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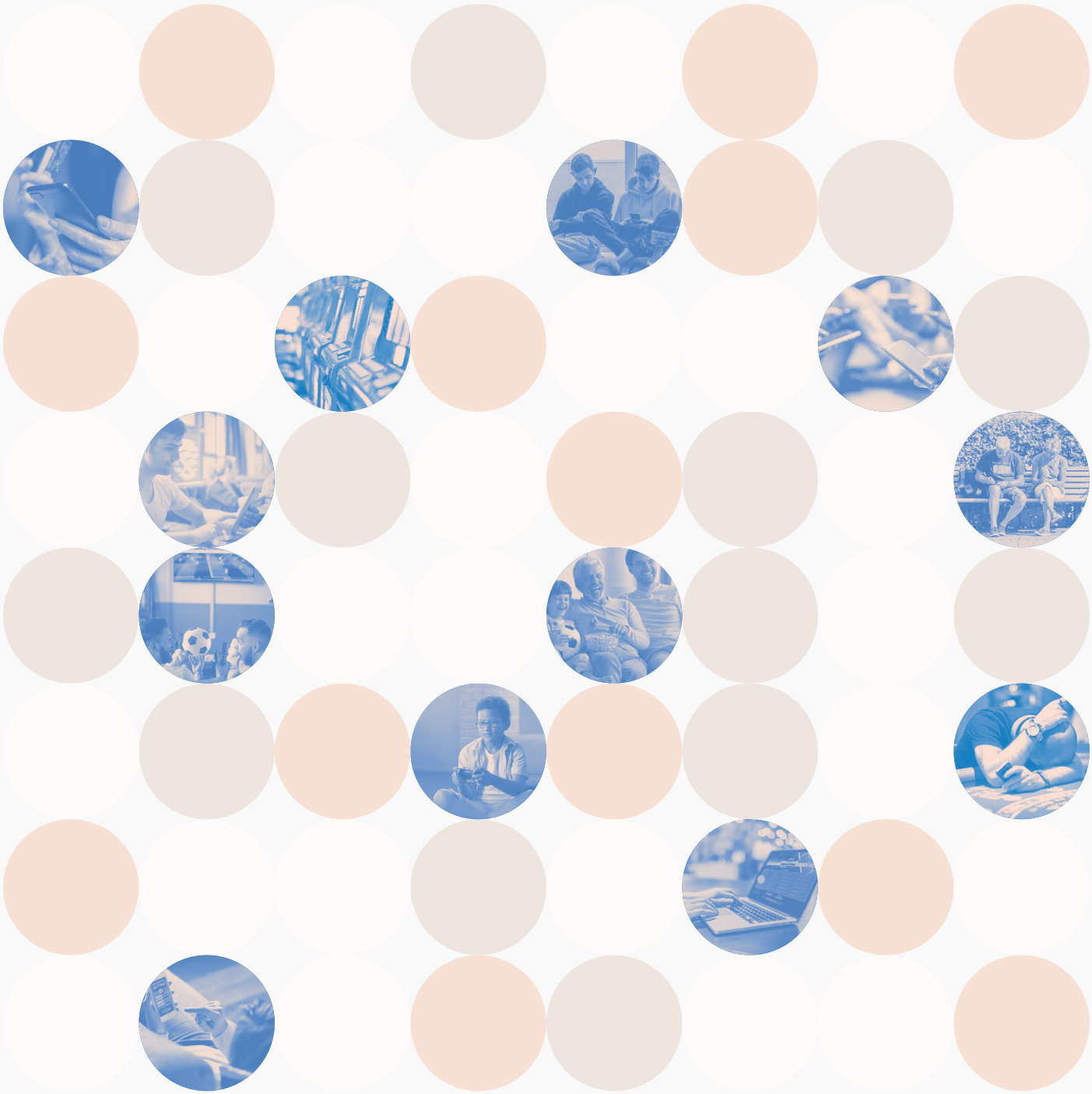
Prevention and Education Review: Gambling-Related Harm

RESEARCH REPORT

2021



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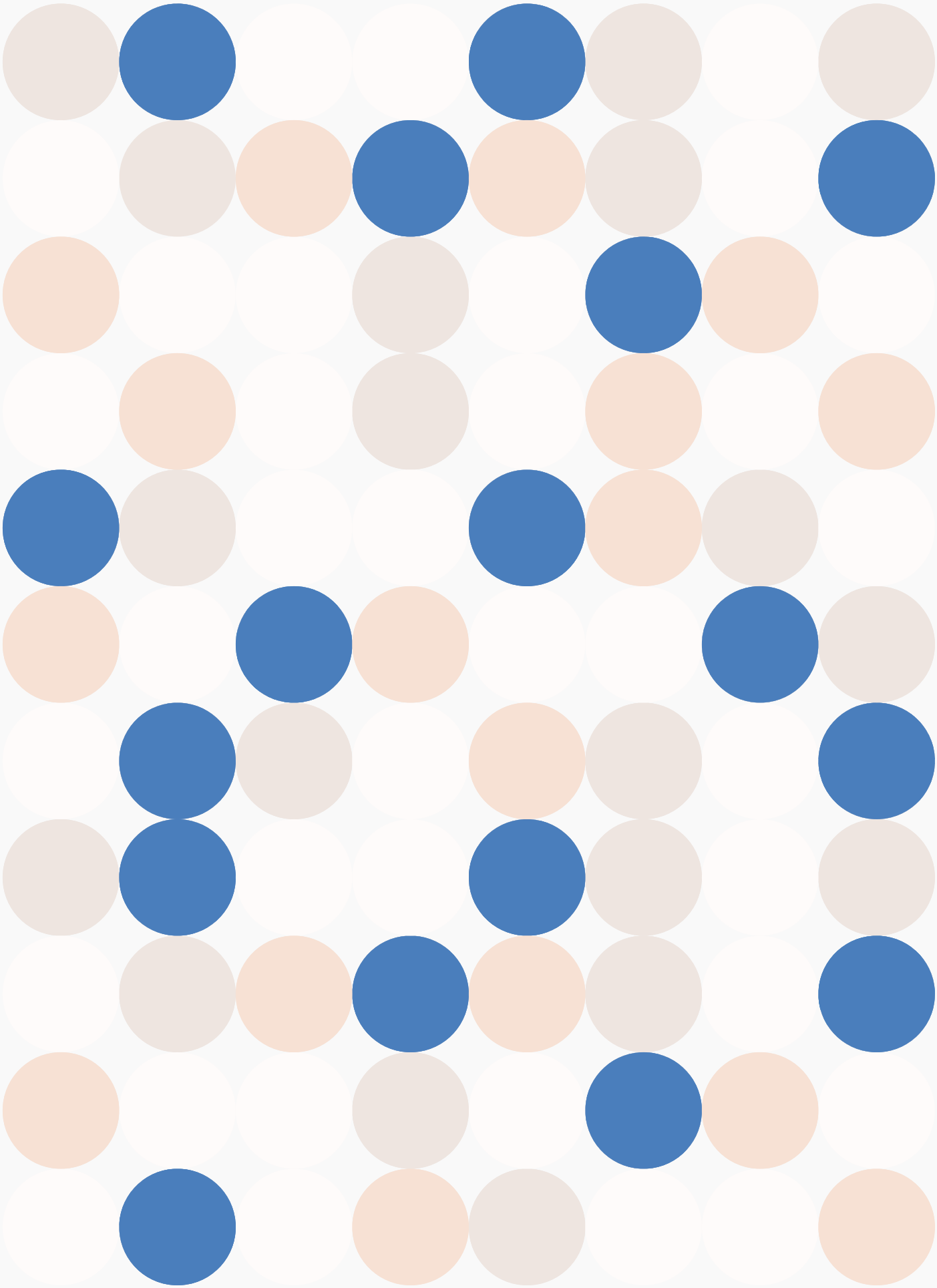

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Prevention and Education Review: Gambling-Related Harm

Abstract

This report supports an evidence-based approach to the prevention and education objective of the National Strategy to Reduce Gambling Harms. Applying a public health policy lens, it considers three levels of measures: universal (for the benefit of the whole population), selective (for the benefit of at-risk groups), and indicated (for the benefit of at-risk individuals). Six measures are reviewed by drawing upon a range of evidence in the academic and grey literature. The universal level measures are "*Regulatory restriction on how gambling is provided*" and "*Population-based safer gambling/ responsible gambling efforts*." Selective measures focus on age cohorts in a chapter entitled, "*Targeted safer gambling campaigns for children, youth, and older adults*." The indicated measures are "*Brief internet delivered interventions for gambling*," "*Systems and tools that produced actual ('hard') barriers and limit access to funds*," and "*Self-exclusion*." Since the quantity and quality of the evidence base varied by measure, appropriate review methods were selected to assess publications using a systematic, scoping, or narrative approach. Some measures offered consistent findings regarding the effectiveness of interventions and initiatives, while others were less clear. Unintended consequences were noted since it is important to be aware of unanticipated, negative consequences resulting from prevention and education activities. After reviewing the evidence, authors identified knowledge gaps that require further research, and provided guidance for how the findings could be used to enhance the prevention and education objective. The research evidence is supplemented by consultations with third sector charity representatives who design and implement gambling harm prevention and education programmes. Their insights and experiences enhance, support, or challenge the academic evidence base, and are shared in a separate chapter. Overall, research evidence is limited for many of the measures. Quality assessments suggest that improvements are needed to support policy decisions more fully. Still, opportunities exist to advance evidence-based policy for an effective gambling harm prevention and education plan.

Keywords: Gambling-related harm; harm prevention; harm education; knowledge synthesis; stakeholder consultations

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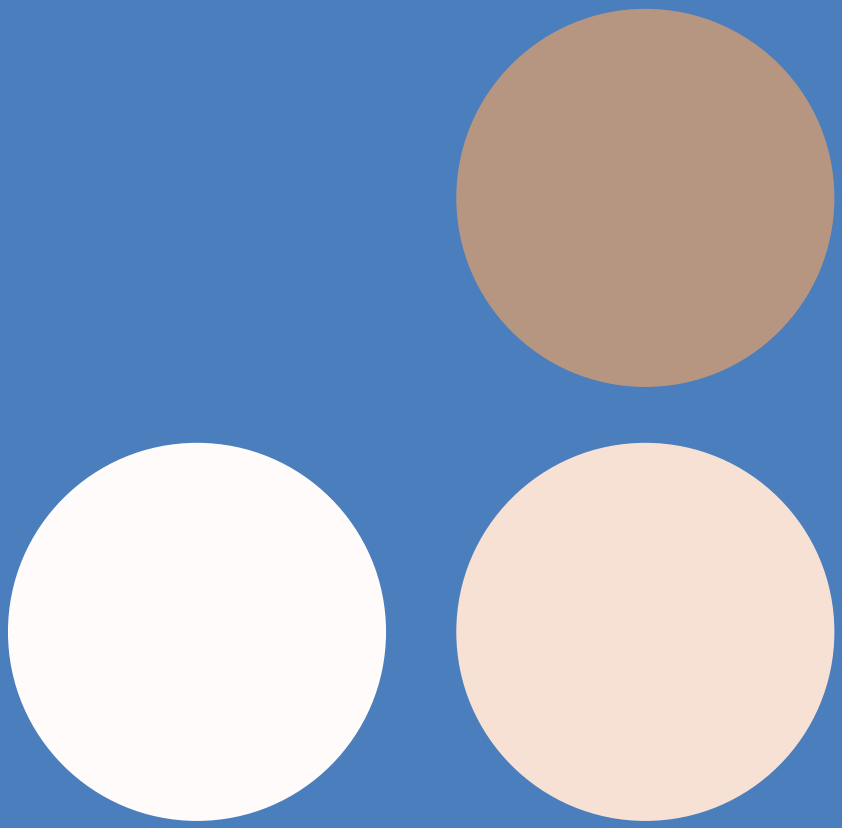
Prevention and Education Review: Gambling-Related Harm

Executive Summary



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Background to the Report

The aim of the National Strategy to Reduce Gambling Harms (the "National Strategy") is "*to move faster and go further to reduce gambling harms*."[para 1] Prevention and education is a key objective of the National Strategy. An effective prevention and education plan draws upon evidence of successful initiatives to prevent gambling harm from occurring. It also incorporates learnings from harm prevention and education activities shown to be less helpful or that may lead to unintended consequences and should be avoided. Such a plan is a complex undertaking. It must consider three levels of measures: universal (for the benefit of the whole population), selective (for the benefit of at-risk groups), and indicated (for the benefit of at-risk individuals). This review helps to support the prevention and education objective by presenting research evidence for a range of initiatives at the three levels of measures. It offers guidance for decision-makers and identifies knowledge gaps where more research is needed.

Since the measures considered for prevention and education are wide-ranging, the project scope of this review was established by Greo in consultation with the Gambling Commission. Greo is an independent, not-for-profit, knowledge translation and exchange organisation with experience in generating, synthesising, and mobilising research across the health and wellbeing sectors. Greo provides support to the National Strategy. This report supports the 'Research to Inform Action' enabler of the Strategy.

After a preliminary assessment of the academic literature, measures for which there was an adequate evidence base were selected for review. At the universal level they are "*Regulatory Restrictions on How Gambling is Provided*" and "*Safer Gambling Messaging and Gambling Management Tools*." At the selective level, evidence is reviewed for "*Safer Gambling Campaigns for Children, Youth, and Older Adults*." Measures reviewed at the indicated level are "*Brief Internet-delivered Interventions*," "*Financial Gambling Blocks*," and "*Self-exclusion*." The reviews of universal, selective, and indicated measures are followed by "*Stakeholder Consultations*," where insights are shared by representatives of third sector charities who design, deliver, and evaluate gambling harm prevention and education programmes and activities. Meaningful information from people working directly in this area to support people at risk of, or experiencing, gambling harm provides valuable context for the research evidence presented in the reviews.

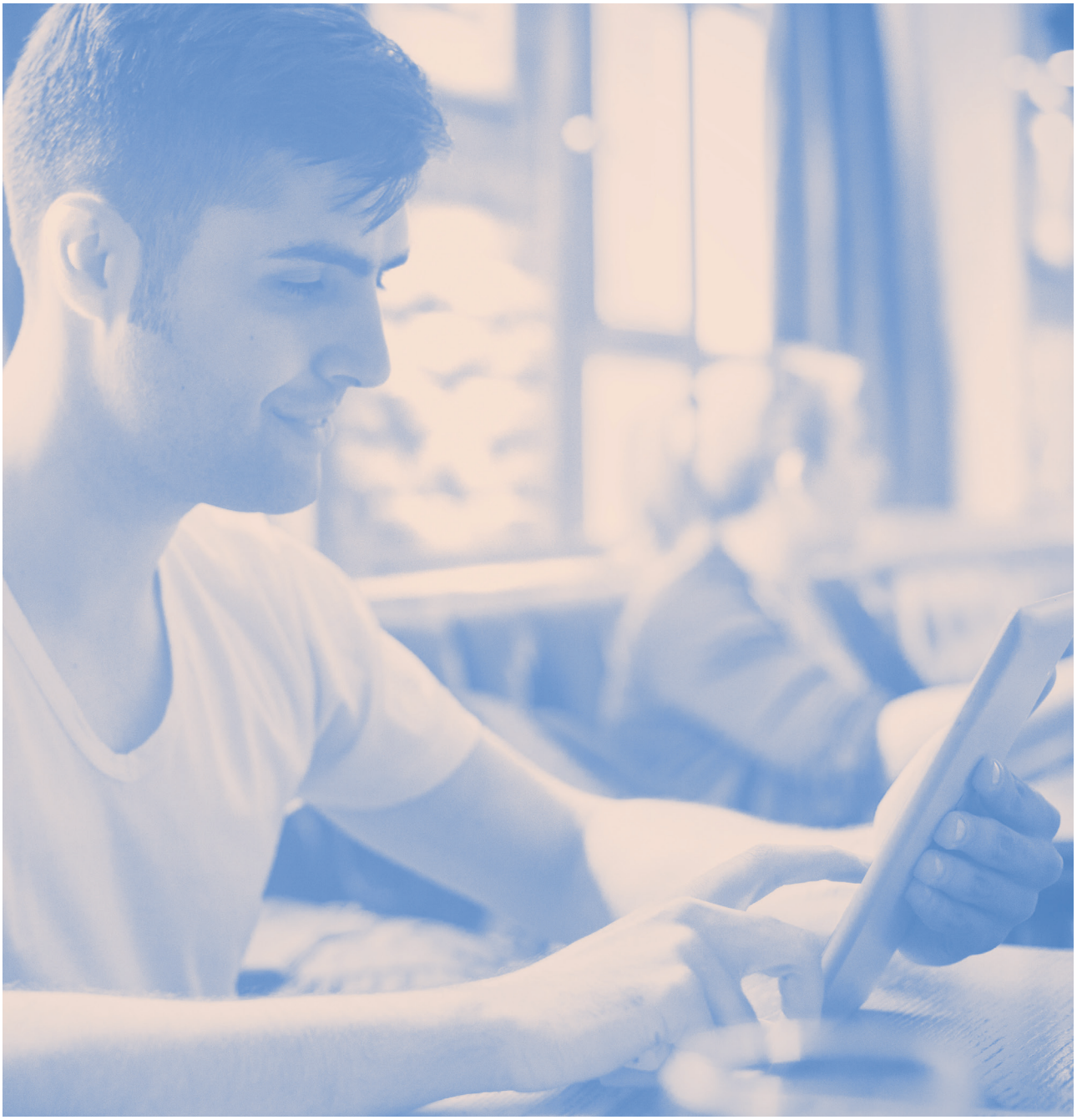
Search strategies for all reviews were developed by Information Specialists at Greo and the University Health Network in Toronto, Canada. Greo commissioned authors based on their research expertise for the specific measures. All chapters underwent peer review by experts in public health, gambling studies, and review methodologies. Search strategies were peer reviewed by information science professionals with expertise in health sciences or gambling studies using the PRESS tool. The research protocol for third sector charity consultations received ethical clearance from the University of Waterloo, in Waterloo, Canada (ORE#42588). Authors' brief biographies and conflict of interest statements are available on the Documentation Hub along with Greo's transparency statement, research protocols for each chapter, ethics clearance certificate, and other relevant materials.

Selected evidence highlights are presented in the sections that follow. Readers are encouraged to review the evidence-based guidance and research priorities for developing an effective gambling harm prevention and education plan, which are provided in each chapter.

Universal Measures

REGULATORY RESTRICTIONS ON HOW GAMBLING IS PROVIDED

This chapter focuses on supply reduction, which refers to reducing the availability of gambling. A scoping review was used to synthesise research on the effectiveness of policies to restrict gambling. Key findings relate to gambling products and place of delivery. Case studies and jurisdictional overviews provide insights into policies used elsewhere to restrict gambling and minimise harm. Relevant research is presented from other public health domains related to restrictions that have an impact on gambling and could help to guide policy development.



Gambling products	Licensing and regulating online gambling seem to reduce participation in offshore gambling sites. Gambling on offshore sites is associated with higher levels of gambling severity.
	Regulations that prohibit online gambling access are somewhat ineffective and have the unintended consequence of people accessing offshore sites, where there are potentially fewer consumer protection measures.
	Participation in sports betting has increased due to online gambling and mobile apps. Evidence is mixed as to whether sports betting, either online or offline, is related to an increased likelihood of experiencing harms. Research suggests that live action betting is linked to impulsive and problem gambling.
	Daily fantasy sports are recognised by some jurisdictions as a new gambling form, but few regulatory restrictions have been applied to reduce the potential for harm.
	Lottery play typically has a low association with gambling problems but may have an additive impact for people who are already experiencing harm from gambling.
	Scratch card use is often associated with youth gambling. Scratch cards in isolation from lottery play have received minimal research and regulatory attention.
	Casino table games have not been studied yet as the subject of specific policy outcomes.

Place of gambling delivery	Restricting opening hours, especially during early morning hours, has a greater impact on people with gambling problems than people without such problems.
	The availability of gambling opportunities is linked to a higher prevalence of problem gambling, although gambling risk level is tempered by adaptation as communities become more accustomed to expanded opportunities.
	The structural design of casinos requires careful consideration. Closed designs (e.g., unclear sightlines, narrow aisles, and lack of space and natural light) can influence unplanned gambling and reduce self-regulation.
	Geographic concentration of venues seems not to affect people who gamble recreationally but has a negative impact on people at risk of, or experiencing, harm from gambling.
	Geographic density of EGMs is more often found in neighbourhoods with low socio-economic status and higher levels of gambling problems, but the impacts of EGM density and socio-economic status are difficult to disentangle.
	Case studies presented for Australia, New Zealand, Germany, Finland, Norway, Canada, and the US show that among the most effective regulations to prevent harm are smoking bans, supply caps for EGMs, no food or alcohol, restricting cash payment, requiring a personal card to play (for age verification, self-exclusion, and allowing personal loss limits), and bans on certain forms of gambling.

Gambling advertising

High exposure to gambling advertising is linked to more gambling participation and the normalisation of gambling. People with gambling problems may experience more impact from gambling advertising than people without such problems.
The UK "whistle to whistle" ban during sports events effectively reduced the number of advertisements viewed by children and youth.
Despite age restrictions, many adolescents use social media platforms to follow gambling operators and are exposed to gambling advertisements.
Branded shirts worn by athletes and ground-based signage still contribute to a substantial portion of gambling marketing.
Some gambling advertisements can be exploitative to vulnerable people and youth when content implies limited risk, and contains inflated suggestions of winning, oversimplification of gambling, and complicated offers.
Alcohol advertising regulations may be useful for informing advertising restrictions for gambling. There is a significant relationship between youth's exposure to alcohol commercials and their subsequent behaviour, which may be transferable to gambling.

POPULATION-BASED SAFER GAMBLING/ RESPONSIBLE GAMBLING EFFORTS

This chapter examined whole population-based safer gambling campaigns, point-of-sale gambling messaging, and gambling management tools for people who gamble and for the general public. Systematic and narrative reviews were conducted.

Safer gambling messaging and gambling management tools for people who gamble	Concrete messages that promote specific safer gambling actions (e.g., "set a safer gambling limit") are more persuasive than abstract messages (e.g., "gamble safely").
	Messages framed positively that focus on the benefits of using gambling management tools are more persuasive than negatively framed messages about harmful effects of gambling.
	Cognitively simple messaging about how games of chance work can help improve knowledge of gambling odds among consumers, but evidence that this knowledge leads to safer gambling is limited.
	Safer gambling messages that encourage people to appraise their own gambling behaviour are related to more awareness of and less time spent gambling, along with more realistic thoughts about the odds of winning.
	Personalised feedback is less effective for players at the highest risk of harm but has positive effects on people who have recently won or lost an unusually high amount.
	It remains unclear whether interactions with advisors in safer/responsible gambling information centres lead to an increase in safer gambling.
	Initiatives aimed at increasing monetary limit setting and adherence allow players to better manage the amount of money spent on gambling and to stick to their financial limit.
	Pop-up messaging with information about approaching pre-set time limits is more effective than pop-up messaging that appears only when the time limit is reached.
	Players experiencing gambling problems more often set a higher spending limit and exceed their limit than people without such problems. This aligns with the aim of limit setting as a way to prevent gambling harm rather than as an intervention.
	Voluntary deposit limit setting tools are positively linked to player loyalty and continued gambling participation. Setting deposit limits is associated with reduced time spent gambling and stronger feelings of control.

Safer gambling messaging and gambling management tools for the general public

General population campaigns appear to have the greatest impact on people who gamble and have already developed problem gambling behaviours.

People who do not gamble limited their future gambling behaviour more often when presented with negative images, while people who gamble were more likely to limit future gambling when presented with positive imagery (e.g., the benefits of safer play).

There is limited evidence that belief in some gambling myths may be reduced at the end of a public awareness campaign.

Selective Measures

TARGETED SAFER GAMBLING CAMPAIGNS FOR CHILDREN, YOUTH, AND OLDER ADULTS

A scoping review was used to examine the evidence base for three age cohorts. More evidence was available for children and youth, less for emerging adults, and little research focused on harm prevention and education for older adults.

Children and youth

11% of youth in the UK between the ages of 11 to 16 years gamble. Further, many adults with a gambling problem began gambling as children.

Most gambling prevention and education programmes are school based. Educating children and youth allows them to make better informed decisions, at least in the short term. Little is known about long-term behavioural changes.

Recommendations to increase the effectiveness of prevention and education programmes include applying an appropriate cognitive development approach to materials, educating youth about odds and probabilities, shifting the focus to participation in other activities, and offering classroom activities and discussion for complex concepts.

Since an early win is a risk factor for later problem gambling, some initiatives have targeted lottery corporations with a holiday campaign recommending that lottery tickets should not be given to children and youth as holiday gifts. Scratch card tickets should be similarly avoided as gifts, according to some initiatives.

Online, "loot boxes" and social casino games present a risk to children and youth. Research suggests that early mobile gaming among teens may predict gambling problems.

Many factors influence children's and youths' gambling behaviour. Tailoring the programme to the group's specific needs, especially for vulnerable youth, can increase effectiveness.

Emerging adults (aged 18-25 years)	Younger adults, age 18-25 years, have higher rates of at-risk and problem gambling than older age groups.
	Much of the evidence is based on studies where emerging adults are college or university students. Few studies have examined emerging adults in the community who are working, or emerging adults who are neither working nor enrolled in post-secondary institutions.
	Eighteen-year-olds are of legal age to gamble in most jurisdictions. They can benefit from the same harm prevention strategies, initiatives, and activities available to the general adult population.
	Personalised Normative Feedback (PNF) is a low-cost, easily disseminated intervention for emerging adults. It is linked to reduced gambling expenditures and frequency, and a decrease in gambling problems. PNF could also have a potentially negative "boomerang" effect among emerging adults, whereby people who gamble socially or recreationally may increase their gambling frequency and spending to reach the "average" level of their peers. Long-term effects of PNF on emerging adults are unknown.
	On-campus gambling policies vary by jurisdiction. Seventy percent of US colleges and universities had an advertised policy compared to only 32% in Canada.
	Guidance for on-campus policies has been developed by the National Center for Responsible Gambling's Task Force. Their recommendations range from using evidence-based strategies to identify and assist students who experience gambling harms, to strengthening the capacity of student counselling services through training on treating students with gambling problems.
	Internet-based approaches to gambling harm prevention and education may be more accessible to emerging adults, and offer other benefits such as privacy and confidentiality.

Older adults (aged 60 and older)	Older adults are commonly targeted by the gaming industry since they are perceived to be a lucrative group. Land-based venues often cater to older adults' physical health needs and provide incentives such as 'free' food, drinks, and transportation—thereby enhancing the appeal of gambling as a leisure activity.
	Online gambling is a concern as more older adults become technologically adept. Older adults who perceive their health to be vulnerable may move more toward online gambling.
	No specific harm prevention or safer gambling programmes were found that targeted older adults.
	Families may play an important role in harm prevention by helping older adults gamble within their means or by exerting some control over their finances, although this can affect relationships.
	Many older adults use self-limiting strategies such as waiting to check lottery results, walking away after losses, setting and maintaining pre-set time and money limits, reading self-help books, and accessing support from religious leaders.
	Recommended gambling harm prevention strategies include educating operators; increasing awareness of self-exclusion and other safer gambling tools; eliminating free food, transportation, and promotional items; consideration of cultural differences and comorbidities; use of family supports, and alleviating help-seeking stigma.

Indicated Measures

Three indicated measures for the benefit of people at-risk were reviewed. A systematic review was conducted for brief Internet-delivered interventions for gambling. Financial blocks to gambling, specifically the systems and tools that produce "hard" barriers and limit access to funds, were examined using a scoping review, and self-exclusion programmes were reviewed using a narrative approach. Only self-exclusion had a well-developed evidence base.

BRIEF INTERNET-DELIVERED INTERVENTIONS FOR GAMBLING: PREVENTION, EARLY INTERVENTION, AND HARM REDUCTION

Four types of brief online intervention are highlighted.

Personalised feedback (PF) or Personalised normative feedback (PNF)	PF has been linked to reduced time spent gambling and lower financial expenditure. This was most evident among people at moderate risk of gambling harm.
	PF combined with advice has a greater impact on reducing spending when compared to PF combined with other interventions.
	PNF is linked to reduced gambling spending and intensity in the short term. In one study, reduced spending and problem gambling severity continued to be observed at a 24-week follow up for people at moderate-risk of harm from gambling only.
	PNF for early intervention shows mixed findings at the three-month follow up assessment.
Limit setting	Lower gambling spending was seen in one-third of limit setting studies.
	Pop-up messages when a person reaches 80% rather than 100% of their spending limit can help to reduce gambling expenditure.
	No studies were found that explored the effectiveness of different ways to help people set limits.

Self-directed internet interventions	Engagement with content is a concern for self-directed internet interventions since people may register for the programme but then not access the content.
	Some evidence suggests that self-directed internet interventions help to improve gambling symptoms for people seeking help, but the intervention is no longer effective when given to people who are not actively seeking help.
	One study of a self-directed internet intervention shows that gambling risk severity, but not gambling expenditure, had decreased at the two-month follow up.
Online self-exclusion	In two-thirds of the studies, online self-exclusion was related to reduced gambling severity and expenditure.
	Risk level may play a role. In one study, after returning to gambling following the online self-exclusion period, gambling severity increased for people with gambling problems.

SYSTEMS AND TOOLS THAT PRODUCE ACTUAL ("HARD") BARRIERS AND LIMIT ACCESS TO FUNDS

Attitudes and preferences toward systems and tools	Many people are unaware that financial transactions with gambling sites and venues can be blocked.
	Most people who use debit and credit blockers rated them as a helpful way to control expenditures.
	Hard barriers imposed by third parties are more effective than soft mechanisms involving family members. Having control over one's own finances appears to be more therapeutic in some cases than financial assistance for strain involving debt reduction after stopping gambling.
	Useful features of financial blocking systems include having a limit on cash withdrawals, a time-release lock, and a cooling off period between initiating and turning off the block.
	When instituting a permanent block on a card for gambling expenditures, contact with a specialist in gambling harm at the financial institution is helpful.
	In a qualitative study in Australia, men with moderate risk or problem gambling were concerned about the ease of credit card use. Many called for a ban on using credit cards for gambling to limit access to money.

Attitudes toward ATM and EFTPOS prohibition	Removing ATMs (or 'cash machines') is strongly supported because it imposes a break in play and helps people to control impulsive spending. People with problem gambling and people who do not gamble were more likely to favour the removal of ATMs from gambling venues.
	In one study, just under half of the participants agreed with the removal of Electronic Funds Transfer at Point of Sale (EFTPOS) facilities from gambling venues. People who gamble occasionally and people with problem gambling were the least likely to favour allowing ATMs and EFTPOS to be permitted inside gaming rooms.
	Participants in another study were concerned that ATM removal meant that cash would be accessed through EFTPOS instead, which has no restrictions. EFTPOS could undermine ATM removal.
Effectiveness of hard barriers	Removing ATMs from gambling venues reduces unplanned cash withdrawals in the short-term, although at a 30-day follow up there was no difference in gambling expenditure, frequency, or unplanned gambling.
	Removing ATMs makes people 'think twice' about further gambling expenditures.
	Most participants in one study reported no change to gambling expenditure with the removal of ATMs, although people with moderate risk and problem gambling were more likely to report reduced spending compared to people without problem gambling.
	After removing ATMs from gambling venues in Victoria, Australia, people reported reduced spending in hotels and clubs, although no difference in spending was detected at either casinos or racecourses.

SELF-EXCLUSION

Effectiveness and ineffectiveness of self-exclusion	Self-exclusion is underused, with one review showing a use rate of between 0.6% to 17% for people with gambling problems.
	Barriers that prevent or delay enrollment include complicated enrollment processes, lack of access to counselling and support during self-exclusion, being excluded from a single venue only, and insufficient choice for exclusion periods. Some people who gamble believe that they do not have a problem, and that using other tools can help them to control their gambling.
	Financial difficulty and/or career, legal, and health-related concerns are often identified as motivations to enroll in a self-exclusion agreement.
	Some studies report reduced gambling and gambling-related harm linked to participating in a self-exclusion programme.
	Although the severity of problem gambling may decrease after enrolling, the decrease was not seen when people began gambling again.
	There is no consensus about the optimal length of self-exclusion.
	At least 50% of people will breach their self-exclusion agreement. The likelihood of breaching increases over time as people may become less satisfied.
	Self-exclusion is linked to improvements in sense of control, self-confidence, and the belief that gambling is less disruptive to one's life.
	Uptake of counselling during self-exclusion is limited.
Unintended consequences of self-exclusion	Self-exclusion at one venue may lead to gambling at other venues where no such agreement is in place.
	People who self-exclude are mostly responsible for complying with the terms of their agreement on their own. The lack of external support has been linked to higher breaching rates.
	Some self-exclusion agreements include mandatory counselling, which could deter enrollment.

Stakeholder Insights

The perspectives, insights, and experiences of representatives from 13 third sector charities that design and deliver gambling harm prevention and education programmes in Great Britain were explored through in-depth interviews. By integrating knowledge derived from academic research and stakeholder expertise, a more complete body of evidence is created to support effective harm prevention and education planning. Stakeholders contributed their knowledge regarding universal and selective measures.

→ Responses to questions about universal measures can be grouped into critiques of population-based messaging; effective practices for designing and delivering universal measures; gambling harm prevention and education awareness and training; conducting evaluations and measuring outcomes; and unintended consequences.

→ Participants shared insights about selective measures for children and youth, emerging adults, and older adults. Most comments related to effective practices for training practitioners, effective design and delivery of initiatives, building capacity among children and youth, best practices for incorporating experts by experience, and addressing unintended consequences. Only two prevention and education initiatives focused on older adults who gamble.

→ Stakeholders' insights and perspectives were also shared at the selective measures level for ethnocultural groups, affected others, employees, military personnel and veterans, people experiencing homelessness, and people who are incarcerated. Since each at-risk group is unique, stakeholders' experiences pertaining to gambling harm prevention and education often varied. Still, there were some commonalities, notably for locating and engaging with people belonging to an at-risk group, developing relationships with others already working in the sector as well as community gatekeepers, and taking the time to fully understand the group to which programmes are being delivered. This allowed initiatives to be tailored specifically for the group—in terms of content and training for the people who would deliver them—so that there was a stronger chance of success.

→ Stakeholders were attentive to the potential for unintended consequences and shared examples from their experiences in programme design and delivery. They also offered guidance for others working in gambling harm prevention and education. The guidance focused on three areas: being responsive to participant feedback and the changing gambling landscape; the important role of policy, legislation, and regulations in preventing harm; and, collaboration with other organisations to enhance rather than duplicate efforts, and to direct participants to other resources, when needed.

DIVERSE INFORMATION SOURCES ENHANCE PREVENTION AND EDUCATION PLANNING

The insights of third sector charity representatives can lend support to or challenge the research evidence. Stakeholders' direct experiences can contribute to programme design and delivery in ways that may be less obvious to researchers. Stakeholders are well positioned to suggest practical avenues for future research and support academic-community research partnerships. Summarised below are ways in which their knowledge can complement the academic literature.

Alignment of expert knowledge with research findings

'One-size-fits-all' messaging at the population level is less effective than targeted messaging. More tailored and flexible approaches are needed.
Peer-to-peer contributions to the design and delivery of prevention and education programmes are important and may have extended benefits for capacity development, particularly among children and emerging adults.
Social media is an effective way of reaching younger people, although use patterns differ between gambling operators and third sector charities. Gambling operators have been active on social media for a longer time, using it both for advertising and required messaging.
Due to health-risk commonalities, successful behaviour change models designed for other public health issues such as alcohol, tobacco, and substance use can be adapted to gambling harm prevention and education strategies.
Both researchers and third sector charity representatives share concerns about gambling industry funding of research.

Stakeholder insights into the design and delivery of programmes and activities for researchers	Stakeholders often mentioned the importance of a participatory approach to programme design and delivery to improve outcomes.
	Very little academic research on gambling harm prevention and education examines how the design process for programming and messaging can influence outcomes.
	Some stakeholders shared the concern that due to limited resources, messaging for the general population was often targeted instead at groups at greater risk of experiencing harms. More consideration of available resources and message intent may be needed.
Identifying areas for future research or research partnerships	More researchers could provide evaluation and research support through community-university partnerships.
	Since older adults are seen as a priority group, more directed attention is warranted. Little research evidence exists for older adults' gambling harm prevention and education and only two examples were given by stakeholders of support resources for older adults.

Evidence for Prevention and Education Varies in Quantity and Quality

DEPTH AND BREADTH OF THE EVIDENCE BASE

The evidence base for gambling harm prevention and education measures is uneven in both quantity and quality, which can be a limitation to advancing new policies and initiatives. There were a number of mixed or inconclusive findings that detract from drawing broad conclusions.

Although the original intent of this report was to include systematic reviews only, it was not possible due to a considerable imbalance in the quantity of research evidence for specific measures. This could happen for a number of reasons, such as a lack of research funding to explore a measure, or it could be that the measure is a relatively new advancement (e.g., financial blocks to gambling). The evidence base is insufficiently developed to conduct any type of review for some other measures identified in the National Strategy (e.g., customer interaction). Ideally, enough evidence would be available to conduct a meta-analysis for each measure, where the results of several studies are combined, and further analysis is conducted to determine overall trends and consistencies in intervention outcomes.

For each measure reviewed, authors identified knowledge gaps and suggested future research directions to address them. These recommendations merit careful consideration so that the evidence base upon which policy and programming decisions are made is extended. Ideally, more research could be conducted in Great Britain to inform British prevention and education policies and initiatives. An awareness of new developments internationally is valuable and can inform directions for harm reduction. Still, it is important to understand whether and how programmes first implemented elsewhere might work in British cultural and jurisdictional contexts.

EVIDENCE QUALITY

The quality of the evidence reviewed for this report is a concern. Depending on the review type, quality assessments were either formal (e.g., for systematic reviews) or informal (e.g., scoping and narrative reviews), as guided by Grant and Booth's typology of reviews and associated methodologies. Authors were provided with quality assessment tools for quantitative and qualitative studies, systematic reviews, and grey literature to support their assessment of the evidence. Methodological shortcomings were often noted, with much of the literature rated as either of low or moderate quality. Research in gambling harm prevention and education would benefit from:

- → **Including appropriate control groups (with random assignment to control and intervention groups)**
- → **Having larger sample sizes for quantitative studies to increase statistical power**
- → **Implementing a longitudinal design so that baseline, short-term, and long-term follow up assessments are possible**
- → **Using measures designed specifically to assess harm from gambling in addition to measures of problem gambling prevalence**
- → **Conducting experimental research to test messaging and other interventions, where appropriate, before implementing them**
- → **Having access to player data so that patterns of behaviour can be objectively monitored without the potential for recall or social desirability biases**

Shortcomings of the evidence base can limit the ability to effectively plan and implement a comprehensive prevention and education plan. However, it does not mean that the prevention and education strategy development cannot advance. There are some measures for which the evidence is well established with consistent outcomes. For those measures that are less well supported, part of the plan initially could be to gather more evidence by supporting high-quality research initiatives to address the knowledge gaps.

Advancing the Prevention and Education Objective

The measures examined give some indication of the broad scope of programmes and activities to be included in a comprehensive prevention and education strategy. Some common themes that arose throughout the report are outlined below.

Moving from prevalence to harm

Historically, the gambling studies literature has aligned primarily with the medical model of gambling policy. This model focuses on problem gambling, its causes, and treatment. As such, much of the research reviewed was designed to address at-risk and problem gambling behaviours and attitudes, with less emphasis on reducing gambling harm more widely. Moving to the public health gambling policy model will include people at all risk levels, employ new ways to measure harm rather than prevalence only, and allow more accurate assessments of the effectiveness of harm prevention and education activities.

Consistencies across measure levels for effective harm prevention and education

What is effective for people with gambling problems often differs from those who gamble recreationally or not at all.

A 'one-size-fits-all' approach to harm prevention and education will decrease its value. Tailored approaches are often more helpful. Interventions that allow more flexibility are desired by participants and would likely improve uptake.

The form and content of communications have an impact. Digital media strategies can enhance prevention and education initiatives, especially among younger age groups. Positive messages that focus on safer gambling are more persuasive than negative messages detailing harmful outcomes. Content needs to be clearly communicated in simple language, and intentions should be specific rather than vague. Better promotion of interventions, safer gambling tools, and financial blocks is needed.

Some interventions (e.g., Personalised Normative Feedback, PNF) are endorsed across multiple levels of measures, which suggests that they could be more widely promoted and implemented in a comprehensive prevention and education plan.

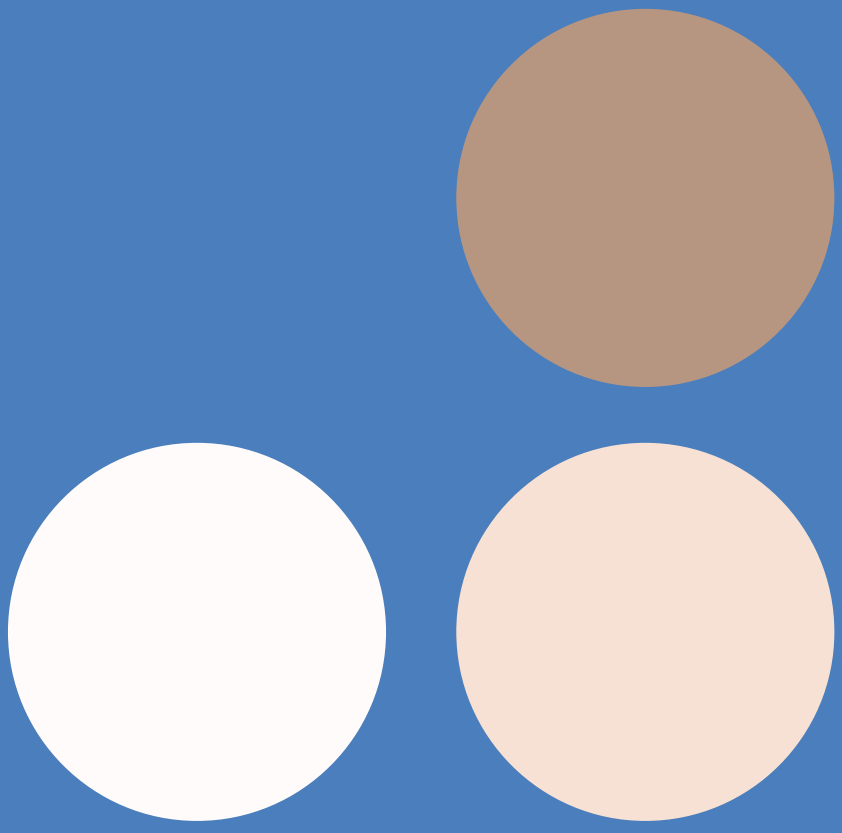
Research identifying unintended consequences is limited	Unintended consequences that may have resulted from gambling harm prevention and education initiatives were rarely reported in the academic literature.
	On the other hand, stakeholders recognised the possibility of unanticipated consequences, and took steps to prepare for and mitigate against them. Many commented that risk management and evaluation are important for reducing the potential for unintended consequences. They also signposted to other stakeholders' resources.
Jurisdictional context is important	Much of the evidence was derived from research conducted in other high-income nations. Further, each jurisdiction has a unique policy structure and set of gambling regulations.
	Attitudes, traditions, and belief systems associated with gambling, treatment seeking behaviour, and experiences of stigma need to be considered in the British context when planning harm prevention and education activities and programmes. There is considerable potential to implement initiatives found to be successful elsewhere in combination with locally contextualised knowledge.
The gambling landscape is constantly changing	Gambling harm prevention and education is most effective when stakeholders are aware of advancements in gambling forms, their delivery format, and who may be at greater risk.
	Online gambling and new technologies have transformed the gambling ecosystem. There is currently an overfocus of research attention on land-based gambling. The evidence base for harm prevention for online gambling will need to expand, particularly in the wake of the COVID-19 pandemic.

FOLLOW THE EVIDENCE

greo

Prevention and Education Review: Gambling-Related Harm

1.0 Introduction to the Review



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1.0 Introduction to the Review

1.1 Background and Approach

The National Strategy to Reduce Gambling Harms (the "National Strategy") was released in 2019 with the sole aim "*to move faster and go further to reduce gambling harms*."[1, para 1] Prevention and education is one of two key objectives of the National Strategy, with the other being treatment and support. As a strategic priority, an effective prevention and education plan draws upon evidence that can guide programmes and interventions to prevent gambling harm from occurring. Such a plan is a complex undertaking that must also consider interventions and activities shown to be less effective, and those that may lead to unintended consequences and should be avoided altogether.[2] This review helps to support the prevention and education objective of the National Strategy in two ways. First, it provides information to support evidence-based approaches to gambling harm prevention and education in Great Britain at varying levels. Second, by doing so it can help to guide a collective prevention plan by sharing appropriate options for a range of interventions, and how they can be delivered most effectively.

A PUBLIC HEALTH APPROACH TO GAMBLING HARM

The National Strategy reflects a public health approach to gambling harm. The public health perspective draws upon the social determinants of health, understanding that factors external to the individual can influence health outcomes.[3] Some examples of external factors linked to gambling harm are inequalities in income, education, and gender,[4] social exclusion,[5, 6] neighbourhoods,[7] and housing circumstances.[8, 9] A public health policy model of gambling reaches people across the full gambling risk spectrum, works toward well-functioning communities, focuses on behaviours and the environment, and uses policy tools to advance new regulations and social policy.[10] Further, it draws upon multiple sectors and government departments to advance its aim in an integrated, comprehensive fashion. The public health approach also strives to provide the greatest benefit to the most people. There are four primary steps to the public health approach: (1) surveillance, or defining the problem through systematic collection of data; (2) identifying risk and protective factors by determining why the issue occurs and who is most affected; (3) developing and evaluating interventions to determine what works; and, (4) implementation of effective programmes and policies, with ongoing evaluation of their impact and cost-effectiveness.[11]

There is considerable national and international interest in the uptake of a public health approach to prevent harm from gambling (e.g., see Adams, Raeburn and De Silva,[12] Arnot,[13] Chief Medical Officer for Wales,[14] Browne et al.,[15] Johnstone and Regan,[16] and Wardle et al.[17]). Although calls for a strategic public health approach to preventing gambling harm are found in the academic literature from the 1990s forward,[18] to date only New Zealand has legislated public health involvement in gambling harm prevention and minimisation as part of the 2003 Gambling Act.[19]

In 2018, one year prior to the release of the National Strategy, *Measuring gambling-related harms: A framework for action*[20] was published by the Gambling Commission and GambleAware. The report provides insights into gambling-related harm in Great Britain. It is guided by the socio-ecological model, which is often used to understand and address other public health issues. This layered model sees the individual as embedded within and influenced by their social

networks, community, and society. It is from this perspective that a range of metrics or indicators are suggested for monitoring in order to estimate the social costs of gambling-related harm. These metrics could be used to help inform and refine gambling harm prevention and education policies and programmes.

A BROAD SPECTRUM OF MEASURES

The measures needed to form a comprehensive prevention and education plan can benefit people at three levels: universal (for the whole population), selective (for at-risk groups), and indicated (for at-risk individuals).[2] At each level, the National Strategy identifies key measures. Measures are courses of action to be considered for an effective gambling harm prevention and education plan.

At the universal level for the whole population, the measures are regulatory requirements and restrictions on place, product, and provider; point-of-sale safer gambling messaging; gambling management tools; and population-based safer gambling campaigns. At the selective level, measures for at-risk groups include education programmes for children, young people, and other vulnerable groups; workforce education programmes for professionals and relevant sectors; and safer gambling campaigns for targeted population groups. At the indicated level for at-risk individuals, the measures are self-exclusion; financial blocks to gambling; brief interventions and online support; and customer interaction by gambling staff.[2] Some measures have received considerable research attention already, while others are in a nascent stage. This means that the evidence base is uneven, and in some areas, there are not enough studies to review at this point (e.g., customer interaction by gambling staff).

In the future, these topics can be reassessed to determine whether there is sufficient research to support evidence-based decisions to inform comprehensive planning.

TOWARD A COMMON UNDERSTANDING OF TERMS

Some terms that regularly appear in this review may be interpreted differently depending on readers' backgrounds and frames of reference. Therefore, it is helpful to share a few definitions at the outset. For this review, we rely primarily on the definitions provided in the National Strategy,[1] the underlying document Measuring Gambling Harms: A Framework for Action,[20] and other highly regarded gambling studies publications. Five key concepts are outlined below.

Prevention includes, "*a broad spectrum of measures at population level, such as regulatory restrictions on product, place and provider. This priority also includes reference to public health messaging and education programmes, and to specific work with individuals who are at risk of harm*."[2, para 3]

Gambling and gaming have been defined differently across jurisdictions. Based on The Gambling Act of 2005, it includes any form of gambling, betting, and participating in a lottery.[21] We extend this description and include the following definition of gambling: "*Staking money or something of material value on an event having an uncertain outcome in the hope of winning additional money and/or material goods*."[22, p.11]

Problem gambling is defined by the Gambling Commission as "*gambling to a degree that compromises, disrupts or damages family, personal or recreational pursuits*."[23, para 1] Rates of problem gambling are measured by screening tools such as the Problem Gambling Severity Index (PGSI),[24]

to identify the number of people who gamble recreationally, people at low-risk and moderate risk of gambling harm, and people with problem gambling. Population estimates show that approximately 0.3% of British adults experience problem gambling, 0.9% are at moderate risk of harms, and 2.0% are classified as low-risk gamblers.[25] At present, much of the gambling studies evidence base focuses on problem gambling and its treatment from a psychological perspective.[26, 27]

Gambling harm is, "*the adverse impacts from gambling on the health and wellbeing of individuals, families, communities and society.*"[20, p.7] These harms are directly related to people's relationships, resources, and health.[20, 23] They can extend beyond the individual to affect their families, social networks, communities, and society overall, and may have lasting generational and intergenerational impacts.[28] Problem gambling and gambling harm are related, but not interchangeable concepts. The former focuses on prevalence rates of a mental health condition for individuals, whereas the latter extends beyond the individual to capture outcomes related to the health, economic, and social costs of harmful gambling.[29] The terms are also sometimes conflated. As noted by Browne and Rockloff,[30] PGSI categories could be treated more as indicators of harm that occur on a continuum ranging from mild to severe rather than a direct measurement of harm itself.

Safer gambling and **responsible gambling** are also related but conceptually different terms. Responsible gambling is based on the premise of the Reno Model[31] that gambling participation is a personal choice, and that people must be adequately informed to make the decision to gamble. Many stakeholders play a role in providing information about gambling, but ultimately the choice is left to the individual. Although widely adopted by governments and the gambling industry, the Reno Model has come under criticism for its emphasis on personal responsibility, differences in interpretation of what "*responsible*" means and how "*responsible gambling*" is defined, and the limited body of supporting evidence.[27] Safer gambling, by contrast, adopts a public health approach, recognising that factors beyond individual awareness can influence the decision to gamble.[18] These factors can include, among others, machine design,[32] placement and density of gambling opportunities,[33] family and peer involvement,[34, 35] and cultural attitudes toward gambling.[36] For this review, safer gambling is the preferred term. Responsible gambling is used only when referring to research results where the term was applied by the original study authors.

A COMPREHENSIVE APPROACH TO GAMBLING HARM IN GREAT BRITAIN

At the time of writing, two other reviews were underway in the UK to address concerns about harm from gambling. Each had a different scope, or research protocol for bringing together information that can address social responsibility issues.

The first review was conducted by a research team at Sheffield University who were commissioned by the National Institute of Health Research (NIHR) to examine the effectiveness of interventions and policies at the national and international levels to reduce harm from gambling. The authors assessed 30 review articles that described programmes aimed to prevent or reduce gambling harm. They concluded that the evidence for most programmes was weak, there is a lack of long-term follow-up on interventions, and there are few screening

programmes or programmes providing post-treatment support.[37]

The second review by Public Health England (PHE) brings together data and information on the prevalence of gambling participation and harmful gambling, the risk factors, the associated public health harms, the economic and social cost, and stakeholders perspectives on gambling-related harms.[38] Both reviews were undertaken in response to the PHE remit letter for 2018-2019 where they were asked to "*inform and support action on gambling-related harm as part of the follow up to the Department for Digital, Culture, Media, & Sport-led review of gaming machines and social responsibility*."[39, p.6] This review is expected to be published in Autumn 2021 and will provide a comprehensive evidence base when developing a gambling harms prevention and education plan.

A third review is mentioned in several chapters of this report. A 2019 umbrella review regarding gambling-related harm prevention and education interventions was conducted by UK researchers based at the University of Central Lancashire and Newcastle University.[4] An umbrella review systematically brings together evidence from other systematic reviews to assess what is known about a topic, what is unknown, and where further research is needed. Of the 10 studies that were included in the review, most focused on the effect of interventions on individual behaviour. There was less emphasis on population level interventions where policy change could have a broader impact on preventing gambling-related harm. The authors also noted that the much of the evidence was of low quality, and more work was needed to assess the effect of interventions on different sociodemographic groups.

1.2 The Project Scope

Since the measures to be considered for a prevention and education plan are wide-ranging, the project scope was refined to those measures deemed to be most relevant for each population level in the UK context. The project scope of this review was established by Greo in consultation with the Gambling Commission. Greo is an independent, not-for-profit knowledge translation and exchange organisation with experience in generating, synthesising, and mobilising research across the health and wellbeing sectors. As part of its work programme, Greo provides support to the National Strategy to Reduce Gambling Harms,[1] including the 'Research to inform action' enabler.
A full transparency statement for Greo can be found on the Documentation Hub.

PRELIMINARY ASSESSMENT OF THE EVIDENCE BASE

Determining the project scope began with a review of the evidence base for all topics identified in the three levels of measures. For topics where there was scant research, we also contacted Information Specialists and gambling studies researchers familiar with these topics for their insights into whether a systematic review or other form of knowledge synthesis was possible.

A knowledge synthesis is simply a way to summarise relevant studies for a specific question, identify gaps in the research evidence, and share inconsistencies in the findings.[40] All types of reviews are a form of knowledge synthesis. A **systematic review** systematically searches for, appraises quality, and synthesises research evidence while adhering to strict guidelines for what information is to be included or excluded.[41] It relies upon having an established evidence base. Although a

systematic review of *all* gambling harm prevention and education literature was the original goal, it became clear that this would only be possible for a few topics.

In cases where the evidence base was not yet well established, some measures were addressed through a **scoping review**. Scoping reviews assess the potential size and scope of the evidence base, and are well suited to topics where there is a less established research presence. They are effective in identifying the current state of evidence and recommending priorities for future investigation.[41] For one chapter, the scoping review was supplemented by illustrative **case studies** of other jurisdictions. Case studies allow people to consider how problems have been approached elsewhere, including effective initiatives as well as unintended consequences, associated with different options.

Where the evidence base was even more limited, a **narrative review** was used. In narrative reviews, findings from research studies are typically presented in their original form, followed by some explanation and interpretation of the evidence.[42]

Once the state of evidence was established and review methods selected, the **project scope** was finalised. The final project scope can be found on the Documentation Hub. With the project scope established, **research protocols** describing the review method and topics to be included (or excluded) were then developed for each chapter. All research protocols are also available on the Documentation Hub.

SEARCH STRATEGIES

Systematic searches for evidence were undertaken by the Greo Information Specialist. For those chapters directly related to public health, interventions, and treatment, an Information Specialist with the University Health Network collaborated on the searches. Systematic searches were conducted for each measure using controlled vocabularies, subject headings, and Boolean operators to increase relevant results. When a search did not retrieve targeted references, a second or, in one case, third search was performed. All search strategies were peer-reviewed by Information Specialists with advanced knowledge of gambling studies and/or public health following the Peer Review of Electronic Search Strategies (PRESS) statement.[43] In response, the searches were revised where needed. Final search strategies are available on the Documentation Hub.

The searches included research evidence published in academic journals, as well as grey literature. Academic articles must undergo a peer review process to ensure their suitability for publication. Grey literature may or may not be peer reviewed. It represents document types "*produced by all levels of government, academics, business and industry in print and electronic formats...where publishing is not the primary activity of the producing body*."[44, p.2] Typical examples would be government reports, or white papers by academics or think tanks. Gambling studies has a rich body of grey literature, much of it peer reviewed, that extends the available evidence, especially in the area of health and wellbeing.[45] This makes grey literature well suited for inclusion in studies from a public health vantage point. Although most reviews in this report were based on academic articles, some high-quality grey literature is included.

ASSESSING EVIDENCE QUALITY

When conducting a knowledge synthesis, it is important to have some sense of the quality of the research evidence available. This can provide assurance that the evidence is sound

so that decisions about policies and initiatives are properly informed, and can proceed with confidence. A formal quality assessment is required for systematic reviews, but not for scoping reviews, and may or may not be for narrative (or "*overview*") reviews.[41] All chapters employing a systematic review included a formal evidence quality assessment using tools recommended by Greo. In chapters where a formal assessment of quality was not required, authors provided an expert opinion guided by categories included in the quality assessment tools. The quality assessment tools were specific to different research methods and publication types. They included the Critical Appraisal Checklist for Systematic Review and Research Syntheses,[46] the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies,[47] the Critical Appraisal Skills Programme (CASP) Qualitative Checklist,[48] and the AACODS checklist for appraising grey literature.[49]

ETHICAL CONSIDERATIONS

Since the Stakeholder Consultation chapter involved personal interviews with representatives of third sector charities in Britain, research ethics clearance was required. The study received ethics clearance (ORE#42588) from the Office of Research at the University of Waterloo in Waterloo, Ontario, Canada. The ethics **clearance certificate** is available for review on the Documentation Hub. It is not necessary to obtain ethics clearance for knowledge syntheses of existing research studies.

COMMISSIONING OF CHAPTER AUTHORS

Authors who contributed to the review were selected through a non-competitive process. They are well-known within Greo's national and international researcher network for their expertise in areas identified as relevant to gambling harm prevention and education. As a major international research funder for more than two decades, and subsequent mandate for knowledge translation and exchange, Greo is well positioned in the gambling studies community to connect with leading researchers in multiple areas of focal interest. Beyond their research expertise, authors with interdisciplinary research experience and familiarity with the public health approach to addressing gambling harm were preferred. Researchers who agreed to take part were provided with the project scope and guidelines for their contributions to ensure consistency across chapters.

CONFLICT OF INTEREST

All authors submitted a conflict-of-interest statement for ethical issues or funding covering the past five years. Brief biographies and conflict of interest statements are available at the end of each chapter, and separately on the Documentation Hub.

Concerns have been expressed in the gambling studies research community about the influence of the gambling industry on industry-funded projects, including perceptions of such influence.[50, 51] This parallels well-founded concerns about industry-funded research for other public health issues such as tobacco and alcohol. To address this issue when considering the evidence, the authors provided information about funding sources for each study included in their review so that readers would know whether the research was funded independently, or directly or indirectly through the gambling industry.

PEER REVIEW OF CHAPTERS

Each chapter included in the review underwent peer review. Peer reviewers were selected so that, ideally, each author or research team would receive feedback from experts in public health, gambling studies, and review methodologies. For the Stakeholder Consultation chapter, a third sector charity representative also participated in the peer review process. Peer reviewers were provided with the research protocol for the chapter under review and a peer reviewer template. The protocols and peer review template are provided on the Documentation Hub. The reviewers are gratefully acknowledged and listed at the beginning of this report and on the Documentation Hub.

ADVISORY COMMITTEE

This review has benefitted immensely from the contributions of an Advisory Committee. The purpose of the Advisory Committee was to provide advice on the report structure and progress, and to guide the dissemination strategy to ensure that information is shared with organisations, stakeholders, and individuals who could benefit from it most. The Advisory Committee consisted of representatives from Public Health England, the Gambling Commission, the Advisory Board for Safer Gambling, and the international gambling studies community. More information about the Advisory Committee can be found on the Documentation Hub.

1.3 How to Read the Report

ORGANISATION AND STRUCTURE

This review can be read in its entirety, or with a separate focus on specific levels of universal, selective, and indicated measures. At the beginning of each level of measure, the measures to be covered are introduced. Each measure is then presented in a separate chapter. The chapters review the evidence, including which initiatives are more effective in reducing harms, and those that are less effective or may have unintended consequences. Authors' insights into how this information could be used to guide a collective prevention plan are offered, along with suggestions for further research to address knowledge gaps. Key findings and guidance are then summarised and synthesised for each level.

The universal measures section includes two chapters. First, Dr. Sally Gainsbury examines "*Regulatory Restrictions on How Gambling is Provided*" using a scoping review supplemented by case studies for several international jurisdictions. The second review, "*Safer Gambling Messaging and Gambling Management Tools*" was conducted by Dr. Nassim Tabri, Dr. Michael Wohl, and Silas Xuereb. The first section of their review addresses initiatives directed toward people who gamble, and the second looks at general population messaging campaigns. They use two review methods, a systematic review for review articles published from 2005 to 2018, and a narrative review for information published since the date of the most recent systematic review in this topic (2018 onward).

There is one review in the selective measures section. Dr. Jeffrey Derevensky conducted a scoping review of evidence for "*Safer Gambling Campaigns for Children, Youth, and Older Adults*." The original scope of this project included a review of "*Targeted Safer Gambling Campaigns and their Information Pathways*" collectively for the following at-risk groups: ethnocultural

groups, affected others (i.e., friends and family of people with gambling problems), employees, university students, military and veterans, people experiencing homelessness, and people who are incarcerated or formerly incarcerated. To enhance understanding of the unique circumstances of each of these groups and the importance of situating campaigns within the UK context, targeted reviews will be forthcoming, with the intention of including the perspectives of experts by experience and third sector charities.

The indicated measures section includes three reviews. Two are conducted by Dr. Simone Rodda. "*Online Supports and Brief Interventions in Other Settings*" is a systematic review, and "*Financial Gambling Blocks*" is a scoping review since the evidence base is relatively new and somewhat limited. The third review, "*Self-Exclusion*", was contributed by Sheila McKnight. It is a narrative review based on existing systematic review studies, followed by a synthesis of information published since the date of the most recent systematic review (2019 onward). Together, these chapters examine evidence for measures directed towards individuals who are experiencing harm from gambling. The only indicated measure identified in the National Strategy but excluded from the review is customer interaction. After consultation with leading research experts and information specialists, it was determined that the literature is too sparse at present to conduct a meaningful review. The topic could be revisited in the future and a review undertaken when a sufficient evidence base is available.

The universal, selective, and indicated measures sections are followed by the stakeholder consultations chapter by Dr. Margo Hilbrecht, Brittany Gottvald, and Jess Voll. The authors share insights of third sector charity representatives, who design and deliver gambling harm prevention and education initiatives in Great Britain. By including stakeholders' perspectives and experiences, meaningful information from those working directly in gambling harm prevention and education will provide a valuable context for the research evidence presented in the preceding review chapters. It also ensures that stakeholders' voices are considered when developing the collective prevention and education plan.

The report concludes with a general overview of the information presented, including some consideration of the extent to which stakeholders' experiences are consistent with the academic evidence. It concludes by synthesising the findings into suggestions for best practices for future prevention and education initiatives and research.

ACCESSIBILITY

This report is designed to be accessible to the target audience of policy makers, and other stakeholders such as regulators, public health professionals, researchers, third sector charities, and treatment providers. Further, it conforms to Web Content Accessibility Guidelines (WCAG 2.1) guidelines so it can be read by as many people as possible while online.

Each chapter has its own voice because of the many authors who contributed to the Gambling Harm Prevention and Education Review. To bridge the differences in academic backgrounds and training, we use clear, straightforward, "*plain*" language wherever possible and offer brief explanations of academic terminology for ease of understanding when an accurate plain language substitute was not possible. A glossary of regularly used terms is found on the Documentation Hub.

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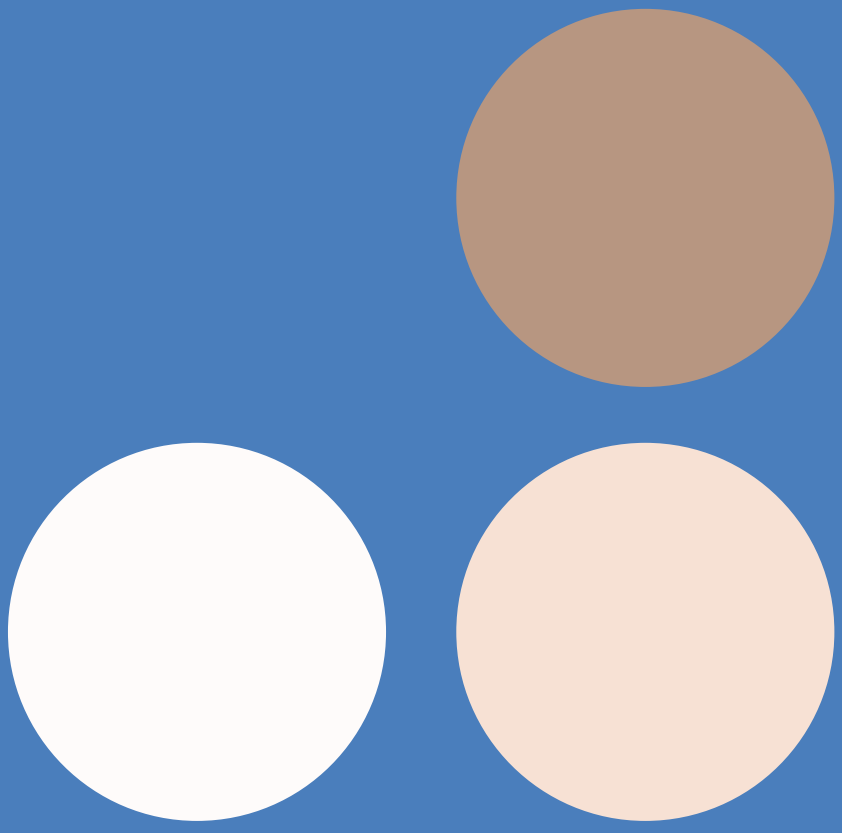
Prevention and Education Review: Gambling-Related Harm

2.0 Universal Measures



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2.0 Universal Measures

2.1 Section Introduction

Universal measures are designed for the benefit of the entire population.[1] They involve a range of activities and initiatives designed to prevent, reduce, and mitigate harm from gambling at the societal level. In this section, we explore two topics that are presented in separate chapters. The first topic is regulatory restrictions specific to gambling products, place of delivery, and providers. The second topic considers the effectiveness of safer gambling messages at point of sale and gambling management tools.

The first chapter, "*Regulatory Restrictions on How Gambling is Provided*," focuses on how the regulation of gambling products and their placement can minimise gambling risk and support safer gambling. The chapter begins with a description of the purpose of regulatory restrictions where gambling is a commercially provided activity, and the role of regulations as an integral component of reducing harm from gambling. The author notes that because the strategies often have broadly defined aims and objectives, it is challenging to effectively evaluate them, especially since evaluation is not often part of the strategy design. Having information about the outcomes is crucial to the success of policy initiatives, which seek to balance reducing and preventing gambling-related harm among the general population without unduly infringing upon the experiences of people who gamble recreationally. Policies to restrict gambling can also create some tension among governments and organisations that are supported by revenue derived from gambling.

The chapter uses a scoping review to address three research questions by identifying (1) research on the effectiveness of policies to restrict gambling; (2) case studies and jurisdictional overviews that provide insights into policies that have been used to restrict gambling and minimise harm; and (3) research from other public health domains related to restrictions that have an impact on gambling and may help to guide policy development to restrict gambling and minimise harms. A scoping review was chosen for its usefulness in examining evidence in emerging areas of research when the goal is to identify the types of available evidence, understand how the research is conducted, examine key characteristics, and analyse knowledge gaps. The chapter is organised into two sections, product and place. Although characteristics of the gambling provider may be relevant in jurisdictions such as Great Britain where gambling is privately operated, almost no evidence was found related to the influence of the provider.

The second chapter, "*Population-based safer gambling/responsible gambling efforts*" considers the messaging and gambling management tools relevant to population-based safer gambling (SG) and responsible gambling (RG) efforts. Much of the research in this area is directed toward people who gamble to help them make informed decisions about their gambling behaviour and participation. The first research question asks whether SG messaging and gambling management tools reduce gambling-related harms among people who gamble. The second research question focuses on the smaller body of evidence regarding the effectiveness of SG messaging and gambling management tools in reducing gambling-related harms among the general public. The chapter is divided into two sections so that evidence for each of the two populations groups—people who gamble and the general population—is presented separately.

For this chapter, it is worth reviewing differences between responsible gambling and safer gambling.

Responsible gambling is based on the Reno Model, first presented in 2004 as a framework to coordinate and advance efforts to prevent and reduce harm from gambling.[2] The underlying principles are that the decision to gamble is a personal choice, and that people must be adequately informed to make this decision. The framework involves multiple stakeholders beyond the individual such as governments, the gambling industry, consumer groups, and health and welfare services, and urges a coordinated approach to inform and develop public policy. In recent years, the Reno Model, and by extension the term "*responsible gambling*", have come under scrutiny for the emphasis on individual responsibility, a limited supporting evidence base, differences of opinion in the interpretation of "*responsible*", and in the definition of "*responsible gambling*."[3] The term "safer gambling" is now being used by a number of jurisdictions. This term recognises that multiple factors, beyond individual choice, can influence the decision to gamble.[4] Many of these factors, such as marketing and messaging, structural design of games, and the availability and access to gambling opportunities could be reframed with consumer protection in mind to align with a public health approach to reducing gambling harm. For universal measures and throughout the report, safer gambling is the preferred terminology. Responsible gambling is used when presenting evidence where the term was used in the articles and reports being reviewed.

During the initial evidence searches, several existing reviews were identified that had examined SG/RG messaging and gambling management tools previously. The authors were asked to focus on evidence in these reviews, and then examine new studies published from the date of the most recent systematic review forward (from 2018 to mid-2020). A systematic review was used for the earlier literature with a focus on existing reviews (from 2005 to mid-2020), followed by a narrative review of the newer evidence.

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2.2 Regulatory Restrictions on How Gambling is Provided

By Dr. Sally Gainsbury

INTRODUCTION

In jurisdictions where gambling is a regulated, commercially provided activity, gambling regulators have a duty to ensure this activity is provided in a manner that reduces the chance of harm for consumers and the broad population. In global terms, harm-minimisation strategies aim to minimise the risks associated with gambling and facilitate responsible gambling, without overtly disturbing those who gamble in a non-problematic manner.[1] Harm-minimisation strategies attempt to reduce harms by using public health and social regulatory approaches that have a wide-reaching scope in targeting all segments of society, including subpopulations considered to be vulnerable or 'at-risk'.[2] In addition to interventions which aim to reduce gambling harms without necessarily having an impact on gambling behaviour (e.g., providing childcare at casinos to reduce children left unattended, or free legal and financial counselling for those with gambling-related problems), policies may aim to reduce the supply of, or demand for, gambling.[3] This chapter focuses on supply reduction which refers to reducing the availability of gambling.

The underlying premise of gambling harm reduction strategies is the recognition that for some individuals, their families, and the broader community, gambling creates and contributes to a broad range of harms. Gambling harms range from mild to severe, have different developmental pathways, can become more serious at different speeds and in response to a variety of individual or environmental changes or stimuli.[4] Broadly, gambling harms can have an impact on finances, health, disengagement from other activities, employment and education, psychological impacts, social interactions and relationships, as well as being related to critical events including suicide, family breakdown, crime, and job loss.[5] Problem gambling is typically defined as occurring when a person's gambling causes harm to themselves or others, while gambling disorder is a mental health condition diagnosed based on specific symptoms. There is no single accepted conceptual model of the development and maintenance of gambling problems and it is typically accepted that there are many causal factors and various pathways to experiencing harms.[6]

Gambling harm minimisation strategies are often outlined as legislative requirements and are undefined in their specific aims, making the impact of the strategies difficult to evaluate. At an individual level, the experience of gambling harm is often measured using self-report scales such as the Problem Gambling Severity Index (PGSI),[7] but, this scale does not always align with the experience of harm since it was developed to differentiate between those who are experiencing serious gambling problems and those who are not. It is important for policy evaluations to also focus on harms at lower severity levels, which can still have an impact on individuals and the broader community, and potentially lead to the experience of serious harms.

Policies to restrict where and how gambling can be provided are increasingly difficult in our highly mobile and connected society. As discussed by many in the gambling field,[8] it is essential to recognise that there are inherent limitations and difficulties confronting those whose task it is to promote safer gambling practices. For example,

the online environment enables access to both regulated and unregulated sites. Although policy makers can introduce regulatory requirements and restrictions for legally sanctioned sites, they have no authority or jurisdiction over illicit sites. To further increase the difficulty of policy makers' tasks, the risks of gambling are changing and evolving with new products, dynamic environments, and emerging technologies in addition to changing consumer cohorts.

Identifying the effectiveness of policies is very difficult. Policies are often not implemented in a manner which easily enables complex outcomes to be measured, nor are evaluations typically incorporated into policy design and implementation considerations. The limited evidence available often necessitates extrapolation from research conducted with limited reliability and validity. Policy makers often must consider evidence and regulations from other jurisdictions and decide whether these may be relevant to local populations. To evaluate the impact and 'success' of harm reduction policies, it is essential to decide on the aim, objectives, and goals. The goal is to reduce gambling-related problems within the community, and prevent harm to consumers and the public. To achieve this goal, policy makers need to work to reduce the incidence of gambling problems (the number of new cases) and its prevalence (existing cases). In liberal societies, such as the UK, this requires a balance between consumer choice and enjoyment against the risks gambling can create and its impact on wider society.

It is difficult and complicated to create and evaluate policies that aim to disrupt and reduce gambling problems, while not having an adverse impact on those who do not experience harm from gambling. The Total Consumption Model (TCM) suggests that there is a strong association between the total consumption (i.e., time and money spent gambling) and the prevalence of excessive/harmful gambling in a population. A meta-analysis of gambling studies found both support for the total consumption model and that longitudinal studies confirm that policies that effectively reduce gambling at the population level will also likely reduce excessive gambling, and therefore probably reduce problem gambling and related harms.[9] The authors conclude that as people with more severe gambling problems account for a disproportionately large proportion of overall gambling and gambling revenues, any measure that is successful in reducing their gambling is likely to reduce the total volume of gambling, both directly and indirectly, on those at lower risk of experiencing harm.[9] However, there is very minimal evidence examining measures which are successful at curtailing gambling amongst those with problems, while not overly disturbing those who gamble without experiencing harm. It is important to note that a reduction in gambling revenue may create a conflict of interest for governments and organisations that are funded based on gambling revenue as this would reduce the funds available including for treatment and prevention of gambling harms.

A previous umbrella review of ten previous systematic reviews to examine the evidence base on the effects of prevention and harm reduction interventions on gambling behaviours and gambling-related harm, found there was very little research on supply reduction interventions,[10] (i.e., policy designed to limit the availability of gambling). An early meta-analysis (i.e., a statistical analysis of the results of earlier studies) examined the association between gambling policies and the prevalence of gambling disorders across 34 European jurisdictions.[11] It demonstrated that regulatory policies did not exert a significant

influence on the national rates of disordered gambling. The types of regulation that were considered extend from prohibition (relating to online gambling) via state monopolies to varied liberal concession models. Only one significant result emerged which was that countries with less restrictive advertising regulation for online gambling show a higher rate of problematic gambling behaviour. However, there is a shortage of evidence that would allow in-depth conclusions on the impact of specific policies.

There has been much debate within academia and the community through media, social media, and other outlets on the appropriate role of government and restrictive policies for gambling. In an analysis of Australian media, most themes attributed responsibility for Electronic Gambling Machine (EGM) play to the government or industry, with only 12% being attributable to individuals.[12] These results suggest that many people see that the role of government is to act as arbitrator between the competing economic interests of industry and societal concerns of social harm, and that the public sees this as a legitimate social policy domain in which government is expected to lead the community. This chapter is intended to guide policy makers in understanding the impact of restrictive gambling policies in addition to highlighting gaps in the existing evidence.

RESEARCH QUESTIONS

The review aims to examine recent international research (2016-2020) to identify what evaluations and research studies have been conducted to inform the effectiveness of regulations to restrict the provision of gambling to consumers. The overarching research question for this chapter was:

What are the most effective restrictions on the provision of commercial gambling to minimise gambling-related harms?

More specifically, the review seeks to:

1. **Identify empirical research on the effectiveness of policies to restrict gambling.**
2. **Identify illustrative case studies and jurisdictional overviews to guide considerations of policies to restrict gambling and minimise gambling harms.**
3. **Identify empirical research (including from other public health domains) and related to restrictions that impact gambling, such as advertising and smoking in venues, that is relevant to guide development of policies to restrict gambling and minimise gambling harms.**

METHODOLOGY

Scoping reviews are useful for examining emerging evidence since the general purpose is to identify and map the available evidence. This methodology was chosen as appropriate given that this chapter aimed to identify types of available evidence, how research is conducted in the field, identify key characteristics, and to identify and analyse knowledge gaps.[13]

The focus of this review is the most current relevant practices only, so the search strategy includes literature published from 2016 to the present (see appended search strategy). The five-year period is the standard "recent" time period for "Current Reports" reviews such as in Current Addiction Reports. It is most valuable to focus on recent regulatory restriction changes since important conclusions from older literature are captured in more recent work.

The review is limited to English language jurisdictions and articles available through

common academic databases supplemented by grey literature such as research reports.

This topic is divided into two areas relevant to regulatory decision making: product and place. The provider of gambling was also considered relevant as in the UK gambling is privately operated in contrast to jurisdictions where gambling is owned and/or operated by the government. However, it was preferred to include relevant research which may have implications for the research question. Nonetheless, very limited research related to the impact of the provider of gambling was identified. Gambling owned or operated by Indigenous Peoples was excluded due to limited relevance in the British context.

In consultation with the Gambling Commission, the following topics were included:

Product

Since gambling products take a variety of forms (e.g., online, Fixed Odds Betting Terminals (FOBT), scratch cards, horse racing, etc.), feedback was requested as to the forms which are most likely to lead to regulatory public policy change by government, regulators, and other stakeholders.

Included: online gambling (with special attention to maximum bet and speed of play); scratch cards; lotteries; casino table games; betting/wagering (sport and non-sport); gaming machine placement. These areas have been prioritised as they have the highest participation and/or highest problem gambling rates in Great Britain.

Excluded: structural characteristics of electronic gaming machines (EGMs) (e.g., maximum bet, payback percentages, etc.); Bingo.

Place

Gambling can take place either online or in a land-based format. Clarification was requested regarding whether to focus on location (e.g., neighbourhood), licensing conditions (e.g., density, number of machines, etc.), or environment (e.g., pub, casino, at home, etc.).

Included: Individual licence conditions (i.e., restricting how much gambling one licensee can operate); broader licence conditions (i.e., limiting total number of licensees, density, and placement of licensees, etc.). A subcategory related to advertising is included in this section; restrictions on volume and placement of gambling advertising in both traditional and online environments; restrictions on the content of gambling advertisements, including inducements.

Excluded: Restrictions on higher-level placement of gambling venues (i.e., "neighbourhood") restrictions.

The full search strategy can be found on the Documentation Hub.

Provider

Gambling is provided through a variety of channels across jurisdictions. Feedback was requested as to whether this should include government, as well as industry owned and operated channels.

Included: Any form of privately operated gambling; government operated lotteries and online gambling.

Excluded: Gambling owned or operated by Indigenous Peoples (due to limited relevance in the British context).

FINDINGS

In total, 102 publications were included in this review (see Figure 1 for a modified PRISMA Flow Diagram). Additional information about the publications, including authors, study type, funding source(s), and country of origin is found in

the chapter Appendix on the Documentation Hub.

Product

Gambling problems appear to be differentially related to gambling products. A comparison of cross-sectional surveys from four countries found differences in risk curves indicating that the relationship between money spent and gambling problems differed between activities.[14] The authors concluded that in general, risk increases in relation to gambling spend for most activities, but some activities had a sharper curve, indicating a more rapid increase in risk (for example, EGM gambling losses correlated most strongly with harms, while for table games risk did not appear to be directly related to the magnitude of player losses). However, differences were observed between countries (Australia, Norway, Canada, and Finland) for lotteries, racing, and sports betting. This suggests that the type of product itself is not solely responsible for gambling harms, but that differences in how and where it is provided in jurisdictional context are related to subsequent harms.

The following sub-sections discuss available evidence that is related to the availability of specific gambling products and gambling harms within the community.

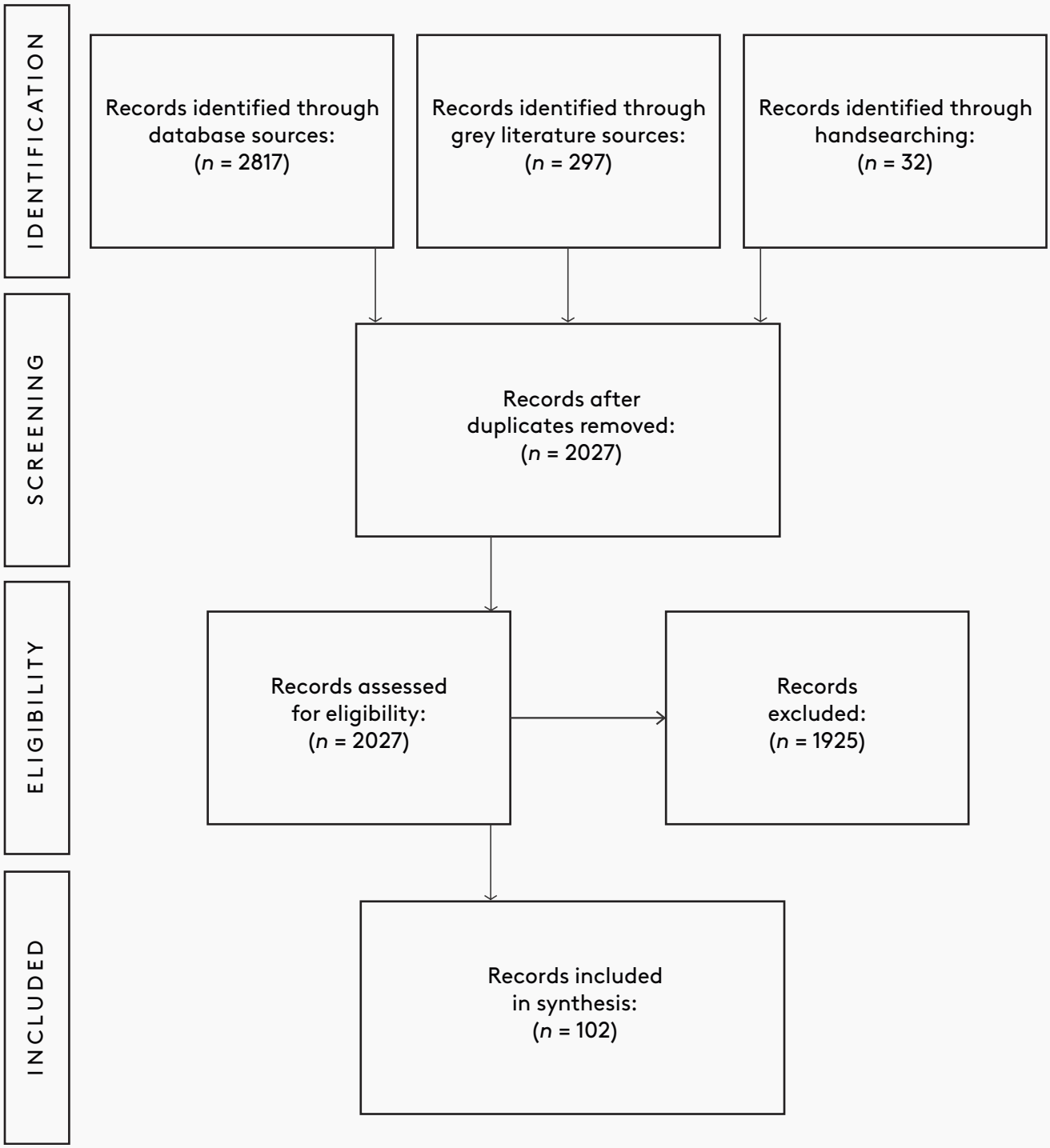
Online gambling

It is difficult to determine the impact of online gambling on gambling problems, as people who use online gambling typically also engage in offline gambling. An Australian study which controlled for breadth of participation across activities and modes of gambling (i.e., online vs. venue-based) found that those who engaged in an online version of a gambling activity were likely to have also engaged in the offline activity.[15] This research found that gambling on EGMs online and EGMs in land-based venues both uniquely predicted the experience of gambling-related problems, which suggests that this activity in both forms is problematic. No other online gambling activities were uniquely linked with gambling problems. The sample for this study was recruited from an online panel and so was not representative of the broader Australian population. The participants all engaged in online gambling, which makes the results preliminary. There is a lack of rigorous empirical research that controls for gambling intensity in representative samples to understand the relationship between engagement in specific gambling activities and harms.

Studies demonstrate that engagement with online gambling sites not licensed within consumer's jurisdiction (i.e., offshore sites, which may be licensed in one jurisdiction but made available to customers in another jurisdiction) is associated with greater problem gambling severity.[16-20] However, consumers who gamble on offshore gambling sites also tend to have the highest levels of gambling engagement, including use of different activities. So, it is not possible to conclude any casual impact regarding the use of unregulated sites on problem gambling or harms.[17, 18]

Liberalisation and licensing of online gambling appears to reduce use of offshore sites. To reduce illegal offshore gambling, many jurisdictions have liberalised online gambling and regulated the provision of online services.[21] Following legislative changes to increase licensed availability of Internet gambling, the amount of gross win in Western European markets earned under local licenses (as opposed to offshore) increased from 49 percent in 2008 to 79 percent in 2015, and was forecast to rise to 87 percent by 2019.[18] Another report indicated that since France introduced Internet gambling regulations to permit this activity legally, the size

Figure 1. Modified PRISMA Flow Diagram for article inclusion



of the unregulated market reduced from 65 percent to 20 percent.[18] In contrast, gambling is essentially prohibited in India, with the exception of limited state-run lotteries, but there is estimated to be a huge illegal betting market, particularly for sports betting, which is estimated to account for around half of the total gambling market.[22]

Initial evidence suggests that consumers who use offshore gambling sites appear to represent a different cohort to people who gamble online domestically and may have higher rates of gambling problems. In 2010, France enacted a law to regulate and supply consumption of online gambling, extending their provision of services of online sports betting, off-course betting, and poker.[17] French licensees were bound to a common regulatory framework that required implementation of prevention measures for people who gamble excessively and promotion of responsible gambling. The French national lottery operator continued to exclusively offer lottery, instant win, and scratch cards online. Illegal offshore sites offer additional activities including casino and slot games. A 2012 survey of those who bet on regulated as compared to unregulated activities online were more likely to be female, younger, less educated, inactive in the labour market, and more likely to perceive their financial situation as difficult. Around half (53.7%) of participants who gambled online reported gambling exclusively on licensed sites and of those who bet on illegal sites, 12.1% gambled exclusively on these. Lottery products were most likely to be purchased from licensed sites, with poker most likely to be bet on unlicensed sites. Participants who bet on unlicensed sites were more likely to report intense gambling and more gambling-related problems. In Australia, only wagering and lottery products can be provided online by licensed sites. A 2017 study comparing those who used only licensed sites and those who used offshore sites found significant differences between the cohorts.[18] Participants reporting gambling on offshore sites were, on average, younger, more educated, more involved in online and offline gambling, less likely to be retired or unemployed, and have higher problem gambling severity scores than participants using domestic sites. Both studies use cross-sectional methodologies, so it is not possible to infer any causality, yet they find that use of offshore gambling sites was greater among those who are experiencing gambling problems, thereby demonstrating a link between offshore gambling and gambling harms.

There is limited evidence to suggest that legalising forms of online gambling may increase participation. An Australian cross-sectional questionnaire study of participants who had gambled online in the past month (i.e., more involved than most) found that most did not know the site's licensing jurisdiction. This suggests that the legality of a gambling site has minimal influence on behaviour.[18] Even so, the study supported Australian Government policies to limit the legal provision of online gambling (with only wagering and lotteries permitted) as a minority of participants who used offshore sites indicated that their gambling would increase if other forms of online gambling were legal (noting that most participants indicated their gambling would remain the same). In addition, those who only used domestic sites were more likely to report that the domestic licensing did influence their decisions (24% of those who gambled only on domestic sites, compared to 14% of those who gambled on offshore sites). Participants who gambled on offshore sites were more influenced to select a gambling site based on payout rates, game experience, and sites advertised as "*for Australians*". Consumers using domestic sites were

more likely to pick their sites because they were licensed by a respected authority, that they were licensed in Australia, and the available payment methods. This indicates that the perception that a form of online gambling and site is legal or relevant for a consumer may increase participation.

Legalising online gambling may increase problems associated with this activity. Spain legalised online gambling in 2012, resulting in a commercial market offering online casinos, slots (legalised in 2015), and sports betting with wide-spread marketing for these companies. A Spanish study following the legalisation of commercial online gambling found an increase in the cases of gambling problems associated with this form of gambling.[23] Further, people began seeking help for online gambling very shortly after the introduction of this form in a legalised market. Problems were most common among younger adults, which resulted in the incidence of young people experiencing problem gambling in recovery in Spain increasing from 3.8% before legalisation of online gambling to 16% two years later. A prevalence study conducted in 2015 found the prevalence of pathological gambling in Spain was 0.72%, higher than a previous regional survey (0.3%)[24], although different measures were used in each study, limiting the extent to which the results can be compared. The percentage of pathological gambling among people who had never gambled online was 0.69%, as compared to a prevalence rate of 7.26% among those who had gambled online. Statistics from the UK gambling treatment service provider GamCare indicate that there has been a gradual increase in the number of callers to the National Gambling Helpline disclosing issues with online gambling, rising from 47% of callers in 2014/15 to 55% of callers in 2017/18.[25] Similarly, more clients in treatment are disclosing issues with online gambling, rising from 38% in 2014/15 to 53% in 2017/18. In contrast, although Italy legalised online gambling in various forms in 2011/12, a 2016 study in which treatment providers were interviewed reported few clients seeking help related to this gambling activity, although some were concerned that this would become more problematic in the future.[26] Despite the increasing proportion of people seeking help and/or experiencing problems related to online gambling, the prevalence of problem gambling across several jurisdictions which have conducted multiple prevalence studies (e.g., UK, Australia, Netherlands) has remained relatively stable or decreased in the past twenty years.[27]

Lotteries

Lotteries typically have a low association with gambling problems. Lotteries have not been extensively researched and most jurisdictions allow lotteries, often through a single provider. Lottery products are often widely available through a range of retail outlets and increasingly online. A cross-national comparison found that losses for lottery products explained little variation in problem gambling scores.[14] A Swedish study showed that despite there being three times as many lottery as EGM retailers, at-risk gambling (a PGSI score of 3+) was nearly ten times higher among people who regularly played EGMs compared to those who regularly played lotteries.[28] This suggests that supply was unrelated to the experience of harms. An Australian study of participants recruited from an online panel who had gambled on lotteries found that 4% were classified as experiencing problem gambling and higher problem gambling severity was associated with younger age, being male, more frequent use of e-cigarettes and more frequent purchase of scratch lottery tickets.[29] This study did not ask about participation in other forms of gambling so it cannot be concluded whether the problems

reported were related to lottery or other gambling.

Lottery may have an additive impact on the experience of gambling problems. For example, a Swedish study found that participants who play lotteries and engage in three or more additional gambling activities have increased risk of experiencing gambling problems compared to those who play one or two additional forms, a trend similar for participation in other gambling activities.[28] In New Zealand, lotto products (including scratch cards) are reportedly the second most common form of gambling for treatment service users (reported by 12% of those seeking help in 2015/16),[30] indicating that lottery products are commonly used by people with gambling problems. A comparison of gambling participation between Quebec, Canada, and France found lottery participation is much higher in Quebec, including among those who are classified as people who gamble regularly. This was thought to contribute to the lower proportion of at-risk and people with problem gambling among this group compared to France.[31] The authors note that France has a long history of legalised gambling, including lottery, as compared to Quebec, which launched the lottery in 1970, and this participation may reflect a slow process of adaption.

Despite the minimal evidence of lottery products making a strong contribution to gambling harms among adults, lottery products are often associated with gambling among adolescents.[32-34]

Scratch cards

Scratch cards have received minimal research and regulatory attention and are often measured and combined with general lottery products in research studies. This makes it difficult to isolate their impact. One commentary paper from Portugal raises concerns about scratch cards, noting that revenue from this gambling activity has been increasing at an average rate of 62% per year, which is notable given that lottery revenue is declining and revenue from other forms of gambling is declining or stable.[35] The authors describe aspects of scratch cards which may make them problematic, including the short bet-outcome interval, high frequency of small wins which are often regambled, visual appeal, focus on maximum prizes, and easy availability. But, no data was provided to indicate an association between scratch cards and gambling harms. In an Australian study, more frequent purchasing of scratch cards was predictive of higher problem gambling severity scores among participants who only played lotteries and/or scratch cards.[29] However, as this was a cross-sectional survey from an online panel, there is no evidence that scratch cards cause gambling problems.

Scratch cards are often reported in association with youth gambling. Studies of youth gambling suggest that scratch cards are often reported by participants who have engaged in gambling.[33, 34] A New Zealand study found that scratch cards have the highest participation rate with the youngest age of onset.[36]

Casino table games

Casino table games have not been the subject of specific policy outcome research. A cross-national comparison found that losses for casino table games explained little variation in problem gambling scores.[14] A New Zealand study showed that 9% of those receiving gambling interventions in 2015/16 reported casino table games as their primary gambling mode.[30] As mentioned in the introduction of this section, a comparison between gambling spend and gambling problems in four jurisdictions found no evidence that spend on casino table games was associated with

gambling harms.[14]

Betting/wagering

Sport wagering has been the topic of increased research and policy focus given the large rise in participation in this activity. It is primarily driven by online gambling including mobile apps. Historically, sports betting has been of low priority for policy makers and generally a low proportion of the population are engaged in this activity.

The instant access to this activity through online methods and transformation of sports betting into a more continuous form of gambling, through the expansion of number of activities to bet on and types of bets to make, have increased focus on this activity as a potential cause for gambling harms.[37] A small qualitative study of participants who bet on sports proposed that the structural features of the online sports betting environment enabled intensive and extensive behaviour, and therefore facilitated the development of problems.[37] Using grounded theory, the relevant components included the use of digital payments, that is money returned directly to an account, wins and cash outs (terminate bets before they are completed, requiring diligent attention and engagement with betting operators vs. set and forget bets), and the ability to re-stake funds and rapidly deposit new funds or reverse withdrawals. These were combined with unlimited betting opportunities, which essentially allow customers to bet at any time across global markets.

There is mixed evidence regarding whether online or offline sports betting is associated with a greater tendency to experience gambling problems. There is minimal research which has focused on isolating the impact of sports betting and mode of access on gambling problems. Australian research has provided preliminary indications that online sports betting may be more impulsive in nature than offline betting.[38] An Australian prevalence study found that 66.9% of participants who bet online reported problems related to sports betting, compared to 23.1% of those who only bet offline.[39] Yet, in a subsequent Australian study of participants who regularly gambled online, participation in venue-based sports betting was associated with greater problem gambling severity scores and psychological distress, even when controlling for participation in online sports betting.[15] Similarly, in a cross-cultural comparison with participants who regularly bet on sports, in both samples, a preference to bet offline (vs. online) was associated with a higher problem gambling severity score and greater likelihood of being classified as someone with problem gambling, in addition to betting via a mobile device and placing a higher proportion of in-play sports bets.[40] As these studies were all cross-sectional, it is not possible to determine whether sports betting may cause gambling problems, but they provide initial evidence of a relation between the product and harms.

Live-action (also referred to as in-play or in-run) betting may be associated with gambling problems. This type of betting refers to bets which require a rapid decision based on quick reactions to in-game events, and are more similar to continuous and rapid bets than most other forms of wagering. It is typically discontinuous with low event frequency. In an experimental task, participants classified as experiencing problem gambling were most responsive to micro-bets, which are characterised as having high frequency and small timeframes between the bet and outcome.[41] Research has also found in-play betting is associated with impulsive and problem gambling.[42, 43] However, there is no evidence of in-play betting being causal of gambling problems

given the cross-sectional rather than longitudinal nature of research.

Daily fantasy sports (whereby participants place a monetary wager to select imaginary teams composed of proxies of real players of a professional sport and outcomes are based on the statistical performance of those players in actual games over a limited time) represents one of the newest activities to be recognised as gambling in some jurisdictions. As such, there have been relatively few harm minimisation policies for this form of wagering. Two US States, Tennessee and Massachusetts, proposed caps on the amount of money that any fantasy sports operator may collect from a participant over the course of a twelve-month period. This allows for these contests to operate but not as a high-volume gambling activity.[44] The impact of these policies are not yet known, but some of the largest industry operators opposed these regulatory attempts.

Commentary on evidence quality

The evidence on the impact of policies for specific gambling products is sparse. Most evidence is based on an association between use of a specific product and problem gambling severity in cross-sectional studies with non-representative populations, often without controlling for overall gambling engagement. Consequentially, relatively little evidence exists to demonstrate a causal connection between any gambling product and the experience of harm. Typically, people who experience gambling problems engage with multiple gambling products and develop problems over several years. In such cases, should causality be attributed to the products they used when they started gambling, when gambling started to cause problems, or the products used when problems became severe?

Discussion of effective and ineffective regulations, including unintended consequences

Policies to prohibit access to all online gambling appear to be relatively ineffective and have the unintended consequence of people only being able to use offshore gambling sites that may have few consumer protection practices. Policies to license and regulate various types of online gambling appear effective in reducing the use of offshore gambling sites. This may have harm prevention implications as offshore gambling site use is associated with the experience of gambling problems. Still, there is some preliminary indication that policies to legalise online gambling have been shown to result in a higher proportion of gambling harms associated with online gambling. It is not possible to know whether harms related to migration to licensed sites are lower than if only offshore sites were available.

Limitations and research gaps

Several gambling activities have very limited empirical research to inform the extent to which they contribute to harms for individuals and affected others. More research is needed to specifically investigate scratch cards, lotteries, and casino table games. This should consider the features which make these products more or less problematic and how they contribute to harms experienced by people who gamble on other products.

There is minimal evidence on aspects of product design that may influence the extent to which problems develop. Exceptions include recent research on the sub-type of sports betting, in-play (live-action) betting, and use of licensed as compared to unlicensed (offshore) gambling sites. Research could look at design aspects of online

gambling sites to see which features of online gambling activities and web/app designs may exacerbate gambling harms.

Research could also focus on populations at-risk of developing and experiencing gambling problems. For example, the use of lottery products by individuals at-risk for gambling problems could be examined to determine the extent to which these contribute to harms experienced. Ideally, longitudinal studies should be conducted for at least 10 years to map the trajectory of problem development and engagement with gambling products over a lifetime. This is important to identifying gambling products that may contribute to gambling participation, problem development, and problem severity.

Where possible it would be useful to trial policies with limited introductions in ways that would enable a comparison between pre- and post-implementation, or between regions where a policy is trialed before national implementation. Research is needed to understand the impact of the mode of gambling (e.g., online vs. land-based) and the gambling activity (e.g., sports betting, casino betting), and studies need to control for overall gambling intensity (e.g., breadth and depth) in identifying harm associated with specific activities.

Place

Individual licensing conditions and broader restriction policies

Individual licensing conditions may be based on regional policies such as to cap or reduce the number of EGMs within a venue, as well as policies to be implemented within venues such as limits on cash withdrawals. The impact of smoking bans within gambling venues was included within the review as this is a public health policy that has impacts on gambling activity. It can be considered a restrictive policy as it limits the ability of consumers to engage in gambling while smoking.

Casino floor design

There is a body of research which describes how the layout and physical design of a gambling venue (typically research focuses on casinos) influences behaviour, including unplanned gambling. Research suggests that a closed-design casino (e.g., unclear sightline, narrow aisles, lack of space, lack of natural light) may reduce gambling customer's perceived internal control, which may lead to more unplanned gambling.[45] Studies suggest that casino design which influences a positive mood can prompt gambling, even if this is unplanned.[46] Experimental laboratory studies with students using computer stimulated gambling show that play duration and spend increase when ambient lighting is dim (vs. bright) and suggests that ambient lighting influences risk-taking; but, removing screens between machines increases self-awareness and reduces risk-taking.[47] The policy implications from this research suggest that an open-design casino with well-ordered spaces, bright lighting, high ceilings, open areas, extensive visible depth, clear pathways, appropriate signage, and natural light will enhance internal control and facilitate greater self-regulation of behaviours. These physical aspects are only one aspect of cognitive and behavioural control and effective warning and educational messages are needed.

Activities permitted within EGM venues

There is little research considering the impact of alternative activities within an EGM venue on EGM play. In Australia, one type of EGM venue, the not-for-profit Clubs, provide EGMs and often offer a variety of gambling and non-gambling activities, including family-friendly activities such as restaurants, live performances by children's

entertainers, and games arcades. Clubs may also offer bingo (for free or a small price per game), free poker tournaments, and live entertainment aimed at adults, in addition to restaurants, cafes, and bars often offering food and beverages at a discounted price for local members. In one qualitative study, participants from Aboriginal communities within Australia reported that they perceived bingo to be offered as a way to induce players into venues and to play EGMs.[48] Participants reported the EGM venues to have had a negative impact on the community, including some who had never gambled prior to beginning bingo at the venue. The authors recommend policy considerations of the tactic of using appealing and seemingly low risk activities in close proximity to EGMs.

Tasmania applied restrictions on beverages within EGM venues, and other jurisdictions have similar bans particularly relating to alcohol. An analysis of a Canadian national survey found that the odds of suicidal ideation were greatest amongst those participants classified as experiencing problem gambling who frequently consumed alcohol.[49] This may indicate that bans or restrictions on alcohol service within gambling venues may target those at greatest risk of gambling harms.

Restriction on opening hours

Policies which restrict access to gambling in the early hours of the morning are most likely to impact people with gambling problems than those who gamble without harms, although restrictions may push people to other forms of gambling. A study commissioned by an Australian state gambling regulator examined the potential harm-minimisation impact of time-based access to EGMs.[50] An online survey of participants with EGM experience found that those classified as experiencing problem gambling were most likely to play EGMs later in the evening compared to lower-risk groups, and this group was more likely to play for longer sessions. Still, four out of ten participants who played after midnight were not classified as experiencing problem gambling. This indicates that restrictions would affect non-problem players. In qualitative research, participants reported that although late-night gambling was sometimes social and involved alcohol, in the early-morning hours (e.g., 3:00 am), gambling rooms were typically very serious places with focused gambling and little socialisation and often a feeling of desperation. Many participants discussed that during late-night sessions they tended to chase losses and take greater risks and that their decisions were negatively influenced by being tired and having consumed alcohol. The proposed policy to shutdown gambling venues for a period of time was seen to be positive by participants, including those reporting gambling problems, although participants admitted that they would be frustrated at having to stop gambling as a result of a shutdown. Participants suggested that a shutdown period should be at least four hours and that any shutdown would have to be mandatory and uniform across all venues.

At the time of the report, the Australian state of New South Wales had a 3 to 4-hour shutdown required in community EGM venues (clubs and hotels), typically starting at 6:00 am. Among regular EGM players surveyed, around one-quarter of those classified as not experiencing problem gambling were aware of this, compared to 45% of those classified as people experiencing problem gambling, suggesting that this ban impacts the high-risk group disproportionately, as intended. Of those classified as experiencing problem gambling who had experienced the shutdown, although 54% reported that they had stopped playing and gone home, an equal 54% had travelled

to another venue to continue to gamble with the remaining responses all indicating different actions to continue to gamble (multiple responses were allowed as the question asked about all actions within a specific time period rather than one specific instance). This suggests that for any policy of restricted hours for gambling to have the maximum intended impact, it would have to apply to all gambling venues within a jurisdiction, but that a mandatory shutdown period is broadly supported and would target those at most risk of gambling problems with a likely positive impact.

Availability of gambling

Restrictions on the general availability of gambling are a commonly considered supply reduction policy. A review of studies on the impact of gambling expansion internationally provides evidence indicating a correlation between the availability of gambling and prevalence of gambling-related problems.[51] Evidence from different jurisdictions indicate a relationship between gambling venue availability, EGM density and seeking help for gambling problems.[51] In a US study, self-perceived gambling convenience was associated with experience of gambling-related harms, but the number of casinos within 30 miles of the participant's residence was not a significant predictor of problem gambling symptoms.[52] This highlights the importance of considering multiple data sources in policy planning and evaluation. There are other important factors which likely affect the relationship between gambling availability and the experience of problems, as seen in findings from a UK study showing EGM density is associated with socio-economic deprivation as well as gambling problems.[53] This supports the conclusion of reviews by LaPlante and colleagues[59] and Meyer and colleagues,[54] that there is not a clear linear relationship between policies which increase gambling availability and rates of problems, and that there is a complex interaction between gambling availability and population level gambling prevalence.

Studies report mixed findings regarding changes to gambling availability and subsequent gambling-related outcomes including problem gambling prevalence, gambling treatment seeking behaviours, gambling participation, and expenditure. In a review of changes in gambling availability from 34 studies on the outcomes of gambling expansion which reported relevant statistical results, 12 revealed statistically significant increases across gambling outcomes and 22 indicated no observable change or statistically significant decreases.[51] One study of gambling retraction[55] from Norway reported five gambling outcomes, of which three indicated statistically significant decreases and two indicated no observable changes. The authors note the many methodological limitations constraining conclusions and that in some cases there were positive relationships seen between gambling expansion change and change in gambling problem rates, even if these were not all statistically significant.

The relationship between the availability (supply) of gambling, gambling participation, and gambling problems has been examined in many jurisdictions, although there are limitations to the available evidence to allow conclusions to be drawn. The authors note that as the extent of gambling expansion increased, the methodological quality of studies decreased and that as gambling outcome changes indicated increases, the methodological quality of studies increased. There are some consistencies in patterns observed. Typically, policies have been implemented which enable a period of expansion of gambling in

terms of activities and access which is followed by an increase in gambling participation (and expenditure), and in some cases an increase in gambling problems. This is typically followed by a period of stabilisation or even decline in gambling participation, referred to as adaptation. This hypothesis has been supported with evidence, including a review of 202 prevalence studies conducted between 1975 and 2012 which applied corrective weighting and considered methodological factors affecting results.[56]

Comparison between current prevalence surveys internationally has shown a general decrease in population level participation in gambling[57] and the prevalence of gambling disorder has remained stable or has declined in many places.[58] This is despite a general increase in the availability of legalised gambling over time, including online gambling, which resulted in an initial increase in gambling participation and problems, followed by a reduction or adaptation.[59] However, it is important to note that there are methodological difficulties in accurately measuring the prevalence of problem gambling given that it falls below one percent in most prevalence studies.[1] That is, a large representative sample is needed with appropriate methodologies to avoid under-recruiting subsegments of the population including incarcerated people, youth, those without phones or unlikely to answer phones, emails, or letters and complete surveys.

There are several international examples of jurisdictional evidence which highlights that expenditure and participation are not reliable markers of gambling problems. For example, in Australia gambling participation has fallen since the 1990s, despite increases in the availability of gambling, including online gambling and EGMs.[39, 60] Between 1999 and 2010-11, there was a large growth in expenditure by people who gamble on EGMs; however, problem gambling prevalence reduced and problem gambling prevalence rates are similar between Australian jurisdictions despite large differences in availability of EGMs.[61] In Switzerland, the problem gambling prevalence rate remained stable between 1998 and 2005, despite widespread opening of casinos in 2002 and a substantial increase in gambling revenue.[62]

Changes in treatment seeking are not necessarily representative of a greater prevalence of gambling problems. Interviews with stakeholders from Italy, including treatment professionals, indicated that the growth seen in help-seeking for gambling, including among women and young adults, was related to an increase in the provision and accessibility of services and greater awareness of gambling problems.[26]

Together, the various results demonstrate the complex interactions between policies, risk, and protective factors. Most studies do not differentiate between the effect of various policies which have an impact on the general availability of and provision of gambling.

Placement of gambling venues

Residential proximity to gambling venues is associated with higher problem gambling prevalence.[80] Many people who are identified as being at-risk for gambling problems disproportionately live in neighbourhoods that have higher concentration of EGM venues.[63] Neighbourhoods with low socio-economic status often have high density of gambling venues.[64] Many people within these neighbourhoods are socially and economically disadvantaged in other ways, meaning that even a low level of gambling expenditure likely contributes to economic harms through reduced savings and funds for necessary

and discretionary items.

A US study found that those who lived closer to casinos and racetracks gambled more than those who do not.[65] Distance from a casino was negatively related to rates of past year gambling, frequent gambling, and gambling problems, even when controlling for gender, age, race, and socioeconomic status; although distance from a track was only related to past-year and frequent gambling, but not problem gambling. In terms of distance, the problem gambling rates dropped for those living beyond 20 miles from a casino and continued to drop at 30 miles. Further, a greater concentration of casinos near a person's home was associated with a higher level of problem gambling. These studies indicate that distance to and density of nearby gambling is related to participation and gambling problems, but that this differs between gambling activities.

Other studies demonstrate mixed results regarding the impact of EGM location and density on the likelihood of experiencing gambling problems. Data from the UK 2007 Adult Psychiatric Morbidity Survey found that individual-level factors explained most of the variance in problem/pathological gambling; however, moderate but significant geographical variations were observed, including severe gambling clustering in particular areas.[66] Notably, area-level factors had no significant impact on recreational gambling, suggesting it is problematic gambling that is affected by the placement of gambling venues within a specific geographical region. An analysis of the relationship between spatial concentration of B2 machines (Fixed Odds Betting Terminals) in Licensed Betting Offices (LBO) and gambling behaviour found no statistically significant relationship between problem gambling prevalence, PGSI scores, and the number of machine sessions or days played.[67] However, a trend was detected which showed higher gambling prevalence rates in anyone with at least one risk indicator (PGSI 1+) when there were more LBOs in the local area. Rates of problem and moderate risk gambling were higher among those who lived in LBO concentration areas. Due to the cross-sectional nature of this research no causal relationships can be examined. The research was limited to loyalty card holders, so cannot be generalised to the broader population of people who play EGMs and FOBTs casually.

Italy has begun introducing regional laws, such as in Piedmont in 2016, where the number of EGMs and EGM venues was reduced and the gambling halls and EGMs were required to be located away from 'sensitive places' (schools, churches, youth clubs, cash exchanges/pawn shops, ATMs, etc.).[68] Economic data following changes in Piedmont after the regional law's enforcement showed that the total land-based gambling expenditure dropped around 10% (from 5.125 billion euros 2016 to 4.630 in 2018) and online gambling rose during the same period (1.343 to 1.952 euros).[68] It is relevant to note that Internet gambling rose globally during this time frame, and the authors suggest that reducing the number of EGMs and changing location did not have a strong impact on migration to online gambling.[68]

Regulation was introduced in Germany in 2012 requiring gaming halls to keep a minimum distance from neighbourhood gaming halls, as well as child and youth facilities, and limit multiple gaming concessions in a single building. Some federal states reduced the number of EGMs in gaming halls and extended minimum closing hours of gaming halls, and banned smoking as well as the provision of free food and drinks.[69] Following a period of gambling liberalisation and growth in gross gaming proceeds from EGMs

since 2005, there was a decrease in gross gaming proceeds from EGMs after the new laws between 2013-2015. As within the Italian data, it is not possible to differentiate between the impact of gambling availability and placement on gambling expenditure and related harms.

Many studies on the placement of gambling venues have been in Western countries. A national survey on youth gambling problems in Korea found that one factor which significantly increased risk of high problem gambling severity was having nearby gambling facilities.[70] However, a Japanese study found that the accessibility of pachinko parlours was not associated with pathological gambling in the general population sampled.[71] However, access effects varied by sub-population, such that having the venue within a 1.5 km radius from home was significantly and positively correlated with pathological gambling for men and people in low-income areas. This is similar to findings from Western countries. For context, in Japan, pachinko parlours are highly accessible and, on average, about 4.3 of these venues were located within a 1.5km radius of the respondent's homes.

Easy accessibility to gambling within the local environment and a lack of enforcement of age restrictions is related to greater youth gambling. A meta-analysis of qualitative youth studies found that easy accessibility to gambling within the local environment, such as a convenience store, cafes, bars, and clubs, frequently visited by young people influenced their engagement in gambling.[72] Specifically, young people were more likely to gamble if the opportunity was available and if it was available in a venue where they were interacting with friends or visiting for another purpose.

Overall, the limited evidence indicates that close proximity to gambling and gambling density may be related to gambling participation and gambling problems, but it is difficult to differentiate the impact of other relevant influences including socioeconomic status and individual factors.

Case studies

This section includes a series of case studies based on available evidence from several international jurisdictions. Case studies enable policy makers to consider how problems have been framed and approached in other jurisdictions, compare and evaluate options based on actions taken in other jurisdictions in response to similar problems, and identify and anticipate implementation considerations and potential unintended consequences associated with options. As such, the case studies provide useful insights to inform best practices. Each jurisdiction is presented as a separate case so that the impact of various policies can be compared, as it is difficult to separate the impacts of policies within jurisdictions. Jurisdictions were selected based on available evidence relevant to this chapter. The limitations of case studies include that data collection often differs in terms of what is measured and how, making it difficult to draw direct comparisons between jurisdictions. Further, gambling policies are often related to other policies and cultural contexts, and even similar policies are often implemented in different ways, meaning that policy outcomes in one jurisdiction may not be replicated in another jurisdiction. Even so, since gambling harms are a widespread issue that affects multiple jurisdictions, and there is a limited evidence base on the impact of restrictive policies, this approach was considered a useful adjunct to the chapter.

Victoria, Australia – Smoking ban, supply caps in disadvantaged areas, and increased tax

A study of EGM expenditure in the state of

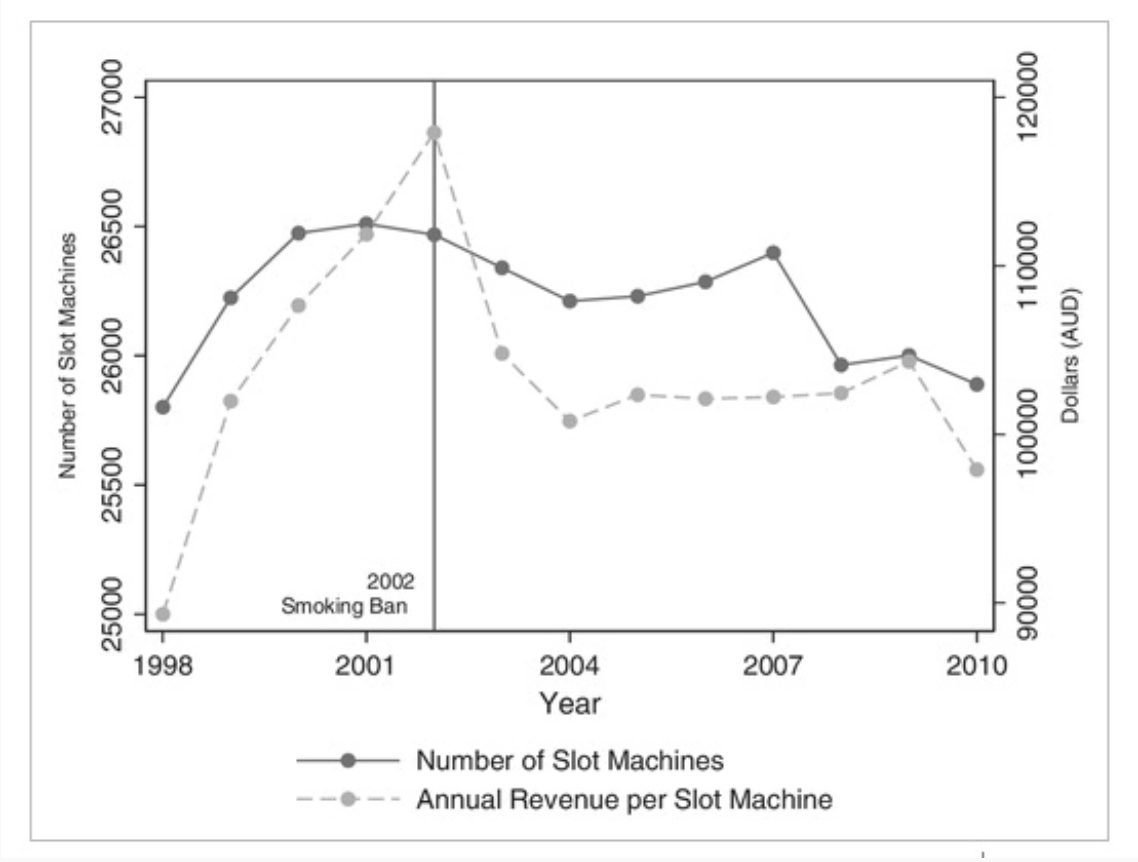
Victoria, Australia, provides empirical evidence on government policies to reduce the availability of EGMs, particularly within areas of socioeconomic disadvantage. Supply caps refer to the policy of placing limits on the number of EGMs available in an area. They are typically gradually implemented such as through not approving additional licenses and requiring EGMs be surrendered when there are major changes such as venues closing or moving EGMs between venues. Using expenditure data, the study found that supply caps intended to slow the spread of gambling in disadvantaged areas only marginally affected the distribution of machines across markets.[51] The supply caps reduced market-level problem gambling prevalence by 2.3% on average. In contrast, tax levies resulted in a 4.4% reduction and the smoking ban on an 8.6% reduction. The caps were set at relatively high levels, and it is uncertain whether there would have been a demand to increase EGM supply growth even in the absence of these. It is presumed that venues would remove their least profitable machines under cap restrictions. As shown in Figure 2, the industry grew rapidly between 1998 and 2001 followed by a maturation of the industry, increasing annual per machine tax levies on EGMs (2001/2002/2005/2007), and 2001/2006 local supply caps. However, the largest impact was created by the 2002 smoking ban where average per-machine revenue experiences a 12.5% fall. The bottom panels of Figure 2 show that average per-machine revenue fell to a statistically significant greater extent (14,076 vs. $11,879) in high socioeconomic areas than low socioeconomic areas. In comparison, EGM expenditure data from the state of Victoria in Australia found that smoking bans within gambling venues had a substantial effect on per-machine revenue, reducing it by around 8.3%.[73] However, the ban had a lower effect in low socioeconomic status areas as compared to wealthier areas. This had the unintended effect of strengthening the relationship between EGM density and low socioeconomic status conditions. Due to the numerous policy changes which occurred during the time-period observed it is not possible to draw causal inferences to any specific policy.

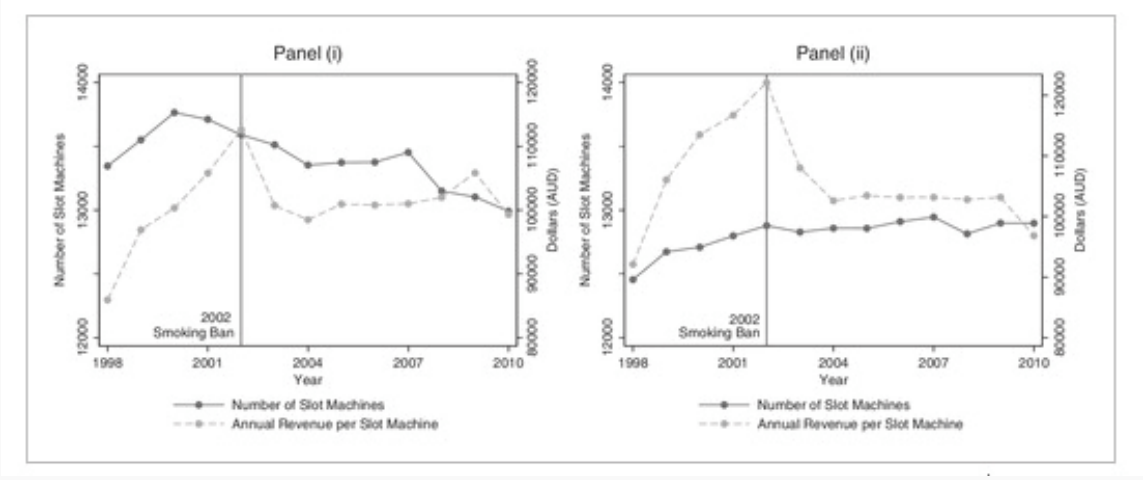
Northern Territory, Australia – Smoking ban, note acceptors for EGMs, increased EGM numbers per venue

The Northern Territory (NT) gambling regulator within Australia has enacted numerous changes over recent years to EGM venues. These include a smoking ban in all venues (2010), allowing note acceptors on EGMs in community venues (2013), increased caps of EGM numbers per venue (2015), and minimum percentage return to player for casino EGMs reduced from 88 to 85% (to be consistent with community venues, 2015).[74] The number of community EGM venues (hotels and clubs) in the NT peaked in 2011 and declined (from 87 to 74) by 2017, the number of casinos remained constant (2). Following the increase in EGMs permitted, there was a notable increase in eligible venues increasing the number of EGMs they offered. Similarly, the proportion of clubs with note acceptors installed on EGMs substantially rose between 2013 and 2017 from 25% to 85%, with similar increases seen in hotels. According to Stevens and Livingstone,[74]

> *Total user losses in community venues increased dramatically after the change in policy in 2013 allowing note acceptors to be installed, and increased 19% from $65 million in 2013 to $78 million in 2014, and continued increasing to $96 million in 2017. This was a 47% increase in user losses over four years, that followed 4 years decreases in user losses from 2010 (first year of smoking ban) to 2013. In 2015, user losses in*

Figure 2. The top panel plots the total number of slot machines in the industry and average per-machine revenue. The bottom two panels present a reduced-form difference-in-difference analysis plotting, by year, the total number of slot machines and average per-machine revenue by socioeconomic status (Panel i: Low socioeconomic status; Panel ii: High socioeconomic status)[1]





[1] Source: Bubonya M, Byrne DP. Supplying slot machines to the poor. Southern Economic Journal. 2020;86(3):1081–109

> *community venues in the NT surpassed user losses from EGMs in casinos for the first time. EGM user losses only increased substantially in hotels and clubs with the maximum allowable EGMs, and it was also in these larger venues that note acceptors were installed more rapidly compared with smaller venues.*[p.7]

Casino user losses decreased following the smoking ban in 2010, accompanied by the increase in user losses at community venues following the introduction of note acceptors. Prevalence surveys showed increases in EGM participation between 2005 and 2015, and indicate an increase in problem gambling prevalence rate among people who gamble on EGMss, although different methodologies make it difficult to compare exact outcomes. From 2005 to 2015, EGM real user losses per person who gambled on EGMs decreased 9%, although increased 5% among people with problem or moderate risk gambling. The increase in user losses mostly occurred before the lifting of the cap on EGM numbers in community venues. However, since the caps were lifted, there has been a 50% increase in EGM numbers in hotels and a 23% increase in clubs while the two casinos had a 5% decrease in EGM numbers. Larger venues accounted for a disproportionate amount of user losses and made considerably more money per EGM than smaller venues. The larger venues were first to install note acceptors and are typically easily accessible.

This case study suggests that larger venues are the most likely to take advantage of any policies to increase gambling availability, likely due to their ability to afford new licenses and technology updates. Greater number of EGMs within community venues and provision of note acceptors was associated with increased gambling expenditure, and the smoking ban was associated with decreased gambling expenditure.

South Australia, Australia – reduction of EGMs

In 2005, the Australian state of South Australia removed 14.5% (2,168) of all EGMs from hotels and clubs, to reduce the number of EGMs in each venue. Venues with 28 or more machines would lose eight machine entitlements and those with between 21 and 27 would lose one to seven machines and end up with 20 machines per venue. At the time of legislative implementation, not for profit venues, i.e., licensed clubs and some hotels, were made exempt from the reduction. Changes in net gambling revenue for the 12 months of 2005 in venues which had EGMs removed demonstrated little evidence that net expenditure was substantially influenced by the removal of machines.[75] Analysis of change in the amount spent per machine before and after the removals showed that revenue per machine generally increased in most of the venue groups and in particular those that lost the greatest number of machines. The findings suggest that people continued to spend a similar amount of money on EGMs and correspondence from policy makers reported by the authors suggested that venues removed the least popular and least profitable machines.

A survey of 400 people who regularly played EGMs found that most (62%) realised that there had been a reduction in the number of EGMs and around half reported it was more difficult to find an EGM to play.[75] The self-report survey found that among the respondents who had found it harder to find machines (*n*=198), 10% reported that the removal of machines helped 'quite a bit', 17% that the policy helped 'a bit', and 73% reported it had not made any difference. However, among those classified as having gambling problems, 6% reported that it

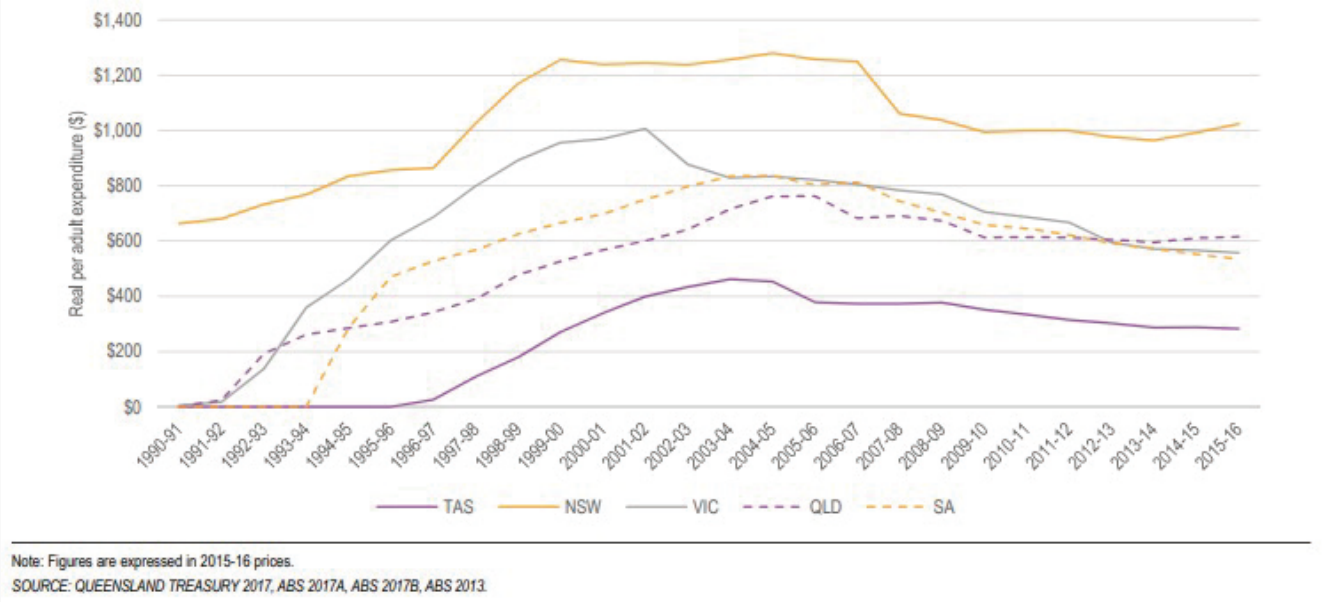
helped 'quite a bit' and 14% reported that it helped 'a bit'. In terms of specific perceived impacts, 50% reported that it was harder to find machines, 36% reported that there were fewer opportunities to gamble, and 25% reported decreases in their urge to gamble, although 17% reported that they would find an alternate venue if needed.

The key points from this case study include an implementation issue of note, the intended policy was changed before implementation to except a large proportion of gambling venues. Of note, the perceived change reported by regular EGM players differed from the expenditure data, with no change seen in expenditure per machine, but some perception of positive change among participants. This demonstrates the importance of considering multiple data sources in policy evaluations and considering the differential experience between population subgroups with the aim of impacting higher risk players as a priority, which may be difficult to discern from objective data.

Tasmania, Australia – low EGM density, Self-reported attitudes, and perceived impact of EGM venue policies

Real EGM hotel and club expenditure per adult has always been low in the state of Tasmania compared with other Australian jurisdictions. This possibly reflects the low concentration of EGMs per 1,000 adults (see Figure 3). EGMs were introduced to hotels and clubs in Tasmania in 1996-97 compared to before the 1990s in New South Wales, 1990-91 in Victoria and Queensland, and 1994-5 in South Australia. Compared to other Australian jurisdictions, hotel and club EGM expenditure in Tasmania comprises a relatively low share of total gambling expenditure and household disposable income.[76] Per adult casino EGM expenditure is relatively high in Tasmania compared to other Australian jurisdictions, reflecting the higher concentration of EGMs within casinos, as well as the presence of two casinos in a relatively small population state.[76] Tasmania also has relatively low caps on EGM numbers on clubs and hotels. Even so, the prevalence of problem gambling is comparable with other Australian jurisdictions, indicating that problem gambling prevalence rates are not solely related to EGM availability. Having fewer EGMs may not necessarily reduce the problem gambling prevalence rate. A 2011 Tasmanian household survey showed that people who played EGMs had the highest awareness of the smoking ban (95.8%) out of numerous policy changes for EGM venues. These changes included limits on the number of EGMs (37.8%), a ban on ATMs (30.4 %), reduction in the maximum bet per spin (28.9 %), a ban on note acceptors (23.8 %), and the reduction in cash inserts (22.3 %).[77] There were no significant differences in awareness of the smoking ban based on problem gambling severity, which suggests that this may affect all individuals who play EGMs. However, this policy change had the largest decrease in enjoyment for people with moderate or problem gambling. Bans on ATMs and reduction in the maximum bet per spin had a greater impact on this group than participants who did not experience problem gambling. The most effective current strategies based on self-report to reduce expenditure for participants with moderate/problem gambling behaviour were the reduction in the maximum number of lines (46.9 %), limit on the number of EGMs (41.9 %), reduction in maximum bet per spin (33.1 %), smoking ban (22.0 %), and reduction in cash inserts (19.8 %). There were significant differences between participants who did not experience problem gambling, and participants who were at moderate risk or experienced problem gambling for the ban on ATMs, limit on the number of poker machines, ban on smoking, reduction in lines, reduction in maximum bet per spin, and

Figure 3. Real per adult EGM expenditure, by Australian jurisdiction, 1990-91 to 2015-16, hotels and clubs only. TAS – Tasmania; NSW – New South Wales; VIC – Victoria; QLD – Queensland; SA – South Australia[2]



[2] Source: ACIL Allen Consulting. Fourth social and economic impact study of gambling in Tasmania (2017) Hobart: Tasmanian Government Department of Treasury and Finance; 2018. Available from: https://acilallen.com.au/projects/other/fourth-social-and-economic-impact-study-of-gambling-in-tasmania, p.27.

reduction in cash inserts.

In relation to newly proposed harm-minimisation measures not yet implemented, two measures had the greatest anticipated decrease in enjoyment for non-problem participants and the greatest difference between non-problem and moderate-risk/problem gambling participants. These measures were no food or alcohol and restricting cash payments. Policies expected to have the greatest decrease in gambling expenditure for moderate risk/problem gambling participants included reducing withdrawals, restricting cash payments, and no food or alcohol. These results suggest that the most effective proposed measures in terms of least reduction in enjoyment for non-problem gambling participants and the greatest reduction in expenditure for participants at moderate risk or who experienced problem gambling would be visible clocks and reducing withdrawals. However, two of the most powerful measures in terms of targeting moderate/problem gambling participants (i.e., no food/alcohol, restricting cash payments) would also reduce enjoyment for non-problem gambling participants. This study demonstrates the importance of considering intended impacts and secondary consequences for universal restriction measures within gambling venues.

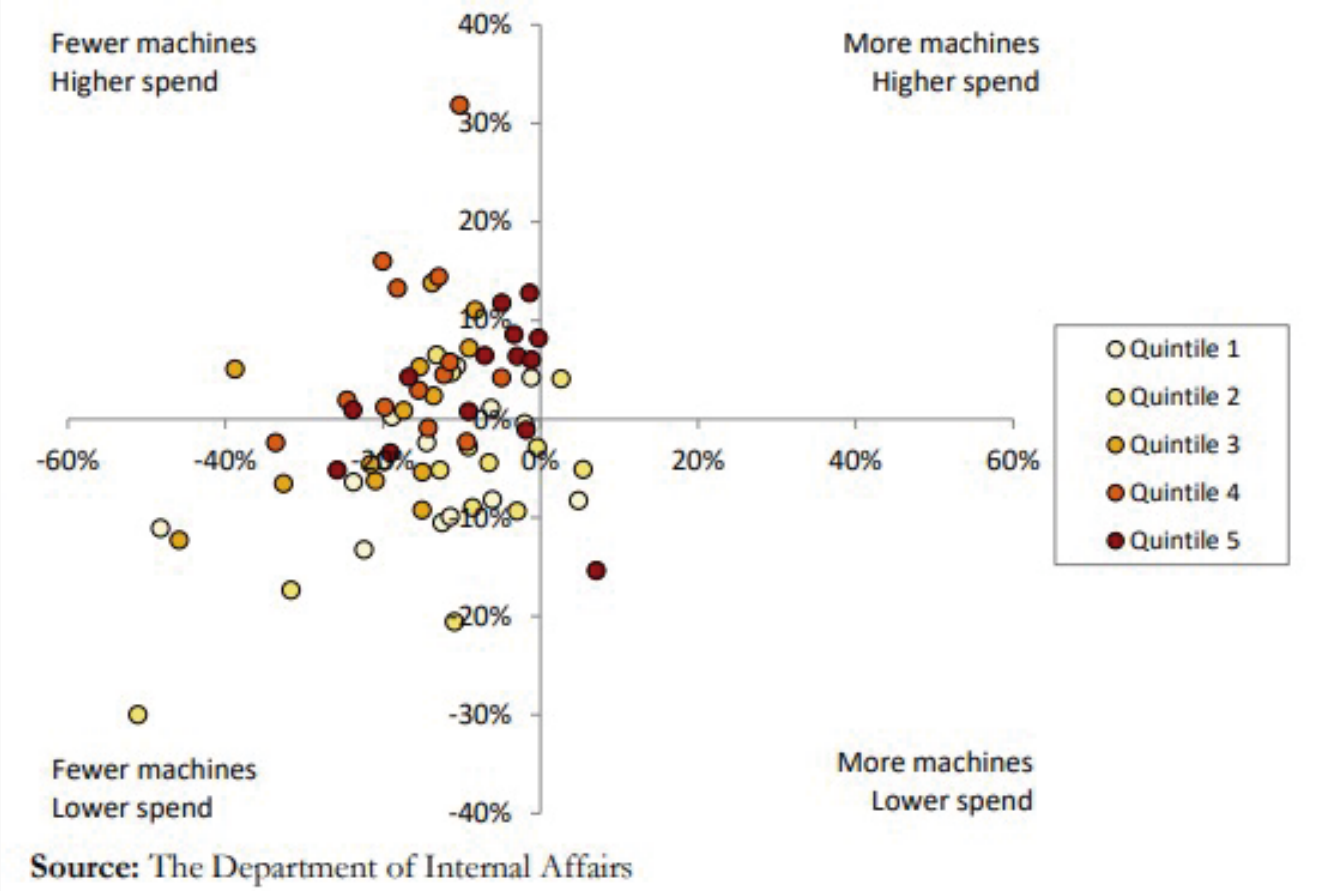
New Zealand

New Zealand experienced a period of liberalisation in the 1990s, including introduction of lottery, instant scratch tickets, and EGMs into clubs and pubs, which saw a doubling in per capita gambling expenditure and high population participation rates in these newly permitted and broadly available gambling activities.[78] One New Zealand study found that the proportion of adults who participated in four or more different gambling activities during the past year almost tripled during this period.[78] From 1998 to 2002, the number of EGMs in New Zealand doubled from 12,608 to 25,221. Gambling expenditure accordingly doubled from $537 million to approximately $1.2 billion.[79] From 2002 to 2013, gambling expenditure continued to increase to more than $1.3 billion, despite the number of EGMs decreasing to 17,266. Total gambling expenditure increased between 2009/10 and 2015/16.[30] EGMs represented the largest share of expenditure (38.2%) followed by casinos (26.5%). Still, adjusting for inflation and changes to the adult population, gambling expenditure showed a general trend downwards from 2009/10 to 2013/14 with the exception of a 2.6% increase between 2014/15 and 2015/16[30] (largest for casinos lowest for EGMs). Adjusted for inflation, overall EGM spend per person dropped 18% between 2009/10 and 2015/16.[30]

New Zealand formally adopted a public health approach to gambling in the Gambling Act 2003. Some of the measures intended to reduce availability (supply) included tighter regulation of, and a reduction in numbers of EGMs and EGM venues, and a ban on the establishment of new casinos. These were accompanied by the additional provision of help services. Taken together, it makes it difficult to identify the impact of any single aspect of the new policies. The reduction in EGMs was the result of the "Sinking lid" policy which was adopted by local governments so that when a gambling venue closes another is not allowed the option to replace it. Consequently, over time it reduces the overall number of venues. This was an attempt to minimise harm based on the 'availability theory' that access has led to increased participation and therefore a greater proportion of problems. However, data suggests that a reduction in EGMs in high deprivation areas does not necessarily relate to a reduction in expenditure.[30] The authors conclude that this could be due to the minimal impact of small reductions in areas with high availability of gambling and venues. Figure 4 shows changes in EGM expenditure per capita (vertical axis) against the change in EGM numbers per capita for each region between 2013/14 and 2016/17, based on quintiles of socio-economic status (quintile 5 being the lowest). As described by Rook et al. (2018)[30], in some areas, the reduction in EGM density was matched by a decrease in expenditure (lower left quadrant) but for many, there was an increase in expenditure (upper left quadrant). The figure shows that the regions with the largest reduction in EGMs were mostly those with a small number of machines but that in regions with many venues, expenditure still increased despite a decrease in EGM numbers. This suggests that there was still adequate availability of gambling in these areas. Areas with the largest deprived populations had a decrease in machines but an increase in expenditure suggesting that any policy aim of assisting these regions in reducing gambling was not successful.

After the initial increase following expansion of gambling, New Zealand gambling participation has remained relatively stable or decreased in the five to ten years following, despite further increases in the availability of gambling.[78] Probable pathological and problem gambling prevalence, both lifetime

Figure 4. Change in EGM density versus expenditure per capita for territorial local authorities (grouped according to proportion living in quintile 5 areas), 2013/14 to 2016/17.[3]



Source: Rook H, Rippon R, Pauls R, Doust E, Prince J. Gambling harm reduction needs assessment. Wellington, New Zealand: Sapere Research Group; [cited Mar]. Available from: https://www.health.govt.nz/system/files/documents/publications/gambling-harm-reduction-needs-assessment-v2-aug18.pdf, Fig. 18, p.41.

and current, decreased significantly from 1990 to 1999.[78] However, in one longitudinal study, the percentage of participants who had at least some level of risk more than doubled within two years. The increase was most notably contributed to by a large proportion of participants who were at no risk of gambling harm who shifted to low-risk at follow-up.[79] This is notable as across the two-year study period, gambling participation among the sample declined. This finding is consistent with New Zealand research, where gambling harm experienced at the household level increased from 2008 to 2012, despite a decline in participation and policies actively attempting to minimise gambling harms.[80] A harm reduction outcome report from New Zealand indicated that gambling harm levels as measured in 2016 have reduced substantially compared to 25 years ago. Yet, despite a concerted effort and policy changes, they have remained

substantially unchanged since 2012.[81]

The evidence from New Zealand is notable as this country was one of the first to take serious efforts to address gambling harms and adopt a public health approach to gambling problems. Initial efforts to reduce gambling harms appear to have been successful, but to have plateaued in recent years despite ongoing efforts to reduce harms and some success in reducing gambling participation.

Germany

German data confirms a similar trend to New Zealand. That is, during a period of expansion of legalised gambling activities including sports betting, EGMs, casinos, poker, scratch cards as well as a greater number of gambling locations, there was an expansion in demand from the local population.[54] One example of expanded demand is that a policy shift of removing a residency ban (which prohibited access to casinos for local residents) resulted in casinos expanding from one million visitors per year (1970s) to 8.9 million in 2007.[54] Still, over the period 2007-2017, a reduction was seen in lifetime (86.5% vs. 75.3%) and past-year gambling participation (55% vs. 37.3%). This indicates an adaptation to the expanded gambling opportunities noted in other jurisdictions. A rise has been seen in treatment seeking for gambling problems, which is associated with the expanded availability of this system. However, 11 representative prevalence studies conducted between 2006 and 2015 have reported no significant change in the prevalence of problematic and pathological gambling. This lack of change may support the saturation hypothesis, whereby following an increase in gambling participation in relation to greater availability, there is a period of adaptation, followed by stabilisation and no further linear relationship between supply, engagement, and problems.[82]

Finland

One of the few specific studies of the impact of legislation regarding legal age of gambling is from Finland, which raised the minimum age limit for gambling from 15 to 18 years, enforced in 2011.[83] Youth prevalence surveys found a statistically significant difference between age groups in 2011 but not in 2014. Older adolescents (18-19 years) had a lower frequency of problem gambling in 2014 (3.4%) compared to 2011 (16.3%). Prevalence of gambling problems appeared to decrease for younger adolescents, but not for young adults (20-21 years) or other adult age groups. The findings are taken to support the effectiveness of policies that the minimum age to gamble should be 18 years of age. Nonetheless, the study did find underage gambling after the policy change, with 18.4% of 15-17 year-olds playing lottery and 10.5% playing slots in 2014. This suggests that strong efforts are needed to monitor and control underage gambling.

Norway

Norway presents an informative example as it has made large shifts in how gambling is available. Similar to many international jurisdictions, the 1990s saw a period of liberalisation and growth where traditional slot machines based on mechanical parts, low stakes, slow speed, and small winnings were replaced by EGMs with banknote acceptors, high speed, greater light and sound displays, and high wins.[84] From 1990 to 1999 it is estimated that EGM turnover (the amount of money taken in a particular period, i.e., spend not accounting for wins) increased by a factor of 47 and from 2000 to 2005 EGM turnover increased by 250%. This is a substantially greater rise than other forms of gambling.[84] In 2001 a governmental gaming authority was established to supervise and control all private and state-operated gambling

and lotteries. Then, in 2003 the Norwegian Parliament decided to establish a government gambling monopoly on EGMs to counter gambling problems. Although the monopoly was challenged, authorities introduced restrictions including a ban on banknote acceptors (2006), restricting EGMs after midnight (until 6am, 2007), and placed a 1.5-year ban on all EGMs (2007). The EGMs introduced through the government monopoly were considered less harmful than previous versions as they had fewer audio-visual stimuli, automatic game breaks, did not use cash, and had forced loss limits per day and month. To use EGMs, customers must have a personal card which requires age verification and allow personal loss limits and self-exclusion. Wins are automatically transferred to the customer's bank account, which reduces card sharing. The EGMs were widely distributed (e.g., gas stations, kiosks, bars, cafes) but to a much lower density than previously.

The changes in Norway led to significant decreases in total gambling turnover and indications that there are fewer gambling problems.[84] During the period of reduced hours of EGM betting, gross turnover on EGMs decreased by 55%, compared to an increase in other forms of gambling by 13%, with a net reduction in gambling gross turnover of 28%.[84] During the EGM ban, there was a net decrease in turnover on all games by 31%, indicating that there was no obvious migration to other gambling activities and that preventing gambling on one activity may lead to a voluntary reduction in other gambling participation.[84] There was no indication of the development of an illegal EGM market.[85] There was a reported increase in participation in Internet gambling (23.9% to 25.4%),[55] which was statistically significant, but also during a time when Internet gambling was increasing worldwide. There was a reduction in the proportion of participants who were classified as experiencing problem gambling from 1% to 0.4%.[55]

After the policy changes in Norway, calls to the gambling helpline decreased substantially and referrals for gambling treatment participation decreased after the restrictions, although a small substitution effect was observed (increased helpline calls related to other forms of gambling).[84] A small survey of people seeking gambling treatment found a decline in EGM play among treatment seekers, but an increase in sports betting and internet gambling and participants were younger and more highly educated. It seems that gambling was affecting a different cohort than prior to the EGM restrictions.[86]

In youth population surveys, gambling participation fell for EGMs, sports betting, and lotteries following the policy restrictions.[84] There was an increase in weekly participation in some forms of gambling and the proportion of people with problem gambling rose from 2.3% to 3.1%. However, frequent gambling participation and perceived gambling problems were reported less frequently among those classified as at-risk and experiencing problem gambling in 2008 compared to 2006. This suggests that the problems may have been less severe. These studies were cross-sectional, meaning that results were obtained at an aggregate level rather than following individuals over time. Therefore, it is difficult to assess whether the changes in gambling behaviour and problems occurred mainly among the same people or across the population (that is, were a new cohort experiencing problems in 2008 that were not in 2006?).

Canada

A study using data from four Canadian provinces demonstrated a relatively robust positive relationship between casino availability, participation in gambling, and problem

gambling risk levels.[87] Some adaptation was seen following the introduction of new casinos, which accompanied an increase in government spending on responsible gambling programmes and treatment, which may have contributed to a reduction in problem gambling prevalence. This highlights the importance of a combination of policies and consideration of short and long-term consequences of licensing conditions.

United States

A study comparing US states between 1999/2000 and 2011/2013 found that the two states which reduced the number of legal gambling options by three forms resulted in a fall in the proportion of people with problem gambling by 2.8%, while two other states that had removed one type of legal gambling had a proportion of people who gamble frequently fall by 14.6%, although no change was observed in the proportion of people with problem gambling.[65]

In South Dakota, video lottery terminals (VLTs, a type of EGM) were banned on constitutional grounds for 14 weeks in 1994. An investigation of gambling treatment centres demonstrated a large fall in inquiries and treatment, which rose again following the reinstatement of machines, although to a lower extent than immediately prior to the ban (cited by[54]).

Restrictions on advertisements

Regulators take different approaches to gambling advertisements; some jurisdictions prohibit certain types of advertising, most often including content/messaging and placement/channels. Recently Italy and Belgium have enacted severe restrictions on gambling advertising.[88] Others have a more liberal policy perhaps based on the rationale that gambling advertising is necessary to attract people to engage in locally-licensed products as opposed to offshore or illegal gambling which may also be available. A liberal advertising policy is also based on the notion that gambling is a legitimate (albeit adult) entertainment activity and licensed operators should be free to advertise within the boundaries of the licensing scheme and social responsibility. One study which is out of scope as it was published in 2014 is nonetheless important to note for context as it is a comparison of countries with various gambling regulation. Planzer et al.[11] found in their cross-jurisdictional policy comparison there was only one statistically significant finding which was that countries with less restrictive regulation of advertising for online gambling show a higher rate of problematic gambling behaviour.

Volume

Policies to liberalise gambling typically result in an increase in the volume of gambling advertising. Increased exposure to gambling advertising is often higher among those experiencing gambling problems. Even so, there is limited evidence to indicate a causal link between gambling advertisements and problems. One nationally representative sample of adults from Norway found that participants classified as experiencing problem gambling experienced more impact from advertising than other participants who gambled, even after controlling for frequency of gambling advertising exposure.[89]

A cross-sectional study of German youth in 2014 found high gambling ad exposure was positively related to gambling.[90] Similarly, a study of adolescents recruited from Spain found that high exposure to advertisements was positively associated with the perception of gambling as a normal and widespread behaviour among adolescents. This impact on normalisation was greater than on favourable gambling attitudes.[91]

Advertisements were associated with gambling frequency, but this appeared to be an indirect impact as the larger impacts were for attitudes and normative perceptions. In this study, gambling frequency rather than advertisement exposure, was related to gambling problems, although this was moderated by perceived family support. The authors note that in Spain, there are no mandatory restrictions on gambling advertisements including a requirement to inform consumers of risks of gambling.

Switzerland has adopted a policy of a liberalised gambling market but requires the gambling industry to undertake measures to protect gambling. As these measures are mandatory, advertising is relatively unregulated and has been described as "*aggressive*", with the consequence of an increase in gambling revenue across the lotteries and casinos (both land-based and online).[62] The prevalence of problem gambling remained stable between 1998 and 2005, despite the widespread opening of casinos in 2002 and subsequent advertising.[62] An Australian study using a small, non-representative sample of online sports and race bettors found no significant interactions between at-risk or problem gambling status and self-reported aggregate advertising message exposure.[92]

Placement

The placement of advertising has shifted considerably, with an increase in gambling marketing featured during sporting events (sponsorship demonstrated through multiple channels including ground signage, shirt sponsorship, commentary as well as television advertisements) and online (targeted ads, social media, online sites). For example, figures from the UK suggest that between 2010 and 2013, Internet and television gambling advertising spend almost doubled.[93] Several jurisdictions, including the UK and Australia, have instituted policies to reduce gambling advertising before 9pm, which is intended to reduce exposure among minors. There is evidence that these policies are being adhered to; a report from the UK found no examples of gambling advertisements being placed within children's media including popular children's websites.[94]

The "*whistle to whistle*" ban in the UK (betting advertisements cannot be shown on television from five minutes before a live sporting event until five minutes after it ends, prior to 9pm) to reduce exposure to gambling advertisements during sports has reportedly reduced the amount of television advertisements viewed by 4 to 17-year-olds by 97%.[95] The same study concluded the amount of gambling advertisements viewed by children fell by 70% over the full duration of live sport programmes. The analysis commissioned by the gambling operators which voluntarily undertook the ban concluded that there was minimal displacement of gambling advertising into other parts of live sports TV programming with post-9pm gambling advertising also declining by 20% compared to the previous year. The "*W2W*" ban was voluntarily implemented by several UK gambling operators in August 2019.

A recent UK report concluded that if adhering to the precautionary principle, that is enacting policies without a fully established relationship between advertising and harms, then there is a case for reducing exposure to gambling advertising.[94] The report found that even with attempts to avoid displaying gambling advertisements in places most likely to be seen by children, gambling advertisements in public places and the media were highly visible to youth and affected attitudes, which may increase

gambling in the future. A UK quantitative study found that only 4% of 11-24 year olds reported having no exposure to gambling marketing in the last month across the 17 types of gambling marketing investigated.[94] The most common placements for advertisements seen by young people were on television, shops on the high street, and social media.

Restrictions to prevent or reduce advertisements that are likely to be viewed by children have limitations to their effectiveness. Despite limits on advertisements in child-focused television shows and hours, children and adolescents do watch television after 9pm and on-demand television reduces the relevance of time-based advertising restrictions.[93] Similarly, restrictions on the placement of advertisements on television programmes which are not primarily targeted at children do not prevent exposure of gambling ads to minors, as many programmes have a mixed-age audience and older adolescents are highly likely to watch most programmes. Restrictions on Internet-based advertising are highly unlikely to be effective due to the personalised and targeted nature of searches and advertising placement. Targeted advertisements are typically based on the devices' browsing history, which is influenced by all users of the device, meaning that parents are likely to need to take specific actions to actively reduce the likelihood that children will be exposed to gambling advertising.

The permitted placement of advertisements may interact with policies regarding content, such as mandates to provide harm-minimisation content. A study of televised sports broadcasts in 2018 in the UK found a substantial proportion of advertisements/marketing is beyond explicit advertisements in commercial breaks and exist in the form of shirt sponsorship or ground-based signage.[96] The placement of these advertisements is impossible to avoid as they are directly related to watching the sport. The study found very low frequency of such content across sports broadcasts; in some cases, this is impossible such as branded shirts worn by players. Where harm-reduction messages were present, they were mostly seen in more traditional advertisements such as in commercial breaks including before sporting events, which the authors note may be removed with bans on pre-match advertisements. The authors suggest that new requirements for harm-reduction messages may be required if the placement of ads continues to expand beyond traditional media.

In the Australian state of New South Wales, gambling venues are prohibited from advertising the prevalence of EGMs within venues including marketing materials or external signage. Venues are allowed to advertise raffles, betting facilities, and keno, and many mention these on their websites.[97] NSW has a higher number of EGMs per capita than any other Australian state and a higher per capita expenditure on EGMs. The prevalence rate of gambling problems is similar in NSW to other states who do not have the same restrictions on EGM advertising.[98] There was no specific research found in this review examining the impact of advertisements for gambling at a venue level on gambling problems.

Social media

Gambling operators are highly active on social media, including Facebook, Twitter, and YouTube.[99, 100] This is permitted among licensed gambling operators within the UK. Research in the UK found that 1 in 20 Twitter users followed at least one account dedicated to producing content promoting gambling.[101] Research from the UK and Australia shows a notable proportion of adolescents also

follow gambling operators on social media and have been exposed to gambling ads on social media platforms, despite age gates supposedly in place.[94, 102, 103] Several studies have found that social media posts by gambling operators include few references to safer gambling or safer gambling taglines typically required to be included in advertisements.[99, 103] Policy recommendations made in research include better/mandated use of age gates on social media to follow gambling operators and adtech to reduce the likelihood that gambling ads will be shown to children.[104]

In a survey of European gambling regulators, only 6 (26%) had ever taken enforcement action against affiliates, influences, or brand ambassadors illegally promoting gambling on social media and only 4 (out of 24) were able to identify this form of advertising. The Netherlands Gambling Authority described how their crawler, which identifies illegal online gambling sites, cannot identify advertising as this is highly variable and targeted.[105]

Restrictions on content of advertisements

Standards and/or regulation which restrict advertising content are typically intended to reduce any potential harmful effect of the advertising message.[93] Policies try to prevent minors and people vulnerable to experiencing gambling harms from being exploited through advertising which encourages behaviours or perceptions that may contribute to problem gambling.

In a recent UK study, the themes and features of gambling advertisements that attracted the attention of children, young people, and vulnerable adults based on qualitative research included: celebrity endorsement, characters, colour, fun, glamour, humour, memorable songs and catchphrases, offers, 'people like me', skill, and winners.[94] More specifically, content that may be specifically appealing to young people included language (e.g., 'Starburst', 'House Party'), cartoon-like and colourful design, and narratives about fun, excitement, and 'non-stop' play.[94] Beyond being engaging and attracting initial appeal, a content analysis identified content of concern to include the lack of labelling of advertisements on social media (i.e., they looked like regular posts), the lack of emphasis on the risks and messages about gambling safely, and overly complex terms and conditions related to promotions.[94] The study identified that some advertisements may be exploitative for young and vulnerable people with content implying limited risk, safeguard against losses, overly complicated presentations of offers, oversimplification of gambling, and inflated suggestions of winning. In terms of impact, qualitative research suggests that ads can prompt immediate and unplanned gambling behaviour, particularly among those at-risk for experiencing harms. Additional impacts included increased awareness of gambling and specific brands as well as emotional and cognitive responses to marketing, which may increase positive disposition to gambling and impact future behaviour. Analysis suggested that for young people who did not currently gamble, exposure to advertising was significantly associated with likelihood to gamble in the future, after controlling for demographic and other factors including behaviour and attitudes of parents and peers. It is important to note that these findings do not indicate that exposure to gambling advertising causes gambling behaviour and other factors are highly influential in driving this behaviour. The comprehensive UK study concluded that current regulations are not sufficient to prevent gambling advertising adversely affecting young people and those vulnerable to experiencing gambling harms.[94] The report recommended that policies could

be enacted to reduce the appeal of gambling advertising further and to improve consumer messaging within advertising.[94]

An Australian study using a small, non-representative sample of online sports and race bettors found no differential effects of messaging on people classified as at-risk or experiencing problem gambling.[92] Inducements offered via direct messaging increased the likelihood of intending to bet, actual betting, and betting when not intending to do so. This study was limited through a high degree of attrition during the data collection period, further reducing the extent to which the sample reflects the actual population of online wagering customers. Participants in a qualitative study indicated that in-match promotions for in-play bets stimulated impulse betting intention.[106] However, a survey found less exposure to gambling-related marketing when exposed to the media was significantly related to a higher proportion of bets placed on impulse before the start of and during the match.[107] In the aforementioned survey of sports bettors, less frequent use of inducements and higher buying impulsiveness was a statistically significant predictor of pre-match impulsive betting. More frequent use of inducements was related to impulsive bets placed during the match.[107] Still, it should be noted that when this survey was conducted in-play betting, that is, the ability to make a bet after a match has begun, was prohibited in Australia, so those placing bets during the match were presumably doing so using offshore gambling sites, the use of which has been associated with increased risk of gambling problems. An experimental study with a sample of Australian online sports bettors found most advertisement types appealed to all participants regardless of their problem gambling risk severity.[41] These studies are limited as mentioned due to non-representative samples making it difficult to extrapolate the outcomes to a broader population. Nonetheless, they provide some insights into the impact of advertising in the absence of representative samples and well-designed rigorous empirical research.

Alcohol advertising

Select studies related to the impact of alcohol advertising on addictive behaviour and potentially harmful consumption were reviewed that have relevant findings for gambling behaviour. Reviews of the association of alcohol marketing and youth drinking have found a significant association between youth exposure to alcohol marketing and subsequent drinking behaviour. This includes a systematic review of 12 studies reporting findings from nine unique cohorts of more than 35,000 people across countries.[108] A narrative review of digital marketing studies[109] concluded that digital media alcohol marketing uses approaches that are attractive to young people and are likely to impact drinking behaviour. The authors suggest that current alcohol marketing regulations are likely to be undermined by the commercial use of digital media.[109] A literature review suggested that industry codes are largely ineffective in reducing youth exposure to potentially harmful sales promotions.[110] A review of the French Évin Law that was implemented in 1991 with the objective of protecting young people from alcohol advertising found that this did not appear to protect young people effectively from exposure to alcohol advertising in France.[111] Specifically, the paper concluded that laws strictly limiting the promotion of alcohol products may have been successful in preventing certain kinds of harmful marketing, but legislative inaction and industry opposition to the legislation reduced its effectiveness.[112] Another review of the impact of alcohol advertising

concludes that evidence which focuses only on the impact of policies on alcohol consumed are limited as they misrepresent the effectiveness of policies by not considering the impact of advertising on thoughts, and attitudes, which influence behaviour.[113]

The experimental literature shows empirical evidence of the impact of alcohol advertising on consumption behaviour. A review published within the timeframe of the study[114] discusses a study (Engels et al., 2009) which found participants consumed on average 1.5 more glasses of alcoholic beverages when randomly assigned to a seeing greater levels of alcohol advertisements within commercial breaks than those with no alcohol portrayals. The same review discusses some differential experimental impacts, including that alcohol commercials have a greater impact on heavy drinkers with patterns of brain activation indicating alcohol advertising may cause a craving response, which affects subsequent consumption.

Commentary on evidence quality

It is difficult to establish a causal relationship between a reduction in the availability of gambling through various restriction policies and gambling expenditure and gambling harms. It is very difficult to establish any causal impact of restriction policies on gambling harms. One difficulty in interpreting data on gambling participation and expenditure is that there are generally few options to evaluate what behaviour would have occurred in the absence of policies since few studies include control comparisons such as comparisons between jurisdictions, trial policy sites, or synthetic controls. Policies are typically introduced in combination with other efforts to minimise gambling harms. This makes it difficult to isolate the impact of any specific policy. There are few studies which examine changes in response to policies over time, which are important to understand for long-term impacts of policy changes. Furthermore, few studies use longitudinal data as compared to comparison of cross-sections of the population, which may be comparing different cohorts and not detect changes in individual behaviours.

Reducing gambling harm is often stated as a motivation for policy, but there have been few rigorous efforts to establish the impact of policies on gambling harms. Most research focuses on population prevalence studies to determine gambling participation and the prevalence of gambling harms using a screening measure. One issue which affects the ability to understand the impact of policies over time and between jurisdictions is the use of different measure of gambling harm (e.g., PGSI, SOGS, NODS), differences in who is assessed for gambling harms (all participants, only those who have recently gambled, exclusion of lottery only players), and a lack of standardised questions to measure gambling participation (e.g., past 12 months, past 4 weeks, various assessments of online gambling). One review of evidence considering impacts on harms following gambling expansion concluded that the methodological quality of studies was generally poor, there were few measures relevant to understanding levels of harm, and the number of comparisons available to test all important questions was small, limiting confidence in the durability of research findings.[51]

Many studies have relatively low response rates and are not representative of the broader population, including national prevalence studies which typically exclude specific populations (e.g., those without phones and incarcerated populations) and use weights to correct for sampling errors. Little is known about non-respondents.

Most studies are reliant on self-report of gambling

behaviours and gambling problems, which are not reliable and accurate. Or they use aggregated spend data, which does not indicate the proportional spend between individuals or among at-risk groups.

Prevalence studies need very large samples to adequately capture enough individuals with severe gambling problems given the low prevalence of this in the population. As such, most prevalence studies have inadequate power to understand the levels of gambling problems among sub-groups.

There is insufficient experimental evidence for gambling advertisements to draw any conclusions regarding the causal relationship between advertising and gambling attitudes, thoughts, intention, or behaviour. Most studies to date have included relatively small, non-representative samples and insufficient control groups. Most studies have failed to adequately control for existing levels of gambling behaviour and only produce correlational findings which limit conclusions about the impact of any policies. Qualitative studies and studies that are based on recall and subjective attitudes towards advertising are of limited use to inform policy.

There have been very few methodologically rigorous experimental studies of the impact of advertising, or studies with an appropriate control group. This is particularly important when considering the impact of exposure to advertising as those most likely to be exposed, or recall being exposed to advertisements may be those most likely to attend to these as they have an interest in gambling and be engaged in activities linked with gambling, such as viewing sports, which confounds any results. Many studies on the impact of gambling advertisements, particularly qualitative studies, overstate the conclusions drawn. Caution is needed in interpreting most of the research in this area given the limited evidence quality.

Nonetheless, despite the limitations of the evidence, it is important for policy makers to consider what data is available and how it can be best used to guide future policy decisions. These limitations are raised here as a guide for the design of future policy evaluations to encourage best practice.

Discussion of effective and ineffective regulations, including unintended consequences

The impact of policy changes to increase and decrease the availability of gambling appears to change over time as individuals and communities demonstrate differential short- and longer-term responses to these changes. Specifically, when gambling availability is increased, including new products, this is followed by an increase in gambling participation; however, there appears to be an adaptation over time and participation drops in the longer term.

Overall, evidence suggests that smoking bans in gambling venues have likely had the largest impact in terms of reducing gambling. Still, these are typically not intended as a gambling harm-minimisation policy and the impacts may not last over time as venues and consumers adapt.

There is minimal evidence that limiting access to gambling has substantially minimised harms. There are few jurisdictions which have enacted polices to substantially reduce gambling availability. Limits on the number of EGMs available in specific locations have limited apparent impact on expenditure and gambling problems, including where these are based in areas with low socioeconomic status. One explanation may be that operators remove the lowest performing machines and caps typically do not

drastically reduce the number of EGMs available. Several jurisdictions have restriction policies, but these have not made substantial changes to the already high gambling availability, and thus have limited outcomes on gambling expenditure and related harms. One unintended consequence of reductions in the number of EGMs may be that the concentration of EGMs increases in low socioeconomic areas as operators move machines between venues, thereby increasing the gambling among potentially at-risk groups. This can occur even when there is an attempt to reduce gambling in disadvantaged areas. It indicates that supply reduction alone is insufficient to change the levels of gambling harms.

Even so, self-reports from participants who gamble on EGMs indicates that policies which restrict their ability to access EGMs may have positive impacts on gambling behaviours. Consistent with this, jurisdictions with a lower concentration of EGMs have lower per capita EGM gambling expenditure, although no clear impact on problem gambling prevalence rates. Policies to permit note acceptors on EGMs are related to an increase in gambling expenditure and policies to restrict cash payments and withdrawals, and the service of food and beverage in gambling venues may have a significant impact on people with gambling problems, although these may adversely impact customers who gamble without problems.

Greater exposure to gambling advertisements may be related to greater gambling participation and problems, including among adolescents; however, the evidence to support these findings is limited by the lack of rigorous empirical research. In many jurisdictions with restrictions on gambling advertisements, including to restrict exposure to children and adolescents, these policies are not effective at blocking young people from viewing gambling marketing. This is related to the high prevalence of gambling marketing in common areas in which children are present such as billboards, within general shops, and on televised sporting events. Similarly, people vulnerable to experiencing gambling harms are likely to view gambling advertisements quite frequently in many jurisdictions, including those which have implemented policies to minimise the impact of, and exposure to these.

There is circumstantial evidence that advertising has an impact on attitudes and perceptions of gambling, and as a consequence their gambling behaviour. For some people, particularly those who are likely to engage in risky and problematic gambling, advertisements may create urges to gamble which lead to immediate gambling behaviour. For most people, advertisements likely influence gambling in the longer-term and as part of a complex psycho-social-environment. It is likely difficult to protect vulnerable people from being exposed to, and influenced by advertisements when these are allowed as a form of marketing for legal gambling products.

Limitations and research gaps

It is typically difficult to isolate the impact of specific policies on gambling venues due to the complexity of factors influencing the outcomes (gambling engagement, expenditure, problems). Research should be designed to evaluate differences in gambling behaviour and problems in similar jurisdictions that have different policies, for example, where states within the same country have substantial differences on policies to restrict gambling. Alternatively, policies could be specifically trialed by being introduced in one environment with a control group to consider the short-term outcomes.

Most of the data available to inform on the impact of policies is based on population and aggregated data. This is not always helpful for the purposes of developing harm prevention and reduction strategies because patterns of behaviour at a population level do not reveal any indication of whether policies are affecting those who are at-risk of experiencing gambling harms. Prevalence studies allow some identification of groups that may be at higher risk, but research is needed to create a refined and in-depth empirical analysis of the patterns of gambling consumption, who gambles, on what, when, and their risk profiles outside of gambling. It is particularly important to plan studies that intend to measure changes over the short, medium, and longer-term given evidence that individuals and communities adapt their gambling behaviour after an initial response to any policy changes (increased or decreased gambling availability).

Some jurisdictions conduct regular population health surveys and collect census data. It would be useful to include measures of gambling participation and problems in surveys collecting a range of measures to understand the interaction between gambling, gambling harms, and engagement in a range of activities or experience of a range of issues.

There is minimal research which uses data available to the industry operators within and beyond the gambling industry, but not shared with researchers or regulators. For example, data collected through loyalty programmes and from financial institutions and payment providers could provide useful insights into patterns of behaviour and links between gambling and other expenditure to understand and identify at-risk individuals. It is recommended that further efforts are made to collaborate across sectors and establish methods for data sharing.

Few studies have specifically investigated potential unintended negative consequences such as looking for migration between gambling forms following restriction policies, or migration to other potentially harmful activities. This is an important area for ongoing research when policy changes are made.

There is little longitudinal evidence related to the impact of advertising. It is likely that those who experience gambling problems are heavily engaged in gambling, are the target of gambling advertising, and attend to this more readily than those without gambling problems. This makes it difficult to discern the impact of exposure and dose of advertising in comparison to interest and attention given to this. Attending to the broader research on marketing, including of risky products, is recommended as well as adoption of methodologically rigorous studies mostly absent from the gambling field. Research must be well designed and conducted by independent research groups to reduce bias.

Research could focus on the impact of advertisements on specific behaviours, as well as important factors known to influence future behaviour including attitude. Experimental studies are recommended to isolate the impact of specific advertising content and placement on gambling behaviour, thoughts, and attitudes. Longitudinal studies with random allocation and control groups are needed to understand the impact of advertisements on gambling behaviour. Longitudinal studies which control for important confounds will make an important contribution to the understanding of the impact of gambling advertisements on behaviours and gambling harms. Studying differences between jurisdictions with varying advertising policies but similar availability of gambling forms is recommended. Natural

experiments could be designed where policies are introduced or trialled in limited capacities.

Research on the ongoing impacts of the COVID-19 pandemic, including the shutdown and reopening of venues, and impact on vulnerable populations should be studied closely. It is possible that young adults, already at-risk for gambling problems, may be disproportionately affected through employment disruptions and need specific considerations. Research is needed to investigate whether people who engaged in online gambling as a result of the closure of gambling venues will return to venues or continue to gamble online, or engage in both modes of gambling, which has been associated with gambling problems.[111]

CONCLUSIONS

For decades, the gambling field has attempted to identify productive primary prevention efforts, but debate persists about their efficacy and effectiveness. This chapter included an extensive search of published academic and grey literature to identify evidence supporting policies which restrict gambling with the aim of reducing gambling-related harms, including the prevalence and incidence of problem gambling. Despite most jurisdictions globally having some policies which would be categorised as 'restrictive', there is a dearth of robust, representative, methodologically sound evidence to understand the outcome of these, including intended and unintended consequences. Policy reviews typically comment on the difficulty comparing results between jurisdictions due to the methodological differences in conducting these; however, in this case, there is also a difficulty related to the absence of studies to compare.

There are a small number of case studies which suggest that overall, when there are notable reductions in the supply of gambling, there is a decrease in participation. Also, there are some indicators of reduced gambling problems including a reduced demand for treatment and prevalence of gambling problems. There are inconsistencies in findings between jurisdictions which have restricted gambling, suggesting that restrictions on gambling do not have equal impacts or resolve all gambling harms, and that there is an interaction between restrictive policies and many other factors.

The literature has an abundance of debates and commentaries on what policies are appropriate and how data could be interpreted. For example, the stabilisation of problem gambling prevalence rates globally has been taken by some to support the effectiveness of policies, while others argue that the prevalence rates could fall further. There are some methodological considerations necessary related to the ability to measure significant change when prevalence rates are less than one percent as they are in many jurisdictions.

The most common topic for inquiry is the availability of gambling, at a broad level, which provides minimal evidence for specific policies as the evidence generally does not discriminate between policies to reduce the availability of specific forms, numbers of products within a venue, number of venues, and so forth. The most common source of evidence is population level prevalence studies which provides limited ability to show small changes, particularly among different cohorts based on their level of risk for gambling problems. Where studies compare self-report with objective data (e.g., expenditure), there are often inconsistencies, demonstrating the importance of considering multiple data sources and differentiating between impacts on subgroups.

GUIDANCE FOR HOW THIS INFORMATION MAY BE USED TO INFORM A COLLECTIVE PREVENTION AND EDUCATION PLAN

Gambling disorder and gambling-related harms are based on highly complex and interacting factors. Regulatory policies are only one component which will influence the prevalence of gambling disorder. Policies to restrict gambling availability are only effective to the extent that they change gambling behaviour including expenditure and frequency of gambling, particularly among groups at-risk of or experiencing gambling harms. Policies that fully disrupt gambling behaviour, such as the total removal of a form of gambling or bans on smoking while gambling, appear to have a significant impact on gambling expenditure and likely intensity. Therefore, these are likely to reduce gambling harms if they are sustained over time. However, policies that merely inconvenience people who want to gamble, such as reducing the number of machines per venue, appear unlikely to have a major impact on gambling behaviour or related harms.

The limitations of the existing literature highlighted in this review demonstrate that an ongoing prevention plan using restrictive policies must be developed in harmony with an evaluation framework to identify policy outcomes. This will enable policies to be refined over time to ensure that they are having the intended consequences. As such, restrictive policies should have specific and measurable outcomes rather than vague overarching goals such as 'reducing gambling harms'. For example, alcohol policies may aim to reduce drunk driving among adolescents or alcohol-related hospitalisations, or alcohol-related domestic violence. Similarly, restrictive policies for gambling may aim to reduce gambling frequency among groups at-risk of or experiencing gambling harms, or to reduce the uptake of gambling among young adults. Evaluations should be planned with several types of data to be collected, for example, aggregate spend data and self-report.

Policies need to be evaluated over a medium to long-term time frame. It is likely that an initial response to any policy change will not reflect behaviour in the longer term as people adapt to these. Further, changes to gambling and gambling problems may take time to occur and see meaningful differences. It is also difficult to have a control group to determine what change may have occurred or not occurred if the policy was not implemented. For example, if no change occurs in gambling behaviour and harms after a policy is adopted, it is not possible to know whether there would have been an increase in harms without the policy, thus whether the policy was impactful. Efforts are needed to collect meaningful metrics and evidence of gambling harms across a broad array of sectors, such as financial harms, physical and mental health, and demand on welfare and legal sectors. This will also inform prevention policies by demonstrating where harms are occurring related to and/or stemming from gambling.

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Brief biography

Dr. Sally Gainsbury is Associate Professor in the School of Psychology, Director of the Gambling Treatment and Research Clinic and Leader of the Technology Addiction Team at the University of Sydney. She has conducted extensive research in the areas of harm-minimisation and prevention of gambling problems, and understanding the impact of emerging technology on the development and treatment for gambling problems. Dr. Gainsbury has published over 110 peer-review papers, is the Editor of International Gambling Studies, and is frequently invited to provide expert input into policy and practice by community, treatment, government, and industry organisations at a national and international level.

Conflict of interest statement

Over the last three years (2017-2020) Dr. Gainsbury has worked on projects that have received funding and in-kind support through her institution from Australian Research Council, NSW Office of Responsible Gambling, Svenska Spel Research Council, Responsible Wagering Australia, Australian Communication and Media Authority, Commonwealth Bank of Australia, GameCo, ClubsNSW, Crown Resorts, and Wymac Gaming.

Dr. Gainsbury is currently a member (2020-21) of the National Council on Problem Gambling International Advisory Board (Singapore) and receives an honorarium for this role. She is a member of the Steering Committee for Remote Gambling Research and the Independent Research Oversight Panel both run by GambleAware, which provide an honorarium for reviewer reports.

Dr. Gainsbury has received honorarium and travel costs for research, presentations, and advisory services from Credit Suisse, Oxford University, ClubsNSW, Clubs4fun, Centrecare Wa, Gambling Research Exchange Ontario, Crown, Department of Social Services, Community Clubs Victoria, Financial and Consumer Rights Council Victoria, Australian Communications and Media Authority, GambleAware, Ministry of Health, Clayton Utz, Greenslade, Generation Next, KPMG, Stibbe, QBE, Stiftelsen Nordiska Sällskapet för Upplysning om Spelberoende, Japan Medical Society for Behavioural Addiction, National Council for Problem Gambling Singapore, and Norths Collective.

2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts

By Dr. Nassim Tabri, Dr. Michael Wohl, and Silas Xuereb

INTRODUCTION

Many people find gambling to be an exciting way to spend time (and perhaps win some money along the way).[1] Put another way, the prospect of winning money following a wager on an unknown outcome can yield a rush of excitement, which is a central motivation for gambling. Unfortunately, players often become captivated by play (i.e., they zone-in to the game), which can result in continuing to play in the face of mounting losses.[2, 3] Further, players tend to misunderstand how gambling games work, ignore gambling safeguards (e.g., responsible gambling tools), and develop the belief that their chance of winning is greater than probability would suggest.[4-7] The result is often excessive gambling (i.e., spending more time and/or money than intended[8, 9]).

Players who spend more money and time than they can afford can experience a range of harms beyond financial loss. These include, among other things, negative consequences to physical and psychological health, legal issues, and familial hardships.[10-14] Excessive gambling is also a central factor in the progression toward and ongoing experience of disordered gambling.[15] This condition often exists with other mental health problems and addictive behaviours that exact a considerable toll on the player's quality of life.[16] Importantly, harms stemming from gambling are not restricted to those experienced by people with gambling problems.[17] The harmful consequences of excessive gambling extend beyond the the person who gambles to include the full risk spectrum of players (recreational to people with problem gambling) as well as the family, social networks, and community of the player.[18] In this light, the prevention of gambling problems has become a high priority for stakeholders, including researchers, government officials, and health care professionals.[19-21]

To minimise the risk of harm from gambling, much attention has been directed toward helping players make informed decisions about their gambling behaviours (i.e., engage in safer gambling practices[22]), and informing the general population about gambling-related harms. Central to this effort has been the promotion of pre-commitment, which means restricting the amount of money spent on gambling to an affordable limit before play begins.[23] The benefits of pre-commitment are typically communicated via safer gambling messaging such as population-based advertising campaigns, in-venue responsible gambling information centres, on electronic gambling machines (EGMs), and other point-of-sale safer gambling messaging, and through gambling management tools provided to people when they gamble. Gambling management tools typically take the form of in-play safer gambling messages on EGMs (e.g., "*know your limit, stay within it*"), providing the players with personal feedback about how much money or time they have spent gambling over a specified period of time, or features of EGMs that allow players to set a predetermined limit on the amount of money and/or time they spend gambling. The hope is that if people are exposed to safer gambling messages and have easy access to player management tools, they will be in a better position to gamble within their financial means.[24, 25]

Considering recent attention directed to the promotion of safer gambling to the general public, we were tasked with conducting a systematic review of research on population-based safer gambling campaigns to answer the following questions:

Q1: Among people who gamble, does safer gambling messaging (e.g., in-venue PlaySmart Centres, general PlaySmart responsible gambling messaging online, and other point-of-sale safer gambling messaging) and gambling management tools (e.g., optional money and/or time limit setting) help reduce gambling-related harms?

Q2: Among the general public, does safer gambling messaging (e.g., advertising campaigns, social marketing campaigns, public health programmes, and educational programmes) targeted at people who do and do not gamble help reduce or prevent gambling-related harms?

BACKGROUND CONTEXT

Like many Western countries, Great Britain has witnessed a dramatic shift in gambling policy over the last three decades from a complete absence of heavy regulation of gambling to market-led expansion.[26] The subsequent increase in commercial advertising and gambling opportunities has normalised gambling.[27] A 2016 prevalence survey conducted in Great Britain[28] indicated that 57% of adults aged 16 or older have gambled in the past year, and that men (62%) are more likely to gamble than women (52%). The pervasiveness of gambling has raised questions about potential gambling-related harms—harms that extend beyond a clinical diagnosis of disordered gambling.

Increasingly, researchers and policy makers have begun to take a broader view of the effects of gambling. This has shifted the focus from disordered gambling to harms that can be experienced by both people who gamble and the broader community.[17-19, 29] This public health approach recognises that more people are harmed because of gambling than is reflected in the rate of disordered gambling. Similar to the public health approach adopted for alcohol consumption, gambling as a public health issue recognises that 1) gambling is regulated by governments, 2) society can yield some benefits from the presence of legalised gambling (e.g., government revenue, employment[30]), 3) the majority of people gamble without experiencing any evident harm, and 4) a small, but meaningful proportion of the population will experience gambling-related harms. From a public health perspective, the primary focus is on harm reduction or minimisation for all people who gamble as well as society at large. This involves prevention or reduction of harm rather than prevention of participation in gambling.

According to the Reno Model[31, 32] the harms associated with gambling can be reduced when players make informed decisions about their gambling behaviour. Informed decision-making can be encouraged by educating the general public and players about the benefits of limiting gambling expenditures to within an affordable amount before play begins (i.e., pre-commitment[23]). In other words, gambling-related harms can be minimised via safer gambling, which refers to an array of strategies, initiatives, policies, and activities introduced by gambling regulators, policy makers, government, and industry operators to reduce gambling-related harms. There has been an increased emphasis within the gambling

industry to encourage and assist players to make well-informed decisions about their gambling behaviour[33, 34] and an associated increase in research attention about the effect of safer gambling messaging and gambling management tools (for reviews, see Wohl et al.[7] and Gainsbury et al.[35]).

Safer gambling messaging includes, among other things, educating the general public, and players in particular, to view gambling as entertainment with associated costs; to help them see the benefits of setting financial and time limits on play; and, to understand that excessive gambling can lead to personal, professional, and familial problems.[36, 37] Messaging is typically provided by way of in-venue safer gambling information centres, general safer gambling messaging online, and other point-of-sale safer gambling messaging. Safer gambling management tools are systematic initiatives that help impede the development of gambling problems or assist those who are gambling excessively. These initiatives include, for example, offering players the ability to set a money and/or time limit on the amount they spend gambling, as well as providing players with personalised feedback about how much money and/or time they spend gambling over a specified period (e.g., over the last month). The aim of safer gambling messaging as well as gambling management tools is to help reduce gambling-related harms.[23]

It should be noted that there are differences between the terms "safer gambling" (SG) and "responsible gambling" (RG). "Safer gambling" is preferred by some jurisdictions to "responsible gambling" since it recognises that there are factors beyond individual choice that influence decisions to gamble. In this section, we use RG when referring to theory and research that specifically uses the term. SG is used when talking about the practices and tools more generally (see the Toward a Common Understanding of Terms on page 2 for more information about safer gambling and responsible gambling terminology).

Q1: SAFER GAMBLING MESSAGING AND GAMBLING MANAGEMENT TOOLS FOR PEOPLE WHO GAMBLE

Focus of analysis

The purpose of this review is to provide research evidence that can be used to help reduce gambling-related harms. For Q1, we focus on people who gamble who are not identified as members of a population subgroup at greater risk of experiencing harm from gambling.

The need for information about safer gambling messaging to players aligns with calls for a greater understanding of the influence of such messaging made by researchers including Blaszczynski and colleagues,[31] Gainsbury and colleagues,[35] and Wohl and colleagues.[7] They have argued that there is a need for empirically tested gambling messaging as well as tools that assist people who gamble to engage in safer gambling.

METHODOLOGY

In this section, we provide an overview of the method used to identify relevant literature to address Q1. A more detailed description, including the PRISMA diagram (Appendix A) and the funding source of each included study (Appendix B) is found in the Chapter documentation section of the Documentation Hub.

Search strategy

The University Health Network (UHN) in Ontario,

Canada conducted the initial search of the scientific literature using these databases: PsycInfo, Medline/PubMed, Embase, Emcare Nursing, Cochrane Database of Systematic Reviews (2005-present), Eric, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL).

A subsequent search added the specific search terms that were used in a recently published systematic review[38] and an umbrella review[39] (i.e., a review of systematic reviews that compiles all the evidence from existing systematic reviews on a topic[40]). For this second search (see Appendix C, Chapter documentation for full strategy), the authors reviewed a random selection of 17 articles to assess for inclusion in the review. Only five of articles were relevant. As such, the search term "*player protection*," a key term of a target paper[41] was added. For the search to be valid, it had to capture this article. The term "protect*" was then added to the search strategy. A total of 871 records were returned prior to removing duplicates. Primary research, reviews, and meta-analyses were retained. Books, chapters, commentaries, and conference presentations were excluded from the analysis. After removing duplicates, 610 records remained. The title and abstract of 473 records, including 375 reports of primary research, 65 review papers, and 33 meta-analyses were screened for further full-text review. Following screening, 179 research reports, 16 review papers, and six meta-analyses were considered for full-text review.

Of note, the search yielded five recent high quality systematic reviews.[23, 42-45] The search also yielded one umbrella review on gambling-related harm reduction interventions.[39] From this umbrella review, we identified nine unique studies that examined the effectiveness of safer gambling messaging and gambling management tools. Given the volume of recent systematic reviews, a new review strategy was needed to reduce duplication of these efforts.

In conjunction with the study commissioners, it was decided that a high-level synthesis of the findings from relevant systematic reviews was the most useful and appropriate approach. Since the systematic reviews covered research published before 2018, we would conduct a targeted search for more recent research from 2018 to 2020. Due to resource limitations, we conducted a narrative review of the existing literature up to 2018 as opposed to a systematic review of the studies identified by the UHN search strategy (for a detailed discussion see Appendix A, Chapter documentation). The benefit of a narrative review is that it enabled us to summarise the literature in a way that is not explicitly systematic. Further, it builds on and facilitates assessment of information presented in pre-existing systematic reviews and umbrella reviews.

Search Strategy for Research published between January 2018 and May 2020

A new search was undertaken with additional key terms used by McMahon et al.[39] (see Appendix A; also see the full search strategy in Appendix D, Chapter documentation). It was limited to peer-reviewed primary studies and reviews published between January 2018 and May 2020. Like the first search, non-empirical papers (i.e., commentaries, letters, editorials), books and book chapters, and research presented at conferences (e.g., posters, talks) were excluded. As well, the Cochrane Database of Systematic Reviews was excluded.

We opened the search window to papers published in 2015 and onwards, due to limitations associated with an external search process. The validity test

involved checking whether or not the paper by Auer and Griffiths[41] was captured by the search. Unexpectedly, this key paper was not retrieved. As such, the validity of the database search strategy is questionable. Nonetheless, we proceeded with the records identified, but limited the review to papers published between January 2018 and May 2020.

After removing duplicates and screening the records, 87 unique records were identified. Of these, 78 were reports of primary research, five were theoretical/non-empirical papers, two were reviews, one was a meta-analysis, and one was a commentary. The commentary was excluded, and the remaining records were screened using inclusion/exclusion criteria outlined in Appendix A (see Chapter documentation).

Grey literature search

The grey literature search was conducted externally by Greo's Information Specialist. The search strategy was like the strategy used by UHN. The content of the following databases that included the designated search terms was retrieved: Greo Evidence Centre, GambleAware, Gambling Commission Library, and the Ontario Public Health Libraries Association. Out of scope records were removed along with records published between January 2018 and May 2020. Of the 56 records remaining, only one record was included.

Secondary search for relevant literature

Due to the limited number of records that were returned, we expanded the search strategy by:

- → Contacting the Gambling Issues International (GII) listserv requesting recent relevant research in academic journals as well as relevant government and non-government reports;
- → Contacting researchers who conducted research in the area of interest (Sally Gainsbury, David Hodgins, Debi LaPlante, and Matthew Rockloff) to request relevant research;
- → Contacting the Responsible Gambling Council for relevant reports; and,
- → Including relevant research published by our own respective teams.

A total of 19 records were retrieved in this way.

Articles reviewed

Thirteen records describing primary research met the inclusion criteria. Three records were identified in the database search, two via the GII listserv, seven were identified from our lab and contacting colleagues, and one record was retrieved through the grey literature search.

FINDINGS: RESEARCH PUBLISHED PRIOR TO 2018

Safer gambling messaging

Gainsbury and colleagues[35] conducted a review of the literature on safer gambling messaging that is provided to players in gambling venues. They separated the existing literature into one or more of the following four domains: (1) message content, (2) message framing, (3) self-appraisal messaging, and (4) specific and action focused messaging.

Message content

It is typically argued that education must use cognitively simple tools that first present the erroneous cognitions (i.e., the faulty beliefs about how games of chance work) and then systematically undermine them[46-48] in an engaging multimedia format (that is, the RG/SG message format is set up so that it is interesting and piques

the curiosity of players), and if players pre-commit to a monetary limit in a 'cold' or non-emotionally arousing state (before play begins), they will set a limit that is within their means (see Lister, Nower & Wohl[49]). A cognitively simple, safer gambling message is important because safer gambling messaging typically must convey complex topics such as the probability of winning and how outcomes are determined in hopes that an increase in knowledge will foster safer gambling, and thus reduce problem gambling.[50] Providing players with the appropriate safer gambling content may improve knowledge about gambling odds, however this knowledge may not be sufficient to improve actual behaviours or reduce frequency of gambling.[51] This is likely because players tend to have an array of cognitive biases that lead them to believe that they have some skill or ability that allows them to maximise gambling outcomes despite the objective odds not being in their favour (see Williams & Connolly[52], Wohl & Enzle[53]). Even when players accurately recall the objective odds, often players do not believe that they apply to them because they "know how to beat the game".[54, 55] Thus, although safer gambling messaging may correct erroneous beliefs about the odds of winning or how gambling games work, there is limited evidence that such messages lead to safer gambling.

Message framing

According to prospect theory,[56] positive or gain-framed messages (i.e., messages that focus on the benefits of action) as opposed to negative or loss-framed messages (i.e., messages that focus on the harmful consequences of risky behaviour) are more persuasive. Perhaps unsurprisingly then, research on safer gambling management tools suggests that player feedback that focuses on the negative consequences of violating a money or time limit on play did not lead to the intended reduction in play.[57] In this light, Wood and colleagues[58] suggested that players are more able to gamble safely when messaging reflects positive beliefs such as the importance of taking personal responsibility for one's gambling and gambling literacy, and behaviours such as honesty about one's gambling with oneself and others as well as pre-commitment. This differs from the term responsible gambling, which can be interpreted as negative and patronising since it implies that people do not gamble responsibly.

Self-appraisal messaging

When presented with safer gambling messages that encourage self-appraisal (e.g., "*have you spent more than you intended?*"), electronic gambling machine players report more awareness of the amount of time they spent gambling, spend less time gambling, and have more realistic thoughts about their odds of success compared to those who were provided informative messages (e.g., the odds of winning[54, 55, 59]). This is because self-generated arguments (e.g., "*I have spent a lot of money on gambling today, perhaps I should stop*") are often perceived to be more accurate than information provided by external sources, and are more likely to influence subsequent behaviour.[60, 61]

Specific and action focused messaging

Concrete messages like "*set a safer gambling limit*" tend to be more persuasive than abstract messages like "*gamble safely*" when trying to persuade people to change their behaviour (see Mussweiler & Neumann[62]). For instance, Matulewicz[63] found that online players registered five times more clicks on the website when they were provided with specific information like, "*Have you checked out your risk profile yet? Go ahead!*", than with informative messages about gambling

such as, "*How problem gambling works*". It may also be prudent to include some urgency in safer gambling messages. For example, "*have you determined how much money you are willing to lose yet?*", motivates people to act.[64]

Safer gambling information centres

Often safer gambling messaging is distributed through responsible gambling information centres (RGIC). These are also commonly referred to as responsible gaming support centres, onsite information centres, and responsible gambling resource centres. RGICs are physical on-site centres (i.e., rooms) at gambling venues staffed by a responsible gambling advisor who provides players with information about responsible gambling practices.[36, 65] RGICs also provide safer gambling information in pamphlets and educational videos that, among other things, provide materials to educate the player about how games work and the odds of winning at those games. Some RGICs provide immediate assistance through on-site clinicians or counsellors to people experiencing or at risk of experiencing harm from gambling.

RGICs fulfill three main purposes:

1. To provide general awareness information and education to patrons regarding the risks and costs of gambling;
2. To identify, support, and refer to support services any visitors to the RGIC who may be experiencing gambling-related problems; and,
3. To provide information, support, and assistance with customers and to venue employees.[65]

A pilot evaluation of the RGICs in Ontario, Canada conducted by The Osborne Group,[66] found that the centres benefit players by sharing safer gambling information and promoting safer gambling behaviours (e.g., pre-commitment). Importantly, visitors found the safer gambling information they were provided was useful in terms of how to gamble more safely. They were also satisfied with their interaction with a responsible gambling advisor. Likewise, in a position piece about how to promote safer gambling, Wohl and colleagues[65] concluded that RGICs may have significant benefits to players in terms of facilitating safer gambling. Specifically, they put forth the proposition that RGICs are the ideal venue to coordinate safer gambling messaging at a gambling venue and disseminate those messages to players.

Despite the potential for RGICs to promote and advance safer gambling, few empirical assessments have been conducted on the safer gambling utility of RGICs. Strikingly, the systematic literature review we conducted (detailed later in this report) failed to capture a single study that assessed the safer gambling utility of RGICs. Moreover, none of the systematic reviews we identified in our literature search mentioned RGICs. That said, following some inquiries with gambling operators, we were provided with a few reports on the utility of RGICs that were commissioned by those gambling operators. We review the results of the research detailed in those reports within the context of our literature review later in this report.

Gambling management tools

Several systematic reviews have been conducted to assess the safer gambling value of player management tools. Research has typically focused on one of the two areas: limit setting tools and behaviour tracking/personalised behavioural feedback. Research on limit setting tools tends to examine whether these tools can reduce excessive gambling. The research assesses whether players can stick to their pre-set limit as well as the

factors that help or hinder it. Most of this research looks at tools embedded in EGMs that allow the player to set a limit on the amount of time and/or money they are willing to spend gambling during a session. A player who sets a limit is typically reminded by a pop-up message on an EGM when their pre-set limit is approaching (e.g., such as a 50% and/or a 90% threshold), when their limit is reached, and when the player has exceeded their limit (e.g., by 150% and/or by 200%).

Increasingly, though, researchers are exploring the safer gambling value of personalised behavioural feedback. This provides players with detailed information about their actual behaviour like how much they have spent gambling over the last month, instead of generic messages that are provided to all players such as "know your limit and stay within it." Personalised feedback uses behaviour tracking software that is activated when the player uses a player account card when gambling (typically a loyalty programme membership card).

Like gambling management tools, personalised behavioural feedback is typically conducted with people who play EGMs. The focus on EGM players is, in large part, because progression toward gambling problems happens almost four times faster among EGM players than among people who prefer other forms of gambling such as blackjack, poker, and horse racing. Also, in Canada, it has been shown that EGM players who experience moderate-to-severe problems contribute to approximately 60% of a gambling operator's total revenue.[50] In the next section, we review evidence published prior to 2018 on the safer gambling value of limit setting tools and personalised behavioural feedback.

Limit setting tools

Many people set a limit on the amount of money they wish to spend when gambling.[48] Even so, once they have reached their limit, they may decide to keep gambling and spend more money than they had intended. For example, in a study of EGM players at a local casino, Wohl and colleagues[48] found that most people who gamble (91%) report that they set a monetary limit on their gambling session. However, a significant proportion of people who gamble who received no safer gambling information prior to their EGM gambling session (25%) exceed their pre-set monetary limit (compared to 8% among those who did receive safer gambling information prior to engaging in EGM play). This is worrying when considering that frequently exceeding a monetary limit is linked to many negative consequences, including gambling-related debts, bankruptcy, and committing crimes to obtain money for gambling.[67]

A player's inability to stay within a pre-set money or time limit on their play is not unlike people's inability to set and stay within a limit on the amount they eat,[68] drink,[69] or exercise.[70] Still, gambling may stand apart from these other activities due to the structural characteristics of gambling activities. Specifically, EGMs are designed to facilitate dissociation (that is, games are created to induce a trance-like state) through their rapid wheel spin, auditory stimulation, and variable-ratio payout schedules (i.e., how games are set up to provide wins and losses).[71, 72] To decrease the harm associated that could occur by going over a money and/or time limit, responsible gambling tools must be designed to encourage players to set a limit on their play and then stay within that limit.

Evidence that setting a limit on the amount of money spent gambling is an effective responsible

gambling strategy among EGM players is growing.[25] Excessive amounts of money spent on gambling by EGM players decreases when a monetary limit is set.[73] Rather than decreasing gambling enjoyment, initiatives aimed at increasing monetary limit setting allow players to better manage the amount of money spent gambling. For example, Nelson and colleagues[74] showed that after setting a limit on play, people who gamble reduced the number of games they played, but did not reduce the amount they wagered per bet. They concluded that limit setting and adherence tools are promising from a responsible gambling perspective. This is supported by Ladouceur and Sévigny[75] who reported that people who gamble who had a monetary display to help them stay within their monetary limit reported that this safer gambling feature was helpful.

In a recent systematic review of harm reduction strategies, Tanner and colleagues[45] found four studies[7, 57, 72, 76] that directly assessed the safer gambling value of limit setting tools. Broda and colleagues[57] reported that 80% of people who gamble online (N = 47,000) continued to play after receiving a message that their daily limit had been reached. Here, the pre-commitment programme was not enforced. In lab-based studies, Wohl and colleagues[7, 72, 76] consistently showed that players who were asked to set a money limit and were then reminded when that limit was reached were more likely to stick to that limit compared to players who were not reminded. Importantly, Wohl et al.[7] showed that a limit setting tool that was created with design fundamentals of Human Computer Interaction (HCI) and Persuasive Systems Design was more likely to help players stay within their limit than a standard tool. Specifically, the enhanced tool was created with (a) an appealing visual design; (b) a system-status update tool that displays information to the person who gambles so they know how much money is left; (c) a tool that provides the player with a sense of control over options such as being able to set a monetary limit of any amount; and (d) the use of simple language to convey information to the player (e.g., clear instructions for setting a monetary limit).

In a more recent umbrella review of harm reduction strategies, McMahon et al.,[39] found 13 unique studies that examined the usefulness of a limit-setting tool. Seven papers reported that most players continued to gamble after receiving a message that their pre-set money limit had been reached. One of those studies, by Broda and colleagues,[57] has already been mentioned. However, the other six studies reported that setting a limit reduced the length of play and overall gambling expenditures. McMahon et al.'s[39] assessment of these conflicting findings was that the players who had gambling problems or were at risk of experiencing them were more likely to set a higher limit. This limited the usefulness of the tool. These players were also more likely to go over their limit if it was reached, resulting in increased gambling expenditures. Another way to look at it is that a limit setting tool likely has its greatest safer gambling value among recreational players. Given that safer gambling tools are built to prevent gambling problems, and not as an intervention tool for those experiencing gambling problems, these results are in line with expectations.

Behaviour tracking/personalised behavioural feedback

McMahon and colleagues'[39] umbrella review found a recent systematic review[38] on the safer gambling value of providing players with personalised behavioural feedback (i.e., giving players information about their play using their player account data). Marchica and Derevensky[38]

identified six unique studies, where players who received personalised feedback decreased their gambling behaviours compared to those who did not receive such feedback (i.e., control groups). For example, Larimer and colleagues[77] recruited college students for a study that aimed to address students' misperceptions about gambling-related norms on campus. The students tended to believe that gambling was a widespread and regular campus activity. Students who received personalised feedback about their gambling behaviour were more likely to report decreases in how often they gambled compared to a control group. This result was mediated by changes in perceived norms—feedback about one's own gambling made students realise that they were gambling more frequently than their peers, which led to a reduction in their gambling.

Although not reported in the umbrella review, these results align with those reported by Wohl, Davis, and Hollingshead.[78] They asked players who were enrolled in a casino-based loyalty programme how much they had won or lost over a three-month period. The players were then given personalised feedback based on their player-account data, about how much money they had won or lost during that time. During a follow-up session three months later, players who under-estimated their losses (i.e., lost more money than they thought) did not think they had reduced their play since the initial session three months earlier. However, data on actual play indicated that they had significantly reduced the amount they bet and the amount they lost during the follow-up period. These results underscore three things: (1) players poorly estimate how much they spend gambling; (2) providing players with accurate information about how much they spend gambling can affect gambling expenditures, and (3) players may be unaware of the safer gambling effects of receiving personalised behavioural feedback.

Assessment of evidence quality for the systematic and umbrella reviews

As previously mentioned, our systematic review of the literature for this section returned five relevant systematic reviews on safer gambling initiatives.[23, 42-45] These identified 13 unique studies that examined the effectiveness of pre-commitment systems and limit setting. The search also yielded one recent systematic review[38] from which two relevant studies that examined the safer gambling value of personalised feedback interventions (PFI) were identified. We also found one umbrella review on gambling-related harm reduction interventions,[39] which identified nine unique studies that examined the effectiveness of safer gambling messaging and gambling management tools.

A quality assessment of all seven systematic reviews was conducted using the checklist for systematic reviews and research syntheses developed by the Joanna Briggs Institute.[79] This tool includes 11 questions to help researchers to appraise whether a systematic review used an adequate search strategy or an appropriate method of synthesis. Examples of the questions are: "*Is the review question clearly and explicitly stated?*", "*Were the inclusion criteria appropriate for the review question?*", and "*Were the criteria for appraising studies appropriate?*"

All seven reviews had clearly stated research questions, appropriate search strategies for primary research, appropriate methods used to combine studies, and suitable suggestions for future research. Still, there were also important differences. In terms of inclusion and exclusion criteria, these were appropriate in three systematic reviews[23, 42, 45] because they included unpublished research which minimises publication bias. For

the remaining three systematic reviews,[38, 43, 44] research was an inclusion criterion thereby introducing publication bias into their syntheses. The appropriateness of the inclusion and exclusion criteria was not applicable for the umbrella review.[39]

All but one systematic review[48] used adequate sources and resources to search for studies. The remaining systematic review[48] searched several databases for peer-reviewed research, but only relied on Google Scholar to identify unpublished research. Other sources for unpublished research examined in some of the systematic reviews included the Greo Evidence Centre Specialised Resources collection, ProQuest Dissertations and Theses database, industry conference proceedings (Discovery), and reaching out to colleagues and experts in the field for relevant works.

In terms of the quality assessment of included studies, four reviews[39, 42, 44, 45] conducted a critical appraisal of included studies, whereas three did not.[38, 43, 44] Of the four reviews that conducted a critical appraisal, three[39, 42, 44] had at least two independent coders and it was unclear in one review[45] whether two or more independent coders were involved.

Only the umbrella review[39] described methods to minimise errors in data extraction. Of the six remaining reviews, three[38, 42, 44] did not include these methods, and it was unclear in the remaining three reviews.[23, 43, 45] All but two of the seven reviews[42, 45] provided recommendations for policy, practice, or both.

In three reviews,[23, 42, 45] attempts were made to minimise the threat of publication bias by searching specifically for unpublished works. In the remaining three reviews, only peer-reviewed published research was included. This increased the threat of publication bias. An assessment of publication bias was not applicable for the umbrella review.[39]

In summary, of the seven reviews, the umbrella review used methods to minimise potential biases and included recommendations for policy and practice as well as directions for future research. In contrast, among the six remaining systematic reviews, only half included unpublished and published research, and another half only conducted a critical appraisal of included studies. Four of the six reviews provided recommendations for policy and practice and all six provided directions for future research.

Quality of the existing literature

In the systematic reviews, the poor quality of the experimental research on safer gambling was a consistent concern. Each of the systematic reviews and the umbrella review concluded that the evidence value of the existing research was poor due to methodological shortcomings. This is particularly troubling from both a basic and applied perspective. Theory and research are cumulative. That is, researchers tend to conduct research and build theory based on the findings of published research. Moreover, safer gambling policies and initiatives are (ideally) based on the existing evidence. When the evidence base is weak, safer gambling messages and gambling management tools that stem from that research may not have the expected utility.

Three critical methodological limitations were frequently noted in the systematic reviews we identified: low statistical power, lack of a control group, and lack of random assignment. Low statistical power is related to the number of participants included in a study. A small sample can be a problem because as the size of an effect decreases, the sample size needed to detect that

effect increases, among other reasons. The lack of a control group, or the use of an inappropriate control group, can make it impossible to draw meaningful conclusions from a study. When a control group is absent from a study, it is not possible to conclude that any change observed in the "*active treatment group*" is due to the treatment being studied. Randomisation means that every study participant is as likely as any other to be assigned to either the treatment or control group. By randomly assigning participants either to be in the group that receives the treatment or in the control group, researchers can measure the effect of the treatment regardless of other factors that may make some people or groups more likely to participate. More detailed information about these limitations can be found in the academic literature (e.g., see Hawkins,[80] Cumming,[81, 82] Kline,[83] and Nuzzo[84]).

FINDINGS: NARRATIVE REVIEW OF RESEARCH PUBLISHED BETWEEN JANUARY 2018 AND MAY 2020

As noted earlier, a new systematic review was not required due to the large number of recent systematic reviews. Rather, in addition to sharing findings from the existing systematic reviews in the last section, we were also asked to conduct a narrative review of relevant research published between January 2018 and May 2020.

The search identified four relevant articles. The Gambling Issues International (GII) listserv request added two more papers. Because we were not entirely confident in the search results, we supplement this section with a narrative review of research from laboratories of research experts on safer gambling messaging and tools. We also included reports on the usefulness of safer gambling information centres we secured from gambling operators. Findings from each of these studies are outlined below.

Safer gambling messaging

Rodda and colleagues[85] evaluated the effect of an action and coping planning intervention on sticking to one's limits for EGM players in Australia. Players who intended to set a limit on their gambling (N = 184) were randomly assigned to an assessment only control group or an assessment and intervention group upon entering a gambling establishment. Participants in the assessment only group answered some demographic questions and listed strategies they planned to use to limit their gambling before a gambling session, while participants in the assessment intervention group also received support to transform their strategies into an action and coping plan. Participants in the assessment and intervention group were not more likely to stick to their limits in the next gambling session or in the following month than those in the assessment only group. However, there was some evidence that at-risk and people with problem gambling in the assessment and intervention group gambled less in the next 30 days compared to the previous 30 days.

Hollingshead et al.[86] evaluated the effect of the timing of an educational video on limit setting and adherence. People (N = 98) were recruited from a gambling venue and participated in a virtual reality gambling session. They were randomly assigned to view an educational video about how slot machines function and the benefits of limit-setting either before the virtual gambling session or when they had reached their limit. Results showed that the effect of the timing of the educational video on limit setting plans was moderated by problem gambling severity. As expected, players who were at lower risk levels and who watched the

video before the gambling session were less likely to favour future limit setting than players who had high problem gambling severity and/or watched the video upon reaching their limit. However, neither the severity of gambling problems nor the timing of the educational video influenced staying within limits during the current gambling session.

Armstrong et al.[87] tested the effect of EGM warning messages that varied in message purpose. Messages could be informative (e.g., Gambling at slower speeds leads to greater enjoyment), self-monitoring (e.g., "*Did you know your play speed has increased? Are you enjoying every spin?*"), and self-evaluative (e.g., "*You're playing faster than most people. Are you enjoying every spin?*") They also looked at whether messages were positive (e.g., "*Did you know your play speed has increased? Are you enjoying every spin?*"), challenging (e.g., "*Did you know your play speed has increased? Betting quickly equals losing quickly.*"), and negative (e.g., "*Did you know your play speed has increased? Betting too fast leads to problem gambling*"). They wanted to know how different types of messages would affect bet size, speed of play, and persistence. One hundred and seventy-two Australian adults were assigned to one of the 10 groups (3 x 3 + 1 control group that received an empty message that simply asked them to "*click to continue*") using a randomised design based on age, gender, and level of disordered gambling. Although disordered gambling status did not moderate the effect of message purpose or frame, gender did. Total loss after being presented with the message was higher among women who were presented with self-evaluative messages compared to women who read informative or self-monitoring messages. Message frame and purpose had no significant main effects. The authors argue that messages should be tailored to player characteristics.

Safer gambling information centres

The Responsible Gambling Council evaluated two PlaySmart Centres (PSCs) at Ontario casinos.[88] The goal of PSCs is to provide an inclusive, welcoming space within casinos where people who gamble could learn about responsible gambling and receive support for problem gambling, if necessary. An online survey of 494 people who gamble who played at one of the two casinos within the past year was conducted to evaluate the effectiveness of the PSCs to inform patrons and increase positive play behaviours. More than half of all participants (58%) reported being familiar with the PSC, yet only 48% of them had visited a Centre within the past year. Almost one quarter of all participants (24%) indicated that the PSC or its staff had contributed to their positive play beliefs (i.e., taking personal responsibility for their gambling and having accurate beliefs about their chances of winning) and 18% indicated that they had contributed to their positive play behaviours (e.g., considering how much time and money they should spend gambling and being honest with others about their gambling). Most (82%) agreed that the PSC and its staff help people become more informed about gambling, and 81% agreed that they provide consultation and referral to support services.

Gray and colleagues[89] evaluated the GameSense information centre at Plainridge Park Casino. Two surveys of GameSense visitors were conducted (N = 982, N = 691) and an additional 479 general casino visitors took part in a survey of perceptions of GameSense. GameSense visitors were satisfied with their interactions with GameSense advisors (94%) and learned about strategies to keep gambling fun (i.e., positive; 77%). Patrons visited GameSense largely out of curiosity and a desire to learn about gambling, but rarely for help with

a gambling problem. Among GameSense visitors, the number of interactions was related to their awareness of PlayMyWay (a limit-setting tool) and local gambling treatment resources. However, the number of interactions with GameSense staff was unrelated to any responsible gambling behaviours among GameSense visitors, nor among general patrons. Previous interaction with GameSense also did not predict gambling expenditure on the day of the survey. Overall, players enjoyed their interactions with GameSense advisors, but it is not clear whether they led to an increase in responsible gambling.

Safer gambling management tools

Limit setting tools

Tong and colleagues[90] tested whether there was a relationship between following safer gambling practices and level of disordered gambling (measured using DSM-5 criteria). Two hundred and eighty-four people living in Macao who had gambled in the past 12 months were surveyed by telephone. The researchers found that as engagement in safer gambling behaviours like setting money and time limits increased, the number of symptoms of disordered gambling decreased.[48] However, knowing how the games work was not linked to disordered gambling. The authors suggested that the positive effects of participating in safer gambling practices was partly the result of Macao's ongoing safer gambling campaign. Still, they noted that with the research method they used, the results cannot be directly attributed to the campaign because the study had a cross-sectional design. In other words, it only examined one point in time.

Tabri et al.[91] evaluated the effect of pop-up messages stating that a pre-set time limit was approaching on whether people who gamble stayed within their limits. Eighty-eight players who were recruited from a gambling establishment participated in a virtual reality gambling session. They were given $10 to gamble, which served as their spending limit. They were randomly assigned to receive a pop-up message when they reached either 70% of their limit and 100% of their limit, 90% of their limit and 100% of their limit, or only when they reached their limit. There were no significant differences between the 70% and 90% scenarios. However, people who gamble in these two scenarios were more likely to stop play before reaching their limit than those who received a message only when they had reached their limit. This effect was moderated by having financially focused self-concept (FFS), that is, if they viewed financial success as an important life goal. Participants with low levels of FFS were significantly more likely to stop playing before their limit when they received a pop-up message at 70% or 90% than those who received a pop-up message only at 100%. Receiving messages before reaching 100% of the limit had no effect for players with a high FFS.

Auer et al.[92] assessed the effect of using a voluntary deposit limit tool on player loyalty (defined as placing at least one bet one year later). Using a random sample of 20% of all active players (N = 175,818) drawn from player account data from an online gambling website (Kindred), they found that only 8.3% set a voluntary limit. Setting a voluntary limit was positively correlated with gambling intensity. For example, 2.6% of players who bet less than €4 during the first quarter of 2016 set a voluntary limit, while 14.9% of players who bet more than €239 set a voluntary limit. Players were grouped by gambling intensity, and within each intensity group, those who set a voluntary limit during the first quarter of 2016 were more likely to be active players in the first quarter of 2017. Overall, 60.9% of players who set

a voluntary limit during the first quarter of 2016 were still active in the first quarter of 2017 compared to only 46.2% of players who did not set a voluntary limit.

Gainsbury et al.[93] evaluated the use and benefits of using a safer gambling tool on an online gambling website. A sample of 564 online players were recruited via email from six online gambling websites. They completed a survey that assessed disordered gambling as well as their use and knowledge of three available safer gambling tools: (1) activity statements that allow players to see their gambling activities over a specified period of time, (2) a deposit limit tool that limits how much money you can deposit to the online gambling website), and (3) temporary self-exclusion, which is the ability to ban oneself from the website for a specific time period. Among players who were aware of the tools, 88% reported using activity statements, 24% reported using a deposit limit, and 8% reported using temporary self-exclusion. Of interest, 23% of activity statement users reported that this tool had changed their gambling, with most indicating that they were more in control of their gambling. About one-third indicated that they were spending less money and less time gambling. Among deposit limit users, 58% reported that this tool had changed their gambling behaviour, with over 60% of these players indicating that deposit limits reduced the amount of money they spent gambling. About half indicated it reduced the amount of time they spent gambling and increased their control. The number of safer gambling tools they used was positively associated with the severity of problem gambling and negatively associated with staying within self-imposed budgets.

Currie et al.[94] assessed the effectiveness of self-initiated limit-setting, among other self-control strategies, for minimising gambling-related harm. People in Canada who gamble online (N = 1054) were recruited through an online panel and completed a survey on gambling and substance use. Limiting one's expenditure was the most highly rated as a self-control strategy (59%), while keeping track of spending and restricting access to additional cash were most often rated as helpful (85%). People who gamble who use a frequency, time, and/or spending limit had more disordered gambling symptoms, gambled more often, and spent more than other people who gamble. However, analyses also showed that staying within one's monetary and frequency limits was negatively linked to gambling harms. The effect of going over one's limit was more harmful when the monthly spending limit was higher than $200.

Personalised behavioural feedback

Auer and Griffiths[41] evaluated whether personalised feedback messages about risky play reduced players' average bets on Swedish online gambling websites. They used an existing dataset for 7,134 people who gamble who had received at least one message that they had taken part in some form of risky play such as increasing the bet amount or time spent playing. The change in average daily bet for the week prior to the message was compared to the average daily bet on the day of, and the week after the message. There were 15,512 unique messages. Overall, 65% of players reduced the amount they gambled the day they received a message, and 60% of players reduced the amount they gambled the week after they received the message when compared to the previous week. The effect of personalised messages was lowest for players who were considered at highest risk of harm, but it was still significant. Further, messages had stronger effects on players who had recently won or lost unusually high amounts within the past

week, i.e., more than €10,000.

Auer and colleagues[95] evaluated whether giving players personalised feedback about when they had spent more than 80% of their monthly loss limit reduces the amount of money gambled. Using data from a Norwegian online gambling website, a random sample of players (N = 7,884) received at least one message that they had exceeded 80% of their monthly loss limit. From this sample, 4,692 players were matched (based on their age, gender, theoretical loss, money gambled, and game preference) with players who did not receive a message. Players who were matched had a lower average bet and theoretical loss than those for whom a match could not be found. The ratio of theoretical loss and bet amount during the three months after having received feedback was calculated relative to theoretical loss and bet amount during the three months before having received the feedback. Results showed that 64% of players who received a personalised message that they had exceeded 80% of their monthly loss limit had a smaller theoretical loss ratio and 63% had a smaller bet amount ratio relative to their matched control group. This indicates that the personalised messages were effective. When divided by gambling intensity, personalised messages reduced theoretical loss and average bet for all but people who gamble the most intensely.

Hollingshead et al.[96] examined the effect of personalised behavioural feedback on playing within limits across two studies. In the first study, 131 people who gamble were recruited from a gambling establishment and randomly assigned to receive either a general message that they had reached their predetermined limit or a personalised message that included the amount of money and credits they had lost. Results indicated that the manipulation (that is, receiving either the general or personalised message) had no effect on limit adherence. However, 49% of participants failed a manipulation check (i.e., a test of the effectiveness of the intervention), indicating that they had not read the pop-up message. The second study attempted to address this limitation by controlling the ability to discard the pop-up message. One hundred and forty-one participants recruited from a gambling establishment were randomly assigned to one of four groups that differed in message content they received and their ability to discard the message immediately or after 10 seconds. Despite this additional factor, 40% of participants failed the manipulation check and this proportion was not affected by the group they were in (i.e., receiving a specific message). Neither the content of the message nor the ability to discard the message influenced playing within limits.

Summary of findings

Among the 13 studies, seven found some evidence of harm reduction among people who gamble. Three of the 13 studies examined the effectiveness of safer gambling messaging.[84-86] Only one of these three studies found a positive effect on harm reduction: timing of safer gambling messaging increased future limit-setting intentions[85].
Three of the 13 studies examined the effect of personalised feedback messages on gambling.[41, 95, 96] Two behavioural tracking studies found that personalised messages significantly reduced gambling expenditure in the near term, and theoretical loss in the medium term, while the third study found no effect of a personalised message over a generic message.

Five of the 13 studies assessed the safer gambling value of a gambling management tool. Four of the five papers reported a positive effect of the gambling management tool on safer gambling.[89-94]

Three of the identified studies that used a cross-sectional design found that voluntary limit-setting tools were linked to lower levels of gambling harm or expenditure. A fourth found that use of a voluntary limit-setting tool was associated with spending more money. An experimental study showed that a limit-approaching pop-up message increased likelihood of stopping play prior to reaching one's limit. Two studies on the effectiveness of visiting safer gambling information centres showed positive self-reported effects on safer gambling.[87, 88] Only one study used an objective measure, and this study found no effect of using a gambling management tool on safer gambling behaviour.

The conflicting findings about the safer gambling value of gambling management tools are in line with McMahon et al.'s umbrella review.[39] Eight of nine studies included in their review found that machine messages significantly reduced gambling activity and both studies on personalised feedback messages found decreases in gambling activity. Only seven of 13 studies in their review found that limit-setting reduced gambling activity.

Assessment of evidence quality (primary research from 2018 to 2020)

Unfortunately, the 13 studies have many of the same methodological issues as the research covered in the systematic reviews published before 2018. That is to say, the quality of much of the more recent research that addresses the influence of safer gambling messaging and gambling management tools for people who gamble is poor due to methodological shortcomings.

Five of the studies—two that examined safer gambling information centres[87, 88] and three that assessed a limit setting tool[90, 92, 93] were cross-sectional retrospective surveys. That is, they used data from one time-point only and relied on the players' recall of experiences, activities, and behaviours. All three studies that explored the value of behaviour tracking and personalised feedback to safer gambling used a longitudinal research design[41, 91, 95] where players participated in the research at several points in time.

Importantly, all three of the studies that assessed safer gambling messaging[84-86] were randomised controlled trials (RCTs) in which players were randomly assigned to a control group or intervention condition (i.e., the group were exposed to a specific message). However, only one of the five RCTs examined the safer gambling value of a gambling management tool[90] and only one examined personalised behavioural feedback.[96]

Retrospective surveys using cross-sectional designs

Although all five retrospective surveys that used a cross-sectional design[87-89, 92, 93] received a weak global quality assessment score using the Quality Assessment Tool for Quantitative Studies,[97] the studies varied in terms of their strengths and weaknesses. In terms of selection bias, three of the studies involved participants who were likely representative of the target population of interest because they used random sampling[89, 92] or a very large convenience sample that aligned with demographic characteristics[93] of the target population. Importantly though, for these three studies, the participation rate was either low[92] or unknown. The remaining two studies were either somewhat likely or not likely to involve a representative sample of the target population because of the sampling strategy.[87, 88] Critically, there were no analyses that looked for differences between players who completed the survey and others who were contacted but chose not to complete the survey. In terms of withdrawals, only

one of these studies reported how many players, if any, withdrew from the study. One exception reported the number of people who did not complete the survey.[92] As such, the ability to apply the results from these five studies to other people who gamble is likely low due to selection bias.

There were also several consistencies across these five studies. In terms of study design, all studies received a weak rating because they were cross-sectional surveys. In terms of confounders, all studies received a weak rating because none addressed potential confounders either in the sampling strategy or in the statistical analyses. In terms of data collection methods, almost all studies received a strong rating because they involved the use of valid and reliable data collection tools. The two exceptions were Tong et al.[90] and Gray et al.[89] because they developed questionnaires with good face validity, but did not report the reliability of the questionnaires (e.g., internal consistency). Thus, although most of the five studies used valid and reliable data collection tools, the internal validity of the results from these studies is uncertain due to possible confounders.

Behaviour tracking and personalised feedback using longitudinal designs

Of the three studies that assessed the safer gambling value of behaviour tracking and personalised feedback, two received a moderate global quality assessment rating[41, 95] and one received a weak global assessment rating.[91] Of note, there was some variability in terms of the strengths and weaknesses of these three studies. In terms of selection bias, two studies[91, 95] involved random sampling and thus were more likely to include a representative sample of the target population of interest, whereas it was unclear in the remaining study[41] how participants were selected. As well, although Auer and Griffiths[41] analyzed a relatively large data set that included over 7,000 players recruited from five different online gambling sites, they did not report how much, if any, overlap there was in participants across the five sites. Thus, the external validity or generalisability of the results from these three studies is likely moderate-to-high.

In terms of study design, all three studies received a moderate rating because they were not RCTs. Indeed, two of the studies[41, 91] involved a case-control design and the remaining study[98] involved a cohort analytic design (two groups pre and post). In contrast, strengths were addressing confounds (other factors that might affect the outcome), blinding (not letting people or the researchers know which group they are assigned to), and data collection methods. More specifically, in terms of addressing confounds, all studies received a strong rating because they either explored potential demographic (e.g., age and gender) and gambling-related (e.g., risk status) factors,[41, 91] or matched participants in the control and pop-up exposure groups on a range of demographic and gambling factors.[98] In terms of blinding, all three studies received a strong rating because the outcome assessors were not aware of the intervention or exposure status of participants and study participants were not aware of the research question. In terms of data collection methods, all studies received a strong rating because they involved the use of valid and reliable data collection tools.

The weaknesses of these studies were related to participants who withdrew or dropped out and the integrity of the interventions. In terms of withdrawals and drop-outs, all studies received a weak rating because it was not possible to determine how many, if any, participants withdrew because of the retrospective design of the studies.

In terms of intervention integrity, across all three studies, less than half of the participants received the exposure compared to matched control participants, and there was no measurement of whether the intervention (i.e., pop-up message) was provided to participants in the same way. It was also unclear whether participants received an unintended intervention that may have influenced the results. For example, in Auer and colleagues' studies, it is unclear whether players who received the pop-up message sought help (e.g., from an addictions counsellor) for their gambling expenditures.

In sum, the internal validity of the three studies that assessed the safer gambling value of behaviour tracking and personalised feedback is low-to-moderate. The reason is that confounds were addressed, but the lack of a control group in two of the three studies and the lack of random assignment in all three studies leaves open alternative explanations for the results.

Overall, when considering the 13 studies, 12 were conducted in countries with a western culture (North America, Europe, and Australia) and one was conducted in Macau. We also note that the 13 studies were conducted between 2018 and 2020 and so research prior to 2017 was not reviewed. As well, eight of the studies were supported by government agencies, two were supported by not-for-profit agencies, one was funded by industry, and one was not funded at all. Accordingly, the findings of the reviewed research may not be generalisable to people living in non-Western countries. As well, funding bodies were heterogenous.

Experimental research involving randomisation

Of the five RCT studies, three received a strong global quality assessment rating[85, 90, 96] and two received a moderate global quality assessment rating.[84, 86] In terms of selection bias, four studies[84, 85, 90, 96] received a moderate rating because they recruited participants from a gambling establishment (e.g., a casino), whereas one study[86] received a weak rating because they recruited participants through community newspaper flyers and a research recruitment agency. It was unclear in three studies[85, 90, 96] how many players in the control and intervention groups agreed to participate in the study before being randomly assigned, whereas two studies[84, 86] provided information on the number of people who agreed to participate prior to random assignment. Therefore, the generalisability of the results from these five studies is likely moderate-to-high.

Other strengths of the five RCT studies include study design, blinding, and data collection methods. This meant that all five of these studies received a strong rating. In terms of blinding, the five studies also received a strong rating because the outcome assessors were not aware of the intervention or exposure status of participants (or the outcome was assessed objectively) and study participants were not aware of the research question. In terms of data collection methods, all the studies received a strong rating because they used valid and reliable data collection tools. Likewise, the studies were consistent in the way they handled withdrawals and drop-outs. All studies reported on withdrawals and drop-outs, but four studies[85, 86, 90, 95] received a strong rating because most, if not all, players completed the study. Only one study received a weak rating because fewer than 60% completed the study.[84] All studies used appropriate statistical analyses. However, one study[84] included only people who had completed it in the analyses, which undermined the randomisation process. In other words, the exposure and control groups may no

longer be equal.

The studies varied in how they addressed confounds. Three studies[84, 85, 90] received a strong rating because there were no group differences prior to the random assignment on demographic (e.g., age and gender) and gambling-related (e.g., risk status) factors that may have had an effect on the relationship between the intervention and the outcome. One study[96] received a moderate rating because there were group differences prior to the intervention despite statistically controlling for confounds in the analyses. Another study[87] received a weak rating because there were group differences prior to the intervention and few confounds were addressed statistically or in the sampling strategy.

The five studies varied in terms of intervention integrity. Specifically, 60-79% of the players received the intervention in three studies,[85, 87, 91] fewer than 60% received the allocated intervention in one study,[96] and it was not possible to determine how many received the intervention in one study.[96] The consistency of the intervention was measured in three studies,[86, 91, 96] whereas it was unclear in two studies.[88, 90] In four studies,[86, 87, 91, 96] it was unlikely that participants received an unintended intervention that may have influenced the results, whereas it was unclear in one study.[85]

In sum, the internal validity from four of the five studies is moderate-to-high. The reason is that confounds were adequately addressed and all participants who were randomised were included in the analyses in four of the five studies.

Limitations and research gaps

The high-level take-home message of the umbrella review by McMahon et al.[39] was that the current evidence base is dominated by research that targets individual-level gambling behaviour as opposed to more systematic issues such as regulatory action that targets demand and supply interventions. As such, the focus of the existing research is on ways to advance consumer protection that places the responsibility of safer gambling on the player, as opposed to efforts aimed at reducing gambling behaviour or understanding the positive aspects of play that most players engage in. This message is in line with other researchers[58, 98] who have argued that stakeholders have tended to focus their attention on people with gambling problems, which can shift the focus away from what creates risky gambling behaviour, or how most people who gamble think and behave that keeps their play positive. McMahon et al.'s[39] umbrella review revealed many methodological issues (e.g., lack of a control group, lack of representative samples, etc.) that undermined the value of research outcomes that examine the value of safer gambling messages and gambling management tools. Our systematic review suggests that little has changed in the intervening years.

Across the 13 studies we identified, most did not include a representative sample of the target population (i.e., through probability sampling) and there was limited information on the participation rate (i.e., number of participants who agreed to participate). As well, none of the 13 studies reported the use of an a priori power analysis to determine sample size for their research. (An a priori power analysis is a process used by researchers that allows them to determine the appropriate sample size prior to conducting the research so that the results are reliable). As such, the generalisability, reliability, and replicability of the findings reported in the 13 studies may be low.

Below we discuss the general advantages and disadvantages of the research designs used in

the 13 studies and make recommendations for future research.

Cross-sectional research designs

Cross-sectional designs have advantages, including the possibility of using a large sample and the versatility to examine multiple factors and outcomes in a single study. However, they also have disadvantages that can affect the quality of the results. Of relevance is the high potential for recall bias and response bias. Although not limited to cross-sectional research designs, recall bias and response bias are threats in research that involve self-reporting. Recall bias is a threat because many participants often do not remember previous events or experiences accurately, especially events further away in time. Additionally, the accuracy of their recollections may be influenced by current events or psychological factors (e.g., mood). Another disadvantage of cross-sectional research design is that it cannot be used to determine whether one factor causes changes in another factor. The reason is that the factors are assessed at only one point in time. This makes it impossible to determine whether changes in one factor creates changes in another factor. Another challenge is the open recruitment strategy often used in cross-sectional research. This provides an opportunity for selection bias, in that there may be important differences between people who complete the survey and those who do not, but the researchers have no way of knowing what these differences might be.

Longitudinal research designs

A study that uses a longitudinal research design has advantages like those that use a cross-sectional research design (i.e., the use of large samples and the ability to examine multiple factors and outcomes in a single study). However, like cross-sectional research, the results of longitudinal research used to track gambling behaviour over time can be affected by recall bias and selection bias. Selection bias may also take the form of participants dropping out of the study over time. This means that there could be differences between participants who remained in the study and those who withdrew or dropped out.

A key advantage of correlational studies that use a longitudinal design is that they are useful for establishing temporal precedence (e.g., the pop-up message precedes change in gambling behaviour). For example, Auer et al.[95] used a longitudinal design where players were classified according to whether they received an exposure to a pop-up message or not. Auer et al.[95] also included a matched control group and showed that gambling behaviour changed among players who received the pop-up message compared to participants who did not. These findings help to establish that the change in gambling behaviour happened after receiving the message. However, the lack of randomisation to the intervention or control groups limits the full understanding of cause and effect because a pop-up message that precedes may co-occur with the reduced gambling expenditures, not cause reduced gambling expenditures (e.g., the rooster's crowing at dawn does not cause the sun to rise; see Shannon, Anjoul & Blaszczynski[99]).

Like cross-sectional studies, results of correlational longitudinal studies are threatened by possible confounds that have not been controlled statistically in the analysis or via the sampling strategy. Therefore, it remains possible in correlational studies using a longitudinal design that factors which were not examined in the study may be associated with the intervention (e.g., i.e., pop-up versus no pop-up message) and causally influence the outcome of interest (e.g., impulsivity)

thereby biasing the results. In sum, although longitudinal correlational studies are useful for establishing temporal precedence, they are subject to the same issues as cross-sectional designs, including recall bias and selection bias as well as confounds due to lack of randomisation.

Experimental research designs

An advantage of an experimental research design is that it effectively addresses threats to internal validity posed by recall bias and confounds. The reason is that randomly assigning players to an intervention or control group means that players in each group are roughly equivalent on observable and unobservable characteristics. If random assignment is successful, the results can be discussed in terms of cause and effect. That is, if participants who were randomly assigned to the intervention group (e.g., received a pop-up message) changed their gambling expenditures when compared to participants who were randomly assigned to the group that did not receive the message, then the change in gambling expenditures can be more safely argued to be the result of the intervention.

However, research results based on experimental designs can potentially suffer from problems with ecological validity, which can limit the external validity of the results. That is, the artificial nature of environment where the data is being collected may not match-up completely with the related real-world environments. As well, experimental research designs may suffer from experimenter effects (the unintended influence of the experimenter's expectations on the behaviour of research participants) and demand characteristics (participants may change their behaviour based on their interpretation of the purpose of the study). Moreover, experimental research that measures the results of an intervention following randomisation may have response and recall bias if the outcome is measured using self-reports. For example, participants in Rodda et al.'s[85] study were asked to recall the amount and time spent gambling each day over a 30-day period following the intervention. Without an objective measure for the amount of money and time spent gambling, participants' recollections may be inaccurate (i.e., recall bias; see Forsström et al.[100]). It is also possible that some players who spent a lot of money and time gambling during the 30-day period may (consciously or unconsciously) underreport their involvement and how much they spent (i.e., response bias).

Like research that uses cross-sectional and longitudinal designs, results from experimental research may be threatened by selection bias if an open recruitment strategy is used or if people drop out of the study.

To summarise, the advantage of studies that use experimental research designs is that the results can be interpreted in terms of cause and effect. However, experimental research designs may also be vulnerable to biases, such as when self-reports are used to measure the outcomes, if people drop out, and if open recruitment strategies are used.

What policies should be changed based on the research reviewed in this chapter? Unfortunately, due to the methodological limitations of the research we identified, we caution readers against using the research we reviewed herein to develop safer gambling policies. In the section below, we provide recommendations for how to improve the quality of research in the safer gambling domain that would yield high quality evidence that can be used to inform policy.

Recommendations for future research

Although much has been learned from research

on safer gambling messaging and gambling management tools for people who gamble, that research has some methodological issues that reduce their readiness for knowledge mobilisation.

We encourage researchers to design experimental research that includes a control group and assign participants randomly to intervention and control groups. Ideally, studies would take place in gambling venues (land-based and online) rather than in research laboratories. Logistically, this would require cooperation from operators, as well as regulators to allow researchers to randomly assign some players to receive certain messages or get access to certain gambling management tools, and other players to receive other messages or access to other gambling management tools. It is important that researchers be allowed to include a control group in which some players are not exposed to any safer gambling messages or are not offered access to a gambling management tool. It is also critical that the research involves large samples and objective measures of gambling behaviour, including time and money spent gambling.

Researchers also need to assess psychological factors that may moderate the usefulness of safer gambling messages and gambling management tools. Our review only identified a single study that assessed the moderating effect of a player's self-concept. The importance of understanding psychological factors that can affect the results of safer gambling messages and gambling management tools may be in player segmentation. Specifically, a one-size-fits-all approach may not be ideal. A message may resonate with players that have a certain psychological profile, but not with players who have a different psychological profile. For instance, players who possess a financially focused self-concept may need messages that highlight how gambling is not an effective means to make money.

The need for player segmentation as it pertains to safer gambling messages was highlighted by Armstrong and colleagues.[87] They showed that threatening messages resonate differently for men and women. Even so, researchers and those who design safer gambling messages for the gambling industry should not rely on intuition. Both Armstrong and colleagues,[87] as well as Wohl and colleagues,[78] found that the value of safer gambling messages and a management tool to influence gambling behaviour did not make a distinction between players with or without gambling problems. Of course, it is possible that certain messages and particular tools may influence groups of players differently. In sum, theoretically and methodologically sound research is needed before any new safer gambling message or gambling management tool is widely used.

Q2: SAFER GAMBLING MESSAGING AND GAMBLING MANAGEMENT TOOLS FOR THE GENERAL PUBLIC

In this section, we examine the effectiveness of safer gambling messages (e.g., advertising campaigns, social marketing campaigns, public health programmes, and educational programmes) for reducing gambling-related harms among the general population. Specifically, whilst the previous systematic review focused on reducing harm among players, this section looks at harm reduction at the population level. This aligns with a growing call for researchers to take a broader view of the effects of gambling—a view that shifts the focus from people with gambling problems to harms that can be experienced by the general public.[17-19, 29, 101]

METHODOLOGY

Like the previous section, we provide a high-level description of the method used to identify relevant literature. A more detailed description, including a PRISMA diagram and the funding source of each included study is found in Appendix A and Appendix B, respectively, in the Chapter documentation.

Like the previous search, the University Health Network (UHN) was contracted by Greo to conduct the search of the scientific literature. Using key terms that our team identified, the following databases were used: PsycInfo, Medline/PubMed, Embase, Emcare Nursing, Cochrane Database of Systematic Reviews (2005-present), Educational Resources Information Centre (ERIC), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL).

Following the insufficient initial search described earlier, a subsequent search was conducted (see Appendix E in the Chapter documentation for the full search strategy) that used key terms from in the initial search as well as specific terms used in a recently published systematic review[38] and an umbrella review.[39]

Prior to removing duplicates, 658 records were identified from the updated database search. After removing duplicates, 458 unique records remained. Of the 458 records, 211 were reports of primary research, 87 were theoretical/non-empirical papers, 67 were review papers, 40 were meta-analyses, 23 were books or edited books, 19 were book chapters, and 11 were commentaries.

One member of the review team screened the title and abstract of the reports of primary research, review papers, and meta-analyses for further full-text review. Thirteen reports, four review papers, and one meta-analysis would be considered for full-text review. The grey literature search returned 745 records. After screening the title and abstract, nine records were selected for further full-text review.

The quality of the database literature search for published research was a concern. It stemmed, in part, from a systematic review we found on a topic very similar to ours that was "*in press*" at that time (see Forsström et al.[101]). Of the eight papers included in that systematic review, seven were relevant to our review. However, six of those seven papers were not captured by the database search. As such, a second updated search performed by UHN included more search terms we drew from the six papers included in the in press systematic review that were not captured by the initial search. These terms were: web-based intervention, personalised feedback online activities, mathematical knowledge, odds, and rational emotive education. The revised search strategy is found in Appendix F in the Chapter documentation.

The final iteration of our search yielded a total of 388 records, which were then reviewed by a member of the review team. Of the 388 records, 318 were reports of primary research, 42 were theoretical/non-empirical papers, 18 were review papers, seven were commentaries, and three were meta-analyses. The commentaries were excluded, and the remaining records were screened. Three records were identified for full-text review, one of which was included.

The title and description of the records identified in the grey literature search conducted by Greo were also screened. Of the 419 unique records identified, 122 abstracts/summaries were reviewed and nine were included for further full-text screening. One review team member reviewed the four systematic reviews and one meta-analysis using

the inclusion/exclusion criteria and included two reviews. Another member screened the four records of primary research using the inclusion/exclusion criteria and included one record.

In sum, a total of five records, including three reports of primary research and two reviews, were included in the review for general population safer gambling messages.

FINDINGS

Public awareness campaigns

Our search identified two systematic reviews[21, 102] and two research papers[103, 104] that evaluated the effectiveness of general public awareness campaigns aimed at reducing gambling-related harm. The findings were mixed.

In terms of the systematic reviews, Rodgers et al.[105] reviewed evaluations of New Zealand's Kiwi Lives campaign. One promising result is that calls to the gambling helpline increased by 30% during a televised advertisement campaign about the gambling helpline. However, the researchers noted that most evaluations used self-reported measures of changes in gambling knowledge and behaviour, and they lacked a control group. Williams et al.[106] reviewed evaluations of public awareness campaigns conducted by the Ontario Lottery and Gaming Corporation in Ontario, Canada and the Victoria Department of Human Services in Victoria, Australia. In Ontario, there was less agreement with gambling myths following a public education campaign. However, despite the campaign being administered to the general public, a survey that assessed the campaign's safer gambling value was only conducted with people who gamble. The evaluation of the gambling awareness campaigns in Victoria revealed that calls to the helpline significantly increased following the campaign.

These results suggest that public awareness campaigns have the most impact on players who have already developed problematic gambling behaviours. Accordingly, public awareness campaigns may be best framed as a tertiary prevention intervention strategy.

In terms of the original research, Najavits et al.[104] evaluated the effect of a state-wide problem gambling awareness campaign. Among independent random samples of Indiana adults, they found no difference in knowledge of problem gambling warning signs or awareness of state resources for people with gambling problems before and after the advertising campaign. Similarly, the Manitoba Gambling Control Commission (MGCC) studied the effect of a public education campaign to dispel gambling myths among the Manitoban population.[102] Although there was evidence that some gambling myths were reduced at the end of the campaign, many of these reductions did not reach traditional levels of statistical significance.

Content of public messages

As with the content of safer gambling messages directed at people who gamble, the content of safer gambling messaging in public awareness campaigns is also important in terms of minimising harms associated with gambling. Our literature search identified one paper that reported an experimental study that compared the effectiveness of different types of messages on the likelihood to limit one's gambling.[103]

Burton et al.[103] tested the effect of advertisements containing positive images (e.g., a picture of people having fun when gambling) as opposed to negative images (such as a picture of a person in distress when gambling) on the likelihood of limiting one's gambling. People who do not gamble

were more likely to limit their future gambling behaviour when presented with an advertisement containing negative images, whereas people who gamble were more likely to limit their gambling behaviour when presented with a positive advertisement. People who gamble found the positive advertisement more relatable than the negative advertisement, while people who do not gamble found the negative advertisement more credible and involving. This study provides some evidence that imagery used in public messages needs to be negative when targeting people who do not gamble, but positive when targeting people who gamble. Further research is needed to determine the best possible public messages to promote safer gambling and how they should be altered for different groups.

Assessment of evidence quality

Unfortunately, the overall value of the evidence from the three studies[102-104] that addressed the influence of safer gambling messaging among the general public is low due to methodological shortcomings. Two of the studies[102, 104] examined the influence of public health messaging on awareness of gambling issues among the general public. The third study[103] was an RCT that tested whether safer gambling messages with different content affect people who do not gamble and people who gamble heavily alike. We describe the quality assessment scores of these studies below.

Because the studies by MGCC and Najavits et al.[102, 104] share methodological features, their quality assessment scores are discussed together. For these studies, two independent random samples of people were recruited from the general population—a pre-campaign sample and a post-campaign sample. The researchers then explored differences between the samples. They also looked at differences between people who reported being exposed to the campaign or not in the post-campaign sample only. Both used a random sampling method that allowed them to obtain a representative sample of the target population. However, the MGCC study had a response rate below 60%[102] and so received a weak rating for selection bias. The study by Najavits et al. did not report the response rate at all[104] and so received a moderate rating for selection bias. Likewise, the MGCC study received a moderate rating for confounds because there were similarities between the pre- and post-campaign samples. In contrast, the Najavits et al. study received a strong rating for addressing confounds because they tested for differences between the pre- and post-campaign samples on a range of sociodemographic characteristics. In terms of study design, both received a weak rating because they were not RCTs (the pre- and post-campaign samples were independent and so each is a one-time retrospective survey). Yet, both studies received a moderate rating for blinding because it was not possible to determine whether the outcome assessors were aware of the intervention status of participants in the post-campaign sample and whether participants in the post-campaign sample were aware of the research question. Both studies received a moderate rating for data collection methods because they used data collection tools that had high face validity but did not report on the reliability of these tools. As well, both studies received a weak rating in terms of withdrawals or drop-outs because they did not report the number of people who withdrew from completing the study. Lastly, although there is no global rating for intervention integrity, less than 60% of participants in both studies recalled being exposed to the intervention using one or more modes of advertising (e.g., television, radio, newspaper).

The quality assessment scores for the Burton

et al.[103] study were weak except for in the areas of study design, blinding, and data collection methods. More specifically, in terms of selection bias, participants were a convenience sample of university students and therefore not representative of the general population. Burton et al.[103] also did not report the response rate for their study. Because the study was an RCT, the study design score was strong. Even so, the study received a weak score for addressing possible confounds. It was unclear whether there were important differences between groups before randomisation and we could not tell whether relevant confounds (e.g., impulsivity, income) were examined. The study received a moderate score for blinding. It was unclear whether the outcome assessors were aware of the intervention status of participants and whether participants were aware of the research question. The study received a moderate rating for data collection methods because the data collection tools used had high face validity, but the reliability of these tools was not reported. Furthermore, although there is no score for intervention integrity, we note that the study did not involve a control group. Both groups of people who gamble and do not gamble received an active intervention that only differed by whether the image was positive or negative (there was no group that received only a neutral image or no image). Likewise, although there is no score for statistical approach, we note that the statistical approach used in the study[107] to assess indirect effects is outdated and less than optimal.[108]

Limitations and research gaps

There is a general lack of research that addresses safer gambling messaging. Critically, the three studies we identified[109-111] had several important limitations that could have affected the internal and external validity of their results. For the two studies that involved independent samples to assess change in the key outcome from before to after the public messaging campaign, the methodological approach is not ideal. Participants in pre- and post-campaign samples are different and so the design is essentially two cross-sectional retrospective surveys involving different participants. As such, any observed change in key outcomes from before to after the campaign cannot be attributed directly to the campaign. As well, any observed difference may be due to confounds or selection bias. Therefore, we recommend that future research not use the independent samples pre- and post-intervention design. Instead, we recommend that researchers use a longitudinal research design with a matched control group, such as the cohort analytic design (two groups pre- and post-campaign). In this research design, participants are tracked over time (e.g., pre- and post-campaign) and classified according to whether they were exposed to the campaign or not. Participants who indicated that they were not exposed to the campaign should be matched to those who indicated that they were exposed to the campaign in terms of relevant demographic factors (e.g., age, gender, ethnicity, income) to help reduce the threat of confounds. This approach helps to establish that the change in attitudes and intentions followed being exposed to the intervention. Further, the lack of randomisation to the intervention or control group limits the ability to understand whether the intervention caused the change. As such, it is important to first conduct experimental research that supports the effectiveness of the public messaging on peoples' attitudes and intentions.

Because public messaging may be effective among different population groups (such as people who gamble versus people who do not gamble), basic experimental research is needed to identify

the limits and boundaries of the public message. For example, Burton et al.[103] experimentally manipulated the images of a problem gambling public message to test whether positive or negative imagery affects people's attitudes and intentions. The findings indicated that a public message that included positive imagery was more effective at influencing high frequency players to limit their gambling. Among people who do not gamble, viewing the public message that included negative imagery increased their intentions to curb any future gambling. Although Burton et al.'s[103] results are intriguing, their study did not involve a control group. In other words, there was no condition that involved the public message with a neutral image or no image at all. The lack of a control group clouds the interpretation of the results (is it the public message with positive imagery that is more effective or the public message with negative imagery that is more effective?). In sum, once the most effective ways of sharing the public message are identified using experimental research, they can be used in the public messaging campaign where the effectiveness of the campaign can be tested using the previously described cohort analytic research design.

TOPIC SUMMARY/CONCLUSION

Gambling is inherently a risky activity, especially since the odds of winning money are not in the player's favour. Moreover, gambling games reward on a variable-ratio reinforcement schedule (that is, the number of bets needed before a win is experienced varies). This reinforcement schedule has been shown to speed up the reinforced behaviour and the behaviour that results is highly resistant to reduction efforts. Consequently, a lot of attention has been directed toward helping the player make informed decisions about gambling and how to do so safely before it becomes a problem,[22] as well as informing the general population about gambling-related harms. Central to these efforts has been messaging that aims to educate players and the general public about safer gambling practices (such as restricting gambling expenditures to within an affordable limit before play begins) and the availability of gambling management tools (i.e., tools that provide the player with information about the amount of money and time they have spent gambling).

We conducted two literature reviews to assess whether safer gambling initiatives facilitate safer gambling behaviour. The first review sought to answer the following question: Do safer gambling messaging and gambling management tools help reduce gambling-related harms among people who gamble? To answer the question in relation to people who gamble, we found five recent systematic reviews that assessed, among other things, the state of research on safer gambling messages and gambling management tools. That so many systematic reviews have been conducted on these topics is unsurprising given the growing concern about gambling-related harms. In fact, the volume of existing systematic reviews on research that assessed whether safer gambling messaging and gambling management tools help reduce gambling-related harms makes the area ripe for an umbrella review. Such a review was recently published by McMahon et al.[39] It covered research published on the topic up to the beginning of 2018. Unfortunately, McMahon and colleagues conclude that the value of the findings from the existing literature is rather low due to methodological limitations. Specifically, most of the research that they reviewed lacked statistical power, a control group, and random assignment. Our narrative review of research published between 2018 and mid-2020 found that much of the newer research had not corrected for the limitations of

the earlier research.

Leaving the methodological limitations aside, the evidence is mixed. Only one of the three studies that assessed safer gambling messages found a positive effect on harm reduction.[86] This study found that safer gambling messaging has greater value when presented at the time players are about to make a safer gambling-related decision (e.g., whether to exceed a pre-set money limit). Two behavioural tracking studies found that personalised messages were linked to reduced gambling expenditure in the near term. However, one study found that there was no added value of receiving a personalised message when compared to a generic message.

Similarly, whilst four of the five studies that assessed the safer gambling value of a gambling management tool observed that their use aided safer gambling, one study found no such effect. Two studies on the effectiveness of visiting safer gambling information centres revealed helpful effects on safer gambling, as reported by the person who gambled. Only one of these studies used an objective measure of safer gambling later, which found no effect of using a gambling management tool on safer gambling behaviour.

Some of the mixed results may be due to less-than-optimal methods used to test the value of safer gambling messages and gambling management tools. Specifically, most research conducted to date does not have large enough numbers of people participating in the study (i.e., statistical power). This undermines confidence in the outcomes of such studies. Even among the studies with greater numbers of participants, there was a tendency for those studies to not include a control group. As such, it is uncertain whether the message or tool had a true effect on players' behaviour.

We call on researchers to pause to consider what is the smallest effect they think is meaningful before conducting any research project. If detection of a potentially small effect is considered warranted, the next step is to determine whether there are sufficient resources (e.g., money, time, personnel, access to a large sample) to collect data from enough participants so that the study is sufficiently powered (see Najavitis et al.[111]). If the answer is no, we suggest a few options: (1) do not run the study until enough resources are gathered, (2) find collaborators who are willing to collect some data, and then combine the samples, (3) use within-person designs to boost power, or (4) use an extreme groups design in which cases from the extremes of the distribution of an independent variable are sampled (see Burton et al.[103]).

During our literature search to answer the question about safer gambling messages directed toward the general population, we found three original research papers. Two papers examined whether population-based safer gambling messaging influenced perceivers' attitudes and intentions. Key limitations of these two studies are that independent random samples were collected before and after the public messaging campaign, there were very few participants in the post-campaign sample who reported seeing the public messaging campaign, and there was no prior research that has demonstrated the effectiveness of the public message itself. As such, any differences in attitudes and intentions between the pre- and post-campaign participants cannot be reliably linked to the public messaging campaign. In contrast, the third paper examined whether positive or negative images included in public health messages are more effective in influencing perceivers' attitudes and intentions. The study reported that positive imagery was more effective among high frequency players whereas negative

relative imagery was more effective among people who do not gamble. These results are intriguing but should be interpreted with much caution as participants were a convenience sample of university students and there was no control group who received the same public health message without an image or with a neutral image. As well, in all three studies there was no discussion of how sample size was determined.

In sum, the value of the evidence for safer gambling messages and tools for people who gamble is low despite there being many studies in this area that span at least a decade. Our review suggests that the low value of the findings is due to low quality research that dominates the literature. Similarly, the value of the evidence for safer gambling messages for the public is low, but for a different reason. There is a lack of research that addresses the value of safer gambling messaging directed at the general public, and the research that currently exists on the topic is of low quality.

At present, gambling stakeholders should be wary about drawing any strong conclusions from the current literature that addresses safer gambling messaging and tools for both people who gamble and the general population. Instead, we recommend investing in high quality research to get a better indicator of the effectiveness of safer gambling messages to the general public or to players specifically, and the safer gambling value of gambling management tools.

GUIDANCE FOR HOW THIS INFORMATION MAY BE USED TO INFORM A COLLECTIVE PREVENTION AND EDUCATION PLAN

As we have made clear throughout this report, the existing research on safer gambling messaging and gambling management tools is of low quality. As such, we caution relying too heavily on the safer gambling body of evidence when designing a collective prevention and education plan. To clarify, we do not suggest throwing out the proverbial baby with the bathwater. It would appear that clear, specific safer gambling messaging does reduce people's erroneous beliefs about the odds of success when gambling, and increase people's knowledge that safer gambling entails setting a limit on the amount of money and time they spend gambling. Additionally, providing players with feedback about how much they are spending gambling, and providing players with tools to help them set and adhere to a money limit, time limit, or both, can help minimise the risks associated with gambling. However, the quality of the research that has supported these claims needs to be replicated using methodologies that produce results that have greater evidentiary value than what currently exists in the literature.

Below we provide six suggestions to help guide a comprehensive prevention and education programme.

1. **A one-size-fits-all approach to safer gambling messaging will reduce its value.**

The standard approach to facilitate safer gambling is to develop and test messages targeted at people who gamble or the whole population. However, a one-size-fits-all approach may undermine their

safer gambling value. As shown by Armstrong and colleagues[87], women respond to safer gambling messages differently than men. Whereas women who received negative, self-evaluative messages had higher losses and a faster bet speed than women who received other types of messages, the results for men were inconclusive. Specifically, when men received positive messages, informative and self-evaluative messages, this led to a noticeable decrease in the persistence of betting. When they received challenging messages, the self-monitoring messages resulted in lower levels of bet persistence. There were no between-group differences for type of message exposure when looking at total losses among men. It is also known that younger people are less likely to be positive players than other players.[110] It may be that the standard safer gambling messages are not resonating with younger people who gamble. Research is needed to assess what messages resonate best with different groups of players.

2. Reward safer gambling

Although most players believe that safer gambling messages and gambling management tools help to reduce problematic play, the desire to use those messages and the tools tends to be low (see Nelson et al.[74], Griffiths et al.[109], and Schellinck & Schrans[112]). Nelson and colleagues,[74] for example, found that only 1% of players on an Internet sports betting site (i.e., bwin) used the self-set limit feature during the 18-month study period. Similarly, in a study by Griffiths, Wood, and Parke,[109] only 10% of players chose to receive play assessments for risky gambling. In terms of the studies identified in our review of messaging and tools for people who gamble, Gainsbury and colleagues[93] reported slightly higher numbers. They found that 24% of players who gambled on an Internet gambling site used the deposit limit option. In terms of visiting a RGIC, Gray and colleagues[89] reported that only 0.67% of daily visitors interacted with an advisor at a casino in Massachusetts. In sum, a significant hurdle for safer gambling initiatives is overcoming initial reluctance to use safer gambling messages (e.g., use RGICs) and use gambling management tools.

Recently, Wohl[113] argued that one possible way to increase the use of gambling management tools is to link casino-based loyalty programmes to tool use. Rewarding players for using gambling management tools or visiting a RGIC will provide them with added value for money spent gambling. This is important because customers expect to receive superior value for their money and when value is not perceived, customers will stop purchasing and using a company's products.[114] In a competitive marketplace, customer patronage tends to be rather fickle. Therefore, companies need to maximise the perceived value of the product or services they offer.[115] Rewarding safer gambling will add value and should encourage some players to use gambling management tools or visit a RGIC that may otherwise be ignored. That is, players may begin to see consuming safer gambling messages and using gambling management tools as an opportunity for reward as opposed to an annoying aspect of the game. The net effect may be greater safer gambling.

Importantly, once exposed, players are more likely to continue using gambling management tools.[112] This is because players who use responsible gambling tools tend to see them as useful. For example, Griffiths and colleagues,[109] found that most players (70%) who used a monetary limit tool found it to be "quite" or "very" useful. Likewise, players who are exposed to their player history express that they like this information and have a desire to have access to this information in the

future.[33, 78, 109, 116] That is, people express satisfaction with gambling management tools when they are exposed to and use the tools.

Although there are potential benefits to rewarding players for using gambling management tools, some researchers have argued that doing so is incompatible with efforts to constrain gambling behaviour through pre-commitment, especially if the reward given is time on a device (i.e., free play; see Williams, West & Simpson[21] and Wood & Griffiths[117]). That is, rewarding safer gambling in this way may cause message confusion (e.g., "*Am I supposed to limit my play or continue playing?*"). We argue that this issue can be avoided by providing players with the readily available non-cashable rewards (such as free tickets to a show; free food or drink). Players can also be given random rewards for using the responsible gambling tools. That is, using a variable-ratio schedule, players can receive a message on the VL that states something like, "*We applaud you for using our limit setting tool! This tool helps keep your play positive. For the next 10 minutes, have a free drink on us!*". Random rewards not only add excitement to the player's experience, they break their normative experience.[118] Should a player cash their reward, it provides a break in play, which has been shown to facilitate safer gambling.[72]

3. Mandate access to players and player data to qualified researchers

Data security and data privacy have real consequences for casino operators that collect and retain the information, as well as the players from whom the data is collected. Even so, when players sign up for a player account (typically via a loyalty programme; see Wohl[99]), most (if not all) gambling operators inform players of the terms and conditions that their anonymised data can be used for research, training, and marketing purposes. As such, there is opportunity to address several methodological limitations noted in the safer gambling research with studies that use player account data and match those data with psychological surveys of players who have player accounts.

The benefits of doing so can be observed in a published study by Wohl and colleagues.[78] They emailed players using the operators' player-base listserv to complete a study about limit setting. First, they asked players to indicate how much money they thought they had won or lost over a three-month span. Next, they provided those players with real time feedback about how much money they had won or lost according to their player card data. Importantly, using player card data, Wohl and colleagues could assess whether this feedback influenced subsequent play, which it did. There was a positive association between underestimating losses and subsequent reduction of play. The greater the discrepancy between the amount of money they thought they had lost and how much they lost, the greater the reduction in their spending over the next three months. Aside from the safer gambling value of showing players that they are underestimating their losses, the results point to a troubling tendency for players to underestimate their losses. This suggests that safer gambling research that relies on players' own accounts of how much they are winning or losing provides very biased estimates. This, in turn, could undermine the value of any research evidence that relies solely on player estimates.

We argue that the value of research evidence on safer gambling initiatives would be improved if regulators require that gambling operators provide vetted, arms-length researchers access to their players through their player-base listservs and provide those researchers with access to

player data. Requiring cooperation between operators and researchers will help overcome some reluctance among operators to do so. Currently, access to such data in most jurisdictions is typically denied or difficult to obtain.

As outlined in Wohl and colleagues[65], safer gambling can best be advanced when there are strong links between government (policy makers, regulators), gambling operators, and the research community. As shown by Wood and Griffiths,[118] it is in operators' best interests to strengthen these links because people who gamble who engage in safer gambling behaviour (typically facilitated by tools that have been tested by researchers) are more satisfied players, and more satisfied players are more loyal to the casino operator that facilitated their safer gambling.[92]

In addition, we recommend that an appropriate level of caution be used when reviewing the results of studies that appear only in the grey literature to ensure that they have been peer reviewed. We suggest that only the results of the highest quality literature be considered. Similarly, funding should only go to high quality research proposals that use random sampling, objective and subjective measures, a control group, and track changes to behaviour over time. Further, the safer gambling messages used in research projects should be supported by experimental research to test the message before releasing it. Open science practices that include registering a study before conducting it, fully sharing the methodology, posting all study materials to an open repository (including de-identified data and code) will allow the research to be replicated to confirm the results and be extended to other research settings. Finally, it is important to determine the appropriate sample size before beginning a study so that there is sufficient statistical power for the results to be meaningful.

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Nassim Tabri

Brief biography

Dr. Nassim Tabri (Ph.D. Concordia University) is an Assistant Professor of Psychology and Director of the Mental Health and Addictions Laboratory at Carleton University. His research focuses on, among other things, how different transdiagnostic factors (e.g., overvalued ideation, perfectionism, and impulsivity) may function together to proliferate and maintain engagement in various health compromising behaviours (e.g., disordered eating and gambling). Dr. Tabri has published 30 peer-reviewed papers. To facilitate his gambling research, he has received research funding from the Carleton University, Gambling Research Exchange, International Center for Responsible Gambling, and Social Sciences and Humanities Research Council of Canada.

Conflict of interest statement

Nassim Tabri has received research funding from Canadian Center on Substance Use and Abuse (Canada), Carleton University (Canada), Gambling Research Exchange Ontario (Canada), Social Sciences and Humanities Research Council of Canada (Canada), and International Center for Responsible Gaming (US). He has received consulting fees from the gambling industry in Canada, New Zealand, the US, and the UK via GamRes Limited—a research and consultancy service that designs, implements, and evaluates responsible gambling strategies.

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Brief biography

Dr. Michael Wohl is a Professor and Graduate Chair in Psychology at Carleton University in Ottawa, Canada. Work in his Carleton University Gambling Laboratory focuses on, among other things, factors that predict disordered gambling and facilitate responsible gambling. He has published over 150 peer-reviewed papers and is the receipt of, among other recognitions, the International Center for Responsible Gambling's Research Achievement Award and Carleton University's Graduate Mentorship Award. To facilitate his research, he has received research funding from an array of national and international agencies.

Conflict of interest statement

Michael Wohl has received research funding from Alberta Gambling Research Institute (Canada), British Columbia Lottery Corporation (Canada), Carleton University (Canada), Gambling Research Exchange Ontario (Canada), Manitoba Gambling Research Program (Canada), International Center for Responsible Gaming (US), Ontario Lottery and Gaming (Canada), and Ontario Ministry of Health and Long-Term Care

(Canada). MW has received speaker/travel honorarium from Alberta Liquor Gaming Commission (Canada), National Association for Gambling Studies (Australia), International Center for Responsible Gaming (US), and Massachusetts Council on Compulsive Gambling (US). He has received fees for academic services from Atlantic Lottery and Gaming Corporation (Canada), Gambling Research Exchange (Canada), National Center for Responsible Gaming (US), New South Wales Government (Australia), Nova Scotia Gaming Corporation (Canada), Manitoba Gambling Research Program (Canada), Massachusetts Gambling Commission (US), and Ontario Lottery and Gaming (Canada). MW has also received consulting fees from Alberta Liquor Gaming Commission (Canada), Atlantic Lottery and Gaming Corporation (Canada), British Columbia Lottery Corporation (Canada), GamRes (Canada), Massachusetts Gaming Commission (US), Nova Scotia Gaming Corporation (Canada), and Ontario Lottery and Gaming (Canada).

Silas Xuereb

Brief biography

Silas Xuereb worked as Research Lab Manager for Dr. Michael Wohl during the 2019-2020 academic year. He provided research assistance on projects involving efforts to promote responsible gambling and projects examining the interplay between collective emotions, feelings of economic anxiety and political decisions. He is now pursuing an MA in Economics at the University of British Columbia. His primary research interests include the social, psychological, and economic effects of inequalities.

Conflict of interest statement

Silas Xuereb has no conflicts of interest to declare.

2.4 Universal Measures Summary

Universal measures are part of an effective prevention plan where interventions can be applied at the population level. In this section, two main topics were addressed. First, evidence was presented for regulatory restrictions specific to gambling products and place of delivery. Next, research about the effectiveness of safer gambling messages and gambling management tools were assessed. Both chapters adopted review methodologies best suited to the current state of evidence. For regulatory restrictions, a scoping review was conducted. Case studies from international jurisdictions were also presented, along with evidence from other public health issues known to have an influence on gambling behaviour. For safer gambling messaging and gambling management tools, the authors used both systematic and narrative review approaches to bring together the evidence needed to support a prevention and education plan, to reduce harm from gambling, and to inform future research paths.

In addition to presenting the collective findings and knowledge gaps of the existing body of research, guidelines for developing an evidence-based, integrated, comprehensive prevention and education plan are suggested. The authors also identify where more and/or better-quality research is needed.

In this section, the highlights of each chapter are summarised. Since the chapters represent two different measures, key findings are presented separately along with unintended consequences and evidence quality.

Full references to the research evidence summarised here can be found in 'Chapter 2.2 Regulatory Restrictions on How Gambling is Provided—Chapter 2.2 references begin on page 55; and, 'Chapter 2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts'—Chapter 2.3 references begin on page 98.

EVIDENCE HIGHLIGHTS

Regulatory restrictions

The scoping review examined regulatory restrictions to prevent harm from gambling in the areas of product and place, with a focus on supply reduction. There was insufficient evidence to address the third component of regulation, that is, the role of the gambling provider.

The purpose of regulatory restrictions is to reduce the chance of harm from occurring to people who gamble, and by extension to their significant others and the wider community. A challenge is ensuring that the restrictions do not disrupt gambling opportunities for people who do not experience harm from gambling. As the gambling landscape evolves, gambling stakeholders must consider new issues related to online access to both regulated and unregulated sites, emerging technologies, and new products. Adding to the complexity is that many strategies for gambling harm reduction are introduced without specific, measurable goals, which makes it difficult to evaluate their effectiveness. There is considerable interest in the appropriate role of government to balance societal concerns about gambling harm and the economic interests of industry. The review findings point to the impact of multiple forms of regulatory restrictions, as well as areas where more information is needed.

Product

The gambling products reviewed for policy regulations to prevent harm were online gambling,

lotteries, scratch cards, casino table games, and sports betting and wagering. There is evidence to suggest that:

- → Differences exist between people who gamble online using offshore sites or domestic sites, with those gambling offshore experiencing more gambling problems.
- → Liberalising and licensing offshore sites can reduce their use but may also lead to increased gambling problems for those who gamble online.
- → Participation in sports betting has increased due to online gambling and mobile apps. Instant access, expanded betting opportunities, and new types of bets have made the activity more continuous in nature, raising concerns about the potential for gambling harms. Despite these concerns, the evidence is mixed as to whether sports betting, either online or offline, is related to a higher likelihood of experiencing harms.
- → Some research suggests that live action betting is linked to impulsive and problem gambling, but no studies yet show that live action betting causes these problems.
- → Daily fantasy sports are recognised by some jurisdictions as a new gambling form, but few regulatory restrictions have been applied so far to reduce the potential for harm.

In terms of outcome, regulations prohibiting online gambling access are somewhat ineffective and have the unintended consequence of people accessing offshore sites with potentially fewer consumer protection measures. Licensing and regulating online gambling seem to reduce participation in offshore gambling sites; however, evidence suggests that participation on these sites is associated with more harm from gambling.

Place

This section examined individual licensing conditions and broader restriction policies for casino floor design, activities permitted within EGM venues, restrictions on operating hours, the availability of gambling, and placement of gambling venues. Case studies for nine jurisdictions were presented, including four from Australasia, three from Europe, and two from North America. Advertising regulations addressed volume, placement, social media, and content restrictions, and then drew upon another public health issue, alcohol use, with relevant findings for messaging about safer gambling.

Regarding licensing conditions and restriction policies:

- → The structural design of casinos requires careful consideration. Closed designs (e.g., those with unclear sightlines, lack of space and natural light, and narrow aisles) can influence unplanned gambling and reduce self-regulation.
- → Restricting opening hours, especially during early morning hours, has a greater impact on people with gambling problems, although restricted hours may result in them accessing other gambling forms. Still, restricting hours is broadly supported and would likely help to reduce the experience of gambling-related harm.
- → The availability of gambling opportunities is linked to a higher prevalence of gambling problems, although the level of gambling harm is tempered by adaptation as communities become more accustomed to expanded opportunities.
- → The geographic density of EGMs is linked to higher levels of gambling problems as well

as neighbourhoods with low socio-economic status; however, the impact of EGM density and socio-economic status are difficult to disentangle, along with influences from other social determinants that may be relevant.

→ The concentration of venues seems not to affect people who gamble recreationally but has an impact on people at risk of or experiencing harm from gambling.

→ By comparing jurisdictions, evidence indicates that expenditure and participation rates are not necessarily reliable determinants of gambling problems, nor do changes in treatment seeking rates necessarily represent a higher prevalence of harms.

→ The interactions between policies, protective factors and risk are complex, and few studies address the effect of specific policies on the provision of gambling.

Selected case studies of high-income nations with well-developed regulatory policies were presented. Although case studies allow policy makers to see how other jurisdictions are addressing gambling-related harms, they often differ in their relationship to other regulatory policies, cultural factors, and approaches to measurement. Among the most effective regulations were smoking bans, supply caps for EGMs, no food or alcohol and restricting cash payments, requiring a personal card to play (for age verification, self-exclusion, and allowing personal loss limits), and bans on certain forms of gambling—although it is important to recognise that this impinges on options for people not experiencing harm as well.

Regulators approach gambling advertisements differently, with some being highly restrictive and others having a more liberal policy. Evidence indicates that:

→ In countries where advertising for online gambling is more restrictive, there are lower rates of problem gambling behaviours.

→ High exposure to gambling advertising is linked to more gambling participation and the normalisation of gambling.

→ There is little to suggest a causal link between more advertising and problem gambling, although people with gambling problems may experience more impact from gambling advertising than those without problems.

→ The UK "whistle to whistle" ban during sports events effectively reduced the number of advertisements viewed by children and youth. Still, gambling advertisements in the media and other public places visible to youth may increase their participation in future.

→ Branded shirts worn by athletes and ground-based signage still contribute to a substantial portion of gambling marketing, even when commercial advertisements are banned.

→ Advertising on the Internet is difficult to regulate due to the targeted nature of advertising placement related to users' search histories.

→ Despite age restrictions, many adolescents use social media platforms to follow operators and are exposed to gambling advertisements there. The advertising content typically has few safer gambling references or taglines, even though required, suggesting the need for closer monitoring.

→ Some gambling advertisements can be exploitative to vulnerable people and youth when content implies limited risk, inflated suggestions of winning, oversimplification of gambling, and complicated offers. They also

increase brand awareness and cognitive and emotional responses that produce positive feelings toward gambling and can influence future behaviour. Current regulations in the UK are not sufficient to prevent adverse consequences among youth and vulnerable populations.

→ Alcohol advertising regulations may inform advertising restrictions for gambling in that there is a significant relationship between the exposure of youth to alcohol commercials and their subsequent drinking behaviour. Alcohol advertising also has a stronger impact on people who are already heavy drinkers, likely through a craving response.

Several findings highlight effective policies relevant to place considerations. Notably, there are different short- and long-term responses to increased availably of gambling opportunities. Initially, there is an increase in participation, followed by an adaptation, with a drop in participation in the longer term. This has been demonstrated in many jurisdictions and is known as the adaptation hypothesis.[1] Banning smoking in gambling venues seems to have the greatest effect on reducing participation. Limiting EGMs in certain locations has some impact on gambling problems and expenditures. An unintended consequence may be that only the least profitable (i.e., least used) machines are removed, which results in few effects on participation and harm reduction, and the machines may be moved by operators to other venues. Permitting note acceptors on EGMs is related to higher levels of expenditure. Finally, policies that restrict cash payments, withdrawals, and food and beverage service in gambling venues are helpful in reducing harm among people with gambling problems but can have a negative impact on people not experiencing harm from gambling.

Evidence quality

Although a formal quality assessment is not normally part of a scoping review,[2] an informal assessment guided by quality tools provided by Greo conveys an understanding of the level of caution needed when using the evidence to inform policy, planning, and action. It should be noted that there is scant evidence of the impact of regulatory restrictions on gambling products. Because most studies are cross-sectional, have non-representative samples, and often do not control for overall gambling engagement, there is little evidence that effectively demonstrates a causal relationship between regulatory policies for specific gambling products and experiencing gambling harm.

Studies of the effect of regulatory policies on gambling and place factors and how they relate to gambling harm share the same quality concerns. Further, although much of the research uses population prevalence studies with a screening measure for problem gambling, often these measures are not standardised across jurisdictions or over time. A complicating factor is that few options are available to assess behaviour that would have occurred in the absence of restrictions. Most studies do not include control groups for comparisons between trial policy sites or jurisdictions. Many rely on self-report of gambling behaviours and problems, which can be unreliable and inaccurate. At present, research on gambling advertisements lacks experimental evidence that could allow conclusions to be drawn about causal relationships between advertising and gambling behaviours, attitudes, and intentions. In addition, most studies of gambling and advertising lack an appropriate control group.

Taken together, the evidence quality of studies on regulatory restrictions is limited so caution

must be used when applying research outcomes. Nonetheless, the available evidence must be considered in light of how it can inform policy design and strategic planning.

POPULATION-BASED SAFER GAMBLING/RESPONSIBLE GAMBLING EFFORTS

Two types of reviews, systematic and narrative, were used to present evidence related to safer gambling messaging and gambling management tools. Since a number of knowledge syntheses already existed in this topical area, the authors were asked to conduct a systematic review of evidence based on existing reviews from 2005 to mid-2020, and then present information derived from individual studies published from the date of the most recent systematic review (2018) to present (mid-2020) as a narrative review. Beyond the systematic searches of academic databases and the grey literature conducted by information specialists at the University Health Network and Greo, the authors extended the search for evidence by posting on the Gambling Issues International (GII) listserv and contacting research laboratories internationally for any studies that otherwise may not have been retrieved.

This chapter examined whole population-based safer gambling campaigns, point-of-sale gambling messaging, and gambling management tools. It is divided into two sections. The first focuses on people who gamble, and the second on the general public. For both groups, the review asks whether safer gambling messaging and gambling management tools help to reduce harm from gambling.

Safer gambling messaging and gambling management tools for people who gamble

Five topical areas relevant to gambling messaging were identified. They included message content, message framing, self-appraisal messaging, specific and action focused messaging, and safer gambling information centres. The evidence shows that:

- → Cognitively simple tools allow complex information to be conveyed to consumers about how games of chance work, which can help improve knowledge about gambling odds. Even so, there is limited evidence that this knowledge leads to safer gambling in practice.
- → Messages framed positively that focus on the benefits of action (i.e., using gambling management tools, positive play) are more persuasive than negatively framed messages that focus on harmful outcomes of risky behaviour.
- → Safer gambling messages encouraging people to appraise their own gambling behaviour are related to more awareness of and less time spent gambling, along with more realistic thoughts about the odds of winning.
- → Concrete messages promoting specific actions (e.g., "*set a safer gambling limit*") are more persuasive than abstract messages like "*gamble safely*."
- → Gender has some influence on the effect of messaging, with women experiencing higher total losses if they received self-evaluative messages when compared to women who received informative or self-monitoring messages.

→ Safer/responsible gambling information centres benefit players by sharing and promoting safer gambling information and gambling behaviours. Most research on these information centres is drawn from the grey literature and has received surprisingly little attention in academic journals. Overall, it remains unclear as to whether interactions with advisors in safer/responsible gambling information centres lead to an increase in safer gambling, although these interactions are generally described positively.

Research on gambling management tools most often involves either limit setting tools or personalised behavioural feedback. The former assesses whether players stick to their limits, including influencing factors. The latter provides information on players' actual gambling behaviour through player account cards that use behavioural tracking software. Research on both tools is normally conducted with EGM players. Evidence highlights are:

→ Many people will set a spending limit, but they often exceed their limit and continue to gamble despite the likelihood of financial harm occurring.

→ Initiatives aimed at increasing monetary limit setting and adherence (e.g., providing a monitory display or reminded when their limit is reached), allow players to better manage the amount of money spent gambling and to stick to their limit. Spending limits are highly rated as a self-control strategy.

→ Engagement with safer gambling tools may help to decrease symptoms of disordered gambling. Staying within monetary and frequency limits is linked to fewer gambling harms.

→ Pop-up messaging with information about approaching pre-set time limits is more effective than pop-up messaging that appears only when the time limit is reached. People with a low financially focused self-concept (FFS) (i.e., viewing financial success as an important life goal), more often stop playing before their limit is reached, but such messaging has no effect on players with high FFS, who will continue to play.

→ Players at risk of or experiencing gambling problems more often set a higher spending limit and exceed their limit than people without such problems. This aligns with the aim of limit setting to prevent gambling harm, rather than as an intervention for those experiencing harm.

→ Voluntary deposit limit setting tools are positively linked to player loyalty and continued gambling participation. Setting deposit limits is associated with reduced time spent gambling and stronger feelings of control.

→ Players receiving personalised feedback on their gambling behaviour are more likely to decrease their gambling frequency. The effect of personalised feedback is lowest for players at the highest risk of harm, but it has positive effects on people who have recently won or lost an unusually high amount of money within the past week. By contrast, other evidence shows that receiving a personalised or general message has no effect on adhering to monetary limits.

While there is some evidence of harm reduction for players who receive safer gambling messaging and/or use safer gambling management tools, support for a specific tool or message is inconsistent. Conflicting findings are reported

in the systematic reviews and may be at least partially attributable to the evidence quality, which is summarised in a later section.

Safer gambling messaging and gambling management tools for the general public

Safer gambling messaging and management tools were also considered for the general public. There is little evidence at present that examines safer gambling messaging and management tools and their relationship to gambling harm for society at large.

Research evidence could be assigned to two areas: (1) public awareness campaigns, and (2) the content of public messages. An assessment of research results shows that:

- → Findings are mixed regarding the effectiveness of general public awareness campaigns aimed at reducing harm from gambling. The campaigns appear to have the greatest impact on people who gamble and have already developed problem gambling behaviours.
- → There is limited evidence that some gambling myths may be reduced at the end of a public awareness campaign. Other evidence shows that after a state-wide problem gambling awareness campaign, there were no differences pre- and post-campaign in people's knowledge of problem gambling warning signs or awareness of resources for people with gambling problems.
- → Only one study was identified comparing the effectiveness of different message types on limiting gambling participation. People who did not gamble more often limited their future gambling behaviour when presented negative images, but people who gambled were more likely to limit future gambling behaviour when presented with positive imagery (i.e., related to the benefits of safer play).

Evidence quality

A formal evidence quality assessment was conducted for both the systematic and narrative reviews using validated assessment tools.[3, 4] Although the quality of evidence varied, it was generally low, with greater attention needed in the following areas:

- → Low statistical power – samples were often not sufficiently large to identify an effect;
- → Lack of a control group or appropriate control group – without a control group, it is not possible to determine whether any observed change is due to the treatment or intervention; and
- → Lack of random assignment – by not randomly assigning participants to either the treatment or control group, researchers are unable to measure treatment effects since other factors may make some people more likely to use safer gambling tools than others.

Additionally, other factors relating to study design influenced the research quality, including:

- → Cross-sectional retrospective survey design, which uses data from one time point only and relies on the participants' recall of behaviours and activities. Although most studies used reliable data collection tools, none considered possible confounders (i.e., factors not identified that could have influenced the outcome).
- → Behaviour tracking and personalised feedback studies with a longitudinal design, where weaknesses were identified in relation to

having limited information about participants who withdrew from the study.

→ Experimental research involving randomisation had the highest quality ratings, but there was a lack of clarity in the consistency of the intervention or treatment provided to participants in some studies.

→ In some cases, even with a randomly selected sample, participation rates were low, which means a higher likelihood of selection bias.

When there is a weak evidence base, caution is needed when considering approaches and strategies for gambling harm prevention and education. The concern about evidence quality was such that the authors provided instructive suggestions outlining the pros and cons of different research approaches including cross-sectional, longitudinal, and experimental designs that are typically used in studies of safer gambling messaging and gambling management tools. These suggestions will be helpful for future research design and readers' assessment of projects.

SHARED CONSIDERATIONS FOR UNIVERSAL MEASURES

The two chapters examined different population level strategies for gambling harm prevention and education. They used different review methods to synthesise knowledge and extend awareness of existing evidence in terms of what measures seem to be effective, where the evidence is mixed, or when there is no clear causal pathway between the topic of investigation and a reduction in harms (often due to methodological concerns for individual studies). Further, both discussed challenges in conducting research at the population level to address universal measures, with shared concerns about the lack of longitudinal research to confirm causal relationships, the need to identify and address confounding factors, and outcomes and approaches that differ in their effectiveness for either people who do or do not gamble. In the case of safer gambling messaging and management tools for the general public, there may not be enough high-quality research yet to proceed with confidence. Both chapters share concerns about evidence quality, although they indicate that there are still some learnings which can be applied to a comprehensive gambling harm prevention and education strategy. These are outlined in the next section, along with suggestions for research to address knowledge gaps in the current evidence base.

2.5 Guidance for How this Information May be Used to Inform a Collective Prevention and Education Plan

Each chapter provided guidance for how the evidence could inform a prevention and education plan, and for research needs to address knowledge gaps. The highlights are summarised for each chapter.

EVIDENCE TO GUIDE REGULATORY RESTRICTIONS

→ Supply reduction is only effective to the extent that it changes the intensity of, and expenditure on gambling, particularly among groups at-risk of or experiencing gambling harms.

→ Policies disrupting gambling behaviour fully (e.g., total removal of a form of gambling or implementing a smoking ban), appear to have a significant impact on gambling expenditure,

and likely intensity.

- → Policies such as reducing the number of machines per venue merely inconvenience people who want to gamble and are unlikely to have a major impact on gambling behaviour or experiences of harm.
- → Policies should have specific and measurable outcomes instead of vague goals such as 'reducing gambling harm'. Measurable outcomes could include reducing gambling frequency among a specific group at-risk of, or experiencing gambling harm, or reducing gambling uptake among young adults.
- → Evaluations should be conducted using several types of data, for example, aggregate spend data and self-report data.
- → Consistent with a public health approach, meaningful metrics and evidence of gambling harm could include a broad array of sectors, such as financial services, health agencies, social services, and legal sectors.
- → Policies need to be evaluated over a medium to long-term timeframe since it is unlikely that the initial response to any policy change will be sustained or will reflect behaviour in the longer term as people adapt. It may take time for changes to gambling behaviours and related harm to occur, and for meaningful differences to be observed.

EVIDENCE TO GUIDE SAFER GAMBLING MESSAGING AND GAMBLING MANAGEMENT TOOLS

- → A one-size-fits-all approach to safer gambling messaging will reduce its value. Differences in effective messaging for people who do and do not gamble have been noted, as well as other factors such as gender.
- → Consider rewarding safer gambling. Evidence shows that safer gambling messaging and gambling management tools are believed to work, but people are reluctant to use them. Players could be rewarded for using them with other products such as free food and drink, or tickets to a show.
- → Once people begin to use gambling management tools, they often want to use them in the future. Continued access to the tools, including personalised player history information, would be helpful.
- → Mandating access to players and player data to qualified researchers would help to overcome several methodological limitations to studying safer gambling messaging and management tools. Having access to these data would address the problems associated with inaccurate information obtained through players' recall estimates. Requiring industry cooperation will address issues of data being difficult to obtain or refused altogether, and help to reduce important researcher concerns about the potential influence of industry on research projects and outcomes, as has been identified for other public health issues like tobacco, alcohol, and drugs.[5]

In addition to addressing evidence quality issues, it may also make sense to 'borrow' from other health issues where there is a longer research history and established evidence base for messaging and management tools. Some similarities already exist and may be worth testing further. For instance, in relation to alcohol consumption, general messages like "drink responsibly" campaigns have weak efficacy, are not memorable, and are seen to be contradictory when carried out by the manufacturers.[6] Top-ranked advertisements

more often convey a 'why to change' message and address long-term harms, than a 'how to change message.[7] Further, the top-ranked ads are more likely to include specific drinking guidelines, which could also be offered in safer gambling advertisements. The low-risk gambling guidelines[8] developed by the Canadian Centre on Substance Use and Addiction are soon to be released and Australian low-risk gambling limits, modelled on the Canadian guidelines, are currently being tested.[9] The use of new mobile technologies for messaging is promising. Positive outcomes for a smoking cessation campaign using SMS text messages were reported. Participants who received SMS text messages on fixed schedules had 36% higher quit rates compared to control groups receiving no messages.[10] This type of messaging could also be tested among people who gamble and are at risk of harm. Some studies of other health issues have shown unintended consequences that could also apply to safer gambling message campaigns. One example is a poster campaign promoting responsible drinking to undergraduates. According to the evaluation, they were more likely to increase alcohol consumption after viewing the posters, thereby having the opposite effect than intended.[11]

In broader terms, the likelihood of harm reduction messages and campaigns directed at the general population being effective is enhanced when there is a concerted approach to harm reduction for individuals, in community social norms, and at the political level. In particular, social attitudes and environmental changes make people more receptive to behavioural change.[12] While messaging tools from other public health concerns may not always be applicable, it is still worth considering how they might inform safer gambling campaigns in future.

LIMITATIONS AND RESEARCH GAPS

In reviewing the evidence, several limitations and research gaps were identified.

Regulatory restrictions

- → Isolating the impact of specific policies on gambling venues is often difficult due to the complexity of gambling factors (e.g., expenditures and frequency) influencing the outcomes.
- → It is important to measure changes over the short, medium, and longer-term given that individuals and communities often alter their gambling behaviour after an initial response to any policy change and then adapt over time.
- → There is a need for more research assessing unintended consequences of policy changes, such as migration from one gambling form or venue to another.
- → Evidence of the impact of gambling advertising on specific gambling behaviours and other factors known to influence behaviour, such as thoughts and attitudes, is important to assess. Comparing and contrasting jurisdictions with similar gambling opportunities but with different advertising policies could yield useful information.
- → Research could be designed to evaluate differences in gambling behaviour and problems in similar jurisdictions that have different policies, or by conducting a trial of the regulation in a smaller geographic area first.
- → In jurisdictions where health and/or social surveys are regularly conducted, it would

be helpful to include measures of gambling participation, problems, and harm. This could enhance understanding of how these measures are affected by other experiences, activities, and socio-demographic factors.

→ More data sharing is needed across sectors. Data collected by gambling operators, financial institutions, and payment providers could be shared with researchers and regulators to monitor and track changes in response to policy changes.

→ Drawing upon broader marketing strategies is recommended, including of risky products.

→ Greater methodological rigor is needed. Research could be conducted by independent research groups to reduce bias.

→ Research is recommended to address the ongoing impacts of the COVID-19 pandemic on gambling harm, including shutting down and reopening venues, as well as patterns of people who engaged in online gambling in response to venue closures.

Responsible gambling/safer gambling messaging and gambling management tools

→ Much of the research to date targets gambling behaviour at the individual level, as opposed to the societal level where a better understanding of policy and environmental conditions could address more systemic issues.

→ Research often focuses on advancing consumer protection, and leaves responsibility in the hands of the player rather than promoting positive aspects of play.

→ Many methodological issues undermine the value of the research evidence. Greater rigour in study design would enhance the quality of the evidence base so that policy decisions can be made with greater confidence.

→ It is important for studies to include an appropriate control group in which some players are not exposed to safer gambling messages or offered access to a gambling management tool so that the impact of an intervention is clear. Large sample sizes and objective measures of gambling behaviour, including time and money spent gambling, and tracked across time are also critical.

→ Researchers need to assess psychological factors that may moderate the usefulness of safer gambling messages and gambling management tools, and not assume that the same approach will be effective in reducing gambling harm for all people.

→ As a corollary, insights could be gained by stratifying study participants so that the impact of their level of gambling risk, along with certain demographic factors, on responses to messaging and gambling management tools is better understood.

→ For research targeted toward the general public, longitudinal study designs with a matched control group are strongly preferred to using independent samples before and after an intervention to test outcomes.

→ Before administering a campaign or intervention, experimental research is needed to establish the effectiveness of the safer gambling messages on peoples' intentions and attitudes. The most effective way of sharing the message can also be determined through experimental research.

CONCLUSION

Universal measures are central to reducing harm from gambling. At the policy level, regulatory restrictions influence both people who gamble recreationally and people who are at-risk of gambling harm. The challenge is ensuring that harm is prevented without restricting opportunities for play among people who experience no harms from gambling. Safer gambling/responsible gambling messaging and gambling management tools are directed to people who gamble as well as the general public. Having reviewed the academic and grey literature, evidence from several studies can be considered when informing a comprehensive gambling harm prevention and education strategy. Still, two areas of concern common to both chapters suggests that regulators proceed with caution.

The first concern is the quality of evidence and methodological limitations in the gambling studies literature. Although a formal assessment was not required for the regulatory restrictions scoping review, the author notes that several study design aspects could be improved such as having larger sample sizes, including control groups, using longitudinal designs, and accessing player loyalty card data that could potentially link harm outcomes to regulatory actions. The chapter also advocates for specific, measurable goals when assessing policy changes. For safer gambling messaging and gambling management tools, a full quality assessment of the studies was included. The authors noted several deficiencies and then shared suggestions for how the quality of evidence could be improved.

The other concern is a lack of empirical literature related to some of the specific topics that authors were asked to investigate. For example, although the role of the gambling provider in regulatory restrictions was identified as an important factor, the evidence base was so poorly developed that it could not be addressed. There are other examples too in relation to online gambling, a format that is gaining traction as the subject of investigation in terms of regulation. Regarding safer gambling messaging at the population level, only three original research papers could be retrieved. There is an overall dearth of information, which can undermine support for campaign strategies. At this point, more research is clearly required. It may also be possible that strategies from other public health areas could be adapted successfully to inform safer gambling messaging.

Despite these limitations, suggestions have been provided to guide thinking about prevention and education at the population level. It is important to consider how they can be integrated into new, effective strategies to reduce harm from gambling from occurring, as well as how new research directions and strategies could enhance the evidence base.

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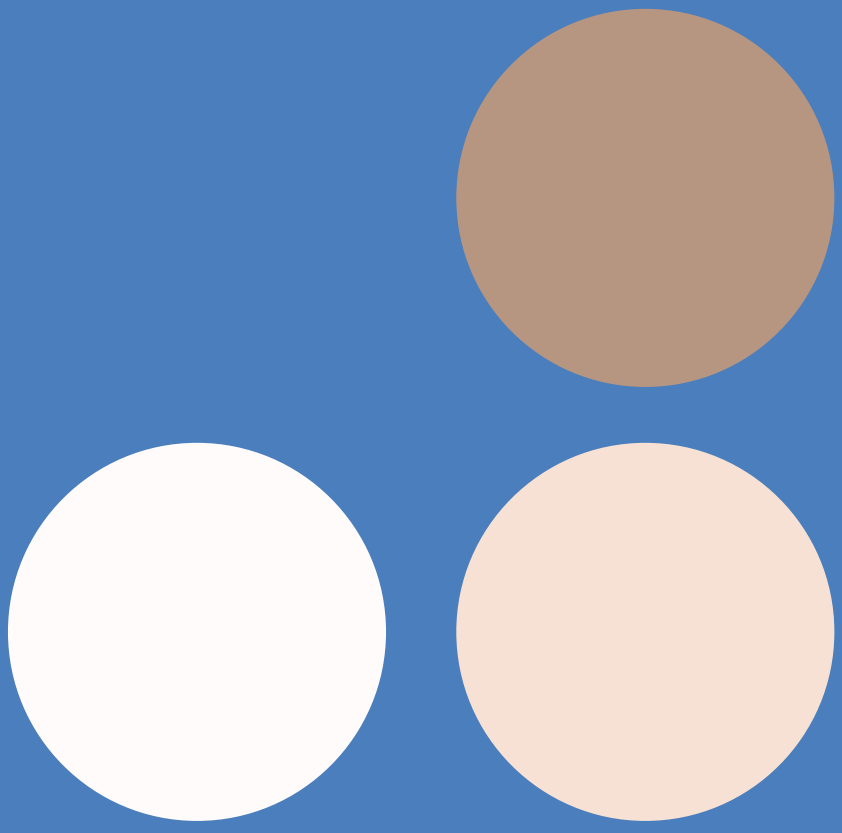
Prevention and Education Review: Gambling-Related Harm

3.0 Selective Measures



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3.0 Selective Measures

3.1 Section Introduction

Selective measures are for the benefit of at-risk groups known to be at higher risk of experiencing gambling-related harm than the general population.[1] As the measures move from the general population at the universal level to targeted audiences at the selective level, campaigns and information pathways need to be tailored so that effective strategies for gambling harm prevention and education reach the at-risk groups for whom they are intended. These groups often share certain characteristics or circumstances commonly noted in research and treatment of people experiencing harm from gambling.

Selective measures include targeted safer gambling campaigns for at-risk population groups, workforce education programmes for specific sectors and professionals, and educational initiatives for children, youth, and other vulnerable groups.[2] In this section, we focus on three age cohorts: children and youth, emerging adults (age 18 to 25 years), and older adults (age 60 years and older). Although the legal age for gambling is 18 years old in most jurisdictions, there is evidence that 11% of children and youth in Great Britain under age 18 gamble,[3] with the potential to experience gambling problems and related harms. Emerging adults are regularly identified as having higher rates of problem gambling compared to the overall adult population and, as such, merit greater attention.[4, 5] Older adults are less likely to have gambling problems,[6] but they are vulnerable to gambling harm due to factors such as fixed incomes with no means to recoup losses, declining health, loss of family members and friends, and in some cases, changes in cognitive abilities. Therefore, strategies for effective gambling harm prevention and education programmes and initiatives for older adults are needed.

Prevention and education initiatives for each age cohort will be addressed with a scoping review to describe the existing literature and allow an overall assessment of the range and amount of research evidence available.[7] More literature is available for children and youth, with less for emerging adults, although there is some overlap between cohorts due to variation in how age groups are defined by researchers. Much less research has examined gambling harm prevention and education for older adults. The review is guided by three questions that address for each age cohort: (1) the effectiveness of prevention and education programmes, (2) whether there are any unintended consequences associated with prevention and education programmes, and (3) how the evidence base might be used to inform a collective prevention and education plan.

There are many other groups to which selective measures are targeted. Unlike age cohorts, these groups are characterised by shared, specific personal circumstances or experiences (such as homelessness, incarceration, being an affected other) that make them more vulnerable to gambling related harm than the general population. The scope of this report precludes a simple review for each at-risk group that would do justice to the range of initiatives underway or attempted in past. Further, the importance of different types of expert knowledge such as insights of experts by experience, and the third sector charities who design and deliver safer gambling campaigns to them is required for a fuller and more nuanced understanding of pathways to deliver effective harm prevention initiatives and activities.

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3.2 Targeted Safer Gambling Campaigns for Children, Youth, and Older Adults

By Dr. Jeffrey L. Derevensky

INTRODUCTION

Prevalence rates of gambling disorders vary from jurisdiction to jurisdiction as does the minimum age at which people can legally gamble, the types of gambling available, ease of accessibility, and specific risk factors associated with different age cohorts. While past year prevalence rates of a gambling disorder typically range from 0.2% to 2.0% among adults, with males reporting a higher incidence of problem gambling, there are estimates that adolescents and young adult prevalence rates with a gambling disorder are higher than the general adult population, and they experience a wide range of gambling-related social, mental health, familial, and economic problems.[1] There is also evidence that many adults with a gambling disorder began when they were quite young (ages 9 and 10)[1, 2] and that 96% of adults with a significant gambling disorder experience one or more gambling-related mental health disorders.[3] Older adults (typically age 60+) may also be at risk due to fixed incomes, poorer physical health, loss of social networks or loved ones, cognitive changes, increased psychological comorbidities, and their desire to seek more stimulating environments.[4, 5] As such, a wide number of clinicians, educators, and public policy advocates have argued for the development and implementation of more empirically based early prevention initiatives.[6]

CHAPTER OVERVIEW

This chapter examines safer gambling prevention and education campaigns, often viewed as harm minimisation or harm reduction prevention strategies, for three age cohorts (children/adolescents, emerging adults (age 18 to 25 years), and older adults (age 60 years and older) all thought to be at risk for increased gambling-related harms. A synthesis of existing prevention approaches for each age cohort is critically examined, accompanied by clinical and research recommendations.

Youth gambling and problem gambling

While gambling has been thought to be primarily an adult activity, there is international research suggesting that it remains a popular activity among children and adolescents, and that a growing number of adolescents are experiencing gambling-related disorders. In general, prevalence studies suggest that upwards of 80% of underage youth have gambled in their lifetime, with the percentage of adolescents experiencing significant gambling problems exceeding those of adults—ranging anywhere from 3% to 12.3%.[1, 7-10] While the percentage of youth engaging in some form of gambling appears to have decreased since 2018 in the UK, 11% of young people in 2019 reported gambling in the past 7 days, with 13% of boys and 7% of girls gambling in this timeframe.[11] This by itself translates to over 350,000 11 to 16-year-olds in England, Scotland, and Wales reporting gambling.[11] With new technological forms of gambling emerging, the potential for young people gambling and experiencing gambling problems has increased. This is not to suggest that all people who gamble occasionally will eventually develop problem gambling, but there is research suggesting that delaying the onset of gambling may be a factor in reducing gambling problems.[12]

Emerging adults

Emerging adults potentially represent another risk group. Those age 18-25 years old report higher prevalence rates than their older age counterparts.[9] However, the limited number of longitudinal studies precludes a definitive answer as to whether early gambling disorders are enduring. The National Center for Responsible Gaming (now referred to as the International Center for Responsible Gaming) reported that 75% of college students gambled during the past year, with approximately 18% gambling weekly or more frequently (collegegambling.org). In a recent meta-analytic review, Nowak[13] determined that the overall prevalence rates of pathological/disordered gambling among college students ranged between 5% to 7%. He concluded that if one looks at students with some gambling-related problems, often referred to as people who gamble who are "at-risk" (i.e., experiencing a few gambling-related problems but not reaching the clinical criteria for disordered gambling), 15-16% of them experience several adverse gambling-related problems. Given the relatively easy access to college students, much of the research examining the effectiveness of prevention initiatives has focused on this group. Yet, there are a growing number of researchers who remain concerned that college students may not be representative of young adults in the general population.[1, 9, 14, 15]

Older adults

Why look at older adults' gambling behaviours? In a 2001 study by McNeilly and Burke,[16] older adults (age 60+) often identified gambling as a favourite form of recreation and entertainment. For the past two decades, the number of casinos along with electronic forms of gambling internationally has grown exponentially. Casinos in many jurisdictions appear to be catering to retirees and older adults as a way of helping older adults relieve boredom, providing a heightened level of stimulation/ excitement, and fostering an environment conducive to coping with stress or emotional difficulties.[5, 17-19] It is not unusual to have many older adults, mostly alone, sitting scattered throughout the slot machine floor, especially during the day. Frequently, the main attractions and gambling preferences for older adults are slots, Electronic Gaming Machines (EGMs), or Video Lottery Terminals (VLTs). The casino environment allows lonely individuals, those with chronic pain, or those with mobility issues an opportunity to help pass the time, to occasionally socialise with other people who gamble, to enjoy relatively inexpensive meals, and to go into a dissociative psychological state (a process where a person disconnects from their thoughts, feelings, memories, or sense of identity. In gambling, this often results in an individual going into a 'zone' or a trance-like state losing track of time and repressing daily problems,[20] [21] while playing their favourite slot machines). In essence, older adults have come to view casinos as a form of 'low cost' entertainment. The casino environment makes older customers welcome and safe, catering to their special physical needs, providing enhanced promotions, 'free' food, drinks, transportation, and even free play, often exploiting their need for warmth and friendship. It is not unusual to see people tethered to 'their' favourite machine by a cord attached to their 'player card'.[22] Given their mental health and physical needs, examining strategies for healthy gambling appears warranted. While lifetime prevalence rates of problem or gambling disorders among people 60 years or older is not particularly high, rates range between 0.01 to 10.9%[4, 23, 24] depending upon the geographic region, instruments used for assessment, and the population studied. There are reports that the prevalence of gambling disorders

seems to rise with increasing age,[25, 26] with those at risk of a gambling disorder also increasing as one gets older.[26] During the COVID-19 pandemic, and even after casinos began to reopen, we witnessed a movement by older adults who view themselves as particularly vulnerable (related to their health) to move toward more online gambling.[27, 28] Independent of the generally low prevalence rates of disordered/problem gambling among older adults, an examination of prevention initiatives is warranted.

Safer gambling

Several prevention initiatives have been linked with safer gambling measures (differences between safer gambling and responsible gambling are outlined in the introduction to this report (see p. 3). In a number of seminal papers describing the Reno Model, Blaszczynski, Ladouceur, and Shaffer[29] and Shaffer, Ladouceur, Blaszczynski, and Whyte[30] articulated a science-based framework of responsible gambling principles for industry operators, health service providers, community and consumer groups, and government agencies. These strategic principles were intended to serve as a guide for the development, adoption, and implementation of responsible gambling and harm minimisation initiatives. In essence, adherence to the recommendations within the Reno Model is intended to keep people who gamble 'safe' from excessive gambling and as a way of minimising harms associated with disordered/pathological gambling, thereby ultimately reducing the prevalence and incidence of people with problem/pathological/disordered gambling. More recently, Shaffer, Blaszczynski, Ladouceur, Collins, and Fong[31] outlined the importance of the Reno Model for all its stakeholders (e.g., governments, industry, consumers, and community). They further argue that "*the dynamic and ever-changing gambling environment is now challenging multiple aspects of responsible gambling programmes across all stakeholders*".[p.26]

Current responsible gambling procedures will only be briefly mentioned in this chapter as they are more fully covered elsewhere. It should be noted that the Australian Productivity (Gambling) Commission[12] reported that approximately 80% of adults considered the onus for responsible gambling rested upon the individual to control their gambling. While there is little doubt that accessibility and availability play a role in understanding problem gambling, independent of the type of gambling, there is ample evidence that certain demographic characteristics (e.g., gender, age), cultural variables (cultural values and beliefs, effects of acculturation), and attitudes toward gambling play an important interactive role,[32-34] with some prevention initiatives addressing these variables while others have not. As children and adolescents are often prohibited from engaging in government sanctioned and regulated forms of gambling, many of the harm minimisation and responsible gambling strategies have only targeted adults, be they emerging adults, adults in general, or older adults. As such, this review will examine the effectiveness of several of these approaches while paying particular attention to different prevention strategies that have been developed for youth, emerging adults, and older adults.

RESEARCH FOCUS

The research protocol attempts to address three questions:

1. **How effective or ineffective are prevention and education programmes directed toward children, youth, and older adults who are at risk of or are experiencing harm from gambling?**

2. **Are there any unintended consequences associated with prevention and education programmes for children, youth, and older adults?**
3. **How might the information from this review be used to inform a collective prevention and education plan?**

METHODOLOGY

Scoping review

A scoping review was conducted to identify pertinent manuscript reviews, empirical research, book chapters, and both published and unpublished reports, examining the effectiveness of prevention efforts primarily targeting three groups of individuals thought to be at high risk for gambling problems: (a) children and adolescents; (b) emerging adults; and (c) older adults. The scoping review describes the existing literature, both peer-reviewed and non-peer-reviewed (e.g., book chapters, manuscripts under review, and research reports) incorporating a range of different study designs and methodology. It was felt that enough published reviews describing prevention initiatives for children and adolescents, as well as for emerging adults, were available whereas fewer published articles were available describing prevention initiatives for older adults. However, as previously noted, there are several harm minimisation/prevention initiatives available for adults in general which are also applicable to both young/emerging adults and older adults, given they are of legal age to gamble.

Study selection

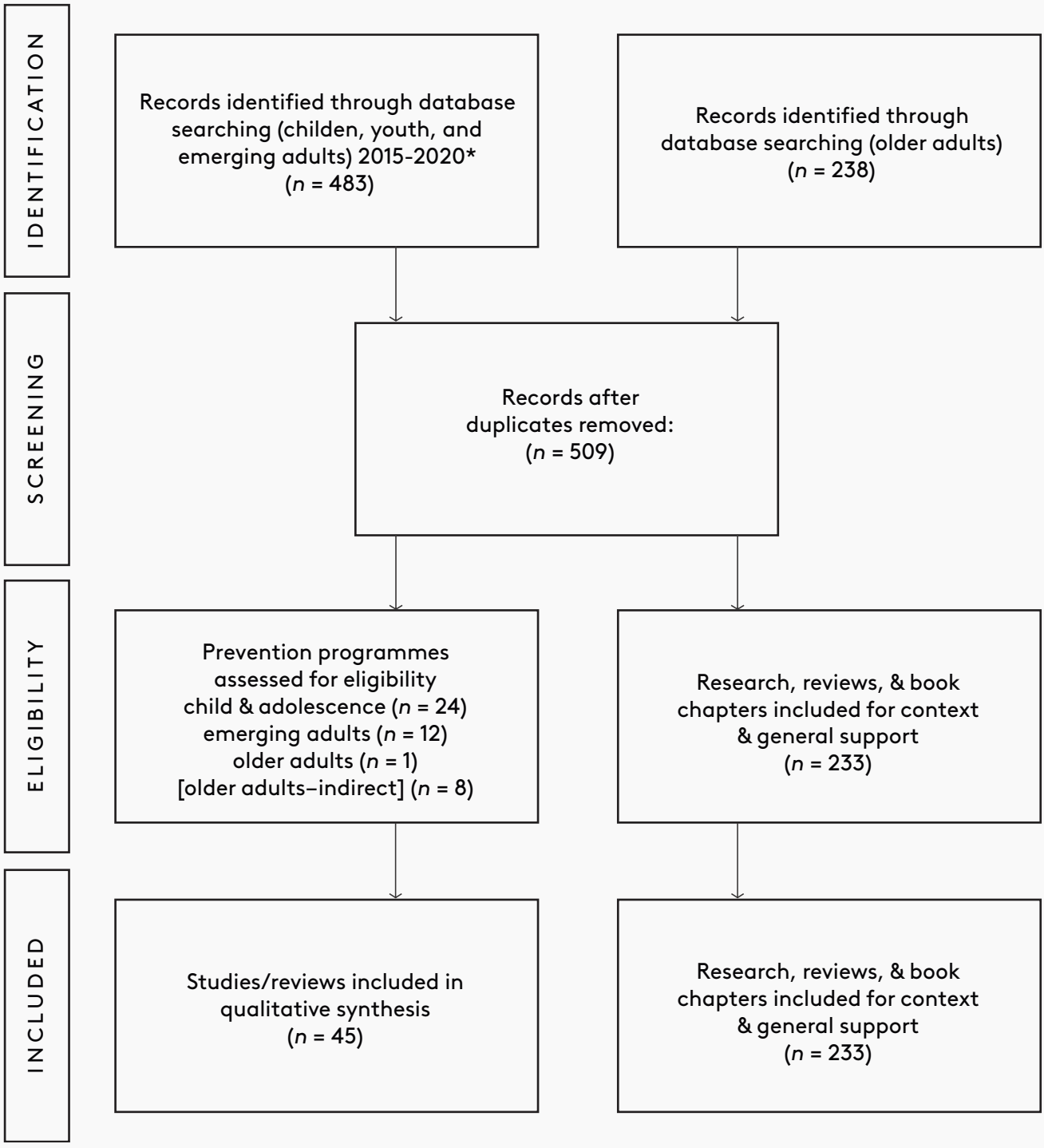
Peer review articles were primarily collected through six databases: ERIC, CINAHL, MEDLINE, PubMed, PsycINFO, and Web of Science. Keywords used in the database searches can be found in Table 1. The following simplified search string with appropriate Boolean operators (modified to reflect the search database) was used to identify academic studies, books, and book chapters; gambling, prevention, harm minimisation AND age cohorts (children, adolescents, emerging adults, youth, older adults/seniors). The strategic search primarily looked at studies published between January 2015 and September 2020 for children, adolescents, and emerging adults. Given there was less available material for older adults (age 60+), the search parameters included all published work. To be specific, the search resulted in 450 academic articles and book chapters in English primarily examining children and adolescents' gambling prevention; 33 published articles for emerging adults; and 238 for older adults/seniors (see Figure 1). It should be noted that there was some overlap between the age cohorts of children/adolescents and emerging adults, and these are noted in the review of programmes.

Many of the peer-reviewed published articles and book chapters focused on risk and protective factors with only inferences for the development of prevention initiatives (these are provided in the reference section). As such, 503 were excluded as they were found not to be directly relevant and 233 were included to either provide context for this section or were perceived to be pertinent by the chapter author. It should also be noted that papers regarding policy recommendations were included as they have direct implications for the development of prevention initiatives.

Table 1. Keywords for Database Searches

GROUPING TERMS	KEYWORDS
Children and Youth	Date Range: 2015-2020 All Text: gambl* AND All Text: child OR children OR youth OR "all child*" OR "young adult*" OR adolesce* OR teen* OR juvenile* OR "emerging adult*" OR student* AND All Text: "gambling prevention" OR "harm minimi*" OR "harm reduction" OR "prevention program*" OR "intervention program*" OR "primary prevention" OR "health intervention" OR "health education" OR "health promotion" OR "health program*" OR "health campaign*" OR "education program*" OR school OR "wellness program*" OR "community program*" OR organi* OR non-profit* OR not-for-profit* OR education OR intervention OR prevention
Emerging Adult	Date Range: 2015-2020 All Text: gambl* AND All Text: "emerging adult*" OR student* OR campus OR college* OR universit* All Text: gambling prevention" OR "harm minimi*" OR "harm reduction" OR "prevention program*" OR "intervention program*" OR "primary prevention" OR "health intervention" OR "health education" OR "health promotion" OR "health program*" OR "health campaign*" OR "education program*" OR school OR "wellness program*" OR "community program*" OR organi* OR non-profit* OR not-for-profit* OR education OR intervention OR prevention
Older Adults	Date range: all All Text: gambl* AND All Text: "older adult*" OR aged OR senior OR retire* OR elder* OR "very old" OR geriatric AND All Text: "gambling prevention" OR "harm minimi*" OR "harm reduction" OR "prevention program*" OR "intervention program*" OR "prevention and control" OR "primary prevention" OR "health intervention" OR "health education" OR "health promotion" OR "health program*" OR "health campaign*" OR "public health" OR "education program*" OR school OR "wellness program*" OR *" "community program*" communit* OR organi* OR non-profit* OR not-for-profit* OR education OR intervention OR prevention OR treatment

Figure 1. PRISMA Flow Diagram



*It is important to note that while the search for children, adolescents, and emerging adults was from 2015-2020, several of the reviews included prevention programmes prior to 2015. Given the overall limited number of programmes, these prevention programmes were included in this review.

Criteria for study inclusion

The following procedures and criteria were applied for inclusion of studies:

Quality assessment: While scoping studies do not require a formal quality assessment of methodological rigor and appropriateness for inclusion,[35] all studies were reviewed by the author to determine their applicability guided by the quality assessment tools provided by Greo.[36-39]

Abstract review: The procedure incorporated a review of abstracts for eligibility. Based upon the abstracts, relevant studies were initially downloaded and reviewed. All pertinent articles were categorised by the age cohort, and reviewed or included for context based upon the following:

- → relationship of the research to the study questions and design
- → overall rigour of the study design and appropriateness of the methodology (sample, instruments used, and analyses)
- → clarity of presentation and interpretation of the results
- → inclusion of appropriate studies (in the case of reviews) and adequacy and generalisability of the population

FINDINGS

Information concerning safer gambling campaigns/prevention programmes is presented separately for each age cohort studied.

Conceptual framework

As early as 2002, Dickson, Derevensky, and Gupta[40] outlined a conceptual framework to be used in the development of gambling prevention programmes for youth. As seen in Figure 2, Dickson and her colleagues viewed pathological gambling (the term used at that time) as one more potentially risky behaviour engaged in by youth. Adapting the U.S. Substance Abuse and Mental Health Service Administration (SAMHSA) model, they articulated the types of individual risk and protective factors necessary to be identified before effective evidence-based prevention programmes could be developed. Since that time, there has been a plethora of research examining the risk and protective factors associated with problematic gambling among adolescents.[6, 41-86]

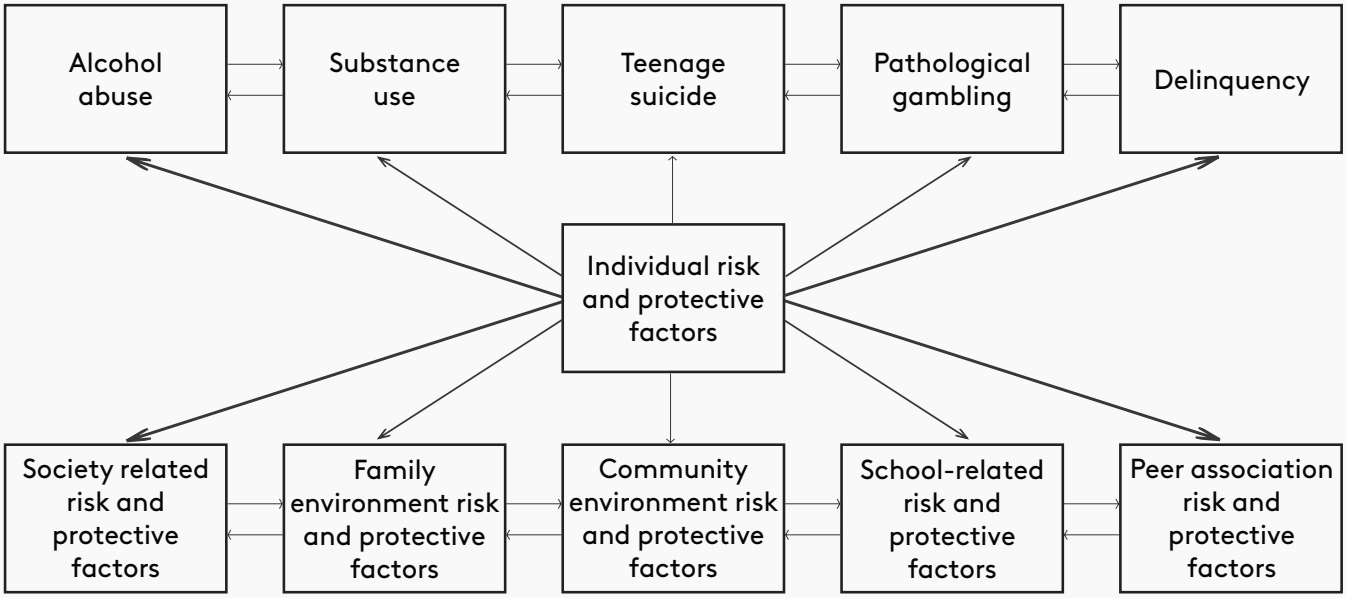
Multiple studies have been published in reviews,[1, 7, 58, 87-90] either through summaries of research, narrative reviews, or meta-analyses for this age cohort. Most recently, Blake and colleagues[91] identified the potential gambling-related harms among children and young people. Their framework, based upon qualitative and quantitative research, examined actual and potential harms—financial, developmental, relationships, and health (physical, mental, and emotional wellbeing) associated with excessive gambling—highlighting the need for additional research and more evidence-based prevention initiatives.

Child and adolescent gambling prevention programmes

The current review revealed 24 studies assessing the effectiveness of child and adolescent gambling prevention programmes (Tables 2 and 3). In reviewing the actual studies, it is important to note that there is a well-defined overlap among the studies within each review. Of the 24 studies, 17 were done in Canada, two in Romania, and one in each of the following countries: the US, UK, Italy, Germany, and Macau.

Keen, Blaszczynski, and Anjoul,[92] in their

Figure 2. A conceptual model for understanding the domains of risk and protective factors that influence an individual's behaviour



Adapted from: Bournstein, Zweig, & Gardner (1999). Understanding substance abuse prevention: Toward the 21st: a century primer on effective programs. Centre for Substance Abuse Prevention (CSAP) & Substance Abuse and Mental Health Services Administration (SAMHSA).

comprehensive review, following a PRISMA protocol, critically evaluated 19 prevention studies, all published between 1993 and 2016, from Canada, US, UK, Germany, Romania, and Italy. This evaluation included most of the existing child and adolescent gambling prevention programmes at that time (see Table 2 and Table 3). All the studies evaluated school-based gambling education programmes among youth attending either elementary/primary or secondary school. Most of the studies were cluster, randomised trials and grouped students either by class or school. Participants were between 10 to 18 years old, with sample sizes ranging between 75 and 8,455. Nine of the 19 programmes provided a single intervention session, two programmes provided two to three sessions, and eight programmes provided three or more sessions. Programme sessions varied between 20 to 120 minutes each and between 20 to 500 minutes per programme (M = 194.71, SD = 3.08). The number of programme sessions (identified as dosage) ranged between one to 10. While all studies assessed cognitive outcomes (gambling knowledge, perceptions, or beliefs) only nine assessed behavioural changes as an outcome. Keen and her colleagues assigned a rating of weak, moderate, or strong, based upon selection bias, study design, confounding variables, data collection procedures, withdrawals, and dropout rates. Global ratings were based upon the Quality Assessment Tool for Quantitative Studies.[93] Overall, nine studies received a weak global rating score,[94-102] six a moderate rating score[103-108] and four a strong rating score.[109-112] Reviews were calculated twice by two independent reviewers. Specific methodological limitations were noted, most of

which included a failure to incorporate behavioural outcome measures (10/19 studies) and assessed cognitive changes over a short period of time, with only four of the 19 studies assessing changes at six months post-intervention or beyond. Keen and colleagues point to the fact that students were not typically randomised but rather classes or schools were randomised. Given disparities in amounts of money wagered before intervention and the amount of money wagered post-intervention, it was difficult to detect average expenditures over time. It should also be noted that the landscape of gambling in terms of venues and gambling opportunities (e.g., types of games available and ease of accessibility) were dramatically different depending upon geographic location and when the prevention programmes were implemented. Methodological difficulties were apparent in most of these studies, with the majority being a universal-based prevention programme and not including problem or people at-risk of problem gambling. Of the nine studies that assessed gambling behaviours, only four explicitly operationalised gambling as wagering money. As a result, changes in expenditures were hard to evaluate. Most existing programmes comprise a combination of multi-media tools (videos, simulations, online modules) along with classroom discussions and activities. More effective programmes seem to be related to a greater dosage and prolonged interventions.

The primary purposes of many of the prevention programmes reviewed (summaries, reviews, and inclusion of more recently published programmes) are designed to share accurate information, to increase youth's understanding of gambling fallacies, to correct erroneous cognitions, to enhance youth's understanding of odds and probabilities, and ultimately to raise awareness that gambling is a potentially risky activity and that excessive gambling is related to a host of academic, social, behavioural, physical, mental health, and sometimes legal problems.[1] Most of the reviews inherently suggest that by educating children and adolescents—even though their cognitive development may be insufficiently developed—and by providing educational programmes, individuals will make better informed decisions. Five recent reviews of the usefulness of gambling education programmes as a preventative strategy[92, 113-116] all concluded that improvements in gambling knowledge, attitudes toward gambling, reductions in misconceptions, a better understanding of irrational cognitive beliefs, and increased knowledge of the odds associated with gambling are common. Nevertheless, there is little information, based upon limited follow-up and longitudinal studies, that these gains translate into long-term behavioural changes for the general population, as well as for youth either at high-risk for gambling problems or those youth with a gambling disorder. The general agreement among these reviews should not be surprising as the reviews typically examined the same programmes with a few exceptions (see Table 3).

While Keen et al.[117] suggest some possible reasons why behavioural changes have not been identified, what we do know is that the prevalence of gambling problems among youth, depending upon jurisdictions, availability, and accessibility of gambling venues, have typically not increased. Several of the studies suggest a need for more theory-driven and evidence-based content in gambling education prevention programmes to enhance their effectiveness in reducing gambling-related harms. They recommend (a) shifting the focus away from harms to increasing youth engagement in other activities, (b) the application of a cognitive-developmental approach to gambling education, (c) educating

individuals about gambling mathematics (i.e., odds, probabilities), and (d) leveraging the use of technology (videos, simulations, online modules) as well as incorporating classroom discussions and activities in teaching complex concepts. Most programmes would not argue for an abstinence approach but rather one of informed decision-making and harm-reduction.

Alternative programmes targeting youth gambling

Other approaches have called for a need for including families in the prevention of children's gambling problems[1, 118] targeting parents to raise awareness about youth gambling and gambling prevention. The International Centre for Youth Gambling and High-Risk Behaviors (www.youthgambling.com) developed several public service announcements to help educate parents about youth gambling. While not systematically evaluated, focus groups of parents reported an increased knowledge about youth gambling, a better understanding of behaviours associated with adolescent problem gambling, and increased knowledge of risk factors associated with problem gambling. The Centre for Addiction and Mental Health and the Problem Gambling Institute of Ontario (renamed Gambling, Gaming, and Technology Use) developed a gambling prevention guide for parents of adolescents to help address the problems.[119]

Other initiatives by the International Centre for Youth Gambling Problems and High-Risk Behaviors and the U.S. National Council on Problem Gambling have targeted lottery corporations throughout Canada, the U.S., and internationally with a holiday campaign suggesting that lottery tickets are designed for adults and should not be given to young, underage age children and adolescents as holiday gifts. The underlying premise is that if it is inappropriate to give youth scratch tickets during the holidays, it is also unwise to purchase lottery scratch tickets for underage individuals at any time, given an early big win is a risk factor for problem gambling.[90] This campaign has been previously recognised and supported by the National Association for State and Provincial Lotteries (NASPL), the European Lottery Association (EL), and the World Lottery Association (WLA). Derevensky[1] has long argued for a variety of programmes, for example, using multiple media-driven programmes, aimed at engaging and interacting with youth. Given that educators and mental health professionals have varying degrees of interest in preventing gambling problems, the use of self-monitored programmes may be an effective way to promote prevention. The programmes developed by the International Centre for Youth Gambling Problems and High-Risk Behaviors include a pencil/paper curriculum for children in grades 3 to 12 (Count Me Out), a teacher training PowerPoint presentation (Youth Gambling: An Awareness and Prevention Workshop), several computer games for children (The Amazing Chateau; Hooked City), and a docudrama (Clean Break). All materials are accompanied by a detailed teacher manual. Several of these programmes have been externally evaluated and shown to have positive results.[97, 99, 105, 120-122] Other programmes have been developed targeting parents, teachers, physicians, lawyers, and mental health professionals, often difficult groups to reach.[1]

Several prevention programmes targeting children and adolescents have been developed by the Responsible Gambling Council of Ontario (RGC). Sponsored by the Ontario Ministry of Health and Long-Term Care (MOHLTC), GAME BRAiN is an interactive live game show designed to educate and engage secondary-school students on the risks

associated with youth gambling. Focusing on the realities of gambling, warning signs of a gambling problem, how to avoid the risks associated with problem gambling, and where to seek help for a gambling problem are integrated into their programmes. This interactive format has reached over 40,000 Ontario adolescents with students competing against each other in teams during a 45-minute session hosted by two Canadian TV and radio personalities. Another programme funded by the MOHLTC is the YMCA Gambling Awareness Program (YGAP). The YGAP programme is community-based and offers awareness programmes for youth ages 8 to 24. Incorporating a peer-to-peer model of youth engagement, their interactive workshops for youth aged 15 to 18 explores gambling-related topics and focuses upon distinguishing between games and gambling, the identification of risks associated with gambling, informed decision-making, consequences of winning and losing, and how to remain safe when gambling. They also developed a series of financial literacy programmes for youth ages 9 to 14 years, and youth ages 15 to 24 years of age. Other workshops have focused on stigma and gambling, media literacy, technological changes in gambling (e.g., e-sports, fantasy sports) and harm-reduction strategies. Auxiliary workshops have been developed for parents, teachers, and adults involved in young people's lives.

More recently, multiple concerns have been raised over the issue of "loot boxes" found in different online games (see Griffiths[123] and Zendle et al.[124, 125] for a discussion of the migration between gaming and gambling). Online social casino games that simulate actual casino games, often with higher payout rates, may be encouraging younger people to gamble.[126] The Morgan Stanley report[127] on social gambling suggested that social casino gambling offers to teach young people to gamble. Online and mobile gambling have been shown to be related to more gambling problems. In a recent study, early mobile gambling among adolescents was found to be predictive of gambling problems among adolescents.[80]

While several programmes focused on teaching youth mathematical probabilities, there is no study that demonstrates their long-term effect on future gambling behaviours. Demonstrating the unprofitability of gambling for youth may not translate into behavioural changes. Finally, as Keen et al.[92] suggested, emphasis should be placed upon minimising gambling harms as an essential outcome measure.

Summary of youth gambling prevention programmes

The fact that many of the programmes for children and adolescents are school-based programmes should not come as a surprise. School age children represent a captive audience and an easy place for gambling prevention programmes to be integrated into mental health/addiction curriculums.

Many of the studies reviewed for this chapter have methodological limitations. Short-term changes may diminish over time while others may provide a protective factor when youth become of legal age to gamble. What then can be concluded about the effectiveness of those programmes examined? The reviews of studies suggest that many programmes were effective in reducing common misconceptions and fallacies about gambling, increased knowledge about different forms of gambling, increased knowledge about gambling odds, were successful in highlighting differences between the concept of chance and skill, and fostered more negative attitudes toward gambling. As well, some of the programmes appear to have been successful in improving

youth's coping skills, increased awareness and self-monitoring behaviours, increased dialogue with peers and families, and enhanced problem solving and decision-making skills.

The reviews of research reports, nevertheless, point to the fact that programme effectiveness should be examined in terms of long-term behavioural changes, which have not been well measured and assessed. While this is the ideal state, most intervention programmes lack the resources (people, funding) to examine the long-term value of the interventions. While more comprehensive programmes with or without booster sessions seemed to have better outcomes, the absence of long-term outcomes precludes drawing definitive conclusions. What is generally known is that the prevalence rates of gambling problems/disordered gambling among youth have not typically increased despite the significant increase in availability, accessibility, and increased technological gambling opportunities. As well, the positive changes observed in these programmes have been viewed as necessary prerequisites to changes in behaviour.[1, 41] Longitudinal studies, while necessary, are both difficult to conduct and costly. Gambling researchers may well be advised to try to collaborate with researchers examining other health-related risks.

Independent of the fact that there are few studies examining changes in behaviour, it should not be expected that children/adolescents' changes in gambling will necessarily occur immediately. The true effects may only take place over a long period of time. As technological advances and less restrictive government sanctions have spurred an increase in gambling opportunities, the interaction between types of gambling, availability, and accessibility (one should see the studies in Finland[128] and Norway[129] evaluating reductions in gambling and problem gambling prevalence rates amongst youth after the legal age for gambling was increased in Finland and slot machines were removed in Norway) necessitates further research. There are many factors affecting children and adolescents' gambling behaviours that should be considered in developing intervention/education prevention programmes. In addition to universal programmes, targeted prevention programmes for high-risk youth are warranted.

While there is ample international research suggesting that most people gamble in a generally responsible manner (sometimes referred to as recreational, social, or occasional gambling), setting and adhering to pre-established money and time limits, for some youth what begins as an enjoyable, relatively benign activity can escalate into serious social, emotional, familial, physical, financial and/or legal problems. As such, the need for the development of primary/universal prevention programmes as well as more targeted interventions for high-risk youth is important from a social and public health policy perspective. While most of these prevention programmes have been implemented within school settings, a number have been developed and implemented outside of the school environment (e.g., youth and community centers). Other programmes have addressed parents, educators, and mental health professionals to have them provide valuable lessons for youth.

The gambling industry has dramatically changed since many of the early prevention programmes reviewed were developed. The industry must play an important role in strictly prohibiting underage individuals from accessing and gambling in age-restricted gambling establishments. The American Gaming Association[130] has made a commitment on behalf of its members to ensure

access is prohibited for underage individuals and to proactively reduce advertisements which may be attractive to minors.

Emerging adults

Given the prevalence data suggests that emerging adults, ages 18 to 25, have amongst the highest prevalence rates of adult problem gambling,[9, 131] it becomes important to examine harm prevention strategies for this age group.

Similar to the work on youth, a growing number of studies (nine in the US and three in Canada) have looked at identifying the risk and protective factors associated with problem and disordered gambling among emerging adults, with the vast majority of these studies researching college students.[81, 84, 85, 132-144] It is important to note that the age at which youth become emerging adults varies from study to study and jurisdiction to jurisdiction, as does the age at which people can legally gamble. For this review, six systematic reviews examining prevention initiatives developed for individuals ages 18 to 25 years, are discussed. Given emerging adults are typically legally permitted to gamble in most jurisdictions (the type of gambling permitted may vary by age), those harm minimisation procedures, programmes, and strategies in place for adults are also applicable to this age cohort and deserve some mention.

Typical adult responsible/harm minimisation gambling features

Although potentially all forms of gambling may be harmful, a substantial body of evidence suggests some forms of gambling may be more problematic than others. Electronic Gaming Machines (EGMs) (i.e., slots, VLTs, Pokies) have attracted particular attention as they have been reported to be more highly problematic than other forms of gambling, and have been reported to have the greatest capacity to cause harm and impaired control.[12, 145, 146] (see Harris & Griffiths,[147] Gainsbury & Blaszczynski,[148] and McMahon et al.[149] for a critical review of harm minimisation strategies for electronic gambling). Similar concerns have been raised over online/Internet/mobile wagering.[148, 150-156] Griffiths and his colleagues[157-160] have similarly argued that games incorporating rapid response rates, intermittent reinforcement schedules, and technological forms of gambling may, in general, be particularly problematic. Binde,[161] after an analysis of 18 international gambling prevalence studies, reported that interactive Internet casino, EGM, and high stakes unregulated gambling (e.g., poker, sports wagering) are the forms of gambling most likely associated with problem gambling. Derevensky and his colleagues[162-164] have provided research suggesting sports wagering among this age group, especially among men, may be problematic. It is also important to note that Davidson and Rodgers[165] reported that 87% of EGM players also gambled on at least one other activity (besides the lottery), with only a small percentage (5.2%) indicating exclusive play on EGMs. For high-frequency players across all forms of gambling, 31% of these individuals reported gambling on four or more different forms of gambling activities. Derevensky[1] has suggested that if a preferred form of gambling is removed, most people with gambling problems will seek alternative forms of gambling.

While it is not the intent of this review to discuss the effectiveness of a growing number of responsible gambling harm minimisation approaches for adults in general, their importance as preventative tools should not be ignored. Understanding situational factors are often considered important in influencing initial decisions to begin gambling (e.g., geographical proximity, accessibility, cultural beliefs and acceptance,

and marketing/advertising/promotions),[166] while structural characteristics are thought to aid in the acquisition, development, and maintenance of gambling behaviour (e.g., Abt, Smith, & Christiansen;[167] Griffiths, Parke, & Derevensky;[159] Griffiths;[168, 169] Parke & Parke;[170] Royal Commission;[171] Weinstein & Deitch[172]). Some of the analyses of changes in structural characteristics have been in the form of general reviews (e.g., McMahon et al.,[149] Parke & Parke,[170] Parke & Griffiths[160]), while others have been more game specific,[167, 173] (e.g., casino games),[167, 171] lottery scratch cards,[174] and/or EGMs.[168, 169, 175] Other harm minimisation strategies have focused on bet size and bet size limits,[170, 176-180] speed of wager,[159, 181, 182] pre-commitment programmes,[12, 147, 183-186] the role of displaying cash versus credits,[187-189] the use of note/bill acceptors in EGMs versus cashless gambling,[12] the removal of ATMs,[12, 176, 190, 191] the use of clocks and ambient sounds, lights, and colour,[188, 192] the impact of breaks in play,[191, 193, 194] messaging,[195-202] the use of player behavioural tracking and personalised normative feedback,[147, 203-206] self-exclusion,[12, 207-211] responsible gambling information centers (housed in casinos),[86] GameSense Information Centres,[212] the impact of mandatory shutdown periods,[176, 213] limit setting,[177, 180, 184, 190, 214] and the use of player tracking data and behavioural analytics.[215-218]

In an informative study, Wood et al.[191] explored the perceived effectiveness of 45 responsible gambling features in relation to 20 distinct forms of gambling. Sixty-one participants (responsible gambling experts, treatment providers, and people who have recovered from problem gambling) from seven countries, rated 45 responsible gambling features. Wood and his colleagues concluded that the most highly recommended responsible gambling features could be divided into three broad types: (a) player-initiated responsible gambling features designed to aid the player in controlling their behaviour, e.g., self-exclusion or quick breaks, tools for establishing personal spending and time limits, (i.e., personal limit setting rather than operator set limits); (b) promotions aimed at informed player choice, e.g., providing clear and concise information – winnings are presented as monetary values (versus credits), clear information on prize structures and winning percentages, the availability of self-diagnostic tools and responsible gambling literature, behavioural feedback with warnings of potentially negative changes in play patterns, pop-up reminders of time and money spent, and problem gambling referral information; and (c) gambling operator actions, e.g., delaying player reinvestment after large wins, prohibiting credit for gambling, restricting physical access to money (ATMs), controlling access to gaming areas through identification checks, and the availability of trained RG staff to identify and help individuals with gambling problems. Although there was general agreement among the three rater groups, people with problem gambling were much more likely to report being skeptical of gaming operators' motives in including responsible gambling features.

Industry approaches to safer gambling and harm minimisation in lottery play

Lottery play, especially scratch tickets, remain a popular form of gambling for youth and young adults. Like other harm minimisation strategies, harm minimisation programmes for lottery play vary greatly between jurisdictions. While most suggest that underage play is not permitted, the minimum age for purchasing a lottery ticket varies greatly around the world. Several organisations (e.g., the World Lottery Association [WLA], National State and Provincial Lottery Association [NASPL] in the U.S., and the European Lottery Association [EL]) have developed guidelines and

accreditation procedures for what they perceive to be "Best Practices". This is also like some of the best practices for land-based operators developed by the American Gaming Association (AGA) Best Practices and Standards and by the European Casino Association (ECA). Although there is some debate about the best means to address safe lottery play, there is a shared interest in wanting to find better ways to prevent and respond to customers with potential gambling problems. To develop more effective best practices, operators must promote informed decision making, provide strategies to assist customers who are experiencing problems, have responsible advertising and promotion campaigns (providing accurate information, not targeting vulnerable populations and underage minors), and improve staff training.

A strategy to examine potential problematic structural and/or situational characteristics for scratch lottery tickets was developed by Griffiths, Parke, and Wood,[219] along with input from international researchers. GAM-GaRD, originally commissioned by Camelot Group Plc, the operators of the UK lottery, was designed to aid in the development of socially responsible games for the lottery industry (particularly instant scratch card games). Drawing upon international research experts incorporating a Delphi methodology, GAM-GaRD assesses potentially problematic features in lottery offerings and provides operational definitions associated with the ten structural characteristics deemed to be the most influential in effecting the gambling behaviour of vulnerable individuals (event frequency; multi-game/stake opportunities; variable/fixed stake size; prize-back percentage [return to player]; jackpot size; deliberate near win opportunities; continuity of play; accessibility points; currency/ease of payment; and illusion of control elements).[220] While the strategy was developed in conjunction with a number of international experts, and has some face validity, a limited number of evaluations have been done to assess its effectiveness in spite of its relatively wide use by the industry. Cousins,[221] after a series of interviews with GAM-GaRD corporate customers and regulatory bodies, concluded that there is good evidence that the programme is meeting its objectives as a responsible gambling tool. Other such tools have been used which are similar in design and intent (e.g., Asterig-Assessment Tool to Measure and Evaluate the Risk Potential of Gambling Products[220, 222] and Veikkaus and Ray Game Evaluation Tool, also known as Product Evaluation Method for Reducing Potential Hazards,[223] for the Finnish lottery).

In general, there has been a growing number of harm minimisation initiatives developed to minimise gambling harms whether for machine gambling, casino gambling, online gambling, or lottery play. The existing research suggests that they have been shown to meet with varying degrees of success.

Prevention programmes specifically targeting emerging adults

Based on a recent meta-analysis, the estimated disordered gambling rate among college-age students ranges from 3% to 32%, with an average estimated rate of 10% for probable pathological/disordered gambling.[224] This age group has repeatedly been shown to be more likely to engage in a wide variety of potentially risky behaviours in general and to exhibit more negative consequences associated with disordered gambling compared to adults age 25+. Using a PRISMA model, Grande-Gosende and colleagues[131] provided a systematic review of prevention programmes targeting young/emerging adults. A total of nine published studies were ultimately retained for review, from 2005 to 2015, and of

these studies eight were conducted in the US and one in Canada[131] (see Table 4 and Table 5). Nine studies[225-233] sought to examine the value of using personalised normative feedback (PNF) (a comparison between an individual's playing behaviour compared to the group norm; for a more detailed description, see Chapter 4.2 Brief Internet-Delivered Interventions for Gambling), while Larimer et al.[229] compared a PNF intervention to a cognitive behavioural intervention (CBT), Lostutter[230] and Martens et al.[231] compared PNF to an education programme, or a combined PNF/education-based programme,[230] while Petry and her colleagues[234] compared PNF with or without Motivational Enhancement Therapy (MET) and CBT. In general, while follow-up post-intervention programmes varied in length, there did seem to be a reduction in gambling frequency, expenditures, and wins/losses, and fewer gambling-related problems after the implementation of a PNF programme. Most of the interventions included a single session without any booster sessions. The Larimer et al.[229] study included four to six group sessions, whereas the Petry et al.[234] study incorporated four sessions. Variations in time spent, ranged from 10 minutes[231, 234] to 60-90 minutes[229] per session. Four studies reported short-term follow-up sessions (one week[225] or one month[226, 230, 234] post-intervention evaluations). Four studies reported short-term follow up sessions (one week[225] or one month[226, 230, 234] post-intervention evaluations). Six of the nine studies reported a longer term follow up assessment. Martens et al.,[231] Neighbors et al.,[227] and Takushi et al.[228] incorporated a three-month post assessment methodology, Larimer et al.,[229] Neighbors et al.,[227] and Williams and Connolly[235] incorporated a six month-follow-up assessment while the study by Petry et al.[234] incorporated a nine month follow-up. Measures used to assess changes in gambling behaviours and severity varied but included the use of different measures for assessing changes in gambling severity (e.g., SOGS, NODS, CGPI, ASI-G), while the Gambling Quantity and Perceived Norms scale (GPQN)[236] was used in a number of studies to assess money spent gambling and beliefs about the frequency and amount of money spent by peers.

Grande-Gosende and her colleagues,[131] after a careful review, concluded that the use of PNF as a prevention tool was generally effective in reducing money wagered or lost and resulted in a reduction in problem gambling behaviours. However, they noted that a number of studies showed no significant differences in gambling behaviours between those college students receiving the intervention and matched control groups,[228, 230] or those in the education/brief advice conditions.[230, 231] Prevention programmes incorporating a CBT approach revealed decreases in illusions of control and negative gambling-related consequences.[229] The CBT and MET combined approach appeared to decrease problem gambling severity scores and amount of money wagered.[234] The majority of studies included in their review were best understood under a harm-reduction/harm-minimisation framework where gambling for this age cohort is viewed as a socially acceptable activity that should be self-monitored. While these studies used a convenience sample of college undergraduate students who may not be representative of this age group in general, there is evidence suggesting that the PNF model may be viable as a prevention tool. However, methodological weaknesses observed in many of the studies prevented positive behavioural changes being observed. Most of the studies incorporated a randomised control group, with only two studies being stratified by gender,[231] as well as by gender and gambling severity.[227]

Marchica and Derevensky[203] in their systematic review of the use of PFN identified six relevant studies (four with a general college population and two with people with problem gambling). In addition to the studies reviewed by Grande-Gosende and her colleagues,[131] two other studies using PNF, in Canada among adults with problem gambling,[232, 233] with 3 to 12-month follow-up, were assessed. Both studies, using PNF reported a decrease in money spent gambling and number of days gambling. While the Cunningham et al.[232] study reported lower Problem Gambling Severity Index (PGSI) scores after the intervention, the Cunningham et al.[233] study showed a similar reduction in money spent and Canadian Problem Gambling Index (CPGI) scores (however the CPGI scores and money wagered were not statistically significantly different from the comparative control group). It is also important to note that in the Cunningham et al.[232] study at 12 months, there was a 67% dropout rate, whereas in the Cunningham et al.[233] study the dropout rate after three months was 20%. While both studies had high dropout rates, the population exposed to PNF included people with gambling problems, where dropout rates in treatment are typically high. Among college students, Marchica and Derevensky[203] cautioned that PNF may potentially have unintended negative consequences. They argued that a 'boomerang effect' may occur whereby people who gamble at a low frequency (people who gamble socially or recreationally with none or few gambling-related problems) may in fact increase their expenditures and/or frequency of gambling to reach the perceived average level.[203] Marchica and Derevensky recently developed a smartphone app as a way of helping college students reduce their excessive gambling behaviours. Rather than using pre-established norms, they suggested assessing changes in an individual's behaviour by presenting information to students that their behaviour was either 10%, 25%, or 50% over the mean of their peers (a control group was also envisioned). This would ideally serve to ensure that students would not attempt to increase their gambling. Unfortunately, due to the COVID-19 virus, the study was placed on hold.

Given the high prevalence rates of disordered/problematic gambling in this age group, this cohort represents an ideal population in which to implement a prevention programme. Education along with the use of PNF appears to be positive in reducing gambling behaviours in general and problem gambling behaviours. Nevertheless, the long-term effects are unknown. Stinchfield[237] noted that prevention efforts designed with targeted messages may be most appropriate for this age group. He suggested that for some people, only educational information may be needed, whereas others already experiencing gambling-related problems may need stronger messages. Nower and Blaszczynki[238] argued that understanding the Pathways Model can help influence the development of harm minimisation programmes within educational settings.

Given the large number of emerging adults gambling and having at least some gambling-related problems, an examination of on-campus college policies appears warranted. Kleschinsky,[239] examining gambling policies on college and university campuses in the U.S., reported that 70% had some advertised gambling policy, while Marchica et al.[240] revealed only 32% of Canadian colleges and universities had a gambling policy. This is in sharp contrast to Canadian schools reporting alcohol (90%) and substance use (83%) policies.

The National Center for Responsible Gambling's Task Force[241] on college gambling policies worked

on combining scientific research with real-world experience in student health and university policy issues to develop science-based policy recommendations. The Task Force focused on topics related to prohibition and restriction policies, recovery-oriented policies that recognise gambling disorders as a mental health issue, and policies on special events that involve on-campus gambling. They suggested the following 10 recommendations:

1. The establishment of campus wide committees to develop a comprehensive policy on gambling.
2. College policies need to ensure they are consistent with local, state, and federal laws.
3. Policies should strive to be consistent with the use of alcohol.
4. Campus-community collaborations that focus on reducing problems with student gambling and drinking should provide a consistent message.
5. Modifications in disciplinary actions for youth who seek professional mental health services.
6. Emphasis should be on recovery from a gambling disorder.
7. Surveys assessing student attitudes, behaviours, and problems should be routinely administered.
8. Promoting campus-wide awareness of pathological/disordered gambling as a mental health disorder that also has a high comorbidity rate with alcohol use, and those programmes should promote responsible gambling principles.
9. Employ evidence-based strategies to identify and help students with gambling problems.
10. Strengthen the capacity of student counselling services through training to help support services with the identification and treatment for gambling disorders.

It should be noted that the Task Force consisted of experts in the area and that no specific mention is made of the evidence basis for their recommendations.

Monaghan and Wood[242] argued for the use of Internet-based approaches as both a way to increase awareness and as a prevention strategy. Given youth typically fail to seek traditional forms of intervention,[243] web-based programmes can help to provide a confidential opportunity for youth to participate in prevention programmes.

Summary of gambling prevention/ harm minimisation programmes for emerging adults

The gambling prevention programmes reviewed provided support for the use of PNF as an effective, low-cost, and easily disseminated intervention for reducing at-risk gambling problems and as a harm-reduction prevention strategy. As well, general responsible/safer gambling and harm minimisation programmes for adults may be useful for people who are of legal age to gamble in casinos or on online gambling sites. Educating counsellors and clinicians in college student service centres about the warning signs for problem gambling and scientifically validated treatment strategies will help to reduce the incidence of problem gambling. However, the long-term effects of many of these programmes have not been adequately evaluated. Whether or not some booster session(s) are warranted has yet to be examined. Will typical harm minimisation strategies in conjunction with PNF be more effective? Is PNF only effective for individuals gambling for specific types of gambling? For

specific people who experience gambling problems? Are there cultural or gender differences? These questions will be important to address.

Older adults

The prevalence of older adults' past year participation in some form of gambling is reported to range between 26.6% to 85.6%.[25, 244, 245] While older adults typically have lower prevalence rates of disordered gambling compared with younger adults,[24] older adults with a gambling disorder have been reported to experience a greater number of mental health problems and physical co-morbidities.[246, 247] For most older adults (defined in this review as being age 60 and older), gambling represents a recreational, social activity.[16, 245] However, like adults of all ages, excessive gambling can lead to substantial harms. Subramanian et al.[24] completed a systematic review, using PRISMA, to identify the prevalence and determinants of gambling disorders among older adults. Examining research between 1995 and 2013 they identified 25 eligible studies (published papers in English journals) that assessed the overall prevalence rates of older adults' gambling behaviours. The prevalence rate of lifetime gambling disorders, among adults age 60+ ranged from 0.01% to 10.6% across all studies. Prevalence rates were found to be higher among those aged 60 to 65, and among men compared with women. Their findings suggest that older adults 'may' gamble more to minimise negative emotional states; they typically have more limited access to other exciting activities, they may be unable to actively participate in previously enjoyed activities, and they gamble to fill the void left after retirement. When asked why older adults gamble, they typically respond that it provides a distraction from life stressors or challenging transitions to ageing.[248, 249]

Examining the determinants of a gambling disorder among older adults, Landreat et al.[250] concluded there were three major types of determinants: individual, socio-financial, and environmental. They suggested that after a review of the literature, women over the age of 60 have an equal or greater risk for a gambling disorder compared to men. People with gambling problems tended to be younger and the age they began gambling is a risk factor for more frequent and more severe gambling behaviours. Older adults with gambling problems were more likely to report more significant medical or psychosocial comorbidities. The authors concluded that while gambling is a sedentary activity that could possibly lead to medical problems, it can also be highly attractive to older adults with mobility issues. While some people seek gambling opportunities to relax, others view the appeal of gambling as an exciting activity, although it can also be simultaneously a highly stress inducing activity given mounting financial losses. There is also research from the U.S. National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) suggesting that older adults with a history of gambling problems are more likely to have an alcohol use disorder and are more frequently dependent upon tobacco products.[251] Nower and Blaszczynski[252] and Nadeau et al.[253] also point to the need to examine factors related to Parkinson disease and dopaminergic medication, and its impact on problem gambling. Not surprisingly, when examining the social and financial determinants, both educational and financial status remain risk factors among older adults with gambling problems. Other determinants found to be related to gambling disorders among older populations include cognitive distortions, structural characteristics associated with certain types of gambling activities (e.g., EGMs), motivations for gambling, and the type of venue (casino gambling

is extremely popular among older populations). Environmental factors included type of game, accessibility, and availability to gambling venues. In particular, Landreat et al.[250] remain concerned about Internet gambling, the reliance upon the use of loyalty cards, the enticement of free meals and promotional materials, and free transportation to gambling venues.

Kerber et al.[254] suggested using the acronym CASINO to help identify the determinants of gambling disorders among older individuals; Chronic health problems, Affective disorders, Serious risk of suicide, Incarceration, NO money, credit card debts, and financial difficulties. In an interesting paper,[255] Parke et al. suggested that late life problem gambling among older adults may be related to the experience of negative emotional states (anxiety and loneliness), that this has a direct effect on severity of gambling problems, and that perceived geriatric pain and loneliness result in gambling harms being used to escape negative mood states. It is important to note that most of the research examining risk and protective factors among older adults have been conducted in the context of Western culture and in developed countries. Although some research incorporated participants from different racial and ethnic groups, these studies are limited.[248] It has also been argued that studying different cultural/ethnic groups living in regions where they are a distinct minority may not be the same as where they comprise much of the population. Given the potential gambling-related harms and the identified risk factors, there is little doubt that older adults may comprise a vulnerable group of individuals.

Bjelde and colleagues[256] suggested that problem gambling rates among older adults might be reduced with appropriate evidence-based responses (e.g., services dedicated to responsible gambling including education, increased public awareness of the risk factors associated with problem gambling, and preventative and treatment services). Matheson, Sztainert, Lakman et al.,[257] using a diverse number of search engines, performed a scoping review to examine the effectiveness of prevention and treatment of problem gambling among older adults (age 55+). Their specific objectives were to (a) identify studies that might inform intervention strategies for prevention and treatment of problem gambling, and (b) to identify gaps in knowledge concerning both the prevention and treatment of problem gambling among this age group. After finding only six studies specific to older adults, they expanded their search to include all adults to identify studies that may have included people aged 55 and older. This resulted in a significant increase in the number of research studies reviewed. In spite of the increased number of studies examining older adults, they reported only four studies on older adults,[248, 256, 258, 259] only one of which was a prevention study.[258] Among these studies, Bjelde et al.[256] examined social issues surrounding casino gambling among older adults both nationally and in the state of North Dakota. An exploratory review of gambling trends among older adults and an examination of policies to protect older people who gamble revealed that older adults are frequently targeted by the gaming industry, as they are perceived to be a lucrative market. In their qualitative study, they explored gambling issues among older adults in North Dakota from the perspective of six gambling/addiction counsellors. The authors concluded that barriers to gambling addiction treatment involved a lack of available services and the travel distance needed to receive services in this rural state, which could inhibit harm prevention. A case study by Lucke and

Wallace[259], from a nurse's perspective, concluded that the aging process often results in a variety of emotional, financial, and health-related problems among older adults, making gambling, with the lure of easy money a potentially attractive solution. They argued that given the high comorbidity rates of gambling with other stress-related illnesses (e.g., alcoholism and depression), nurses and other health professionals must begin to recognise the prevalence of gambling as an important concern among older adults. Ladouceur and his collegaues[260] focused on educating people with gambling problems about randomness and erroneous perceptions about odds, and suggested that this could help inform educational initiatives for adults of all ages.

More recently, a number of studies in Europe (Austria, Ireland) and the UK have begun to examine the use of behavioural tracking analyses to create predictive models to whom educational initiatives should be directed.[212, 215, 216, 218, 261, 262] After identifying risk behaviours, Ariyabuddhipongs[115] suggested the possibility of tailoring prevention initiatives for older adults. While educational initiatives might be helpful, the results of studies on their impact for problem gambling have been inconsistent.

Several responsible gambling information centres have become embedded in casinos in Australia, Canada, and the U.S. These centres typically provide information and serve as a place for support and referrals. Boutin et al.[258] evaluated the Online Casino Information Centres in Montreal, Canada which were created to help educate people who gamble in general about probabilities and how different gambling activities work. In one of the few evaluations, they argued that educating players may prevent problem gambling. However, their results suggest merely visiting these casino information centers failed to modify gambling behaviours.

In Ontario, the Responsible Gambling Council has been managing and operating PlaySmart Centres since 2005, while GameSense centres developed in British Columbia can now be found in casinos within the U.S. These centres provide tips and strategies on how to keep play low-risk, and information on warning signs of gambling problems. As well, they provide valuable information to clients on how to self-exclude from casinos. Unfortunately, there has been no systematic review of these programmes to date as to their long-term usefulness in reducing harms. Matheson et al.[257] turned to the literature examining harm minimisation procedures for adults in general, arguing that educational programmes should be guided by awareness of the risk factors particular to this age group (e.g. isolation, loneliness, impaired health conditions), the use of effective social marketing strategies, educating stakeholders who are responsible for gambling venues, increased awareness and potential positive aspects of self-exclusion, the use of pre-commitment tools (time and money), and the use of warning and pop-up messages for EGMs or online gambling. Other factors considered and worthy of study include restricting hours of operation, eliminating free food and promotional items, limiting free bus service to casinos, and educating older adults about responsible gambling features on EGMs and online gambling sites.

While there is not considerable empirical data to support their contention, Matheson et al.[257] nevertheless suggested the following recommendations for the prevention of gambling problems among older adults:

1. Education for older adults should consider cultural differences, comorbidities, stigma

associated with help-seeking behaviours and the use of family supports.

2. As older adults become more technologically knowledgeable, messages may need to take a different form, with greater emphasis on the negative consequences related to their mental and physical health.
3. Tracking risk behaviours should consider 'stage-of-life' concerns including disposable income, social networks and support, and issues related to isolation and loneliness.
4. Educational programmes for older adults should include awareness of the potential risks associated with excessive gambling, information on self-diagnosis (gambling severity screening tools), cognitive factors associated with gambling, and information on probability (these should be done considering their cognitive ability and understanding).
5. Prevention training for the gambling industry should provide information on the playing behaviours and risk factors specific to older adults (e.g., comorbid mental and health concerns, limited disposable income, loneliness, isolation).
6. Education on prevention strategies for primary care professionals.
7. Given that older adults often view gambling as a social activity, it may be necessary to monitor accessibility and frequency of visits to gambling venues.
8. Warning messages may need to take on a different emphasis based upon the determinants of problem gambling for older adults.

While these recommendations make intuitive sense, unfortunately there is little empirical support for inclusion for older adults. Clearly, there is a need for more research. Recreational/occasional/social gambling can have many positive consequences for older adults. Yet, this age group, in general, represents a potentially highly vulnerable population. The casino industry views these players as an important part of their industry. If one looks at callers to Florida's gambling helpline, a third (34%) were age 55+, with 20% age 61+[263] (24-hour confidential and multilingual 888-ADMIT IT Helpline Evaluation study). Potenza and his colleagues[264] in an earlier study reported nearly one in five older adult people who gamble called the Connecticut gambling helpline. It is important to remember that confidentiality among older adults is critical.[265]

A systematic review of industry strategies for harm reduction, for adults of all ages, suggests that strategies most effective in reducing gambling time and expenditures for older adults included (a) self-appraisal pop-up messages, (b) decreasing maximum bets to $1.00 on EGMs, (c) removal of large note acceptors and ATMs, (d) reduced operating hours, and (e) inclusion of smoking bans.[176] Tanner et al.[176] nevertheless provide a cautionary note that their findings were limited by the quality of available studies, as many of the studies failed to include pre- and post-test measurements, lacked suitable control groups, and most relied on retrospective self-reports.[176] McMahon et al.,[149] after their review, suggested that reduced hours of gambling venues was only marginally effective and that while pre-commitment/limit setting and self-exclusion policies were helpful and had positive effects in reducing gambling-related harm, individuals must avail themselves of these opportunities. Machine messages/feedback and PNF were reported to be generally helpful. However, McMahon et al.[149] failed to examine research only related to older adults.

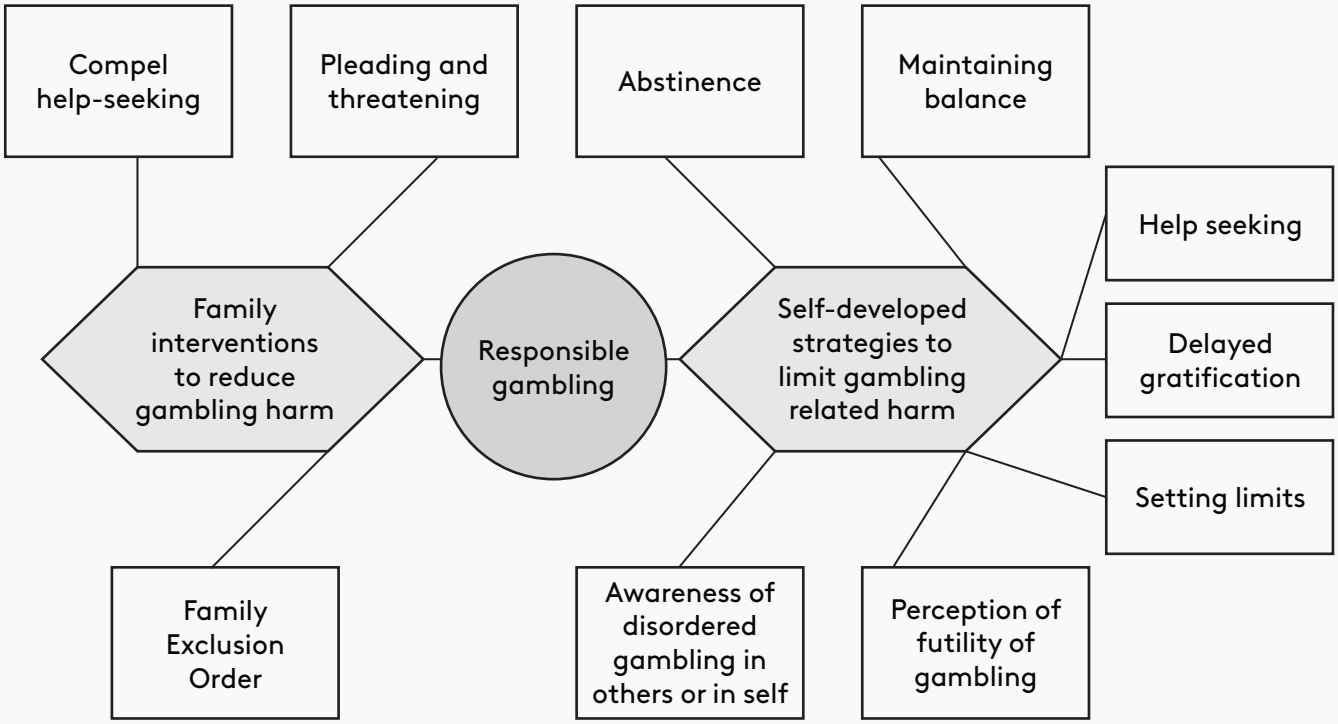
Other industry recommendations focused on structural characteristics associated with gambling products, pre-commitment and self-exclusion, the use of interactive pop-up messages, restrictions on advertising and marketing, stigma reduction, and regulatory frameworks.[266]

Using a qualitative methodological design, Subramanian and colleagues,[267] in Singapore, highlighted the important role families play in Asian societies in imposing responsible gambling strategies among older adults (age 60 to 81). Using a thematic analysis, participants discussed their gambling careers and indicated the adoption of several strategies they implemented either by themselves or those imposed by a family member, which they perceived helped them gamble within their financial means and/or helped them exert some control over their gambling behaviour. The global theme of responsible gambling compromised two organising themes: (1) Self-developed strategies to limit or minimise gambling-related harms and (2) family interventions to reduce gambling harm. Given the uniqueness of this study for older adults, further information is provided.

Self-developed strategies were intended to minimise the need for immediate results. For example, people indicated not participating in gambling activities such as sports wagering where one had the ability to make in-play wagers. Lottery players noted they would wait some time before checking the results of recent lottery draws. Some indicated repeating messages that reinforced that chasing behaviours were futile. A considerable number of the participants reported establishing and maintaining pre-set time and money limits on themselves. Here again, some discussed the importance of walking away after losses, thereby avoiding chasing behaviours. Maintaining and balancing an understanding concerning both wins and losses was perceived to be an important self-limiting strategy. Many participants reported using informal sources of help-seeking including the use of self-help groups (there are now both land-based and online self-help groups), reading self-help books, and support from religious leaders. Several participants discussed the importance of casino self-exclusion programmes. Most were aware of the harms associated with excessive gambling, reporting anecdotal stories of people having made suicide attempts or loss of family resulting from excessive gambling, with several participants highlighting the important role family members played in helping to control their gambling. While some family members tried to reason with the person who gambled, others threatened, pleaded, or pressured them to refrain from gambling. Older adults frequently talked about how family members sought treatment for their loved one. Finally, several family members had sought casino-exclusion orders for the person who gambled as a way of minimising gambling losses (third-party exclusion is permitted in Singapore). Subramanian et al.[267] provided a diagram (see Figure 3) as an overview of the determinants of a successful responsible gambling approach for older adults.

Unfortunately, there are few specific approaches to the prevention of gambling problems for older adults. All the reviews suggest the need for greater awareness and education for this age group. Several studies also discussed the industry's responsibility in promoting harm minimisation among older adults, and suggested both reducing incentives and encouraging more controlled gambling including limit setting. While gambling activities can promote socialisation and become a recreational form of entertainment, excessive gambling can have many negative mental health and financial consequences. Both the CARE[268]

Figure 3. The impact of family and self-developed strategies to limit gambling-related harm



Source: Subramaniam, M., Satghare, P., Vaingankar J., Picco, L., Browning, C., Chong, S., et al. Responsible gambling among older adults: A qualitative exploration. BMC Psychiatry. 2017;17(1):124. (Fig. 1).

and Reno Models[29] have recognised the need for greater collaboration between the gambling industry, government, educators, academics, and health care providers to help establish effective responsible gambling policies aimed at consumer protection. Subramanian et al.[269] and Shaffer et al.[31] further highlight the importance that family members can play in reducing harms for older adults. Gambling operators continue to recognise older adults as a vital part of their business revenue. Gambling trips to casinos sponsored by older adult centres remain common, with many offering free food, transportation, and promotional items.[270] With the next generation of older adults being more technologically savvy, there are concerns about online gambling. The use of self-limiting strategies should be encouraged. Whether other safer gambling strategies can be tailored to older adults has not yet been tried (e.g., pop-up messages, personalised feedback). Singapore is one of the few jurisdictions where third-party exclusion programmes exist, but their overall impact on older adults has not yet been systematically evaluated.

Summary of strategies for safe gambling for older adults

While the general prevalence rates of problem/disordered gambling among older adults are not particularly high, the number of older adults

gambling has increased due to the proliferation of gambling venues, both land-based and online.[4] There has been some research suggesting that older adults frequently report gambling later in life, partake in organised casino bus-trips,[271] and frequently attend bingo halls.[272] Given multiple risk factors including increased free time, a fixed income, increased mental and physical health issues, and loneliness, they represent a potentially vulnerable group. Unfortunately, no specific or safer gambling programmes have been developed targeting this age cohort. Most clinicians would argue a variety of strategies for harm-reduction for the general adult population are also applicable to older adults. Nevertheless, the review suggests that specific messaging and education (both for individuals and their caretakers) should be developed. Still further, there is preliminary evidence that the children and/or significant others (family members) of older adults with problem gambling may be effective in helping their parents reduce gambling-related harms.

GENERAL CONCLUSIONS

Throughout this chapter, the prevention initiatives for particularly vulnerable populations (children and adolescents, emerging adults, and older adults) were discussed. While adolescents and emerging adults have been shown to have high rates of gambling disorder, older adults appear to be a potentially vulnerable group due to their life circumstances. Problem gambling prevention research has examined the relationships between knowledge, attitudes, and perceptions about gambling behaviours. The impact of environmental and situational factors was briefly explored as was the general state of industry safer gambling strategies. Understanding the risk and protective factors associated with problem/disordered gambling provides a useful framework for the development of safer gambling initiatives. Safer gambling programmes and activities are ultimately designed to reduce the prevalence of gambling-related harms and the negative mental health, familial, financial, interpersonal, educational/work-related, and legal consequences associated with disordered gambling. It is important to recognise that people with gambling problems are a not a homogeneous group, independent of age and cognitive abilities, and one should not expect that a one-size-fits all approach is the preferred form of intervention. Even among the discussed age groups, differences in terms of gender, gambling preferences, cultural, and socio-economic status may impact the success of intervention programmes. While some of the prevention initiatives have shown promise with respect to each of the age groups examined, we remain in search of the Holy Grail of Best Prevention and Education Practices.

Gambling prevention programmes designed for youth have typically incorporated the following harm-minimisation and educational objectives: (1) Highlight the difference between games of chance and games of skill, (2) Educate participants about probability and the independence of events, (3) Dispel erroneous cognitions concerning the "illusion of control" regarding random events, (4) Define the signs of problem gambling, and (5) Provide resources to aid those experiencing a gambling problem.[102, 113] Some of the more comprehensive prevention curricula seek to encourage the development of interpersonal skills, foster effective coping strategies, provide techniques to improve self-esteem, and offer ideas for resisting peer pressure.[87] The impact of advertising is hard to escape, with most children, adolescents, and young adults being online a considerable amount of time. A recent finding suggests that among adolescents,

exposure to advertising had a direct effect on the normalisation of gambling.[273] The available research suggests that short-term gains are possible but there is little information on the enduring long-term changes in behaviour. Other important considerations need to focus on gambling advertisements, the use of celebrities, and sports figures and teams by gambling operators, and ease of accessibility to gambling venues (both land-based and online).

Among emerging young adults, most programmes have been designed for college students (an easily accessible population for research). Whether or not college students are representative of the general population of 18-25 year-olds, has been questioned.[274] Most of the harm prevention programmes appear to have incorporated the use of Personalised Normative Feedback (PNF) and have shown positive results in reducing the amount of time and money spent gambling, with several reporting changes in level of gambling severity. The use of PNF provides a method of self-appraisal and strategy for enhancing self-regulation checking one's gambling behaviours. Along with other responsible gambling features, dependent upon the type of gambling and gambling venue, changes in behaviour have been generally positive. However, like many responsible gambling features, the long-term effectiveness has not been adequately evaluated. The growth of e-sports wagering, alternate forms of sports wagering (e.g., in-play betting) and migration from gaming to gambling remain a concern for youth.

Older adults age 60+ appear to represent another potentially vulnerable group given their fixed incomes and limited ability to generate revenue. For some older adults, gambling represents a brief reprise from the monotony and boredom of daily life, an opportunity to find excitement, the potential to win money, and at times, an opportunity to go into a trance-like, dissociative state where their fears, anxieties, and physical limitations are minimised. While the current prevalence rates of pathological/disordered gambling among older adults are not significantly higher than the general adult population, there remains considerable concern given age-related health, psychological, and financial issues. Yet for this age group, few specific prevention programmes exist, and this would merit further development. Like emerging adults, much of the prevention/harm minimisation programmes designed for adults are generally available for seniors. The effectiveness of harm minimisation strategies has been shown to have varying degrees of success, with few studying older adults. Pre-setting and maintaining both time and money limits may be an effective strategy for minimising excessive gambling. Specific pop-up messages on EGMs and targeted gambling messages, as well as staff employee training, may need to be developed. At the same time, family members appear to play an important role in minimising problems among youth, as well as older adults. Several studies examining gambling disorders among older adults point to the importance of understanding the cultural context and beliefs associated with gambling. Differences across cultures will likely become more apparent as our research expands.

Further research is needed to look at the unintended consequences of some well-intentioned harm minimisation strategies and policies as well as their feasibility, effectiveness, and costs. What works in one venue or jurisdiction may not be appropriate in another. Our understanding will change as new strategies, technologies, practices, and policies are developed. The use of smartphones as a platform for gambling

represents some challenges but may similarly present some opportunities in directly reaching individuals. Meyer, Kalke, and Hayer,[275] examining the literature on the impact of supply reduction on the prevalence of gambling participation and disordered gambling, concluded that after periods following reduction in supply there was an associated reduction in participation and in the number of people who gamble frequently in demand for therapy and in the number of people with problem gambling. However, these results were not universal and may not represent a practical approach toward prevention. Several studies reported by Meyer et al.[275] showed an increase in frequency of participation in other forms of gambling. Clearly, some structural and situational factors are easier to manipulate and have greater impact than others. Governments have become too dependent upon revenues generated from gambling to significantly curtail regulated forms of gambling. On the contrary, governments throughout the world are permitting the supply of gambling to continue to increase. Whether people will avail themselves of voluntary measures to reduce harms remains to be seen. Researchers and clinicians may be wise to focus on how to de-stigmatise gambling problems and how to get people who gamble to accept and adopt effective harm-minimisation strategies.

LIMITATIONS AND RESEARCH GAPS

Whilst most prevention programmes have targeted school-age children, there remains no clear consensus on their long-term effectiveness. Methodological limitations, a lack of behavioural data, and longitudinal, well-controlled studies, limit the potential usefulness of existing programmes as recognised harm minimisation strategies. The good news is that most programmes show no negative effects of increasing gambling behaviour. However, concerns were raised with respect to the use of PNF for individuals not experiencing gambling problems. Derevensky[1] has argued that programmes developed for youth need to exercise caution to ensure they are not encouraging children or youth to either begin or increase their gambling. There is little doubt that our knowledge concerning youth with gambling problems has increased. The need to incorporate such knowledge into a risk-protection-resilience prevention model, requires further development. Our current programmes are intended to modify inappropriate attitudes toward risky behaviours, enhance young people's knowledge and positive decision-making, increase children's understanding of mathematical laws of probability, and educate young people about both short-term and long-term risks associated with excessive gambling, all of which are thought to be important in changing behaviours.

With respect to emerging adults much of the existing research has focused on the prevention of gambling problems amongst college and university students given their easy accessibility by researchers. Further research with young adults not attending institutions of higher learning is necessary.

In general, there is a dearth of research focused specifically on safe gambling strategies for older adults. These individuals represent a potentially vulnerable group, and more information is needed as to their gambling behaviours in general and ways to minimise gambling-related problems. The fact that family support groups can play an important role necessitates further research. Whether older adults require specialised

programmes, pop-up messages, or different forms of education, need to be examined.

Independent of age group, further longitudinal research is necessary to examine the long-term effects of prevention and harm minimisation programmes. While this may be difficult considering the continuing changing landscape of gambling and the way in which individuals gamble, the potential rewards in keeping people safe from gambling-related harms has important societal and public health implications.

GUIDANCE/ RECOMMENDATIONS

Clearly, age verification is necessary to limit underage individuals' access to gambling online and in land-based venues. Members of the British Amusement Machine Association (BACTA) agreed to voluntarily raise the age limit for players to 18+ years effective March 2021 for playing Category D cash fruit machines. This is certainly a movement in the right direction as there is sufficient research suggesting that delaying the age of onset can reduce later gambling problems.

There is also a need to develop, monitor, and enforce safer gambling advertisements. Whether viewing gambling advertisements leads to the onset of gambling or increased gambling remains unclear. In a series of studies in Canada by Felsher, Derevensky, and Gupta,[276-278] they found that underage youth were able to purchase lottery tickets, and advertisements impacted their desire to purchase lottery scratch tickets. Interestingly, while purchasing behaviours of lottery tickets increased, they were not the tickets being advertised. Several jurisdictions have begun to ban or restrict public advertisements of gambling (e.g., Italy, UK, Lithuania, Australia) as advertisements typically depict gambling as exciting, glamourous, and skillful, promising financial and social rewards, as well as a way for people to enhance their status. Those interested in safer gambling messages should pay particular attention to advertisements during general TV viewing times and promotions offered during televised sporting events.

Greater governmental and familial responsibility in educating our children and adolescents about the potential risks associated with excessive gambling is warranted. Adolescents and young adults have a higher disposition for risk-taking, believing they are invulnerable, smarter than most people, and frequently have difficulty accepting and adhering to rules and regulations. Despite the growing awareness of youth gambling and the prevalence of youth gambling problems, many jurisdictions fail to see the need for the implementation of gambling-based prevention programmes as they have done for substance abuse prevention. Ministries of Health must work more closely with Ministries of Education to ensure gambling prevention initiatives are developed, evaluated, and integrated into the school curriculum. While school-based prevention programmes tend to be the norm, developing parent education programmes can add sufficient value. Coupling problem gambling prevention programmes with other high-risk behaviours may be an effective strategy for the acceptance of gambling-related programmes.

While it was not the intent to look at all safer gambling measures currently in place, the use of gambling helplines and self-help groups (either land-based or online) may be a potential source of prevention for all age groups. Although adolescents typically fail to seek help for behavioural addictions, alternative online resources could be made readily available. Gambling helplines continue to be accessed by

adults of all ages and by their significant others. Helpline staff should be trained to deal with calls from older people. This can also be extended into residences for older adults.

Despite specific advances having been made in harm minimisation, considerably more work needs to be done. In a world of evolving technologies, our research on harm prevention and education approaches needs to keep pace with not only the different types of gambling activities but the mode of delivery. Smartphones, tablets, wearable devices, and portable computers have brought a new wave of gambling opportunities. Such devices also hold promise for delivering harm-reduction and harm-minimisation messaging to vulnerable people through personalised normative feedback. Technological advances may be particularly suited for both adolescents and emerging adults, where web-based programmes can be easily and confidentially accessed. Blocking software for online gambling websites such as Gamban holds promise in helping individuals self-regulate their gambling.

The use of a collective self-exclusion list for land-based casinos and online gambling platforms will likely help minimise problem gambling harms. Given there is ample evidence that people who gamble online hold multiple accounts with different gambling operators, the use of a master list of self-excluders (such as Gamstop in the UK) would help limit a person's ability to go from operator to operator.

Unlike educational programmes for youth around excessive alcohol and drug use, risky sexual behaviours, bullying, unprotected sex, amongst other risky behaviours, we are failing to educate our youth about the warning signs associated with problem gambling. The same can be said for older adults as incentives provided by gambling operators can often outweigh educational messages. Gaming operators, governments, our educational institutions, and family members all have an important role to play in raising awareness about problem gambling.

Responsible gambling programmes have been plagued by competing conflicts and tensions, and may not have made the advances that would be possible if industry, government, mental health professions, academics, policy makers, and public health professionals worked together.[31] At the same time, the landscape of gambling internationally has radically changed, continues to grow, and presents new challenges. With greater accessibility, emphasis on technological forms of gambling, an increasing number of gambling venues internationally, and migration between gaming and gambling, the need for empirically evaluated prevention programmes has never been greater.

Relevant studies are summarised in Tables 2-5 on the following pages.

Table 2. Systematic Reviews: Children and Adolescents

AUTHOR	PROGRAMMES REVIEWED	METHOD	AGES/ GRADES	PROGRAMME CONTENT	PROGRAMME FINDINGS	LIMITATIONS	CONCLUSIONS/ RECOMMENDATIONS	FUNDING SOURCE(S)
Keen Blaszczynski & Anjoul 2017[92]	19 Studies Reviewed: 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 15, 16, 17,18, 20, 21, 22, 23, 24	PRISMA School-based prevention N=75 - 1,240	Elementary Secondary	13 programmes aimed at teaching about unprofitability of gambling 11 programmes included randomness 11 programmes raised awareness of signs, symptoms & consequences of PG 6 programmes included coping, problem solving and decision making Few studies provided a theoretical rationale Programmes vary considerably in duration & frequency In general, comprehensive programmes with greater numbers of sessions over longer periods were more successful Brief interventions may not be sufficient for understanding of randomness and negative expectations Most programmes used a combination of multi-media tools (videos & online modules) Movement from PG to measures of gambling-related harms Movement toward more web-based programmes	Generally effective in cognitive changes (reducing common misconceptions, reducing fallacies, increasing gambling knowledge, increasing knowledge of odds, highlighting difference between chance and skill, enhancing negative attitudes toward gambling) Skill development → Some showed increased coping → Increased awareness and self-monitoring → Increased problem solving → Increased decision making	Most studies failed to measure long-term behavioural changes Unable to determine if improvements led to future gambling problems Theoretical models for change unclear Few studies examined changes among PGs Changes in cognitions did not necessarily change behaviours	Study ratings: → Weak (9) → Moderate (6) → Strong (4) Universal programmes should be implemented early (age 10+) Focus on preventing gambling problems not gambling Programmes should include mathematical principles indicating unprofitability of gambling Programme should be comprehensive using multiple sessions Use of multi-media for delivery of content Measurement in reduction of harms vs. expenditures Need for long-term follow-up	DOOLEYS Lidcombe (funding for preliminary scoping report)

Oh, Ong & Loo 2017*[114]	17 Studies Reviewed: 2, 4, 6, 7, 11, 13, 15, 16, 17, 18, 19, 20, 21,22, 23	Examined empirical published prevention studies between 2002-2014 N=34 - 8,455	Children, Adolescent Emerging adults	Programmes typically focus on risk or protective factors. Typically show increased knowledge of gambling and PG, fewer gambling fallacies Improved understanding of randomness	Erroneous cognitions decreased Gamblers' faulty beliefs and knowledge Mathematical education (odds/ probability) Combination of video and information superior Humor a good way to captivate interest Interaction sessions preferred over didactic sessions Use of website useful Programmes targeting risk factors have shown consist positive effects in increasing knowledge ad correcting misconceptions, increase information, dispelling myths, and fallacies	Lack of long-term follow-up Unclear whether cognitive changes impact gambling behaviour Unclear if knowledge and beliefs transfer to behavioural changes Time/duration varies considerably among programmes	Use of cognitive behavioural approach potentially useful Interactive vs didactic programmes useful Web-based programmes strong potential Programmes integrating peer and parental influences are important Greater need for problem solving skill development Method of delivery as well as person delivering programme important Need for long-term studies showing effectiveness Need for more theoretically driven programmes	No funding information disclosed
Kourgiantakis, Stark, Lobo & Tepperman 2016[116]	16 Studies Reviewed: 2, 3, 10, 5, 6, 7, 8, 12, 13, 15, 16, 17, 18, 20, 21, 22	Systematic review following 7 step Model (Cooper, 2010) Studies published between 2000 - 2014 N=34 - 8,455	Children Adolescents	Increase gambling knowledge Change erroneous cognitions 5 studies aimed to increase skills → coping, self-monitoring, problem solving, decision-making 1 study showed a slight decrease in gambling behaviour	Misconceptions improved No changes in gambling behaviour	Few studies incorporate behavioural changes All studies (except one) were school-based No secondary or tertiary programmes were evaluated	All studies examined primary prevention programmes Most studies reported changes in knowledge, increased understanding of cognitive changes Need for inclusion of parent education programmes Need to examine how parent gambling problems impact children Need for a family-centered paradigm Teacher and parents feel ill-equipped to deal with gambling problems	Ontario Problem Gambling Research Centre

Ladouceur, Goulet & Vitaro 2013[113]	14 Studies Reviewed: 1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 15, 16, 17, 18	Society for Prevention Research criteria N=201 – 8,455	Children Adolescent (8-19)	Over short-term, programmes tended to show increased knowledge Reductions in misconceptions The inclusion of a booster session can improve retention and consolidate attitudinal changes.		Half of the programmes had no evaluation Majority of programmes failed to include measures of gambling behaviours No long-term evaluations No measures of behavioural changes Programmes varied considerably with respect to intensity and duration Some studies failed to have a control group All the programmes were universal prevention programmes	Without measures of behavioural change difficult to draw conclusions Difficult to determine long-term outcomes Most studies failed to adhere to SP criteria With few exceptions no positive effects on gambling behaviours Borrowing from substance abuse prevention could assist in developing personal and interpersonal skills training Need more sensitive instruments to assess changes Specific recommendation for the implementation & evaluation of programmes are provided Replication and cost effectiveness is important when achieving positive outcomes. Need for stronger theoretical models	No funding information disclosed
Ariyabuddhiphongs 2013*[115]	12 Studies Reviewed: 1, 2, 6, 7, 11, 14, 15, 16, 17, 18	Systematic Review N=174 – 8,455	10-16	Programmes varied in terms of content, aims, and use of multimedia tools Some programmes examined risk factors A few programmes addressed coping and life skills			Cognitive perceptions modified Increased knowledge Modified attitudes Increase in understanding of odds Improved understanding of gambling fallacies Need for long-term follow-up studies	No funding information disclosed

Williams, West & Simpson 2012[86]		Summary of programme findings (not explicitly examining individual programmes)	Children, Adolescent Adults	Limited research on impact of awareness campaign Short-term evaluations of school-based programmes typically show increased knowledge of gambling and PG, fewer gambling fallacies Improved understanding of randomness Improved understanding of negative consequences	Programmes typically include: odds, information/ awareness		Short-term increases in knowledge and attitudes may not lead to behavioural changes	Ontario Problem Gambling Research Centre; Ontario Ministry of Health and Long-Term Care
Williams, West & Simpson 2007[152]		Bio-psycho-social model Summary of studies (not explicitly examining individual programmes) N=289 -1,600	Elementary Secondary Separate section on harm-minimisation programmes aimed at adults	Programmes aimed at teaching mathematical concepts Knowledge about gambling Cognitive fallacies Awareness	Generally effective in cognitive changes (reducing common misconceptions, reducing fallacies, increasing gambling knowledge, increasing knowledge of odds, highlighting difference between chance and skill, enhancing negative attitudes toward gambling)	Most studies failed to measure long-term behavioural changes Unable to determine if improvements led to future gambling problems Studies failed to examine changes among PGs	Elementary & HS prevention programmes relatively uncommon Very little published outcomes Need to use a bio-psycho-social model Universal programmes should be implemented early (age 9+) Need for long-term follow-up	Ontario Problem Gambling Research Centre

* These reviews also included a limited number of studies that looked at emerging adults or college students

Table 3. Child and Adolescent Studies Reviewed

STUDY NUMBER	STUDY	PARTICIPANTS	INTERVENTION	DOSE/NUMBER OF SESSIONS	FUNDING SOURCE(S)
1	Gaboury & Ladouceur (1993)[100]	N = 289 Age (M = 16) % Male = ns PG = 6.7 % (DSM-III-R)	6 session programme	6	Loto-Québec
2	Ferland, Ladouceur & Vitaro (2002)[94]	N = 424 Age (M = 13.1) (range 11–15) 53.3 % Male	"Lucky" video + 40 min info	1	Loto-Québec; Centre Québécois d'Excellence pour le Prévention et le Traitement du Jeu
3	Williams (2002)[106]; Davis (2003)[279]	N = 282 Age Control (M = 15.31, SD = 0.52) Exp (M = 15.45, SD = 0.84) 51.5 % Male PG = 2.5 % (DSM-IV-MR-J)	Five session programme	5	Alberta Gaming Research Institute
4	Ladouceur, Ferland & Fournier (2003)[97]	N = Phase 1 = 153 N = Phase 2 = 356 Grades 5 & 6	"Count Me Out" exercises	1	Québec Ministry of Health and Social Services; Loto-Québec
5	Ladouceur, Ferland, Roy, Pelletier, Bussieres, Auclair (2004)[120]	N = Phase 1= 345 45% Male Grades 7 & 9 N= Phase 2 = 520 44% Male Grades 7 & 8	"Count Me Out" exercises	1	Québec Ministry of Health and Social Services; Loto-Québec
6	Ladouceur, Ferland & Vitaro (2004)[109]	N = 506 Grades 7 & 8	"Lucky" video	1	Québec Ministry of Health and Social Services; Loto-Québec
7	Lavoie & Ladouceur (2004)[95]	N = 273 Age (M = 11.53) (range 10–13) 50.2 % Male	"Lucky" video + 20 min info	1	Québec Ministry of Health and Social Services; Loto-Québec
8	Lemaire, de Lima, & Patton (2004)[103]	N = 894 Grades 7 & 8 % Male = ns	"It's Your Lucky Day"	1	Addictions Foundation of Manitoba; Manitoba Lotteries Corporation

STUDY NUMBER	STUDY	PARTICIPANTS	INTERVENTION	DOSE/NUMBER OF SESSIONS	FUNDING SOURCE(S)
9	Williams et al. (2004)[110]	N = 578 Age (M = 16.2) 53 % Male PG = 3.5 % (DSM-IV-MR-J)	"Gambling: A Stacked deck"	5	Alberta Gaming Research Institute
10	Ferland, Ladoucuer & Vitaro (2005)[107]	N = 1,193 Age (M = 13.5, SD = 1.1) Control = 43.9 % Male Exp = 56.1 % Male	3 session programme	3	Québec Ministry of Health and Social Services; Loto-Quebec
11	Ladouceur, Ferland, Vitaro & Pelletier (2005)[96]	N = 568 Age (M = 15.99, SD = 0.79) 47 % Male	"Gambling stories" + 20 min info	1	Québec Ministry of Health and Social Services; Loto-Québec
12	Vitaro, Pare, Trudelle & Duchesne, (2005)[121]	N = 2,848 Grades 10 & 11	Youth Gambling: An awareness and prevention workshop-Level II	1	Loto-Quebec
13	Korn, Murray, Morrison, Reynolds & Skinner (2006)[280]	N = 34 Ages 10-19	Web-based programme	1	Ontario Ministry of Health and Long-Term Care
14	Derevensky, Gupta & Baboushkin (2007)[122]	N = 174 Ages 10-13 Grades 5 & 7 48% Males	Card cutting game	1	Loto-Québec; Social Sciences Humanities Research Council of Canada
15	Turner, Macdonald & Somerset (2008a)[102]	N = 201 Ages 15–18 32.84 % Male PG = 3.5 % (SOGS-RA)	Seven session curriculum	7	Ontario Problem Gambling Research Centre; National Center for Responsible Gaming (funded by industry)
16	Turner, Macdonald, Bartosuk & Zangeneh (2008b)[98]	N = 374 Grades 5–12 % Male = ns	One-hour intervention	1	National Centre for Responsible Gaming (funded by industry)
17	Taylor & Hillyard (2009)[104]	N = 8,455 Age = Ns 48 % Male PG = 10 % (MSOGST)	"Don't Gamble Away our Future"	1	Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice
18	Williams, Wood & Currie (2010)[111]	N = 1,253 Grades 9-12 PG = 3.2 % (DSM-IV-MR-J), 5.2 % (Self-reported)	"Stacked Deck"	5	Alberta Gaming Research Institute

STUDY NUMBER	STUDY	PARTICIPANTS	INTERVENTION	DOSE/NUMBER OF SESSIONS	FUNDING SOURCE(S)
19	Luk et al. (2011)[281]	N = 232 Secondary School students Ages 12->16	P.A.T.H.S. (Positive Adolescent Training through Holistic Social Program) Focus groups	1	Macau Government Education and Youth Bureau
20	Lupu & Lupu (2013)[99]	N = 75 Age (range 12–13) 48 % Male	"The Amazing Chateau"	10	No funding information disclosed
21	Todirita & Lupu (2013)[105]	N = 81 Ages 12–13 45.7 % Male	"The Amazing Chateau" Rational Emotive Education	10	No funding information disclosed
22	Walther, Hanewinkel & Morgenstern (2013)[112]	N = 2,109 Age (M = 12, SD = 0.85) 50.4 % Male	Vernetzte www.Welten	1	Ministry of Social Affairs, Health, Family and Equality of Schleswig-Holstein (Germany)
23	Donati, Primi & Chiesi (2014)[101]	N = 181 Age (M = 15.95, SD = 0.51) 64 % Male	Two session integrated intervention	2	No funding information disclosed
24	Canale et al. (2016)[108]	N = 168 Age (M = 15.01, SD = 0.6) 58 % Male PG = 8.3 % (SOGS-RA)	Five session web-based intervention	5	No financial support was received

Table 4. Systematic Reviews: Emerging Adults

AUTHOR	PROGRAMMES REVIEWED	METHOD	AGES/ GRADES	PROGRAMME CONTENT	PROGRAMME FINDINGS	LIMITATIONS	CONCLUSIONS/ RECOMMENDATIONS	FUNDING SOURCE(S)
Grande-Gosende et al. 2020[131]	9 Studies Reviewed: 1, 2, 4, 6, 8, 7, 10, 11,12	PRISMA Examined studies from last 20 years	Emerging adults	Most programmes incorporated a Personalised Normative Feedback component	PNF generally had good results in reducing/ minimising at-risk or problem gambling.	Short-term evaluations Only a limited number of programmes found Studies only targeted college students and may not be representative of general population Wide variability in use of different instruments	PNF is promising prevention strategy for college age students More studies needed before definitive conclusions can be reached	Council of Health from the Principality of Asturias; Council of Education and Culture from the Principality of Asturias (Spain)
Oh, Ong & Loo 2017*[114]	2 Studies Reviewed: 3, 4	Examined published prevention studies between 2002-2014 N=34 - 8,455	Emerging adults	Programmes typically focused on risk or protective factors typically report increased knowledge of gambling and PG, Fewer gambling fallacies post-intervention Improved understanding of randomness	Erroneous cognitions decreased Gamblers' faulty beliefs decreased Increased knowledge Mathematical education (odds) positive changes Combination of video and information superior Humor a good way to captivate interest Interaction sessions preferred over didactic sessions Use of website useful Programmes targeting risk factors results in consist positive effects in increasing knowledge, correcting misconceptions, increase information, dispelling myths, and fallacies	Lack of long-term follow-up Unclear whether cognitive changes impact gambling behaviour Unclear if knowledge and beliefs transfer to behavioural changes Time/duration varies considerably among programmes	Use of cognitive behavioural approach potentially useful Interactive vs didactic programmes suggested Web-based programmes strong potential Programmes integrating peer and parental influences are important Greater need for problem solving skill development Method of delivery as well as person delivering programme important Need for long-term effectiveness Need for more theoretically driven programmes	No funding information disclosed

AUTHOR	PROGRAMMES REVIEWED	METHOD	AGES/ GRADES	PROGRAMME CONTENT	PROGRAMME FINDINGS	LIMITATIONS	CONCLUSIONS/ RECOMMENDATIONS	FUNDING SOURCE(S)
Marchica & Derevens-ky 2016[203]	6 Studies Reviewed: 1, 5, 8, 9, 10, 12			PNF	PNF is an effective tool for college students to reduce gambling frequency	Only short-term effects studied	PNF is a useful tool for reducing gambling behaviours among college students	No financial support was received
Ariyabud-dhiphon-s 2013*[115]	2 Studies Reviewed: 1, 4	Systematic Review N=174 – 8,455	10-16	Programmes varied in terms of content, aims, and use of multimedia tools Some programmes examined risk factors A few programmes addressed coping and life skills	Cognitive perceptions modified Increased knowledge Modified attitudes Increase in understanding of odds Improved understanding of gambling fallacies	Long-term changes not examined	Need for long-term follow-up studies	No funding information disclosed
Williams, West & Simpson (2012)*[86]		Summary of programme findings (not explicitly examining individual programmes)	Children, Adolescent Adults	Limited research on impact of awareness campaign Short-term evaluations of school-based programmes typically show increased knowledge of gambling and PG, fewer gambling fallacies Improved understanding of randomness Improved understanding of negative consequences	Programmes typically include: odds, information & awareness	Short-term increases in knowledge and attitudes may not lead to behavioural changes	Need for long-term follow-up studies	Ontario Problem Gambling Research Centre; Ontario Ministry of Health and Long-Term Care

AUTHOR	PROGRAMMES REVIEWED	METHOD	AGES/ GRADES	PROGRAMME CONTENT	PROGRAMME FINDINGS	LIMITATIONS	CONCLUSIONS/ RECOMMENDATIONS	FUNDING SOURCE(S)
Williams, West & Simpson (2007)*[152]		Bio-psycho-social model Summary of studies (not explicitly examining individual programmes N=289 -1,600	Elementary Secondary Adults Separate section on harm-minimisation programmes aimed at adults	Programmes aimed at teaching mathematical concepts Knowledge about gambling Cognitive fallacies Awareness	Generally effective in cognitive changes (reducing common misconceptions, reducing fallacies, increasing gambling knowledge, increasing knowledge of odds, highlighting difference between chance and skill, enhancing negative attitudes toward gambling)	Most studies failed to measure long-term behavioural changes Unable to determine if improvements led to future gambling problems Studies failed to examine changes among PGs	Elementary & HS prevention programmes relatively uncommon Very little published outcomes Need to use a bio-psycho-social model Universal programmes should be implemented early (age nine years+) Need for long-term follow-up	Ontario Problem Gambling Research Centre

* These reviews included a limited number of studies that looked at emerging adults or college students

Table 5: Emerging Adult Studies

STUDY NUMBER	STUDY	PARTICIPANTS	INTERVENTION	DOSE/NUMBER OF SESSIONS	FUNDING SOURCE(S)
1	Takushi et al. (2004)[228]	N = 28 Ages 18-21	Personalised feedback intervention Assessment only control	One	National Institute on Alcohol Abuse and Alcoholism; Royal Research Fund
2	Hopper (2005)[226]	N = 68 Undergraduate students 90% males	Personalised normative feedback (PNF) condition Assessment only control	Not specified	No funding information disclosed
3	King & Hardy (2006)[282]	University students & faculty	Programme development	N/A	No funding information disclosed
4	Williams & Connolly (2006)[235]	N = 470 University students Mean age 20.80 years 45% males	Probability & Gambling	Intervention group:39 lectures and 13 labs	Alberta Gaming Research Institute
5	Cunningham, Hodgins, Toneatto, Rai & Cordingley* (2009)[233]	N = 49 Adults 48% males	Personalised feedback intervention (PFI) Wait-list control	One session with three-month follow-up	Ontario Problem Gambling Research Centre
6	Lostutter (2009)[230]	N = 168 College students Mean age 19.50 years 29.7% females	Brief advice for gambling (BAG) Personalised normative feedback (PNF) Combined advice and norms (CAN) Assessment only control	One	No funding information provided
7	Petry et al. (2009)[23]	N = 117 College students	Brief advice Motivational enhancement therapy (MET) MET +cognitive behavioural therapy (MET +CBT) Assessment only control	Brief advice - one session MET – one session; MET +CBT - one + three sessions	National Institute of Health; Donaghue Medical Research Foundation
8	Larimer et al. (2012)[283]	N = 147 College students Ages 19-25 Mean age 21.23 years 65.3% males	Personalised feedback intervention (PFI) Cognitive-behavioural intervention (CBI) Assessment only control (AOC).	PFI - one session CBI – four to six sessions	National Institute on Mental Health; Group Health Foundation; National Institute on Drug Abuse; National Institute on Alcohol Abuse and Alcoholism
9	Cunningham, Hodgins, Toneatto & Murphy* (2012)[284]	N = 209 Adults	Personalised feedback intervention (PFI) Partial feedback Wait-list control	One session with three follow-up points	Ontario Problem Gambling Research Centre

STUDY NUMBER	STUDY	PARTICIPANTS	INTERVENTION	DOSE/NUMBER OF SESSIONS	FUNDING SOURCE(S)
10	Celio and Lisman (2014)[225]	N = 136 Undergraduate students 55% males	Personalised normative feedback condition (PNF) Attention control	One	American Psychological Association Dissertation Research Award; National Institute on Alcohol Abuse and Alcoholism
11	Martens et al. (2015)[231]	N = 333 College students	Personalised feedback only intervention (PFB) Education only (EDU) Assessment only (AO)	One	National Centre for Responsible Gaming (funded by industry)
12	Neighbors et al. (2015)[285]	N = 252 College students 59.5% males Mean age 23.10 years	Gender-specific normative feedback An attention-control feedback, control group	One	National Center for Responsible Gaming (funded by industry)

*Adults

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Brief biography

Jeffrey L. Derevensky, Ph.D., is the James McGill Professor, Department of Psychiatry at McGill University. He is Director of the McGill University Youth Gambling Research and Treatment Clinic, International Centre for Youth Gambling Problems and High-Risk Behaviours, and Clinical Training for the School/Applied Child Psychology programme. Dr. Derevensky is a clinical consultant to numerous hospitals, school boards, government agencies, and corporations. He and his team have helped governments establish research priorities and have been instrumental in the development of responsible practices, treatment centres, prevention programmes, and social policy recommendations. He is widely published in the fields of gambling, adolescence, behavioural addictions, developmental psychopathology, and serves on multiple journal editorial boards.

Conflict of interest statement

Dr. Derevensky has held multiple research grants from the NCAA, Manitoba Gambling Foundation, Florida Council on Compulsive Gambling, US National Council on Problem Gambling, Fonds Québécois de la Recherche sur la Société et la Culture (FQRSC), and Social Sciences and Humanities Research Council (SSHRC).

He has provided research and clinical consultations to the Gerald Schwartz and Heather Reisman International Conference on Child Health, Development and Welfare. Jerusalem; National Science Foundation (U.S.), By Kids for Kids; Marsden Fund Council New Zealand Government, National Collegiate Athletic Association's Sports Wagering Task Force; Gamble Aware, UK International Olympic Committee. Mental Health Task Force; The Research Foundation - Flanders (FWO), Belgium National Council on Problem Gambling (U.S.), Fonds National de la Recherche. Luxembourg; International Research Institute for Gambling and Gaming. Germany; University of Newcastle, U.K. Gambling Commission; Government of Hong Kong; Australian Research Council; University of British Columbia Gambling Research Center; Ontario Ministry of Health and Long-Term Care; National Association for State and Provincial Lotteries.

Dr. Derevensky has received honoraria for speaking at conferences and workshops organised by the University of North Carolina; Morneau Shepell; Canadian Paediatric Society; New Jersey Council on Problem Gambling Champlain College; Montreal Junior Chamber of Commerce. Massachusetts Council on Problem Gambling: Florida Council on Compulsive Gambling; Kentucky Council on Problem Gambling; Evergreen Council for Problem Gambling; University of North Carolina State of Illinois, amongst others.

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3.3 Selective Measures Summary

Selective measures target groups that are at risk of experiencing harm from gambling.[1] Although several groups are vulnerable to harm, age cohorts including children and youth, emerging adults (aged 18 to 25 years), and older adults (aged 60 years and older) were the focus of this section. Their life stage characteristics and related social, health, and financial circumstances can contribute to the amount of gambling activity, game choice, preferred delivery format (land-based or Internet) and, ultimately, their susceptibility to gambling harm. Substantial numbers of children and teens in the UK are gambling, with implications for experiencing harm both in the immediate and more distant future.[2, 3] Emerging adults, especially young men, experience harmful and problem gambling at higher rates than the adult population.[2] Although older adults have a lower rate of gambling problems, they may be vulnerable due to fixed incomes and the inability to recoup financial loss, life changes due to retirement and/or loss of loved ones, poorer health, and being a prime target audience for operators.[4, 5]

A scoping review was selected to assess the range of evidence since each cohort varied in the amount of research attention that had been received. Evidence from 2015 to 2020 was initially included for all age groups since there were already a number of existing reviews. The date range was subsequently expanded for older adults to include any published work since much less research was available for this group. The main findings for each cohort are summarised separately, followed by suggestions for how the evidence may be used in a comprehensive approach to gambling harm prevention and education. Included in the discussion for emerging and older adults are harm prevention and education tools that apply to the general population since both groups could benefit from them. Suggestions for future research are advanced where evidence gaps are identified or there are mixed findings that would benefit from clarification, if possible.

Full references to the research evidence summarised here can be found in 'Chapter 3.2 Targeted Safer Gambling Campaigns for Children, Youth, and Older Adults'. Chapter 3.2 references begin on page 168.

EVIDENCE HIGHLIGHTS

The chapter begins with a conceptual model for understanding the domains of risk and protective factors that influence an individual's behaviour. Although designed for youth, the model could be adapted to guide evidence-based gambling harm prevention programmes for other cohorts.

Children and youth

Although gambling is widely seen as an adult activity, 11% of youth in the UK between the ages of 11 to 16 years have been reported to gamble, including a greater percentage of boys than girls.[3] Further, many adults with a gambling problem began gambling as children.[2, 6]

→ The evidence base is reasonably well developed although somewhat geographically concentrated. Seven reviews of prevention programmes for children and youth were retrieved (with a substantial amount of overlap of studies within each review) and 17 other studies met the inclusion criteria. Most, but not all, of the studies were conducted in Canada, only one in the UK, and a handful of others in the US, Italy, Germany, Romania, and Macau.

- Most gambling prevention and education programmes are school based. Educating children and teens allows them to make better informed decisions, at least in the short term, even though their cognitive development is not yet complete. Improvements have been noted in gambling knowledge, gambling attitudes, increased mathematical knowledge of odds and probabilities, and a reduction in misconceptions. However, little is known about long-term behavioural changes related to these outcomes.
- More theory-driven and evidence-based content is needed to enhance programme effectiveness. Recommendations include applying an appropriate cognitive development approach to materials, educating youth about odds and probabilities, increasing the use of technologies for programme delivery, shifting the focus to participation in other activities, and offering classroom activities and discussion for complex concepts.
- Families could be included in gambling harm prevention and education activities so that parents are more aware of youth gambling and how to prevent problems from occurring.
- Since an early win is a risk factor for later problem gambling, some initiatives have targeted lottery corporations with a holiday campaign, recommending that lottery tickets should not be given to children and youth as holiday gifts. Scratch card tickets should be similarly avoided as gifts.
- There are several programmes available for schools (many of which have been externally evaluated) accompanied by a teacher manual. Examples include curriculum modules, teacher training presentations, computer games for children, and a docudrama. Gambling harm prevention and education programmes external to schools are directed toward professionals in the mental health sector, physicians, and lawyers.
- Third sector charities such as the Responsible Gambling Council (RGC) in Ontario, Canada, and the international YMCA Gambling Awareness Program (YGAP) offer interactive, community-based, educational programmes for children and youth. Topics range from identifying and avoiding gambling risks, consequences of winning and losing, and remaining safe while gambling, to financial literacy, gambling stigma, and technological changes in gambling.
- Online, "loot boxes" and social casino games present a risk to children and youth. Newer research suggests that early mobile gaming among teens may predict gambling problems.
- Although several programmes focus on teaching mathematical probabilities, no study demonstrates a long-term effect on gambling behaviours.
- Many factors influence children's and youths' gambling behaviours. These factors should be incorporated into programme/activity design, especially when targeted to high-risk youth. Like other interventions, tailoring the programme to the group's specific needs can be more effective.
- Many of the studies have methodological limitations such as no long-term follow-up. Without longitudinal research, no definitive conclusions can be drawn about long-term outcomes.

Emerging adults (age 18 to 25 years)

The age at which adolescents become emerging adults differs across studies and jurisdictions. For this report, age 18 to 25 years has been adapted because it most closely aligns with the six systematic reviews that address gambling harm prevention for young adults. Notably, much of the evidence is derived from studies where participants are college or university students. At present, few studies have examined emerging adults who are either employed, or not working or enrolled in post-secondary institutions.

→ Since 18-year-olds are of legal age to gamble in most jurisdictions, they can benefit from the same harm prevention strategies, initiatives, and activities available to the adult population. Many of these are addressed in the Universal Measures section, in Chapter 2.2 Regulatory Restrictions on How Gambling is Provided and Chapter 2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts. Gambling operator actions are also identified and can include restricting access to money (see Chapter 4.3 Systems and Tools that Produce Actual ("Hard") Barriers and Limit Access to Funds), conducting ID checks as a way to control access to gambling areas, and having trained staff available to identify and assist people at risk of or experiencing harm. Notably, people with gambling problems tend to be more skeptical than others of operators' motives, including responsible gambling features.

→ Lottery and scratch card play are popular forms of gambling for youth and emerging adults, with minimum age restrictions being enforced for play varying by jurisdiction. Best practices and standards of international lottery associations support responsible advertising campaigns that do not target vulnerable groups.

→ Compared to adults over the age of 25, emerging adults are more likely to engage in a wider variety of risky behaviours, and to show more negative effects of harmful gambling.

→ Personalised Normative Feedback (see Personalised feedback (PF) or Personalised normative feedback (PNF) on page 213 for a description) is a low-cost, easily disseminated intervention for emerging adults. It has been linked to reduced gambling expenditures, frequency, and gambling problems. Even so, not all studies of PNF show significant differences between students receiving the intervention and those that do not, which may also be related to methodological limitations. PNF may have a potentially negative "*boomerang*" effect among emerging adults whereby people who gamble socially or recreationally could increase the frequency and spending on gambling to reach the "average" level of their peers.

→ Education combined with PNF is effective in reducing gambling generally, and problem gambling particularly. Still, long-term effects are unknown for emerging adults.

→ The presence of on-campus gambling policies can vary by jurisdiction, e.g., 70% of US colleges and universities had an advertised policy compared to only 32% in Canada. The percentage for campuses in the UK is unknown.

→ Ten recommendations for on-campus policies were developed by the National Center for Responsible Gambling's Task Force based on scientific research, and real-world experience in university policy and student

health issues. They range from promoting campus-wide awareness of disordered gambling as a mental health issue, to using evidence-based strategies to identify and assist students experiencing gambling harms, to strengthening the capacity of student counselling services through training on the identification and treatment of students with gambling problems.

→ Internet-based approaches to gambling harm prevention and education may be more accessible to students and offer other benefits such as privacy and confidentiality (see Chapter 4.2 Brief Internet-Delivered Interventions for Gambling, for more information).

Older adults (age 60 years and older)

→ Older adults have lower prevalence rates for at-risk gambling. Still, they may be motivated to gamble as a way of coping with or escaping from life stressors, and/or challenging life stage transitions and circumstances such as retirement, loneliness, boredom, and declining health.

→ Older adults with gambling problems are more likely to have tobacco dependency and/or alcohol use disorder.

→ A number of positive outcomes have been identified for older adults who are gamble recreationally, but it is important to remember that older adults have specific vulnerabilities that may make them more susceptible to harm.

→ Determinants of risk for harmful gambling among older adults can be individual, socio-financial, and environmental. Some risks are financial and educational status, cognitive distortions, and structural characteristics of specific gambling types popular among older adults (e.g., EGMs). Of concern is Internet gambling as more older adults become technologically adept; the enticement of promotional materials from gambling operators that include free meals, free transportation to gambling venues; and the reliance on customer loyalty cards. Older adults are commonly targeted by the gaming industry since they are perceived to be a lucrative group.

→ There is a lack of services dedicated to safer gambling resources for older adults that enhance awareness of risk factors and gambling harm prevention and treatment services. Barriers to treatment can be amplified for people with limited mobility living in rural locations.

→ Results of studies of educational programmes to prevent gambling harm have been inconsistent among older adults. Effectiveness may be improved if the programmes are tailored to an older adult audience and consider risk factors such as isolation, impaired health, and loneliness.

→ Recommended gambling harm prevention strategies for older adults suggest an approach that would include social marketing strategies; educating operators; increasing awareness of self-exclusion and other safer gambling tools; eliminating free food, transportation, and promotional items; minimising incentives to gamble and loyalty programmes; and educating older adults about online gambling sites and safer gambling features on EGMs. Further recommendations suggest consideration of cultural differences, comorbidities, use of family supports, and alleviating stigma associated with help-seeking. Gambling

industry employees should also be equipped with information on the risk factors and playing behaviours specific to older adults.

- → For industry, the most effective strategies for reducing gambling expenditures and time among older adults are removing large note acceptors and ATMs, reducing operating hours, decreasing minimum bets on EGMs, implementing smoking bans, and reducing operating hours.
- → Families may play an important role in helping older adults gamble within their means or by exerting some control over their finances.
- → Many older adults use self-limiting strategies such as waiting to check lottery results, walking away after losses, setting and maintaining pre-set time and money limits, reading self-help books, and accessing support from religious leaders.
- → The evidence highlights the necessity of greater awareness and gambling harm education among older adults. It also points to the need for industry to promote harm minimisation and reduce incentives for older adults to gamble.
- → No specific harm prevention or safer gambling programmes were found that targeted older adults.

EVIDENCE QUALITY

As a scoping review, a formal evidence quality assessment was not required.[7] Rather the suitability for inclusion was guided by quality assessment tools shared by Greo based on overall rigour of the study design, how well the research methodology was suited to answer the study questions, clarity in the presentation and interpretation of results, and the adequacy and generalisability of the study population and sample. For all age cohorts, several deficiencies were noted where long-term follow-up was lacking, or when recommendations were not based on the evidence presented even though, intuitively, they seemed to make sense. Quality assessment outcomes for some reviews were also presented with limitations noted for factors such as a failure to include behavioural outcome measures, lack of randomisation among study participants, and lack of consistency in measures of expenditure (for children and youth).

SHARED CONSIDERATIONS FOR AGE COHORTS

Different age cohorts are important to consider as at-risk groups, since each is linked to different vulnerabilities. The extent to which this has been recognised and addressed varies. For children and youth, there is an established, although geographically constrained, evidence base. There were also a number of studies of emerging adults, although they were mostly limited to people pursuing post-secondary education and largely excluded those who were either employed or not participating in either education or employment. Gambling harm prevention and education initiatives for older adults has received little attention from researchers, and their age-specific harm prevention and education needs appear to be mostly overlooked. Further, this cohort is viewed as a lucrative customer base by gambling operators that actively targets them with promotional materials and enticing offers. Therefore, despite having specific risk factors associated with each life stage, the evidence base is uneven. Research related to harm prevention activities for children and youth provides much firmer ground from which to draw conclusions compared to the other two cohorts.

Understanding the risk and protective factors for gambling harm among each age group is an important first step to developing approaches to gambling harm prevention and education that will be most effective for different age cohorts. Even with shared age-related vulnerabilities though, it is also important to recognise that people in any age cohort are not homogenous, and neither are their experiences of gambling harm. There are limitations to a one-size-fits-all approach. Various factors such as gambling preferences, socioeconomic status, gender, and cultural context can affect the success of harm prevention and education activities and programmes. Still, recognising some of the risk factors more common to specific age cohorts due to developmental and life course stage will go some way to facilitate effective harm prevention initiatives.

Few unintended consequences were noted for any cohort beyond the boomerang effect of PNF experienced by some emerging adults. Unintended consequences may be difficult to detect without long-term follow-up evaluations, which have rarely been part of the reviewed age cohort studies. It may also be that more qualitative and/or mixed methods research is needed to probe unanticipated outcomes.

3.4 Guidance for How this Information May be Used to Inform a Collective Prevention and Education Plan

Although the size of the evidence base varied among age groups, each section provided some information to consider for a comprehensive gambling harm prevention and education plan.

EVIDENCE TO GUIDE AGE COHORT INITIATIVES

- → Age verification is necessary to prevent children and underage youth from gambling online or in land-based venues.
- → Safer gambling advertisements need to be developed, monitored, and enforced. Youth and emerging adults may be particularly vulnerable to advertisements that depict gambling as glamourous, exciting, and linked to social and financial rewards.
- → The public health and educational sectors could work together more closely at the government level to develop, evaluate, and integrate gambling harm prevention activities into the school curriculum.
- → More government and family responsibility are encouraged for educating children and teens about potential risks of gambling. Youth and young adults are more likely to take risks, believe they are invincible, and more often have difficulty adhering to rules.
- → Gambling helplines and self-help groups could incorporate an age cohort element. Although teens are less inclined to seek help for gambling problems using a helpline, other platforms such as online resources could be useful. Helpline staff should receive specific training for calls from older adults and their affected others.
- → Effective gambling harm prevention and education approaches need to consider the rapidly changing landscape of gambling. There are new opportunities created by smartphones, tablets, and wearable technologies that can both advance new gambling forms and opportunities, and also

offer new treatment opportunities.

→ Multiple stakeholders need to raise awareness of gambling related harm for all age cohorts since gambling harm education for youth is limited, and gambling operators provide attractive incentives to older adults to gamble that may diminish the effectiveness of harm education efforts. Government, educators, operators, and family members can all play a role in gambling harm prevention and education.

LIMITATIONS AND RESEARCH GAPS

→ Most gambling harm prevention and education programmes have targeted school-age children, but their long-term effectiveness is still unknown. More research is needed with more sophisticated and elaborate methodologies including control groups, behavioural (player) tracking data, and longitudinal studies.

→ More research on emerging adults needs to include people who are not enrolled in post-secondary education to understand the needs of this age cohort more broadly.

→ More information is needed on unintended consequences. This could include evaluations related to the costs, feasibility, and effectiveness of programmes and initiatives. What works well for a certain venue or jurisdiction may be less effective or perhaps even ineffective elsewhere.

→ There is an evidence gap for safer gambling strategies for older adults. Specific areas of study could include the role of family support, and the extent to which older adults could benefit from specialised safer gambling messaging and tools or education methods.

→ Regardless of age cohort, longitudinal research is needed to properly evaluate long-term outcomes of gambling harm prevention and education activities to see what works, for whom, in what context, and whether there are unintended consequences.

CONCLUSION

Selective measures are designed for the benefit of groups at risk of experiencing harm from gambling. Although many such groups exist (and will be addressed in greater depth at a later date), this section focused on the age cohorts of youth, emerging adults, and older adults. Each has specific vulnerabilities that require consideration when planning the most effective approaches and pathways to gambling harm prevention and education. The evidence base is most developed for the children and youth cohort, less so for emerging adults, and poorly developed for older adults. However, jurisdictional considerations and cultural context mean that suggestions based on research outcomes should be implemented with caution since the studies were mostly generated outside the UK and may not be entirely applicable. Ongoing, regular evaluation will lead to a more effective gambling harm prevention and education programmes, and activities with greater cultural relevance. Improving partnerships among stakeholders is also suggested since this offers strong potential to design and implement activities more effectively.

There are several research recommendations worth pursuing. In addition, it will be important to consider new forms of gambling (i.e., sports wagering in some jurisdictions, e-sports, etc.) as well as new technologies used to gamble (e.g., cashless based systems). Like other areas of

gambling harm prevention and education, the quality and quantity of evidence vary substantially, which can limit its applicability. In particular, longitudinal research and evaluation with control groups will provide more definitive answers to inform an evidence-based plan to address not only age cohorts, but also other vulnerable groups.

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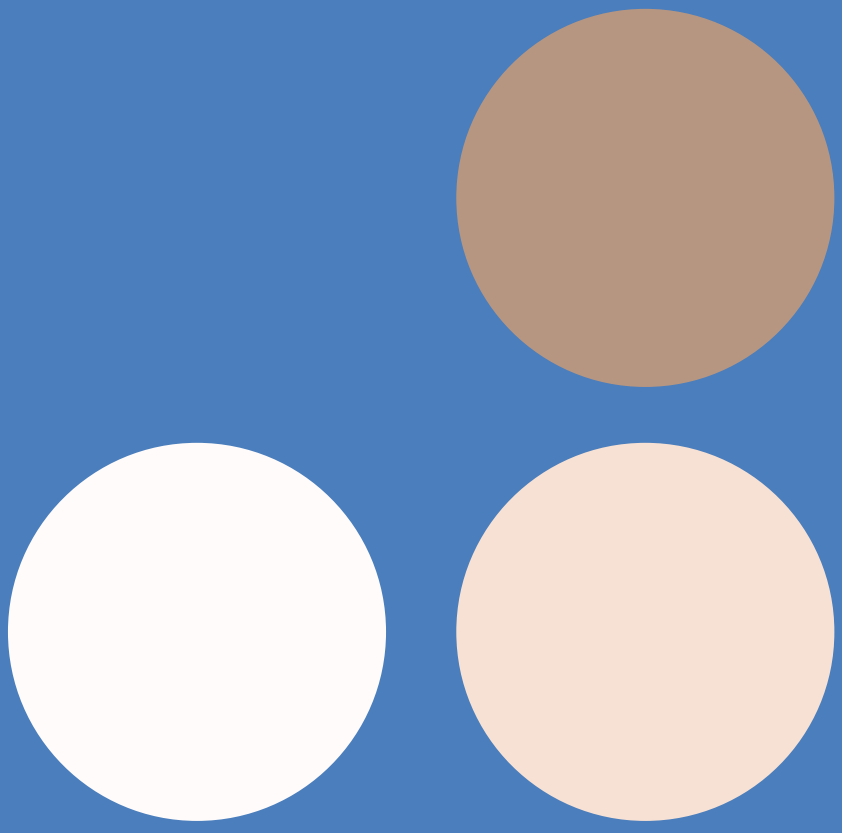
Prevention and Education Review: Gambling-Related Harm

4.0 Indicated Measures



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4.0 Indicated Measures

4.1 Section Introduction

Indicated measures are for the benefit of at-risk individuals.[1] Although there is a regulatory requirement in the UK for gambling operators to identify people experiencing or at-risk of experiencing harm from gambling,[2] a comprehensive prevention and education plan would move beyond measures that could be applied by operators to include other stakeholders such as public health, the financial sector, and third sector charities.[1] Indicated measures covers three topics. The first is brief Internet-delivered interventions for gambling. The second is financial blocks to gambling, specifically the systems and tools that produce "*hard*" barriers and limit access to funds. The third is self-exclusion programmes. A fourth measure, customer interaction by gambling staff, could not be included in this review due to a lack of research at present. Following a literature scan and consultation with gambling studies researchers who are informed in this area, it was apparent that the evidence base is only beginning to emerge, and not enough literature exists to form the basis of a review.

The first chapter, "*Brief Internet-Delivered Interventions for Gambling: Prevention, Early Intervention, and Harm Reduction*," focuses on online supports and interventions for the treatment of people with gambling problems and that take no more than five hours to complete. Online interventions are showing promise as a viable treatment strategy with certain benefits. They have the potential to reach more people at risk of harm than traditional, in-person treatment, and they can be accessed within online gambling sites. Still, this is an emerging area, and the effectiveness of brief, online interventions has not yet been fully explored. The chapter reviews and critically assesses the research evidence regarding the effectiveness of Internet delivered intervention for harm prevention, reduction, and early intervention.

Research questions that are addressed through a systematic review of literature, share evidence on (1) the effectiveness of brief Internet-delivered interventions for prevention, harm reduction, and early intervention, (2) whether brief online interventions target different harmful gambling risk levels, (3) the target groups for this type of intervention, and (4) the content of brief Internet interventions. A systematic review method was chosen because sufficient research has been conducted on this topic to allow a comprehensive search, appraisal, and synthesis of knowledge within a set of proscribed guidelines. A systematic review can convey what is known, and includes a rigorous assessment of the literature quality,[3] which provides a firm footing to guide practice and future research.

The second chapter is "*Systems and Tools That Produce Actual ("Hard") Barriers and Limit Access to Funds*." These financial gambling blocks differ from optional and non-binding ("soft") financial barriers, such as most pre-commitment systems. Those would be considered safer gambling management tools and are covered in Chapter 2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts in the universal measures section. Money is an essential component of gambling, and also a leading cause of harm. The inability to pay bills and living expenses, having reduced savings and discretionary income, amassing debt, and the loss of assets harm not only the person who gambles, but can extend to their partner, family, and friends, and have generational and intergenerational effects.[4] Research indicates that money management is linked to recovery from gambling harms, but which tools and systems that provide hard barriers are most effective in preventing excessive gambling has yet to be determined.

A scoping review is used to assess hard barriers limiting access to cash and money. To date, no reviews have focused on hard barriers in gambling settings such as Automated Teller Machine (ATM; commonly known as cash machines) removal or measures implemented through banking systems. A scoping review allows a preliminary assessment of the size and scope of existing research evidence.[3] The focus of review is to assess systems and tools that represent hard barriers to access funds, including their content and effectiveness, for people who gamble. Specifically, it explores the characteristics of systems and tools that block access to money or cash, attitudes and preferences toward these systems and tools, who they are meant to target, and whether there are effective systems and tools for people at varying levels of gambling risk.

The third chapter, "*Self-exclusion*," explores the contribution of self-exclusion programmes to gambling harm prevention and education. Self-exclusion is considered a harm minimisation strategy, but as an intervention that seeks to reduce gambling harm it also serves the purpose of prevention and education. The design and delivery of a self-exclusion programme can affect both the extent to which it is used, as well as its outcomes. This chapter examines research on all aspects of self-exclusion as it relates to gambling harm prevention, to identify evidence gaps and offer recommendations for making self-exclusion programmes more effective.

Due to the number of systematic reviews of self-exclusion published within the last decade, a narrative review was undertaken to weave together the existing review evidence and highlight consistencies and contradictions within the topic.[5] The author assessed existing reviews from 2010 onward, and then explored new evidence published since the date of the most recent review, 2018, forward. Three research questions assess (1) the effectiveness of self-exclusion in preventing further gambling harm for people at risk of or already experiencing harm from gambling, (2) whether there are any unintended consequences of self-exclusion programmes related to gambling harm prevention and education, and (3) how self-exclusion programmes could be used to reduce gambling harm as part of a prevention and education programme.

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4.2 Brief Internet-Delivered Interventions for Gambling: Prevention, Early Intervention, and Harm Reduction

By Dr. Simone Rodda

INTRODUCTION

Gambling Disorder is categorised as a Substance-related and Addictive Disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and is currently the only recognised behavioural addiction.[1] People with Gambling Disorder experience clinically significant impairment or distress inclusive of financial, relational, emotional, and psychological harm.[2] This harm differs according to level of severity which the DSM-5 specifies on a continuum from mild (4-5 criteria met), to moderate (6-7 criteria met), to severe (8-9 criteria met).[1] International prevalence rates of Gambling Disorder range from 0.05% to 5.8% with higher rates for those at mild and moderate-risk.[3] Some groups such as adolescents and young adults have higher prevalence rates of Gambling Disorder with rates reported between 0.2 and 12.3%.[4] This higher rate of prevalence is due to individual, relational, and academic risk factors which predict later gambling problems.[5] A systematic review and meta-analysis of longitudinal studies indicated risk factors range from impulsivity, male gender, depression, school performance, and sensation seeking, through to alcohol and cannabis use and the number of gambling activities engaged.[5]

Growing knowledge of risk factors for Gambling Disorder has prompted efforts to prevent or delay the rate of new cases developing. Over the past 20 years efforts have focused on prevention, early intervention, and harm reduction.[6, 7] Prevention programmes target youth and school-aged children before gambling or gambling problems have emerged[7, 8] (for more information, see Chapter 3.2 Targeted Safer Gambling Campaigns for Children, Youth, and Older Adults). These programmes aim to increase knowledge about gambling harm and risk factors, and modify beliefs about gambling skill and how gambling works (e.g., house edge, probability of winning), as well as dampen personal motivation to gamble.[8-10] A recent systematic review by Forsström and colleagues[8] identified 11 studies on educational programmes. Most of these studies were delivered in schools as part of the curriculum and were targeted at youth and adolescents, with one study[11] focused on probability education for university students. Meta-analysis indicated a reduction in gambling frequency, but overall, the evidence was rated low due to the quality of the studies included.[8]

Harm reduction aims to minimise the negative consequences of gambling through modification of intensity or frequency of gambling. Early intervention is an extension of harm reduction in that it aims to identify people who might be at-risk or already showing signs of a gambling problem.[12, 13] A recent umbrella review by McMahon and colleagues[7] examined prevention and harm reduction/early intervention. They identified 55 systematic reviews which were related to pre-commitment and limit setting (24%), self-exclusion (20%), youth prevention programmes (20%), and machine messages or personalised feedback (20%). Of the 55 reviews, four examined preventions related to youth gambling. These reviews identified 11 unique studies of which six reported no effect of the intervention on gambling behaviour. The remainder of intervention types in the umbrella review were considered harm

reduction, which was defined as interventions that reduce gambling harm through change to motivation, cognitive processes, or limiting opportunities to gamble excessively or continuously (e.g., environmental change). There were five reviews on pre-commitment and limit setting (consisting of 13 unique studies), which broadly indicated interventions were associated with increased adherence to gambling spending limits. Two reviews examined self-exclusion (11 unique studies), which was associated with reductions in expenditure and gambling harm but indicated change may not be maintained if a person starts gambling again. One review examined the effectiveness of personalised normative feedback (two unique studies) and reported a reduction in gambling expenditure. Another recent systematic review by Grande-Gosende and colleagues[14] focused specifically on reducing gambling harm among young adults. They identified nine articles which delivered personalised normative feedback to college students, which was associated with positive changes to gambling behaviours.

Prevention, harm reduction, and early intervention reviews have revealed mixed but promising findings in terms of interventions to reducing gambling symptoms, harm, and behaviours.[6-9, 14-18] To date, however, there are no reviews specifically examining online interventions for prevention, harm reduction, and early intervention. The umbrella review by McMahon,[7] for example, did not examine the mode of delivery for the intervention or how this related to the different types of approaches. There have been multiple reviews specifically examining online interventions for those who have already developed problem gambling.[19-21] These reviews focused on treatment for people with problem gambling and who were seeking assistance to reduce or quit gambling.

Interventions that are effective and can be delivered online have the potential to reach more people and can be made available within online gambling settings. For example, research with people who gamble indicates that Internet-based interventions are preferred due to increased ease of access, availability, and convenience, as well as increased privacy and confidentiality.[22] Furthermore, Internet delivered interventions can be more easily tailored specifically for individual needs, and personalised according to preferences.[19, 20]

Based on an initial scan of the literature, a systematic review was deemed appropriate because there is a growing body of literature that spans a range of different research designs (i.e., cohort studies through to randomised controlled trials). To our knowledge there are no other reviews specifically examining brief interventions, gambling, and Internet delivery for prevention, harm reduction, and early intervention. However, there are reviews in each of these areas, which indicate the availability of at least some literature but no specific findings related to the research question.

The primary goal of this systematic review was to examine and critically assess the literature related to the effectiveness of Internet-delivered prevention, harm reduction, and early intervention for gambling problems. The review also aimed to identify the components of these interventions as well as to assess the quality of studies. The research questions were (a) What is the effectiveness of brief Internet-delivered interventions for the prevention, harm reduction, and early intervention for gambling problems?, (b) Do brief interventions delivered online target different levels of gambling risk?, (c) Who are the target groups of these brief Internet interventions?, and (d) What is the content of these brief Internet interventions?

METHODOLOGY

This systematic review followed the protocols recommended in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[23]

Search strategy

A systematic search was conducted in March 2020 to identify all relevant peer-reviewed literature exploring Internet-delivered prevention, harm reduction, and early intervention approaches to reduce gambling problems. The search strategy included an electronic database search of Medline, Cochrane, and PsycInfo using a combination of MeSH terms, keywords, and wildcards. Search terms incorporated the following: gambling (e.g., wagering, betting, gamble) AND Internet-based intervention (harm reduction or early intervention or group intervention) AND intervention type (e.g., web, online, Internet, feedback, guidance, reminder, treatment, therapy, guidance, support, counselling, programme). Dissertations were identified through PQDT open, which provides full-text and open access to dissertations and theses. A grey literature search was also conducted through the Greo Evidence Centre as well as GambleAware, Gambling Commission Library, and OPHLA Canada. Finally, a hand search was conducted using Google Scholar to detect other peer and non-peer reviewed publications (limited to the first 100 search results). The reference lists of all included studies were searched to identify any potential studies that met the inclusion criteria as well as recent systematic and literature reviews.

Eligibility criteria

Studies were selected based on the following inclusion criteria. Studies had to: (1) use a longitudinal design; (2) include people at-risk and/or experiencing problem gambling; (3) have less than five hours of total intervention time; (4) focus on prevention, harm reduction, or early intervention; (5) involve the delivery of content and not just that a tool or resource was used; (6) be delivered online; (7) include an outcome measure on gambling consumption (amount/frequency) or severity (measured with a validated tool); (8) conduct a follow-up evaluation at a minimum of one week later; (9) published since the year 2000, and (10) be published in English language. Studies were excluded if they involved help-seekers or treatment populations or people responding to advertising for a treatment study. Studies were also excluded if they were delivered in person (not online).

Data extraction and analysis

Data were extracted using a standardised form that gathered relevant characteristics to the review, including participant characteristics, recruitment, and study methods, intervention characteristics, mode of delivery, outcome measures, and the significance and direction of results. The author extracted the data from all included studies. To ensure accuracy of data extraction, a second reviewer reviewed all full-text articles and all data from included studies. A third researcher assessed all included studies with the designated Quality Assessment Tool. The quality assessment inter-rater agreement between the author and second reviewer was 91% and discrepancies were resolved through discussion. Given the relatively small number of studies and articles, this review provides a narrative synthesis of the included articles. A meta-analysis was not possible given the varying study designs and overall quality of the available data.

Quality Assessment

The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool was used to

assess the quality of included studies.[24] This assessment tool has six subscales including: participant selection bias, study design, confounding factors, blinding, data collection methods, and participant withdrawal and drop-outs. Because of the mixed study designs in the current review, we used a modified version of the tool whereby pre-post studies were not assessed on randomisation, blinding, or confounders. We also included an assessment of follow-up evaluations and fidelity checks. Similarly, studies using retrospective data obtained from online gambling websites were not assessed for withdrawals or drop-outs. Each included component was then rated as strong, moderate, or weak, based on the presence of no weak ratings (strong), one weak rating (moderate) or two weak ratings (weak).

FINDINGS

Search results and flow chart

A total of 15 studies were identified for inclusion in the review (see Figure 1). The search of Medline, Cochrane, PsycInfo, and PDQT (dissertations and theses) databases provided a total of 535 citations. After accounting for duplicates, 404 studies remained. Of these, 375 studies were removed because a review of titles and abstracts indicated that these papers did not meet the study criteria. The full text of the remaining 29 citations were examined for eligibility. It appeared that 14 of these studies did not meet the inclusion criteria because there was either no outcome evaluation, the sample were help-seekers, or the intervention was not Internet-delivered. Fifteen studies met the inclusion criteria and were included in the systematic review. This included four studies that met the criteria and had been identified by checking the references of included articles and searching for studies that had cited the included papers.

Study characteristics

Study design

Included studies were published between 2008 and 2019. Of the 15 studies, eight were randomised controlled trials (RCTs), one cluster RCT (by school), four cohort with matched controls, and two pre-post cohort studies. There was one study on prevention, seven studies on harm reduction, and seven studies on early intervention. The setting for studies was predominantly online gambling provider websites (*n*=8), followed by college or high school (*n*=4), and community recruitment (*n*=3). Where studies were undertaken within gambling provider websites, three were RCTs,[25-27] four were matched cohort studies using matched controls which were drawn from a wider dataset,[28-31] and one was a pre-post cohort study.[32] Where studies involved students, three were undertaken in university or college settings,[33-35] and one in a high school.[36] Community recruitment included three studies including two that recruited people who had engaged with online gambling provider websites (but recruited from the community).[37, 38] One study recruited from an online survey provider, Mechanical Turk.[39]

Sample characteristics

Table 1 displays the characteristics of the 15 included studies. Sample sizes ranged from 60 to 5528 participants. The percentage of men within the included studies ranged from 45% to 96%, with an average of 74.1%. The age of participants ranged from 15 to 42 years with an average of 30.2 years. Across the 15 included studies, most recruited participants from Europe (*n*=11), with three from France, two from Norway, and one each from Italy, Austria, Finland, and Sweden.

Figure 1. Flow chart of review selection

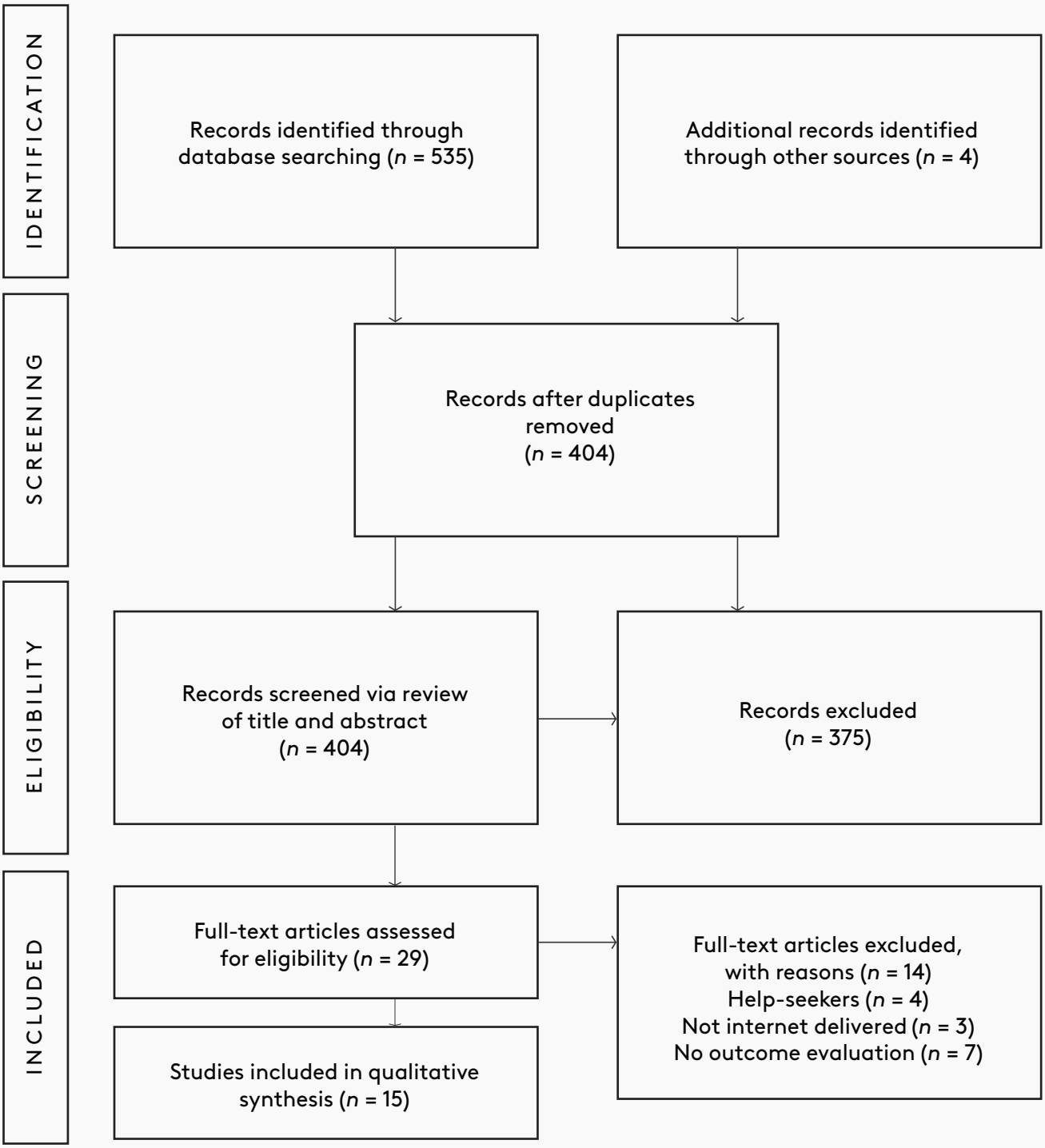

Table 1. Characteristics of included studies

1. Author & date	2. Study design and setting	3. Sample characteristics and sample size[a]	4. Problem-related inclusion criteria	5. Intervention	6. Main outcomes[b]	7. Delivery mode	8. Direction of change	9. EPHPP and funding
Auer & Griffiths (2015)[28]	Matched cohort European gambling provider website	78% male, age NR, n=1015 (matched pair n=15,216)	Daily players active in the previous 14 days who had elected to receive PF	PFc: Feedback on expenditure, duration, number of days, and games played. Matched control: No PF but matched on age, gender, playing duration, and theoretical loss.	Expenditure: Theoretical loss[d] Intensity: Time spent gambling	Website with on-screen dashboard	Expenditure: +ve 14 days. Intensity: +ve at 14 days.	Strong No industry funding
Auer & Griffiths (2016)[25]	RCT (2x2x2 factorial design) Norwegian gambling provider	69% male, average age 41 (SD=13.2) years, n=5,528	Net loss across all games in the past month with over-sampling of high intensity players	PF: Graphical feedback on past expenditure and losses over a 6-month period. Normative feedback: Information on other player's average expenditure plus graphical comparison. Advice: Information on RG tools available through the website.	Expenditure: Theoretical loss and amount wagered	Messages displayed in user account	Expenditure: all groups +ve at 7 days for all expenditure outcomes. Greatest change PF plus advice.	Strong Direct industry funding
Auer, Hopfgartner, & Griffiths (2018)[29]	Matched cohort Norwegian gambling provider	73% male, average age 42 (SD=13.3) years, n=4,692 (matched pair n=46,518)	Played >1 game across any game type in the first quarter of 2017 and had set a personal global monthly loss limit	Limit setting: Automated feedback on remaining available budget once 80% of limit was reached. Matched control: No feedback matched on age, gender, theoretical loss limit, as well as expenditure and games played during the data collection period.	Expenditure: Theoretical loss and amount wagered	Pop-up message (online) or text message (land-based)	Expenditure: +ve at 3 months.	Strong Direct industry funding

1. Author & date	2. Study design and setting	3. Sample characteristics and sample size[a]	4. Problem-related inclusion criteria	5. Intervention	6. Main Outcomes[b]	7. Delivery Mode	8. Direction of change	9. EPHPP and funding
Caillon et al. (2019)[37]	RCT Community sample who use French licensed websites	73% male, average age 35 yearsd,n=60	Score >3 and <7 on PGSI, gambling >once in the past month on a licensed website	Self-exclusion: Self-initiated implementation of a 7-day temporary exclusion on self-selected websites. Control: No intervention.	Expenditure: Money wagered Intensity: Time spent gambling	Gambling websites	Expenditure: No change at 2 months. Intensity: No change at 2 months.	Weak Indirect industry funding
Canale et al. (2016)[36]	Cluster RCT 12 classes in an Italian high school were assigned to intervention or control	58% male, average age 15 (SD=0.6) years, n=168	All ninth-grade students who obtained parental consent	Internet intervention: PF on gambling risk and information on consequences and strategies for reducing risk. An online portal delivered CBT via interactive games and quizzes. Control: PF component only.	Severity: SOGS-RA[e] 30-days Expenditure: Typical monthly amount bet	Purpose built website	Severity: +ve effect at 2 months. Expenditure: No effect at 2 months.	Moderate No industry funding
Cunningham, Godinho, & Hodgins (2019)[39]	RCT Canadian and USA crowd sourcing platform	45% male, average age 37 (SD=10.9) years, n=321	>5 on PGSI and weekly gambling	Internet intervention: PNF, cognitive and behavioural strategies, self-monitoring & motivational emails, or text reminders. Control: No intervention.	Severity: NODS[f] and GSAS[g] Frequency: Days gambled	Purpose built website	Severity: No effect at 6 weeks or 3 months. Frequency: No effect at 6 weeks or 3 months.	Moderate No industry funding
Hayer & Meyer (2011)[38]	Pre-post cohort Austrian gambling provider	69% male, average age 36 years (range 18-64)[d], n=259	Self-initiated self-exclusion	Self-exclusion: Selection of an online exclusion period of 1, 3, 6 or 12 months.	Severity: Lie-Bet Expenditure: Average net weekly losses	Purpose built website	Severity: +ve effect at 1, 6 and 12 months. Expenditure: +ve effect at 1, 6 and 12 months.	Moderate Funding not reported

1. Author & date	2. Study design and setting	3. Sample characteristics and sample size[a]	4. Problem-related inclusion criteria	5. Intervention	6. Main Outcomes[b]	7. Delivery Mode	8. Direction of change	9. EPHPP and funding
Hopper (2008)[35]	RCT USA college students	90% male, average age 21 years[d], n=60	>2 times per month gambling	PNF: Normative feedback on own versus others gambling levels. Feedback on gambling expenditure, frequency and highest amount lost in a gambling session. Control: Assessment only.	Severity: SOGSh Frequency: Days per month gambling	Email and postal mail	Severity: No effect at 4 weeks. Frequency: No effect at 4 weeks.	Moderate No industry funding
Ivanova, Magnusson, & Carlbring (2019)[26]	RCT Finnish gambling provider (slots only)	65% male, average age 29 (SD=12.5) years, n=4,328	slot machine gamblers	Deposit limit prompt: Monthly deposit limit prompted at varying times (registration, pre-deposit, post-deposit). Control: No prompt.	Expenditure: Net loss Frequency: Number of gambling days	Option displayed in user account	Expenditure: No effect at 3 months. Frequency: No effect at 3 months.	Strong Direct industry funding
Lostutter (2009)[33]	RCT USA college students	70% male, average age 19.5 years[d], n=158	>3 SOGS	Advice: Information on 5 behavioural strategies focused on risk-education. PNF: Normative comparison on expenditure and frequency of gambling. Advice and PNF: Combined advice and PNF. Control: Assessment only.	Severity: SOGS Expenditure: Amount lost/ won from gambling	Email and survey software	Severity: No effect at 1-month. Frequency: +ve effect for brief advice at 1-month.	Strong No industry funding

1. Author & date	2. Study design and setting	3. Sample characteristics and sample size[a]	4. Problem-related inclusion criteria	5. Intervention	6. Main Outcomes[b]	7. Delivery Mode	8. Direction of change	9. EPHPP and funding
Luquiens et al. (2016)[27]	RCT French online poker provider	92% male, average age 35 (SD=10.1) years, n=1122	>5 PGSI and current poker player	PNF: Feedback on severity score and categorisation with population comparison. Self-help: CBT in a PDF format. Emailed CBT: CBT programme emailed weekly by a psychologist. Control: 12-week waitlist.	Severity: PGSI Expenditure: Amount lost over past 30 days	Email	Severity: No effect at 6 or 12 weeks. Expenditure: No effect at 6 or 12 weeks.	Weak Direct industry funding
Luquiens et al. (2019)[31]	Pre-post cohort French online poker provider	87% male, average age 31.5 (SD=9.5) years, n=4887	Self-excluding poker gamblers	Self-exclusion: Between 1 day and 3-year exclusion period via the gambling provider website.	Expenditure: Amount lost over past 30 days Intensity: Time spent gambling over 30 days	Gambling websites	Expenditure: +ve effect at 12 months. Intensity: +ve effect at 12 months.	Strong No industry funding
Neighbors et al. (2015)[34]	RCT USA college students	59% male, average age 23 (SD=5.3) years, n=252	>2 SOGS	PNF: Feedback, perceptions, and actual norms on frequency, expenditure, and time spent gambling. All comparisons by same-sex gender. Control: Gender specific feedback on student non-gambling behaviour.	Severity: Gambling problems index Expenditure: Amount lost from gambling over past 30 days	Computer in laboratory	Severity: +ve effect at 3 months but not 6 months. Expenditure: +ve effect at 3 and 6 months.	Strong No industry funding

1. Author & date	2. Study design and setting	3. Sample characteristics and sample size[a]	4. Problem-related inclusion criteria	5. Intervention	6. Main Outcomes[b]	7. Delivery Mode	8. Direction of change	9. EPHPP and funding
Nelson et al. (2008)[32]	Pre-post cohort European gambling provider website	96% male, average age 29 years, n=567	Current gamblers who self-selected a limit on the website	Limit setting: Participants used a deposit limit option that offered lower limits than the websites default (€5,000 a month).	Amount lost from gambling Frequency: Days spent gambling	Gambling website	Expenditure: No effect at 6 months. Frequency: No effect at 6 months.	Strong Direct industry funding
Wood & Wohl (2015)[30]	Matched cohort Swedish gambling provider	89% male, age NR, n=779 (matched pair n=779)	Gamblers who registered to receive feedback via the online tool	PF: Feedback on level of risky gambling categorised into low, moderate, and high-risk. Matched control: Those who did not use the RG tool were matched on age, gender, types of games played, average amount deposited and wagered (over 10 weeks) as well as level of gambling risk.	Expenditure: Weekly deposit and amount wagered (weekly)	Option displayed in user account	Expenditure: +ve for moderate risk only at 1 week and 24 weeks.	Strong Direct industry funding

[a] Missing SD or medians indicate these were not reported in the included study; [b] Where no differentiation between primary and secondary outcomes the table reports two outcomes in order of severity, expenditure, frequency and intensity of gambling; [c] PF=Personalised feedback [d] Theoretical loss refers to a calculation of gambling intensity consisting total bet size multiplied by the house advantage for each game type; [e] SOGS-RA-South Oaks Gambling Screen – Revised for Adolescents; [f] NODS-NORC DSM-IV Screen for Gambling Problems, [g] GSAS – Gambling Symptom Assessment Scale, [h] SOGS-South Oaks Gambling Screen.

Two European studies did not recruit from any one European country. An additional four studies recruited participants in the United States, and one recruited across both the United States and Canada. The eligibility criteria related to gambling harm or involvement was most frequently regular gambling (*n*=10) ranging from never gambled to weekly gambling. Five studies required some level of identified gambling risk with one study targeting people at moderate risk of problem gambling only,[37] and two targeting those with low-risk problems and a score of 2+[34] or 3+ on the South Oaks Gambling Screen (SOGS).[33] Two studies limited their samples to people who gamble scoring 5 or more on the Problem Gambling Severity Index (PGSI), which indicates moderate-risk or problem gambling.[27, 39]

Outcome measures

Outcome measures across studies were focused on (1) symptom severity, (2) gambling expenditure, (3) gambling frequency, and (4) gambling intensity. Seven studies examined symptom severity, which was most frequently measured with the Gambling Problems Index[40] (*n*=3), adapted SOGS with a reduced timeframe[41] (*n*=2), or South Oaks Gambling Screen – Revised for Adolescents (SOGS-RA; *n*=1).[42] There were also single instances of the PGSI,[43] National Opinion Research Center DSM Screen for Gambling Problems (NODS),[44] Gambling Symptom Assessment Scale (G-SAS),[45] and Lie-Bet.[46] All studies examined gambling expenditure with the most frequent approach being amount wagered over a specific period (*n*=11). Expenditure was also measured by theoretical loss (amount lost by house edge), quantity won, total amount deposited, and gross gaming revenue (calculated as net win/loss). Nine studies examined frequency of gambling with the most often used measure being number of days gambled (*n*=8), followed by number of gambling sessions (*n*=2). Six studies examined intensity of gambling, with four measuring hours spent gambling. Other studies examined the highest amount bet in a single session (*n*=2), amount lost per session (*n*=2), and one study measuring the average session duration.

Description of intervention content

Four types of interventions were identified: (1) personalised feedback (PF) or personalised normative feedback (PNF); (2) limit setting; (3) self-directed Internet intervention; and (4) online self-exclusion. Each of these intervention types is described below along with the content of these interventions.

Personalised feedback (PF) or Personalised normative feedback (PNF)

The current review identified a total of six studies that examined personalised feedback. This included two delivering Personalised Feedback (PF) only,[28, 30] and four studies delivering Personalised Normative Feedback (PNF).[25, 33-35] PF is an intervention that involves providing feedback on an assessment. In gambling studies, assessments can be as brief as expenditure or frequency, and often include a measure of problem gambling severity such as the PGSI. Personalised feedback is then provided directly to participants in the form of a brief report which describes the cumulative values recorded in the assessment (e.g., 12-month expenditure). In the current review, two studies provided PF via the gambling provider website, which was displayed in the player profile. Auer and Griffiths[28] provided people who gamble with feedback on the duration of gambling, number of days gambled, and games played. Wood and Wohl[30] provided information to participants on their intensity of gambling and risk of problems. The risk profile was presented to participants as low (no issues), moderate (at-risk), or

high-risk gambling (problematic).

Personalised normative feedback (PNF) extends PF by adding a normative component whereby the individual's scores, or values on assessment, are compared with other people. PNF has accumulated a great deal of evidence as to its effectiveness in reducing harm in college students and other at-risk populations for alcohol and other drugs.[15] It does this by providing population-relevant comparisons to the participant on the basis that this arouses cognitive dissonance and provides a prompt to adjust behaviour. Three studies provided normative feedback on the perceptions of other students' gambling expenditure and frequency, compared with the actual gambling levels at their university.[33-35] One study provided normative feedback based on other players at the same gambling website,[25] and another provided normative feedback that was tailored according to sex.[34] As part of PNF, three studies included PF on gambling behaviours including expenditure, frequency, and time spent gambling.[33-35] Two of the included PNF studies provided additional support or information. Lostutter[33] delivered five protective behavioural strategies focused on risk-education (e.g., set a limit in advance, avoid taking cards). Auer and Griffiths[25] provided written information on different types of responsible gambling tools that were available through the online gambling website.

Limit setting

Limit setting involves setting a financial or time-based upper limit that may be specific to a single gambling episode or over a select period (e.g., year). Three studies examined limit setting interventions.[26, 29, 32] These three studies all involved limit setting in online betting accounts but focused on different aspects of limit setting. Nelson and colleages[32] examined the impact of setting personal monthly limits on a betting account. This limit setting option meant players could select a monthly limit that could not be breached, and was lower than the website default limit of €5,000 in a 30-day period, and €1,000 in a 24-hour period. Auer, Hopfgartner, and Griffiths[29] examined the impact of provided feedback on the nearness of reaching a monthly gambling limit. This study delivered an automated pop-up message once the person had reached 80% of their limit. Ivanova and colleagues[26] examined the timing of limit setting in an online gambling website. Participants were prompted to set a limit at registration, at post-registration but before being depositing funds, and at post-deposit.

Self-directed Internet interventions

Self-directed Internet interventions are a package of information, education, or resources that are delivered online. Participants usually work through a series of modules or lessons which may be delivered with audio and visual content, quizzes, as well as interactive activities. Three studies were identified that delivered a self-directed package of information and activities.[27, 36, 39] Canale and colleages'[36] self-directed intervention was developed specifically for high school students and included a collection of interactive games and quizzes. The content aimed to build knowledge of gambling types, luck versus skill, and how gambling works (including information on independence of events, odds, and probability). The intervention also included information on the characteristics and risk factors associated with problem gambling. The content was delivered across four weeks with the first week being personalised feedback on assessment (also provided to the control group). This included feedback on the severity of gambling problems (SOGS-RA), a list of gambling consequences, as well as information on low-risk gambling and local

gambling help contact details.

Two Internet interventions for adults who gamble were also included in this review. Cunningham and colleagues[39] adapted three brief treatment manuals that provided cognitive and behavioural strategies for reducing gambling behaviours. Participants were able to tailor the intervention by selecting any number of strategies that were relevant.[47] The programme also provided access to a self-monitoring tool and motivational messages, and reminders via email and text. The PNF component provided brief feedback on assessment that included a comparison of gambling behaviours with other people in Canada, as well as feedback on results of screens for gambling cognitions and gambling severity (PGSI score).

Luquiens and colleages[27] developed an interactive workbook that was emailed to participants. The workbook was based on Ladouceur's Cognitive Behavioural Therapy (CBT) treatment manual.[48] It contained content related to motivation, finances, cognitive distortions, gambling triggers, lifestyle, and relapse prevention. Different to the other Internet interventions, Luquiens delivered this CBT via email in an editable PDF format. One arm delivered this CBT via a self-help workbook and the other involved weekly emails from a therapist. This study also contained a PNF component that provided feedback on the problem gambling severity score (PGSI) with a population comparison.

Online self-exclusion

Self-exclusion refers to a request made to a gambling operator to stop the person from accessing gambling activities for a specified period. In the current review, three studies examined online self-exclusion.[31, 37, 38] Online self-exclusions ranged from very brief temporary orders[37] through to 12 months,[38] and up to three years.[31] Two of the included studies were self-exclusions from non-specific gambling websites. Hayer and Meyer[38] examined the impact of online self-exclusion from a single gambling provider in Austria, which provided lottery, casino games, and poker. Similarly, Caillion and colleages[37] examined the impact of exclusions on self-selected websites (any type of gambling). Luquiens and colleagues[31] examined the impact of a self-exclusion order on poker gambling at 12 months post exclusion. This exclusion barred the person from accessing the poker website for the defined period.

Intervention effects

Personalised feedback (PF) or Personalised normative feedback (PNF)

The current review identified a total of six studies that examined personalised feedback. Of the two studies examining PF alone, Auer and Griffiths[28] provided PF to those who gambled daily. Compared with a matched control group, PF resulted in a reduction to gambling expenditure and time spent gambling at 14 days. In a similar study, Wood and Wohl[30] recruited people who gamble online who registered to receive feedback from a gambling provider website. Compared with a matched control group, PF resulted in a greater reduction in gambling expenditure for people at moderate risk of problem gambling only (not for other levels of gambling risk) at one-week and 24 weeks post intervention.

Four studies assessed the impact of PNF. Hopper[35] recruited people who gamble who were identified by a screening tool as gambling at least twice per month. Compared with assessment only, there was no effect of the intervention on severity or frequency of gambling at 4 weeks. Lostutter[33] delivered PNF to college students who had been screened for gambling problems and reported

some level of gambling risk (>3 on the SOGS). This RCT reported that advice only (not PNF) was associated with a reduction in the frequency of gambling compared with a control group involving assessment only, but no impact on problem gambling severity. Neighbors'[34] RCT compared PNF with a control group delivering non-gambling-related feedback. Compared with the control condition, there was reduced problem gambling symptoms and reduced expenditure at a three-month follow-up evaluation, but this was not sustained at six months. Auer and Griffiths'[25] factorial design randomised people who gamble who had a net loss over the past month to a combination of PF, normative feedback, and advice. At the seven-day follow-up comparing a combination of PF, Normative feedback, and advice, Auer and Griffiths[25] reported a reduction in expenditure for all groups with the greatest impact of PF plus advice.

Limit setting

Three studies examined limit setting interventions.[26, 29, 32] Nelson and colleages[32] determined whether a voluntary limit setting feature had an impact on current people who gamble who self-selected a limit in an online gambling website. In this pre-post study, Nelson[32] reported no impact on expenditure or frequency but there was a reduction in the number of bets placed per day. Auer, Hopfgartner, and Griffiths[29] compared people who gamble who had set a monthly loss limit and received feedback on their limits with a matched pairs control group (same age, gender, expenditure but had not received feedback). Compared with the control group, participants who received feedback that they had reached 80% of their limit gambled less money in the following three months. Ivanova and colleagues[26] randomised people who gamble regularly to a prompt at registration, pre-deposit, post-deposit, or to a no-prompt control group. The researchers reported no effect of the deposit limit prompt and no difference between any of the deposit limit timings on expenditure or frequency.[26] This study did find that setting an unprompted deposit limit or changing a limit (increase or decrease) may indicate gambling problems.

Self-directed Internet interventions

The current review identified three studies which had examined a self-directed Internet intervention.[27, 36, 39] Canale and colleages[36] randomised 12 ninth-grade classes to an Internet intervention with PF or a control (PF only). Compared with the control group, those receiving the intervention reported a reduction in problem gambling severity at the two-month follow-up evaluation but no change to expenditure. Cunningham and colleagues[39] recruited people who gamble scoring greater than 5 on the SOGS through a crowd sourcing survey platform and delivered a multi-component Internet intervention. Compared with a no-intervention control group, Cunningham and colleages[39] found no effect of the intervention on severity or frequency of gambling at six weeks or three months. The authors suggest the findings are a combination of a small sample as well as low engagement with the intervention (only 9% of participants logged into the intervention more than once). Luquiens and colleages[27] recruited at-risk poker players (scoring >5 on the PGSI) from an online gambling website and delivered a randomised trial involving PNF, a self-help PDF delivering CBT, and an emailed CBT programme delivered by a therapist, versus a 12-week waitlist control group. The study reported no impact on severity or expenditure of any intervention type compared to the control group at six or 12 weeks. They suggested these outcomes

were a result of significant attrition (90% drop-out) and recruiting people at-risk of problem gambling who were not actively attempting to seek help.

Online self-exclusion

In the current review, three studies examined online self-exclusion.[31, 37, 38] Luquiens and colleagues[31] conducted a pre-post study involving 4887 people who had registered for self-exclusion over a seven year period. They reported significant reductions in gambling expenditure, and time spent gambling, against a matched pair control group. When the authors further examined short-term exclusions only (less than three months), there was no impact on time or money spent. Two studies recruited participants from the community who had signed up to an online self-exclusion for online gambling provider websites. Caillion and colleages[37] examined the impact of a self-initiated seven-day temporary exclusion against a no-intervention control. In this study, participants with moderate-risk gambling on the PGSI were randomised to the temporary exclusion, selected their preferred websites, and in the presence of a researcher, enacted the temporary exclusion. Compared with the control group there was no change to expenditure or intensity of gambling at the two-month follow-up evaluation. Hayer and Meyer's[38] pre-post study, examined the impact of an online self-exclusion from a single gambling provider in Austria. The researchers reported a positive effect on expenditure and intensity of gambling at 1, 6, and 12 months following the exclusion enactment.

FUNDING SOURCES

Six studies reported direct industry funding to conduct the research.[25-28, 30, 32] Funding came directly from a gambling operator, and in all of these studies, funding was from an online operator. One study did not report the funding source, but directly involved an online gambling operator,[38] and another did not directly receive funding but the authors were supported in other similar studies by gambling industry funding.[28] There was one study which received funding through the French Ministry of Health.[37]

ASSESSMENT OF EVIDENCE QUALITY

Of the 15 studies, 13 were considered to have a moderate or strong global rating on the (EPHPP) Quality Assessment Tool (see Table 1). Two studies were included even though they were associated with weak quality ratings.[27, 37] One was a self-exclusion intervention study,[37] which involved self-selected samples, no information on follow-up rates, and attrition greater than 60%. The second study[27] testing an Internet intervention, was also associated with very low retention at follow-up evaluation (10%), and did not report confounders between groups (i.e., other factors that could potentially influence the outcome but were not identified).

ASSESSMENT OF FOLLOW-UP AND FIDELITY

Shortcomings of the included studies were the short length of time for follow-up evaluation, and the lack of ongoing participation in the intervention or fidelity checks (i.e., whether participation was monitored by the research team). Three studies had a follow-up period of less than one-month,[25, 28, 33] seven studies had follow-up evaluation of less than three months,[26, 27, 29, 35-37, 39] three had a follow-up period of less than six months,[30, 32, 40] and just two studies conducted a follow-up evaluation at 12 months post intervention.[31, 38] All studies with medium term

follow-up evaluation were cohort studies.

In relation to fidelity checks, three of six PNF/PF studies examined whether participants had read and understood the intervention information.[33, 35, 40] Two included a feedback section on the survey and one required participants (students) to read the feedback for five minutes in a university laboratory.[34] Limit setting was offered as part of engagement with the gambling websites, meaning that participants needed to engage with the intervention in order to proceed to gamble. Of the three self-directed Internet intervention studies, two were not able to report on engagement with the intervention or whether participants opened the email or logged onto the website.[27, 36] Cunningham[39] reported that 42% of participants who did access the Internet intervention completed the first task (gambling quiz). In terms of content beyond self-assessment, just 14% accessed any other content with only 9% logging on to the intervention more than once. Of the two self-exclusion studies conducted in a community setting, one had a fidelity check whereby a researcher observed the participant setting up their online self-exclusion.[37]

DISCUSSION

This review examined and critically assessed the literature related to Internet delivered prevention, harm reduction, and early intervention gambling behaviours. Even though many intervention studies were identified in McMahon and colleagues'[7] umbrella review (more than 55 studies), the current systematic review identified just 15 which were Internet delivered. These studies assessed Internet delivered PNF, PF, limit setting, self-directed Internet interventions, and online self-exclusion. For prevention we identified just one study which aimed to prevent gambling behaviours from commencing, as well as prevent gambling-related harm. This study delivered an Internet intervention and was associated with reduced gambling severity, but not expenditure at the two-month follow-up. The study was limited, however, in that it did not report engagement with the self-directed programme and students were free to do it in their own time. As indicated by Cunningham,[39] engagement with content is a huge and growing issue in these types of interventions where participants register for the intervention and then fail to access the intervention content, thereby rendering their treatment as not actually delivered.

Seven studies delivered harm reduction which targeted people who gambled over a specified period (e.g., past month) or at a specified intensity (e.g., daily play, large losses). Harm reduction involved PF, PNF (*n*=4), and limit setting (*n*=3). For PNF, three-quarters of the studies reported reduced gambling expenditure or intensity over the short-term (seven and 14 days) and for people at moderate risk for problem gambling only at the 24-week follow-up. Just one-third of the studies on limit setting indicated reduced expenditure and this was at the three-month follow-up evaluation. The literature indicated that feedback providing a prompt that the person had reached 80% of the expenditure limit resulted in reduced expenditure. However, another study indicated the timing of when limits are set did not have an impact on gambling behaviour. In the current review all studies on limit setting were carried out in online gambling venues (none for any other forms of gambling) and no studies examined ways to help people set limits. Future research might consider offering support on how to set limits through the provision of quantitative or qualitative guidelines.

Seven studies were focused on early intervention which targeted people who were already showing

signs of gambling harm or had low to moderate levels of gambling severity. Early intervention involved self-exclusion (*n*=3), PNF (*n*=2), and Internet interventions (*n*=2). For self-exclusion, two-thirds of the studies indicated reduced gambling expenditure or severity, which is consistent with research involving land-based self-exclusion.[7] However, for those with gambling problems who returned to gambling, levels of severity increased once the self-exclusion order was reinstated. PNF for early intervention had mixed findings with one study indicating a reduction in problem gambling severity and expenditure at the three-month follow-up (but not at six months), and another reporting an impact for frequency only at the one-month follow-up. The two studies delivering Internet interventions had previously been reported as improving gambling symptoms for those who were seeking help, but when delivered to people not actively seeking treatment, the interventions were no longer effective. This may in part be explained by high rates of attrition and low engagement with the intervention content. Alternatively, it may be that a different type of intervention is needed for those with problems but who are not reaching out for help. Given the positive findings associated with feedback and screening, it may be that tailored Internet interventions are needed that can be an adjunct to PNF and offered as part of a stepped-care approach.

The target groups for these interventions were predominantly people who gamble accessing online gambling websites, and to a lesser extent, students and people identified as at-risk in the community. Participants in these studies were predominantly male, aged around 30 years old, and gambling at least weekly. Research indicates that being male and gambling more frequently is associated with an increased risk of gambling problems,[5] which suggests that the target group for these interventions is appropriate. Across these studies only two examined a specific type of gambling (i.e., slots and poker) with the remainder focused on gambling in general. It may be helpful to look at interventions that are specific to different forms of gambling, particularly in an online setting. Almost all the reviewed studies originated from Europe and the USA and many of these were funded by the gambling industry.

Overall, the studies were assessed as moderate or strong quality. The primary reasons for moderate or weak quality were: (1) selection bias in which study participants were self-selected; (2) drop-out and attrition where less than 60% of the sample remained at follow-up evaluation; and (3) failure to report or address potential confounding factors. All but four studies were determined to have a moderate quality of study design mostly due to a lack of reporting on randomisation methods. Similarly, no studies achieved a strong rating on blinding because no studies reported that the outcome assessor was blind to group allocation. All studies were strong on data collection methods, which reflected the use of online survey tools that were consistently delivered and focused on symptom severity, expenditure, intensity, or frequency of gambling. Because of online methods of data collection, there was very limited missing data.

Limitations

This systematic review is the first to examine Internet delivered prevention, harm reduction, and early intervention, but the following limitations should be considered. First, the quality of included studies was variable in terms of the type of study (limited RCTs) and quality of study, whereby there were multiple instances of low sample representativeness, failure to identify or address

confounders, and high rates of study attrition. Ideally, we would have only included RCTs, but this would have reduced the number of included studies to less than half and much of the detail on trends would have been lost. It does mean though that these innovative studies provide some insight into the current state of the literature, but before firm conclusions can be drawn, more high-quality study designs need to be administered.

Second, many studies that were similar in design and content were excluded because the study was only interested in Internet-delivered interventions. For example, there were multiple studies delivering PNF that delivered the intervention as a printed summary for participants to review. Similarly, interventions in school settings may include computer-based learning, but as far as this review could determine, this was in addition to the intervention rather than the intervention per se (e.g., videos, quizzes). While a comparison between form of delivery is beyond the scope of this review, it would allow better integration of the available literature. For example, although there are only a couple of studies on normative feedback offered online, these studies build upon a larger literature of the effectiveness of normative feedback provided in person and in written form. The same is true for the self-exclusion and brief intervention literatures. Third, because of the limited quality of studies, a meta-analysis was not able to be conducted to determine the effectiveness of interventions. A meta-analysis was not possible due to varying study designs and overall limited data available.

Fourth, the review reported intervention content as it was described in the included studies. Across many of these studies, intervention descriptions were very limited and not informed by a published protocol or trial registration. This meant analysis of intervention components was also limited. This reduced the capacity to compare similar intervention content. There was also very limited information on exactly how these Internet interventions were delivered (e.g., within the gambling website or as part of a different website). Lastly, the review focused on severity and frequency of gambling over knowledge and skills, which may not be consistent with theoretical models. For instance, according to the Theory of Planned behaviour, prevention and harm reduction work might be better placed to measure outcomes measuring attitudes, subjective norms, and perceived behavioural control. These outcomes may be more relevant to those who are yet to develop serious gambling problems.

Implications for collective prevention, harm reduction, and early intervention

This review indicates some promising directions in terms of the potential value of brief advice, limit setting, and online self-exclusion. However, the literature is currently too meager to extract specific prevention and education plans. To advance this promising work future investment in prevention, harm reduction, and early intervention could include the following options.

- → Studies that are conducted with online betting providers have the benefit of being able to leverage existing technological infrastructure. This can facilitate the delivery of high quality interventions where the technology costs are kept to a minimum. However, this approach requires the willingness of researchers and industry to work together. Given the current debate on industry funding[49, 50] it may be that co-operation needs to be facilitated at a government level.
- → Interventions developed for gambling venues have not been made available online. This

may be because many approaches have consistently been found ineffective or specific to land-based poker machine venues as part of casinos (e.g., caps on EGMs, smoking bans). However, it may be that a blended approach is useful whereby land-based venue gambling is supported by more extensive technology. For example, technology could be used to plan visits and set limits in advance, conduct regular self-assessment, and offer guides for limiting or reducing gambling behaviours as required.

→ The biggest problem with Internet delivery is when there is no engagement with the intervention. Frequently, participants fail to open or start the intervention or, where they do begin the intervention, stop after just one session. Studies must include fidelity checks on the amount of content (or active ingredients) of the intervention that is delivered and received by the participant.

→ Behavioural tracking appears more effective for people at-risk of problem gambling rather than people with problem gambling. It may be that failure to adhere or respond to interventions indicates an increased risk or gambling problems. This may extend a stepped care model whereby a different intensity of intervention is delivered according to need. For example, a study by Jonsson[51] delivered motivational interviewing by letter or phone to the top 0.5% of people who gamble who displayed risky gambling patterns on an online gambling website. At the 12-week follow-up evaluation, there was a 15% reduction for the mailed letter and a 29% reduction in theoretical losses for the phone intervention (compared with a 3% reduction for the control group). This low-intensity intervention could be easily delivered via the Internet (e.g., email, chat, WhatsApp) and demonstrates the potential impact of stepping up the intensity of intervention.

→ Self-exclusion was included within this review as it is frequently classed as harm reduction in other similar reviews.[7, 17, 52] However, in all these studies a high proportion of participants already have severe gambling problems. Motka and colleagues'[18] systematic review of self-exclusion reported between 51 and 95% of participants were classified as problem people with problem gambling. It may be that brief or short-term periods of exclusion are more relevant as an early intervention. This was demonstrated in Caillon and colleagues'[37] study where just 18% of people who gamble, enacting a seven-day temporary exclusion, had problem gambling.

→ Internet delivered interventions allow for more sophisticated tailoring and personalisation of interventions. The included self-directed Internet interventions delivered CBT that would typically be delivered to help-seeking people who gamble. It may be that the high attrition rates and lack of engagement is due to the lack of tailoring and personalisation to the person's readiness to change. Again, this indicates the need for a vastly expanded suite of interventions that are appropriate, relevant, and of interest to people with low levels of gambling problems.

Implications for future research

→ When delivered without a control group, it makes it very difficult to know whether the impact was due to recruitment methods or the intervention. Across all the intervention types there is a need to improve the quality of

evidence using randomised samples. Future research should consider RCT or factorial designs with a control condition to determine the effectiveness of interventions when delivered online.

→ The current findings suggest treatment developed for people with problem gambling may not be of interest to those who are starting to experience some gambling problems. New intervention types may be required for early intervention. Future research should consider a stepped-care approach when delivering self-directed Internet interventions for non-treatment seekers, and develop interventions that are tailored to their needs and preferences.

→ There was an absence of online interventions focused on prevention and Internet gambling. For example, there were no studies that directed young people away from gambling sites, or to ensure that there were age checks or parental consents upon signing up to gambling websites. These kinds of interventions could be useful for reducing both gambling and gambling harms.

→ There was just one school-based intervention in the current study, and of the PNF studies, most were conducted in online gambling venues. Future research might consider identifying the components of PNF and PF that could be of value in school-based interventions. Furthermore, the findings that PF was comparable to PNF is counter to the broader literature. Future research could compare pure PNF with PF and other additions, such as strategies or tips for reduction.

→ Outcome measures were most frequently gambling expenditure and frequency with a whole range of severity measures that are typically administered to people with problems. It may be that these outcomes are not optimal for prevention, harm reduction, and early intervention. Future research should consider the optimal outcome measures for this domain of research. It should also consider the optimal period for follow-up evaluation and whether this should be consistent with the Banff consensus[53] of two years.

→ Lastly, because of the limited quality of studies, a meta-analysis was not able to be conducted to determine the effectiveness of interventions. Once more research is available, a meta-analysis indicating the efficacy of these Internet interventions appears warranted.

CONCLUSION

This systematic review identified 15 Internet delivered interventions for gambling prevention, harm reduction, and early intervention. Overall, the literature is small but promising and provides information on potential areas for expansion. The quality of this literature is still developing, as indicated by the quality of included studies and limited number of high quality randomised controlled trials. This review provides information to guide the translation and tailoring of traditional face-to-face interventions for online delivery across the broad range of identified areas. This translation and extension of current practice from face-to-face to online, is important if interventions are to have an impact in new gambling settings. The use of Internet-delivered prevention, harm reduction, and early intervention may increase engagement and be attractive to people who gamble because of anonymity, and potentially reduce stigma in responding.

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Brief biography

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Conflict of interest statement

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4.3 Systems and Tools that Produce Actual ("Hard") Barriers and Limit Access to Funds

By Dr. Simone Rodda

INTRODUCTION

Gambling involves the betting or wagering of something of value where the outcome is determined by chance and one party becomes richer and the other poorer. Usually the item of value is monetary and the motivation for gambling is primarily financial gain.[1] The central involvement of money means winning and losing can prompt feelings of elation and joy as well as desperation, sadness, and despair. To date, regulation that is specific to the monetary aspects of gambling has been tightly focused on regulation that prevents criminal activities (e.g., money laundering, loan sharks) as well as restrictions to cash and credit betting.[2] There has also been a focus on supporting responsible gambling (RG) described as industry initiatives and government regulations that support people to "gamble within affordable limits."[3] There has been an abundance of research on limiting or restricting gambling expenditure. Studies have examined expenditure limits on gambling products, generation of account history, notifications of gambling expenditure, self-assessment, pop-up messages, pre-commitment, expense calculators, information, online surveillance, pre-paid cards, and the use of e-wallets and cryptocurrencies.[3-9] These studies suggests some approaches may be helpful for setting or sticking to gambling expenditure limits for some people who gamble.

Money is the essential component of gambling, and it is implicated in gambling-related harm. Multiple studies indicate that gambling can cause a reduction in savings, discretionary income, loss of assets, pay-day loans, debt, and inability to pay bills.[10] Financial harm can present as general, crisis or legacy harms where the person experiences the longer term impacts of gambling problems (e.g., debt, inability to purchase housing). Affected others are also significantly affected by financial harm such as income loss, debt, and inability to pay bills and other living expenses.[11-13] In addition, financial harm can have an impact on other harms, as well making these worse and more difficult to repair.[14] For example, money problems can put strain on relationships and make the person want to withdraw from social networks. Financial harm can also mean that the person needs to take a second job thereby having an impact on time for family and relationships.

Gambling-related debt is an especially difficult burden for people who gamble and their family. It is estimated that around one-quarter of people who develop gambling problems experience gambling-related debt.[15] Debt has been associated with poor mental health, suicidality, stress and distress, and relationship conflict.[15-19] In an attempt to relieve harm, people who gamble may seek financial advice, and this is a key motivator for treatment seeking.[20-23] For example, 91% of women and 80% of men who called the Michigan Gambling Helpline reported difficulties in paying bills, debt, and borrowing from family and credit agencies.[24] The level of debt is also a predictor of treatment drop-out with those experiencing higher debt levels more likely to prematurely terminate treatment than those with lower debt.[25] Most jurisdictions offer financial assistance in the form of specialist gambling financial counsellors as well as other financial advisors.[26] Affected others may

also seek advice from gambling counsellors and financial counsellors.[12, 13] Research has reported a perception among affected others that providing debt relief may prevent the person from hitting "*rock bottom*" and therefore the person does not experience the full consequences of their actions.[27]

Recognition of the importance of gambling-related financial harm has resulted in gambling expenditure being a main outcome of interest in intervention studies,[28, 29] but there are few interventions that focus specifically on money (i.e., banking systems or tools) or cash management. Granero and colleagues examined the impact of Cognitive Behavioural Therapy (CBT) aimed at enhancing money and cash control.[30] This study recruited 998 people with gambling problems in Spain and delivered a 16-week CBT group treatment. Participants were asked to set up money and cash control strategies that involved restrictions to cash and card access, and having a friend or family member manage finances. Participants that implemented control strategies reported lower gambling severity at post-treatment evaluation than those that did not implement the recommended approach. Treatment that focuses on money management is not just limited to gambling,[31, 32] since multiple studies indicate money may be a cue for alcohol and illicit drug use.[33, 34]

Money and cash control appears to be a common self-help strategy with more than a dozen studies investigating it.[35-46] These studies all indicate that people who gamble go to elaborate lengths to control money and cash as a way of protecting themselves and their families from unplanned or excessive gambling. Studies have reported the use of self-initiated money and cash control strategies before gambling (e.g., set a budget, leave cash or cards at home, paying bills before gambling), during gambling (e.g., avoid borrowing money, avoid cash machine use), and after gambling (e.g., avoid chasing losses).[38, 47] A factor analysis of 489 current or past people who gamble reported money management was used more frequently by people experiencing problem gambling than no/low/moderate-risk people who gamble but that cash control was used equally by all people who gamble.[42] Rodda and colleagues also reported that around 85% of all people who gamble implemented at least one money or cash control strategy. However, participants rated the helpfulness of this strategy as average, well below other approaches such as cognitive strategies (e.g., thinking about how money could be better spent). Multiple studies reported affected others (e.g., partners or family) also apply self-help strategies regarding money management to minimise the impact of gambling-related harm.[27, 48, 49] Such strategies include establishing signatories to joint accounts through to taking over control of the person who gambles' finances.

Whether money and cash control approaches are supported by formal systems or tools is unclear. Given that research has reported for more than 30 years that unrestricted access to money and cash is associated with gambling problems, it is timely to determine the extent to which systems and tools provide hard barriers to prevent excessive, unplanned, or uncontrolled access to money or cash which could be used for gambling. Hard financial barriers therefore refer to tools or systems that can restrict access to cash (i.e., banknotes, physical money) and money (i.e., incorporates physical money and virtual money) which could be used for gambling. Systems and tools are formal methods to restrict money or cash, and may be part of banking or financial management systems inside or outside the gambling venue. Almost all research to date on financial barriers

to gambling has focused on soft systems such the involvement of family members (e.g., someone else controls money or cash), through to voluntary in-the-moment personal restrictions (e.g., cash or debit cards left at home) as well as ways to avoid borrowing money for gambling from friends or relatives. Other research has focused on limiting gambling expenditure (e.g., limit setting and pop-up messaging), but these approaches are not intended to stem the flow of money or cash more broadly.

Systems or tools that might support hard money or cash limits have been identified or suggested in previous research.[15, 17-19, 50-53] These include (a) banking blocks on gambling that cannot be easily overturned, (b) advocacy and grassroots campaigns for government legislated mechanisms, (c) restriction to all credit card gambling imposed by government and the banking sector, (d) prevention of gambling expenditure by minors based on bank account information, (e) removal of ATMs (referred to as cash machines in the UK) from gambling premises, (f) spend controls on gambling within gaming (often part of parental controls), (g) policy and regulation related to access to money and cash for gambling, (h) banking accounts that can be personalised according to individual need such as no access to cash, (i) proactive intervention from banks where high-risk gambling behaviours are identified, and (j) open access to anonymous bank transaction data for research purposes.

The primary aim of this study was to assess the presence of hard financial barriers in the context of gambling harm minimisation for anyone who gambles. The goal was to conduct a scoping review to explore systems and tools that can act as a barrier to money or cash. This included identifying attitudes and preferences towards systems and tools (e.g., perceived need or benefit), the effectiveness of existing systems and tools, as well as their characteristics and target groups. Where systems and tools were identified, the review also describes the content and functionality. The specific research questions were: (a) What are the characteristics of systems and tools that could be a barrier to money or cash? (b) What are the attitudes and preferences towards systems and tools? (c) Who are the target groups of systems and tools? (d) What is the effectiveness of systems and tools? (e) Are there effective systems and tools for those at different levels of gambling risk?

METHODOLOGY

A scoping review was selected as a form of knowledge acquisition that can synthesise information to answer an exploratory research question. Given the expected limited evidence in the field, the scoping review was a preferred way to identify gaps in research, as well as systematically search, select, and synthesise existing evidence.[54] This scoping review followed the protocols recommended in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[55]

Search strategy

A systematic search was conducted in December 2020 to identify all relevant peer-reviewed literature exploring financial system and tools to restrict access to money or cash that could be used for gambling. The search strategy included an electronic database search of Medline, Cochrane, Scopus, PsycInfo, and Proquest Dissertations and Theses Global using a combination of MeSH terms, key words, and wildcards. Search terms incorporated the following terms: gambling (e.g., wagering, betting, gamble) AND finances (e.g., cash, credit, funding, bank, debt, financial, economics) AND limit (e.g., barrier, harm

minimisation, harm reduction, prevention, note acceptors, consumer safety, social responsibility, ban, restriction). A grey literature search was also conducted through the Greo Evidence Centre, as well as GambleAware, UK Gambling Commission Library, WorldWide Science, Ontario Public Health Library Association, and Social Care Online. Finally, a search was conducted using Google Scholar to detect other peer and non-peer reviewed publications (limited to the first 100 search results). The reference lists of all included studies were searched to identify any potential studies that met the inclusion criteria, as well as recent systematic and literature reviews.

Eligibility criteria

Studies were selected based on the following inclusion criteria. Studies had to: (1) include people who gamble or affected others at risk of gambling harm or with problem gambling; (2) focus on systems and tools that provide hard barriers to money or cash; (3) be targeted directly at access to money or cash (not limit setting of gambling expenditure); (4) apply to a land-based or online gambling venue or setting (e.g., credit bans) or external setting (e.g, financial institutions); (5) include empirical data (e.g., qualitative or quantitative); and (6) be published in English language. Studies were excluded where they were optional or non-binding ("soft") financial barriers, such as family involvement in restricting access to money or cash. Studies were also excluded if they were not directly related to access to money or cash such as deposit limit and pre-commitment systems (these are considered limiting gambling expenditure rather than access to money or cash) or did not include empirical data (e.g., opinion pieces, legal documents).

Data extraction and analysis

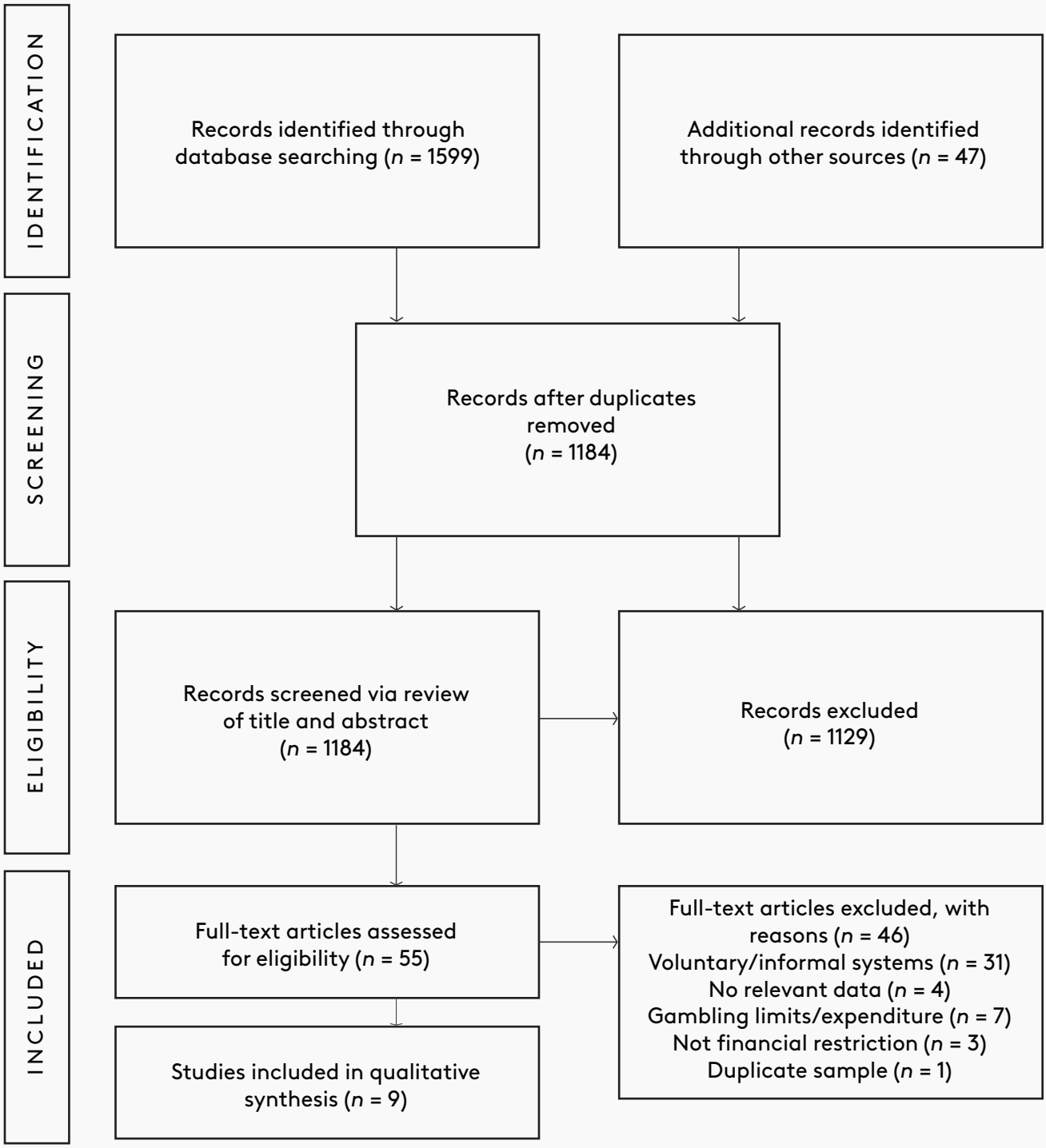
Data was extracted using a standardised form with relevant characteristics to the review including participant characteristics, definition of hard financial limit, study design, intervention characteristics, outcome measures, and significance and direction of results. The author extracted the data from all included studies. To ensure accuracy of data extraction, a second reviewer independently screened a random selection of 50 records for eligibility which resulted in no disagreement. For full text review, the second reviewer independently reviewed five publications to ensure a high level of agreement in assessment of eligibility. Methodological quality or risk of bias of the included studies is generally not recommended for a scoping review.[56] To provide an indicator of overall quality, the current review mapped study design against the hierarchy of evidence with ratings of high (RCTs, observational studies), moderate (pre-post studies, uncontrolled trials) and low (descriptive studies, case studies, expert opinion).[57]

FINDINGS

Search results and flow chart

A total of nine studies were identified for inclusion in the review (Figure 1). The search of Medline, Cochrane, PsycInfo, Scopus, and PDQT (dissertations and theses) databases provided a total of 1646 citations. After accounting for duplicates 1184 studies remained. Of these, 1129 studies were removed because a review of the title and abstract indicated that these papers did not meet the study criteria. The full text of the remaining 55 citations was examined for eligibility. Forty-six of these studies did not meet the inclusion criteria because they were not focused on hard barriers, reported no data or correlations only,

Figure 1. Flow chart of review selection



(e.g. relationship between gambling and ATM use), were voluntary systems or tools focused on gambling expenditure, or were not related to money or cash restrictions. The reference list search of the included studies identified one additional study that met the inclusion criteria. Therefore, nine studies met the inclusion criteria and were included in the scoping review. The final nine included studies were five reports and four journal articles.

STUDY CHARACTERISTICS

Study design

The included studies were published between 2004 and 2020. Of the nine studies, two were pre-post surveys, three cross-sectional cohort, and six qualitative studies using interviews or focus group methods. Two of these studies were mixed methods involving both a survey (one cohort and one pre-post) and interviews.[58, 59] There were three studies on money management and six studies related to prohibition of automated teller machines (ATMs, also referred to as cash machines) or electronic funds transfer point of sale (EFTPOS also referred to in the UK as a card payment machine) from gaming venues. The setting for studies was predominantly gaming venues (*n*=6) or community recruitment (*n*=3). Where studies focused on money management there was one cross-sectional survey[60] and two studies which were in-depth interviews.[61, 62] Where studies were focused on ATMs the study design was two pre-post evaluations,[59, 63] two surveys,[58, 64] and four in-depth interviews[58, 59, 65, 66] (one study was cross-sectional plus interviews[58] and another was pre-post plus interviews[59]). Recruitment for the pre-post surveys were from a gaming venue[63] and through community advertising and treatment services.[59] Studies involving cross-sectional surveys recruited using CATI (Computer Assisted Telephone Interview) design.[58, 64] Recruitment for qualitative interviews was from community and treatment services,[58, 59] CATI survey,[65] and one recruited from gaming venues.[66]

Sample characteristics

Table 1 displays the characteristics of the nine included studies. Sample sizes ranged from 17 to 928 with an average of 359 participants) (SD=393.1, Median=107). The percentage of men within the included studies ranged from 36% to 100% (average=56.3%). The age of participants ranged from 18 to 75 years with an average of 35.8 years (based on five studies which reported an average age). Across the nine included studies most recruited participants from Australia (*n*=6, 66.7%) with one study each from the UK, Canada, and Finland. The eligibility criteria related to gambling harm or involvement was most frequently self-identified gambling problems (*n*=3) or scoring at 3+ (moderate-risk or problem gambling) on the Problem Gambling Severity Index (PGSI) (*n*=1). The remaining eligibility was related to frequency of gambling which included gambling or visiting a venue in the past year (*n*=4) or gambling at least twice weekly (*n*=1). Two studies did not have any gambling-related inclusion or exclusion criteria.[59, 65]

The target group of these interventions varied. The three studies examining money management systems targeted three different groups and all involved samples consisting only of people at moderate risk or experiencing problem gambling. Evans and colleagues'[60] study of financial blocking systems stated that the target market was people who gamble experiencing harm as well as affected others. People who gamble included anyone that attempted to self-regulate or reduce gambling behaviours inclusive of people experiencing gambling harm. Heiskanen and colleagues[61] presented a qualitative study of financial recovery

Table 1. Characteristics of included studies

AUTHOR, DATE, AND SOURCE TYPE	TYPE AND QUALITY OF EVIDENCE	STUDY DESIGN AND POPULATION[C]	RESEARCH AIM RELEVANT TO THE CURRENT STUDY	KEY FINDINGS	FUNDING BODY
Allen Consulting Group (2011)[65]	Report Low	13 structured group interviews, (n=126). 55% Male, aged 18-70, 12% MR/PG. Participants were recruited from a CATI survey of those willing to take part in an interview. [a]	Explore the attitudes and impact of ATM removal from gaming venues in Tasmania (exc. casinos).	Strong support for the removal of ATMs from gaming venues as circuit breaker for continued gambling once limits reached. There was low support for casino exemption.	Tasmanian government Australia
Evans, Collard, Fitch (2020)[60]	Report Low	Cross-sectional survey (n=88) 61% male, 55% were 34-54 years of age. Recruitment was predominantly via treatment services.	Determine usage and preferences for banking systems that can assist in reducing gambling-related harm.	Of those aware of banking blocks, 44% had turned it on at least once to stop or reduce gambling. 54% had reduced gambling expenditure and had not reverted the restriction. In terms of ideal banking system, the most endorsed components were hard barriers on frequency and expenditure per day as well as limits on the time of day for card use as well as an option for a cooling off period or the option for a permanent block. Other potential service options were highly endorsed including a regular reminder of gambling expenditure each month and access to gambling-harm reduction experts located in financial institutions.	GambleAware UK
Harrigan, MacLaren & Dixon (2010)[63]	Report Moderate	Pre-post study with matched control (n=729). 36% male, average age 53.5 years (SD=41.2), frequent EGM gamblers recruited in venues, 62% MR or PG. Recruited from two gaming venues.	To determine the impact of removing ATMs from one gaming room (versus another venue where ATMs were not removed) on expenditure, frequency, and unplanned gambling.	Removal of ATMs was associated with reduced unplanned gambling on the initial day of testing when compared with a venue where the ATMs were not removed from the gaming room floor. There was no change in gambling expenditure, frequency, or unplanned gambling between the two venues at 30-day follow-up.	Greo (formerly Ontario Problem Gambling Research Centre) Canada
Heiskanen (2017)[61]	Journal article Low	Semi-structured interviews (n=17). 71% male, M=42 years (range 24 – 70). Self-identified gambling problems recruited from treatment and support services or groups.	Investigate financial recovery from problem gambling including the experience of community and health services.	Restrictive money-management measures were perceived as effective and supportive of personal aims of controlling money. Viewed more trustworthy when oversight was outside of the family. When oversight by family personal relationships were negatively impacted. Viewed as useful when offered alongside financial advice and assistance.	Finnish Foundation for Alcohol Studies
Hing, Cherney, Gainsbury, Lubman, Wood, Blaszczynski (2015)[62]	Journal article Low	Semi-structured interviews (n=25). 100% male, M=39.9 years (SD=14.1), 100% MR or PG on the PGSI. Recruited from previous surveys who had gambled > once in the past 12 months and were not currently seeking treatment.	Understand aspects of Internet gambling that are associated with loss of control and perceived usefulness of RG measures.	Impaired control was associated with access to credit betting. Participants had concerns about credit provision from operators, ease of credit card use and inconsistency between online and land-based restrictions on credit betting.	Gambling Research Australia

AUTHOR, DATE, AND SOURCE TYPE	TYPE AND QUALITY OF EVIDENCE	STUDY DESIGN AND POPULATION[C]	RESEARCH AIM RELEVANT TO THE CURRENT STUDY	KEY FINDINGS	FUNDING BODY
Jackson, Christensen, Francis, Dowling (2016)[64]	Journal article Low	Cross-sectional CATI survey. Sub-sample of the 2011 Tasmanian prevalence survey, (n=828). 44% male, average age 43 years, 8% MR or PG. Recruited those who had gambled on an EGM in the past 12 months.	To examine self-reported change to gambling expenditure following the removal of ATMs from Tasmanian gaming venues.	Across the whole sample there was no change to gambling expenditure. However, 10% of MR/PG decreased expenditure compared with just 4.5% of LR and 0.6% of non-problem gamblers.	Tasmanian government Australia
McMillen Marshall, Murphy (2004) [58]	Report Low	Mixed methods. Cross-sectional CATI survey (n=755), 49% males, 56% aged 18-44 years. Most of the sample were non-gamblers (78%) with 11 participants self-identified as having a gambling problem. Additional in-depth interviews with gamblers and affected others (n=16).	Determine attitudes towards ATM removal from gaming venues in the Australian Capital Territory.	Support for removal of ATMs was 57% across the sample with higher rates of agreement by non-gamblers and people with gambling problems. Interviews with gamblers and affected others reported almost unanimous support for the complete removal of ATMs from gaming venues.	Australian Capital Territory (ACT) Gambling and Racing Commission Australia
Rintoul, Deblaquiere, Thomas (2017)[66]	Journal article Low	In-depth interviews with gamblers (n=40) and 3 focus groups with professionals (n=20). Gamblers: 50% male, 33/40 aged 25-64 years, 84% MR or PG on PGSI. Recruited from 11 gaming venues.	The study explored access to cash in gambling venues.	A key theme was stronger regulation of access to cash in gambling venues. Unrestricted access to cash through EFTPOS had the potential to undermine the benefits of ATM removal from gaming venues.	Commonwealth Government of Australia
Thomas, Pfeifer, Moore, Meyer, Yap, Armstrong (2013)[59]	Report Moderate	Mixed methods. Pre-post survey (n=928). 41% male, M= 48 years (SD = 16.2) and 41% of the sample were MR or PG on the PGSI. Additional in-depth interviews with gamblers (n=30).	Evaluate the effectiveness of ATM removal from all gaming venues in the state of Victoria, Australia.	Positive attitude towards ATM removal from all gambling venues by PG and to a lesser extent non-gamblers. At 30-day evaluation there was a significant reduction in overall expenditure. This reduction in expenditure was greatest for people with PG. These findings were consistent with overall gaming revenue for the state that reported a 7% reduction in expenditure over the first 6 months of ATM removal. Qualitative analysis suggested ATM removal increased self-control and management of expenditure.	Victorian Department of Justice and the Victorian Commission for Gaming & Liquor Regulation Australia

from problem gambling, and all participants self-identified as experiencing problem gambling. Hing and colleagues'[62] study was targeted at all people who gamble online, but the final sample included only people at moderate risk of or experiencing problem gambling. The target group for ATM restrictions were people who gamble on gaming machines in land-based venues. Four of these studies reported ATM restrictions as harm minimisation measures targeting gaming venue patrons. A further two studies measuring the attitudes towards ATM restrictions stated that the measures were to support the reduction of problem gambling,[58] whereas Harrigan and colleagues[63] study examined the impact of ATM removal on people who gambling on gaming machines with people who gamble regularly (twice weekly or more).

The characteristics of systems and tools

The type of hard barriers in this study were systems and tools to assist with financial management and reduction of access to money or cash for gambling. The three studies which examined money management systems or tools were related to attitudes and preferences towards prohibiting credit and debit card betting,[60, 62] and financial management systems that could impact on access to cash.[61] The six studies focused on ATMs included three which examined their removal from a whole jurisdiction excluding casinos[59, 64, 65] and one that removed ATMs from one venue only.[63] One study examined attitudes towards the proposed removal[58] and another examined an extension of ATM removal to EFTPOS restrictions.[66] EFTPOS was highlighted as different to ATMs in that the person must interact with an operator in order to withdraw cash.

Attitudes and preferences towards systems and tools

Attitudes towards financial systems and tools

Three studies examined attitudes and preferences toward financial systems and tools. Evans and colleagues[60] explored the use of debit and credit card technology to block gambling expenditure as well as preferences for banking systems in the UK that could assist in access to money or cash for gambling. They conducted a cross-sectional survey with 88 participants who were recruited mainly from treatment services. Participants were asked about their awareness and use of debit and credit card technology blocking options which would prevent financial transactions from occurring with businesses that provide gambling opportunities. At the time of the survey, eight financial services offered the technology on selected accounts which meant it was available to approximately 60% of people in the UK. Evans and colleagues[60] reported that 43% of treatment seekers were not aware of blocking options. Of those aware of banking blocks, 44% had turned on the blocks at least once to stop or reduce gambling, and 54% reported reduced gambling expenditure and had not reverted the block. Overall, 65% of respondents rated debit and credit card blockers as a helpful way to control gambling (rating of 7/10 or higher). The authors also provided data from one financial institution and reported that the blocker stopped an average of two to three transactions per user per month. They estimated that half a million people were currently using the blocks but just 20% reported gambling in the six months prior to the block initiation. The authors suggested that affected others may also be implementing blocks as a way of reducing gambling-related harm. Given the usefulness of money and cash blocks,

the authors commented on the need to take advantage of opportunities to inform the public when opening accounts, in bank statements, or where expenditure patterns may indicate problematic gambling. Treatment and support services and self-exclusion providers should also be alerting clients of the option. For optimal effectiveness, the authors suggest card blockers may need to be implemented in conjunction with self-exclusion and/or gambling website blockers.

Evans and colleagues[60] also investigated the ideal components of a money management system to provide hard financial limits. Participants rated the importance of seven different potential components of a banking tool to support the self-management of gambling. The highest endorsements as determined by a score of 7/10 or greater were: A cooling off period between initiation and ability to turn off the block (91%); requirement to talk to a person at the bank before being able to turn off the block (91%); and, allow a permanent block on all gambling spend on the card (91%). Other items highly endorsed by more than four-fifths of participants was to permit a spending limit by hour, day, or week (82%), and, a limit on the number of times the card can be used for gambling per hour, day, or week (82%). Although rated less positively, there was still good endorsement for set a limit on the time of day when the card cannot be used for gambling such as evenings (73%) and stop specific gambling operators from accepting card transactions (77%).

Participants in the Evans and colleagues[60] study also rated the likelihood of usage of additional tools that financial services could provide to support money and cash control. The most frequently endorsed tools (defined by a rating of quite likely or very likely to use) were having a gambling-related harm reduction specialist located in the financial institution (76%), the ability to opt out of further credit (62%), and the capacity to set a limit on the amount of cash that can be taken out of an ATM (53%). The authors concluded across all aspects of the study the most important aspects of a blocking system would be the inclusion of a time-release lock and a limit on cash withdrawals.

Heiskanen and colleagues[61] investigated factors related to financial recovery from problem gambling using the hard barriers imposed by social services versus a soft limit imposed by family member. In this study hard barriers referred to social service or a family member being appointed to manage money and be partly or entirely responsible for the the person who gambles' income and expenditure. The study conducted a series of semi-structured interviews with 17 participants who self-identified as having gambling problems. Heiskanen and colleagues[61] reported financial strain often became worse after stopping gambling because of debt-related interest that continued to grow. The authors noted ongoing financial strain was associated with relapse and that financial systems and tools could assist with relapse prevention. Participants reported mixed experiences of having social services versus a family member control money and cash. For some participants there was relief that relapses could be prevented, and a sense of self-trust could be regained. However, participants noted limitations with soft mechanisms involving family members with increased relational difficulties and potential for conflict. The study noted that control over money and cash appeared to be more therapeutic than focusing on debt reduction, in that some participants when relieved of debt continued to gamble. This was made worse because the only hard barriers were available through social services which was not suitable for most participants. There

was also a perception that gambling was a self-caused problem that ought to be resolved by the person who gambles themselves.

Hing and colleagues[62] conducted a study to understand aspects of Internet gambling that were associated with loss of control and attitudes towards bans to credit card betting. A total of 25 semi-structured interviews were conducted with men who were classified by the PGSI as people at moderate risk of or experiencing problem gambling. Recruitment was from participants involved in previous surveys conducted by the research team with eligibility restricted to those who had gambled at least once in the past 12 months and were not currently seeking gambling specific treatment. The study indicated eight different themes were associated with loss of control (e.g., digital money, targeted promotions, alcohol consumption) with one theme directly related to hard barriers. Participants voiced concerns about the convenience and accessibility of credit betting and the ease of credit card use. They stated that direct linkages between credit and betting accounts through the storage of card details meant funds could be topped up instantly. Others stated that credit betting provided access to funds to support chasing losses which inadvertently led to more desperation and chasing. There were multiple participants calling for a direct prohibition of credit betting to limit access to money for gambling. Hing and colleagues[62] noted that harm minimisation measures mandated in land-based venues were not applied to all Internet gambling operators.

Attitudes towards prohibition of ATMs in gaming venues

Five studies investigated attitudes and preferences towards restricting access to cash through ATMs in gambling venues. The Allen Consulting Group[65] explored attitudes towards the removal of ATMs from gaming venues in Tasmania (Australia). This mixed methods study convened 13 structured group interviews and administered a questionnaire to 126 participants. Participants were recruited from a CATI survey and had indicated a willingness to take part in an interview with 12% of the sample screening as at moderate-risk or experiencing problem gambling on the PGSI. Qualitative data indicated strong support for the removal of ATMs because it triggered a break in play and potentially helped people manage impulsive expenditures. Participants reported a preference for the prohibition of ATMs in gambling venues to be extended to the two state-based casinos.

McMillen and colleagues[58] conducted a study of attitudes towards ATM removal from gaming venues in the Australian Capital Territory (Australia). This study was a cross-sectional CATI survey involving 755 participants. The sample consisted of 590 (78%) people who had not been to a gambling venue in the past 12 months (termed non-gambler), 119 occasional gamblers, 44 regular gamblers (defined as gambling at least weekly), and 11 participants reporting self-identified gambling problems. This data was also supplemented with interviews with 16 people who gamble and affected others. CATI participants were asked to indicate the degree to which they agreed with four questions related to ATM removal and bans on access to money from credit cards in venues. In response to the question of whether ATMs should be removed from gaming venues altogether 48% either agreed or strongly agreed that they should be removed. This rate varied according to gambling status with 55% of self-identified people with problem gambling and 52% of people who do not gamble agreeing that ATMs should be removed compared to 35% of people who gamble occasionally.

McMillen and colleagues[58] also asked participants whether all EFTPOS facilities should be removed from gaming venues. Just under half of the total sampled either agreed or strongly agreed with the removal of EFTPOS facilities (47%). Again, the results differed by gambling status with 49% of people who do not gamble in agreement. Lower rates of agreement were reported for people who gamble occasionally (30%), people who gamble regularly (22%), and people with self-identified problem gambling (36%). Finally, participants were asked whether ATMs and EFTPOS facilities should be permitted inside gaming rooms. Just 20% of the total sample agreed, which again differed according to gambling status with 16% of people who do not gamble and 18% of self-identified people with problem gambling in agreement. People who gamble regularly had the strongest rate of agreement (43%), followed by people who gamble occasionally (24%). These findings should be treated with caution given the very high rate of non-gamblers (78%) who had not been in a gambling venue in the past 12 months.

McMillen and colleagues'[58] qualitative component indicated strong agreement for the prohibition of ATMs by people harmed by gambling. The report stated most people harmed by gambling supported the removal of ATMs from gambling venues. This was because it would assist people to stay in control, force a break in play, and provide a safer gambling environment. Participants noted that ATMs in venues facilitated chasing losses and unplanned expenditure to the point of no more available funds. The removal was not, however, viewed as a miracle cure for gambling problems. Many participants indicated that other measures were also needed. As the current review's inclusion criteria was people who gamble and affected others, comments from industry were not included. However, qualitative data in this same study indicated that industry and government need to 'balance' consumer preferences with broader social and community benefits and that people with problems would find ways to get around the prohibition. None of these views were mentioned by people harmed by gambling or those working in health care services.

Rintoul and colleagues[66] explored venue controls for limiting access to cash. Forty people who gamble were recruited from 11 gambling venues. Almost all participants reported gambling problems with 84% scoring as moderate-risk or experiencing problem gambling on the PGSI. People who gamble were asked to report on tools for controlling access to cash in gambling venues. Participants were concerned that removal of ATMs meant that cash could be accessed through EFTPOS and that these financial transactions were not subject to the same restrictions. Participants reported that access to cash through EFTPOS had the potential to undermine the removal of ATMs from venues.

Thomas and colleagues[59] conducted a mixed methods study investigating attitudes and effectiveness of the removal of ATMs from Victorian gaming venues in Australia. A total of 929 people who gamble were recruited from the community and completed a pre- and post-survey on ATM removal. At baseline very few people agreed that ATMs should be permitted in gaming areas (around 5% agreed) with around half agreeing that they could be in venues but not gaming areas. There was a significant difference in agreement, whereby 27% of people with problem gambling thought ATMs should be in venues compared with around half of people who did not gamble on EGMs or those with low level problems. Two-thirds of people with gambling problems thought that ATMs should be removed from venues altogether, which was

significantly greater than other levels of gambling risk. Thomas and colleagues'[59] interviews with people who gamble indicated positive attitudes to ATM withdrawal. Qualitative analysis suggested that ATM removal would be helpful to themselves or to other people. There was also a view that EFTPOS should be removed from gaming venue floors, with two-thirds of people with problem gambling wanting EFTPOS removed from gambling venues altogether.

The effectiveness of hard barriers

Three studies evaluated the effectiveness of hard restrictions to cash, and all were related to the removal of ATMs from gaming venues. Harrigan and colleagues'[63] pre-post study investigated the impact of removing ATMs from one gaming room. This pre-post study used a matched control design where gambling expenditure, frequency, and sticking to limits was measured for patrons at two gambling venues (one where ATMs were removed from the gaming room floor and one venue where they were not removed). They recruited 729 people who gambled frequently (at least twice weekly) from two Ontario gambling venues and administered pre-post measures at baseline and 30-days later. Few participants did not report gambling problems (16%) with the majority classed on the PGSI as experiencing low-risk (23%), moderate-risk (39%), and problem gambling (23%). Harrigan and colleagues[63] reported reduced unplanned cash withdrawals on the day of the intervention (24% of participants) compared with the control group (43%). At a 30-day follow-up evaluation, there was no difference in expenditure, frequency, or unplanned gambling. The authors concluded that continued availability of ATMs in other venue areas may have an impact on the usefulness of removing them from the gaming floor.

Jackson and colleagues'[64] cross-sectional study examined the self-reported change to gambling expenditure following the removal of ATMs from Tasmanian gaming venues. The sample consisted of 828 participants who had gambled on an EGM in the past 12 months. Participants were asked whether their gambling had increased, decreased, or stayed the same since ATMs were removed from venues. Across the entire sample, 98% of participants reported no change to gambling expenditure. However, there was a significant difference between non-problem and people who gamble who are at risk of problem gambling, whereby 10% of people at moderate risk and experiencing problem gambling reported a reduction in gambling expenditure.

The largest and most extensive evaluation of ATM removal from gaming venues was conducted by Thomas and colleagues[59] in Victoria, Australia. Involving 928 people who gamble in a pre-post survey, Thomas and colleagues reported a significant reduction in EGM expenditure between baseline and a 30-day follow-up evaluation. People with problem gambling reported a reduction in average monthly expenditure from AUD$277 to AUD$187 in hotels and AUD$203 to AUD$161 in clubs. There was no difference detected in amount spent at casinos and racecourses which were exempt from the ATM ban. These findings were consistent with industry reports which found a 7% reduction across the state in the six-month post-evaluation period. Qualitative analysis suggested ATM removal assisted with self-control. Participants stated that ATM removal assisted people to 'think twice' about further expenditure. Some noted that ATM removal would not be enough to stop people from excessive gambling once problems had developed, but that it might be useful as a way of preventing harm from occurring in the first place.

Funding sources and quality of evidence

All studies were funded through government or government funded agencies, and there was no reported industry funding. Five studies were funded directly from Australian state or territory governments, or the commonwealth government. All other studies were funded by organisations that support gambling and addictions research including Gambling Research Australia, Greo, GambleAware, and the Finnish Foundation for Alcohol Studies.

The overall quality of evidence was low across the five reports and four peer reviewed articles. The evidence on effectiveness of hard financial limits was low with just two studies rated as moderate which included a before and after design. The remaining seven studies were assessed as low quality and were qualitative or survey designs.

DISCUSSION

This review examined the attitudes and effectiveness of systems and tools to support hard financial limits on money and cash. It is well established that people who gamble across the continuum of gambling risk use informal systems and tools to self-regulate but there was a dearth of evidence on formal or hard financial systems or tools, or evidence for their effectiveness. The current scoping review identified nine studies which examined attitudes and/or effectiveness of financial systems or tools. These studies assessed debit and credit card blockers and the need for hard financial systems that can support self-regulation and recovery from gambling problems. Most studies were related to in-venue cash restrictions, and all of these were associated with ATM or EFTPOS availability.

The current review highlighted a huge gap on formal systems and tools for money and cash management for people who gamble, as well as those who develop a problem. Evans and colleagues'[60] innovative approach to hard barriers is a world first in examining engagement with financial systems and tools that can control access to money and cash. These hard financial limits were well received by people with gambling problems and the findings are promising. Other similar financial blocking options are starting to emerge in the UK, Australia, and New Zealand, but to date none of these have resulted in published evaluation. For example, the United Kingdom introduced a ban on gambling with credit cards in April 2020 and this is currently being considered in Australia.

Heiskanen and colleagues'[61] study of formal systems controlled by social services and informal systems involving a family member highlighted gaps in other similar studies.[35-47] None of these studies identified a need for hard barriers—rather, there were discussions about implementation failure because self-managed banking systems could easily be overturned. In the Evans study, the authors noted that the central components of an effective financial management system were that it could not be easily overturned and that it controlled access to cash. This is important given the dozen other studies that have consistently reported that people who gamble and affected others use these financial strategies.

Six studies examined attitudes and impact of ATM removal from gaming venues. These studies consistently found that ATM removal was perceived as helpful for sticking to gambling limits. These studies varied however in the degree of support for ATM removal which appeared to be influenced by the gambling context (whether

ATMs had already been removed), the extent of ATM removal (a single venue versus a whole jurisdiction), and the frequency and severity of participants' gambling engagement. For example, participants in Australian studies, where ATMs had previously been removed, reported stronger support for their removal than in jurisdictions where similar measures were being proposed. In terms of effectiveness, where ATMs were removed from whole areas, there were reports of reduced gambling especially amongst those with gambling problems. In the only study which removed ATMs from a single venue, Harrigan and colleagues[63] reported no impact. This suggests that restrictions need to be applied across jurisdictions or countries to ensure that they have a chance of being effective.

The target groups for these interventions were mainly people who gamble in EGM venues as well as people with gambling problems. Participants in these studies were slightly more often men and around 35 years of age. The studies that focused on money management systems and tools recruited people who gamble that reported gambling problems. Research suggests that gambling-related financial harm can occur to people at no or low-risk for gambling problems, but there were no studies that considered the needs of this group. A clear limitation of the evidence identified in this review is a lack of data on how hard barriers affect different populations, whether different barriers are needed for different populations, and their effectiveness. Safeguarding those who are vulnerable may fall to parents or carers with lower digital literacy, leading to inequalities amongst groups with lower digital literacy, and further embedding a social gradient in gambling-related harms. The social gradient that affects people accessing many health care and social services may also limit access to services that facilitate the implementation of financial barriers. The lack of evidence for the subject as a whole means that even when stronger evidence of effectiveness does become available it may not be applicable to all groups.

Across the included studies, just one examined hard financial systems and tools for people who gamble online.[62] This study questioned the inconsistency in financial restrictions between land-based and Internet gambling. Two studies[60, 62] suggested a combination of approaches may be required when implementing a hard financial limit online. For example, it may be that for Internet gamblers the combination of blocks on debit and credit banking combined with website blockers is optimal. The growth of remote gambling globally places an even greater emphasis on the potential for systems and tools made available by the financial sector. This review recognises that harm minimisation measures in land-based venues are not consistently applied to Internet gambling operators and, as such, evidence on effective hard barriers for remote operators is rapidly needed. Furthermore, systems and tools that operate only in land-based gambling venues may inadvertently exacerbate inequalities in gambling harms if hard barriers such as limiting access to ATMs are not accompanied by hard financial barriers online.

Almost all of the reviewed studies originated in Australia and none were funded by the gambling industry. These findings highlight an opportunity for industry, government, and the community to fund and support high quality studies on the attitudes, needs, preferences, and effectiveness of hard limits in both land-based and online gambling settings. Recent calls for stakeholder collaboration to foster responsible gambling[67, 68] suggests an openness to investigate important reform that could protect all people who gamble

and their families from gambling-related harm. Other funding sources could also be considered that are outside of traditional sources (i.e., gambling industry and government) such as financial industry associations.

The policy context for hard barriers includes the differing role that national and local government plays in setting policy and regulatory endorsement as well as how they are piloted and deployed. This review explicitly considered global evidence on approaches to the deployment of systems and tools and, as such, there was not a focus on specific regulatory contexts. Future research might consider a review of regulation and regulatory levers across countries. This could be especially useful given much of the evidence cited in the review originates from national and regional Australian Governmental reports which highlighted the relevance of government regulatory context to gambling harm reduction interventions.

Limitations

This scoping review is the first to examine the attitudes, preferences, and the effectiveness of systems and tools to support hard financial limits for money and cash that could be used for gambling. However, the literature was limited in terms of quantitative research as well as evidence quality and, as such, the following limitations should be considered. First, the quality of included studies was low where just two involved any kind of outcome evaluation. These pre-post studies were without a control group, so it is not possible to know the real impact of hard barriers. Traditional conceptions of the hierarchy of evidence, ranked the quality of evidence identified in this review as being of low quality. The gap in the evidence base on this subject is a key finding of the review but does undermine the generalisability of the findings to broader contexts. Similarly, included studies almost exclusively relied on self-report data. Ideally future studies include objective financial data obtained through gambling or banking transactions.

Second, the original vision for the current review was to focus solely on an evaluation of systems and tools to restrict access to money and cash for gambling. The meagre quantitative literature meant the scope was expanded to understand attitudes and preferences reported in qualitative studies (not just quantitative). It was expected that the wider scope would uncover many more studies that met the inclusion criteria, but most reviewed full text articles referred to systems for limiting gambling bet size or frequency (limit setting, smart cards), or qualitative studies focused on soft measures such as asking a family member to help with cash control. The use of this systematic approach to the literature search allows us to conclude there is a massive gap in the literature which requires urgent attention.

Third, the review included only hard financial limits which meant soft options were not included. It may be for some people a soft option (e.g., leaving cards in the car when in a gaming venue) was perceived as a hard barrier and therefore helpful in restricting cash for gambling.

Fourth, the current study focused on people who gamble and affected others, and did not include the attitudes or experiences of people who work in the gambling industry. We did however briefly report on these findings when they were dominant in the included studies. For example, the McMillen[58] qualitative study recruited similar proportions of industry and consumer representatives, and more than half of the report presented industry perspectives on the need to 'balance' gambling benefits and disadvantages for communities.

Fifth, the literature spans more than 20 years with

major shifts in banking systems and tools, and it may mean that some of the findings may no longer be relevant. For example, Evans[60] noted that the UK government recently regulated to prevent credit card betting, which somewhat negated their findings related to credit betting. Similarly, the move towards cashless payments varied across countries with this trend accelerating over time. This could render older studies less useful and suggests a need to ensure regular monitoring of the situation. Finally, because of the limited number and quality of included studies, a systematic review or meta-analysis was not conducted. It is therefore not possible to draw firm conclusions as to the impact of hard financial limits on reducing money or cash for gambling or whether it had an impact on gambling-related harm.

Implications for collective support for hard financial limits

This review identified some new and emerging systems and tools that offer hard financial limits that could be helpful to people experiencing gambling-related harm. The identified systems and tools may be useful as prevention, harm minimisation, early intervention, and treatment. However, more foundational work is needed to identify needs, preferences, and effectiveness of systems and tools.

Implications for future research

→ The number of excluded full-text qualitative studies that made no mention of hard financial limits was surprising. Future research might consider how and why the situation has developed that counsellors, academics, governments, and policy makers are not demanding that financial systems and tools be put in place to protect and support people who gamble and their families. Interestingly there was also very little discussion in the included studies as to why there was so little research on hard financial limits.

→ There was limited discussion about children and money. The finding that most people using the new UK system were affected others might suggest parents are using these blocks on accounts to stop children accessing betting sites. In a study on loot boxes (a new gambling form that is built into computer games)[69] parents reported that unlinking credit from an app store was an important approach to restricting loot box expenditure. Future research might consider the role of financial blocks for app-based gambling games such as loot boxes, and parental preferences in being able to access such a product.

→ Hard barriers that reduce harm amongst some groups in society mean that intervention-generated inequalities may arise from the implementation of hard financial barriers. Digital literacy barriers or language barriers may impact the ability of individuals to engage with financial products or services that can minimise harm.

→ The current findings suggest an opportunity for financial institutions to unilaterally act to prevent and reduce unrestricted access to money and cash by people who are concerned about gambling harm. As outlined by Evans and colleagues,[60] financial institutions are in a position to deliver the public good products that can make a massive impact on individuals and families. Ideally, researchers could partner with financial institutions to evaluate and report on the impact of these measures.

→ The gambling field is in a unique position to

advocate on behalf of other health and social services for systems and tools that can help many different segments of the population. As identified in multiple studies,[31, 32, 34] access to hard financial limits can be a useful addendum for reducing harm associated with all addictions.

→ Much of the evidence related to ATM removal is of relevance only to land-based gambling venues. Internet gambling is rapidly growing and even more so during the COVID-19 pandemic. Because of the rapid growth, there is an urgent need to extend hard barriers into Internet gambling to restrict access to funds as well as introduce new hard barriers specifically for Internet gambling.

→ Hard barriers such as systems and tools restricting cash for gambling are unlikely to be voluntarily adopted by the gambling industry. Hard barrier approaches may therefore need to be part of a legislative approach overseen by regulatory functions. The lack of evidence to date might therefore be placed in this context with recognition that development of an evidence base for hard barriers may be viewed as being counter to the interests of the gambling industry.

CONCLUSION

This scoping review identified nine studies that examined attitudes, preferences, and the effectiveness of hard financial limits. Overall, the literature was scant. This is surprising given such an abundance of data indicating that hard financial limits could be useful to all people who gamble, as well as for people with problems when trying to self-manage gambling harm. This review provides information on where more research is needed and possible future directions.

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4.4 Self-Exclusion

By Sheila McKnight

INTRODUCTION

This chapter summarises the evidence on the contribution of self-exclusion programmes to gambling harm prevention and education among people at-risk of or experiencing gambling-related harm. Self-exclusion is used as a harm management tool for people who self-identify as at risk of or experiencing harm from gambling. By enrolling in a self-exclusion programme, they agree to abstain from gambling in the listed venues/sites for a set period, ranging from 24 hours to indefinite or lifetime bans. Gambling operators will then block player accounts or cards, or monitor venues through facial recognition by staff. There may or may not be penalties for those who are caught gambling at a barred site during their exclusion.

Although self-exclusion is a harm minimisation strategy, it still falls under the umbrella of prevention and education as an intervention that aims to prevent further harm. Research suggests that factors related to how self-exclusion programmes are designed or implemented (e.g., promotion, registration process, or control for breaching) can influence the extent to which the programme is used, and its outcomes for those at-risk of or experiencing harm from gambling. Additionally, this chapter aims to identify major gaps in the evidence and offer guidance for improving the provision of self-exclusion programmes. The content covers research on all aspects of self-exclusion programmes as it relates to the prevention of gambling harm.

Three questions are addressed in this chapter:

1. **How effective is self-exclusion in the prevention of further gambling harm among people who are at-risk of or experiencing harm from gambling?**
2. **Are there any unintended negative consequences or outcomes of self-exclusion programmes for prevention and education about gambling-related harm among at-risk individuals?**
3. **How might self-exclusion programmes be used to reduce harm from gambling as part of a collective prevention and education plan?**

METHODOLOGY

Self-exclusion has been the subject of several recent systematic reviews, although the focus of the studies usually has not been on self-exclusion as a prevention and education strategy. To effectively answer the research questions, it is important to assess the findings from a broad range of studies that assess self-exclusion from the perspective of gambling harm prevention and education. This will contribute a more informed understanding of whether, how, and the extent to which varying self-exclusion programmes and initiatives might contribute to a comprehensive plan for reducing gambling-related harm in Great Britain.

Narrative review

Given the availability of high-quality systematic reviews of self-exclusion conducted within the past 10 years, the present knowledge synthesis was undertaken following a narrative review approach. As Kastner et al. note, "*A knowledge synthesis summarizes all pertinent studies on a*

specific question, can improve the understanding of inconsistencies in diverse evidence, and can define future research agendas."[1, 2 p.2] As a type of knowledge synthesis, the narrative review approach allows quantitative and qualitative evidence, as well as grey literature to be reviewed, but does not generate new theories or merge data, as a meta-analysis would. A narrative review is used to explore the evolving "*story*" of a discipline.[2 p.46] As such, it gives an overview of the research that highlights contradictions within the field.[2] A strength of the narrative review is that it considers contextual factors related to the evidence, such as jurisdictions and sources of funding.[3] The focus is more on gathering relevant information than on rigorous quality assessment.[1] The findings of narrative reviews are often well suited to informing policy making decisions and intervention design applications. The outputs of narrative reviews means that the messages are woven together to be more accessible and applicable for informing practice than some other types of knowledge syntheses.[2]

Search strategy

An initial search identified reviews of self-exclusion that have been conducted within the past ten years, from 2010 onward. This encompassed multiple review types including systematic, scoping, narrative, realist, and meta-analysis. The search terms were developed using the Cochrane handbook guidelines for formulating review questions and inclusion criteria, known as PICOS (Population-Intervention-Comparison-Outcomes-Study design):[4] (P) people who self-identify as at risk of or experiencing harm from gambling (i.e., population); (I) voluntary self-exclusion programmes provided by gambling operators (i.e., intervention); (C) gambling-related harm before enrolling or after participating in self-exclusion; or comparison to populations that have not participated in self-exclusion programmes (i.e., comparison); (O) reduction of gambling harm in people who participate in self-exclusion programmes (i.e., outcomes); and (S) systematic reviews or other reviews. The final terms used were "*self-exclusion*" or "*voluntary exclusion*" and "*gambl**", limited to reviews only. Scopus, Web of Science, PubMed, PsycINFO, CINAHL, and ERIC databases were searched on July 2, 2020.

A second search was then conducted to include the most recent evidence that would not have been included in the reviews. Therefore, the intention of this search was to retrieve recent articles published on the topic of self-exclusion related to prevention and education from the date of the literature search of the most recently published review (May 2018) to July 2020. The search included the same databases and search terms used to identify the existing reviews, but was not limited to review studies.

A document search of grey literature was also completed on eight sites, using the same search criteria as above where possible. Grey literature sources consisted of the Greo Evidence Centre, GambleAware Research Publications, Gambling Commission Research Library, OpenGrey Grey Literature Repository, Ontario Public Health Library Association (OPHLA) Custom Search Engine for Canadian Public Health Information, Social Care Online, and Google. Google searches were limited to the first 100 articles, per the Google literature search methods of the Canadian Institute for Health Information.[5]

Inclusion and exclusion criteria

Included documents were English language publications about self-exclusion from gambling in relation to prevention and education. Reviews

published in academic journals were included if they contained information about how articles were systematically searched for and selected. Grey literature documents were included if they were in a review format with self-exclusion as one of the main focuses. Documents were excluded if they did not address any of the research questions, if they were not evidence-based, if they were not accessible electronically, and if they were below "*first-tier*" grey literature document types[6] (such as conference presentation slides, news stories, and press releases).

Quality assessment

Four tools suggested by Greo were used to assess the quality of included evidence in each category. For the reviews, this consisted of the Checklist for Systematic Reviews and Research Syntheses from the Joanna Briggs Institute (JBI).[7] For articles published after May 2018, assessment was done using the Effective Public Health Practice Project's (EPHPP) Quality Assessment Tool for Quantitative Studies[8] and the Critical Appraisal Skills Programme's (CASP) checklist, "*10 Questions to Help You Make Sense of Qualitative Research*".[9] Finally, the AACODS (Authority, Accuracy, Coverage, Objectivity, Date, Significance) checklist[10] was used to assess grey literature quality.

According to the JBI Checklist criteria, two of the six reviews published in academic journals did not assess articles for quality, stating that self-exclusion is a "*developing area of research*"[11 p. 2] and that all studies would have been considered 'weak' and eliminated.[12] Four of the six reviews did not provide any substantial recommendations in relation to policy and practice, citing that this was due to low quality evidence[3] and inconsistent results across studies.[12] Three of the six reviews were narrative reviews and therefore did not combine studies. None of the reviews assessed for publication bias. Similarly, according to the EPHPP tool and CASP checklist, all articles published after May 2018 were assessed as 'moderate' or 'weak' based on selection bias, study design, and methods related to data collection. In reference to the AACODS checklist, the grey literature documents were not peer reviewed, with the exception of one evaluation.[13] Overall, however, most publications were produced by experts in the field, had extensive descriptions of methodology, and included detailed bibliographies.

Search results

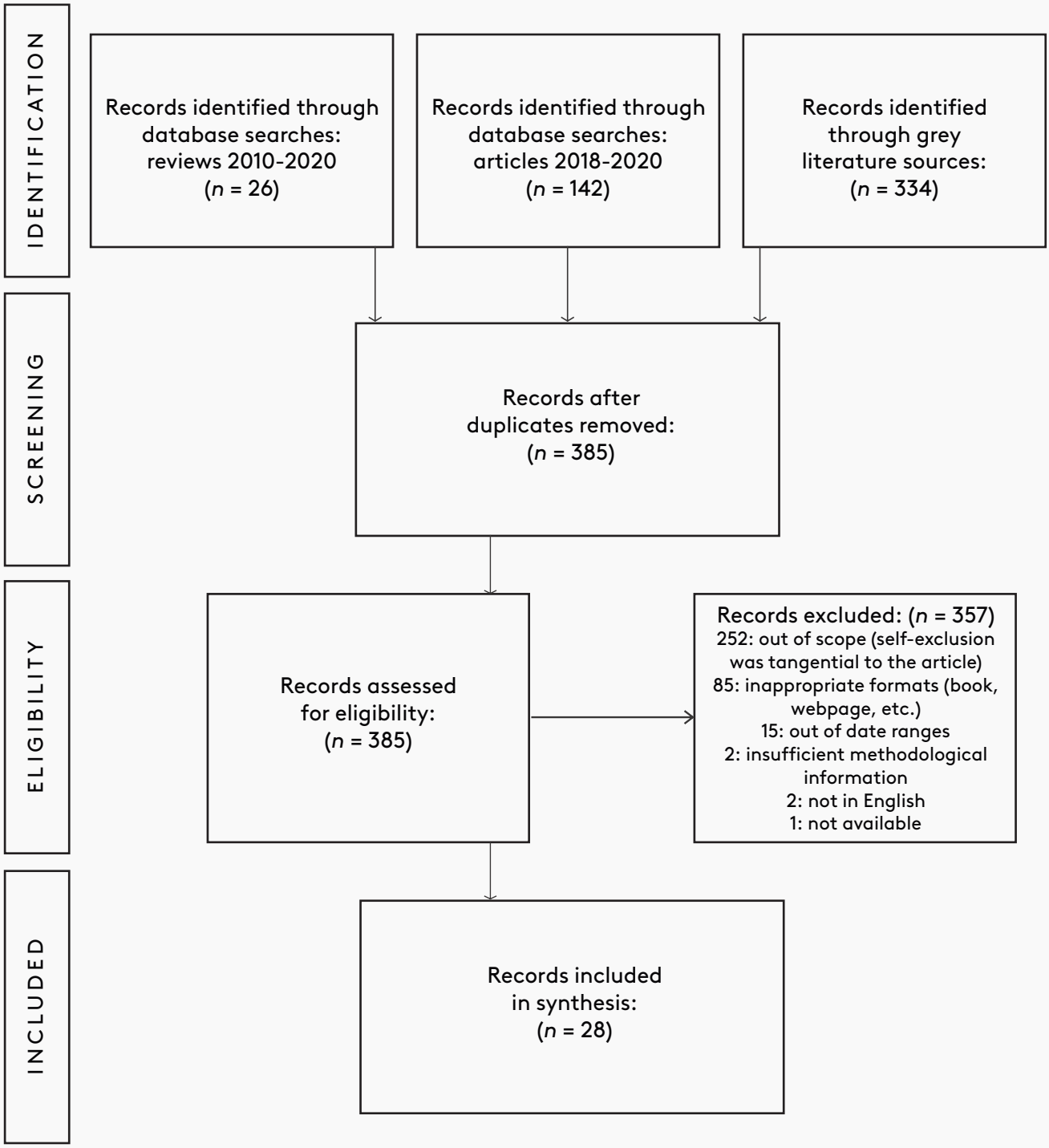
The search strategy for reviews yielded 11 publications after removal of duplicates. The search strategy for recent articles took place in July 2020 and yielded 71 publications, leaving 67 after combining with the first academic database search results and removing duplicates. The search strategy for grey literature yielded 159 publications after removal of duplicates.

In total, 502 records were identified, including 168 from database searches, and 334 through grey literature sources. After removing duplicates, 385 records remained. After assessing these items for suitability, 357 were excluded for reasons such as being out of scope or not within the date range (see Figure 1 for a full list of exclusion factors). In total, 28 publications met the criteria to be included in this review.

FINDINGS

Evidence from academic articles and other resources is presented. The section begins first by describing the outcome of each search. The second section presents the main findings about the effectiveness and ineffectiveness of self-exclusion in relation to gambling harm prevention and education.

Figure 1. Modified PRISMA Flow Diagram for article inclusion



Search outcomes

The first search for reviews published since 2010 resulted in six reviews. All were published between 2017 and 2019. Of these, three were systematic reviews. One focused on land-based self-exclusion programmes,[14] one examined the demographic characteristics of those who use self-exclusion programmes,[15] and one examined protective behavioural strategies in gambling more generally, with content related to self-exclusion that was not tangential.[12] The other three reviews included: an umbrella review of prevention and harm reduction interventions for gambling behaviour and gambling-related harm;[16] a scoping review of self-directed management strategies for problem gambling;[11] and a synthesis of the empirical evidence for safer gambling measures.[17] All three of the latter reviews provided information about their systematic searches, and two[11, 16] followed PRISMA guidelines.

The second search for studies published since the date of the last published review returned nine studies that could be included in the final dataset. These studies examined self-exclusion in both online and land-based gambling, as well as multi-venue self-exclusion programmes. Specifically, two articles examined online gambling sites—one on perceptions of consumer protection tools[18] and the other on the effectiveness of short-term self-exclusion;[19] two explored early detection and consumer perspectives of multi-venue self-exclusion programmes;[20, 21] two examined land-based self-exclusion programmes (including the prevalence of mental health problems and customer experiences);[22, 23] two looked at self-exclusion among people who play online poker;[24, 25] and one explored how awareness of safer gambling tools affected their use.[26]

Grey literature searches resulted in 14 additional documents on self-exclusion. Two of these were reviews: one was published in 2014 and was prepared for the former non-profit organisation, Responsible Gambling Trust (now GambleAware);[27] the other was published in 2016 for the Australian Gambling Research Centre, an agency of the Australian government.[28] Three documents were reports by the Responsible Gambling Council in Canada,[29-31] with a fourth report by the Centre for Gambling Research at the Australian National University.[32] There were also seven evaluations of self-exclusion programmes in Australia, New Zealand, United Kingdom, Canada, and the United States.[13, 33-38]

The studies selected from each of the searches are presented in Table 1, along with contextual factors that are relevant to understanding their quality and contribution to the evidence base. Country is included because there may be important jurisdictional policies and practices associated with self-exclusion programmes; study type and quality assessment provide more information about the research project at a glance; and funding source allows readers to consider whether the study is free from actual or perceived influence of the gambling industry.

Effectiveness and ineffectiveness of self-exclusion

Despite the widespread nature of self-exclusion programmes internationally, few studies have evaluated their effectiveness and efficiency at reducing harm (instead, many studies describe aspects such as consumer perspectives, profiles, motives, and rates of use), especially high-quality studies.[11, 12, 27, 34, 39] This may be partly related to self-exclusion still being a relatively new field of research, yet it is likely also a result of the challenges of using certain types of research methods like randomised controlled trials in this field.

Table 1. Included studies, quality assessment, and funding sources for the academic and grey literature

CITATION	COUNTRY	STUDY TYPE	QUALITY	FUNDING SOURCE(S)
Academic literature – first search for reviews since 2010 (Assessed using the Checklist for Systematic Reviews and Research Syntheses, Joanna Briggs Institute (JBI)[7, 8, 50])				
Drawson et al. (2017). The use of protective behavioural strategies in gambling: A systematic review[12]	Canada	Systematic review	JBI Checklist: Publication bias not assessed No quality assessment undertaken as most articles would be eliminated for being too weak.	Portions adapted from report submitted to Gambling Research Exchange Ontario (Greo). Partially supported by the Canada Research Chairs program
Kotter et al. (2019). A systematic review of land-based self-exclusion programs: Demographics, gambling behavior, gambling problems, mental symptoms, and mental health[14]	Germany	Systematic review	JBI Checklist: Publication bias not assessed	Partly funded by an unrestricted research donation by the Federal Association of German Casinos (BupriS) to the Technische Universität Dresden
Ladouceur et al. (2017). Responsible gambling: A synthesis of the empirical evidence[17]	Canada	Evidence synthesis	JBI Checklist: Publication bias not assessed Only used basic standard methodological quality for inclusion criteria, otherwise sample would be significantly reduced.	La Loterie Romande (Switzerland), ClubNSW (Australia), Camelot (United Kingdom), La Française des Jeux (France), Loto-Québec (Québec, Canada), and the National Lottery (Belgium)
Matheson et al. (2019). The use of self-management strategies for problem gambling: A scoping review[11]	Canada	Scoping review	JBI Checklist: Publication bias not assessed No quality assessment of evidence as it is a "developing area of research".	Ontario Ministry of Health and Long-Term Care; Dalla Lana School of Public Health, University of Toronto
McMahon et al. (2019). Effects of prevention and harm reduction interventions on gambling behaviours and gambling-related harm: An umbrella review[16]	United Kingdom	Umbrella review	JBI Checklist: Publication bias not assessed No final quality "scoring" of articles (in line with AMSTAR 2).[51]	National Institute for Health Research Short Placement Award for Research Collaboration
Motka et al. (2018). Who uses self-exclusion to regulate problem gambling? A systematic literature review[15]	Germany	Systematic literature review	JBI Checklist: Publication bias not assessed	Authors supported by Bavarian State Ministry of Public Health and Care Services in the context of the Bavarian Coordination Centre for Gambling Issues (LSG Bayern); Swedish Research Council for Health, Working Life and Welfare.

CITATION	COUNTRY	STUDY TYPE	QUALITY	FUNDING SOURCE(S)
Academic literature – second search for reviews since May 2018 (Assessed using the Effective Public Health Practice Project's (EPHPP) Quality Assessment Tool for Quantitative Studies,[8] and the Critical Appraisal Skills Programme's (CASP) checklist "10 Questions to Help You Make Sense of Qualitative Research".[50])				
Caillon et al. (2019). Effectiveness of at-risk gamblers' temporary self-exclusion from Internet gambling sites[39]	France	Randomised controlled trial	EPHPP rating: Moderate	French Ministry of Health; National Institute of Prevention and Health Education; University Hospital of Nantes (has received funding from the gambling industry in the form of a sponsorship)
Gainsbury et al. (2020). Use of consumer protection tools on Internet gambling sites: Customer perceptions, motivators, and barriers to use[18]	Australia	Descriptive survey	EPHPP rating: Moderate (low response rate: 5%; study type)	Partly supported by research funding from Responsible Wagering Australia to Gainsbury and Blaszczynski.
Hayer et al. (2020) Multi-venue exclusion program and early detection of problem gamblers: What works and what does not?[20]	Germany	Secondary data analysis	EPHPP rating: Weak (study type) No standard measure for staff reactions.	Hessen Ministry for Social Affairs and Integration
Kotter et al. (2019) Gambling problems seldom come alone: Prevalence and temporal relationships of mental health problems in casino excluders[22]	Germany	Cohort	EPHPP rating: Moderate (low response rate: 6.1%; study type)	Study supported by the Bundesverband deutscher Spielbanken gegr. 2008 als BupriS e. V. (German Casino Association) through an unrestricted research grant.
Lischer and Schwarz (2018). Self-exclusion and imposed exclusion as strategies for reducing harm: Data from three Swiss casinos[23]	Switzerland	Secondary data analysis	EPHPP rating: Moderate (study type). Use of a non-clinically validated tool. Possible inaccuracies in data due to gaps in data and self-report.	Sucht Schweiz (Addiction Switzerland)
Luquiens et al. (2019) Self-exclusion among online poker gamblers: Effects on expenditure in time and money as compared to matched controls[25]	France	Secondary data analysis	EPHPP rating: Moderate (study type)	"Poste d'Accueil" program exchange between the Assistance Publique – Hôpitaux de Paris and the Ecole polytechnique.
Luquiens et al. (2018) Description and assessment of trustability of motives for self-exclusion reported by online poker gamblers in a cohort using account-based gambling data[24]	France	Secondary data analysis	EPHPP rating: Moderate (study type)	No financial support was received.
Pickering et al. (2019). Consumer perspectives of a multi-venue gambling self-exclusion program: A qualitative process analysis[21]	Australia	Qualitative process analysis	CASP checklist: All affirmative	ClubsNSW
Tong et al. (2019) Application of Health Belief Model to practice of responsible gambling[26]	China	Descriptive survey	EPHPP rating: Weak (study type, lack of reported response rate)	University of Macau

CITATION	COUNTRY	STUDY TYPE	QUALITY	FUNDING SOURCE(S)
Grey literature (Assessed using the Authority, Accuracy, Coverage, Date, Significance checklist.[10])				
Allen Consulting Group Pty Ltd. (2011). Social and economic impact study of gambling in Tasmania, Volume 3: Assessment of harm minimisation measures[33]	Australia	Evaluation (interviews, survey)	AACODS checklist: No indication of peer review	Tasmanian Government Department of Treasury and Finance
Bellringer et al. (2010). Formative investigation into the effectiveness of gambling venue exclusion processes in New Zealand[13]	New Zealand	Evaluation (literature review, focus groups, survey)	ACCODS checklist: Peer reviewed	New Zealand Ministry of Health
Cohen et al. (2011). BCLC's voluntary self-exclusion program: Perceptions and experiences of a sample of program participants[34]	Canada	Evaluation	AACODS checklist: No indication of peer review	British Columbia Lottery Corporation
Fogarty and Taylor-Rodgers. (2016). Understanding the self-exclusion process in the ACT[32]	Australia	Report (qualitative scoping study using interviews)	AACODS checklist: No indication of peer review	Australian Capital Territory Gambling and Racing Commission
Ipsos MORI Public Affairs. (2020). Process and impact evaluation of the multi-operator self- exclusion schemes: Baseline report (Evaluation phase 1)[35]	United Kingdom	Evaluation (interviews, focus groups, survey)	AACODS checklist: No indication of peer review; Lack of stated limitations, bibliography (evaluation)	GambleAware (indirectly funded by industry)
Ly. (2010). Investigating the use and effectiveness of the Tasmanian gambling (self) exclusion program[36]	Australia	Evaluation (cross-sectional, longitudinal)	AACODS checklist: No indication of peer review	Community Support Levy (a tax on the gross profit derived from gaming machines in Tasmanian hotels and clubs)
Nelson et al. (2018). Evaluation of the Massachusetts Voluntary Self Exclusion Program: June 24, 2015 – November 30, 2017[37]	United States	Evaluation (secondary data analysis, longitudinal survey)	AACODS checklist: No indication of peer review	Massachusetts Gaming Commission
Responsible Gambling Council (2014). Perspective: Disallowing winnings as a part of self-exclusion agreements[29]	Canada	Report summary (literature review, key-informant interviews, lived experience focus group)	AACODS checklist: No indication of peer review; Summary of report does not include methodology, limitations, bibliography	Responsible Gambling Council's Centre for the Advancement of Best Practices
Responsible Gambling Council. (2016). Best practices for self-exclusion: Reinstatement and renewal[31]	Canada	Report (literature review, procedure review, key-informant interviews, lived experience focus groups, conferment panel and round table)	AACODS checklist: No indication of peer review; Data collection not explicit for literature review; Limitations not explicitly stated	Atlantic Lottery Corporation, the British Columbia Lottery Corporation, Loto-Quebec, Manitoba Lotteries & Lotteries, the Nova Scotia Provincial Lotteries & Casino Corporation, the Ontario Lottery and Gaming Corporation, and the Saskatchewan Liquor and Gaming Authority

CITATION	COUNTRY	STUDY TYPE	QUALITY	FUNDING SOURCE(S)
Grey literature (Assessed using the Authority, Accuracy, Coverage, Date, Significance checklist.[10])				
Responsible Gambling Council. (2016). Managing multiple self-exclusion breaches[30]	Canada	Report (rapid evidence review, policy review, key-informant interviews)	AACODS checklist: No indication of peer review	Gambling Research Exchange Ontario (Greo)
Responsible Gambling Council. (2011). Voluntary self-exclusion program review: British Columbia[38]	Canada	Evaluation	AACODS checklist: No indication of peer review; Lack of bibliography (evaluation)	British Columbia Lottery Corporation (BCLC), Gaming Policy and Enforcement Branch (GPEB)
Parke and Rigbye. (2014). Self-exclusion as a gambling harm minimisation measure in Great Britain: An overview of the academic evidence and perspectives from industry and treatment professionals[27]	United Kingdom	Overview of the evidence (grey literature)	AACODS checklist: No indication of peer review	Responsible Gambling Trust (indirectly funded by industry)
Thomas et al. (2016). Review of electronic gaming machine pre-commitment features: Self-exclusion[28]	Australia	Rapid evidence assessment (grey literature)	AACODS checklist: No indication of peer review; Lack of clearly stated limitations	Australian Government Department of Families, Housing, Community Services and Indigenous Affairs

Therefore, most evidence reviewed to date is drawn from descriptive studies.[15]

Overall, studies that do evaluate self-exclusion programmes' effectiveness show mixed results. Although there are low use rates, high breaching rates, and little evidence regarding long-term outcomes, self-exclusion seems to be associated with some positive effects (such as a improvement in psychological function,[12, 16] and, in some cases, a reduction in gambling[12, 14, 28]) as an element of harm reduction programmes.[13, 17, 28, 34] The evidence is summarised below in three categories: programme use, reduced gambling, and a decrease in mental health symptoms. Potential unintended consequences of self-exclusion are also outlined.

Programme use

Self-exclusion programmes are widely underused.[15, 17, 32, 39] One review cited a utilisation rate by those with problem gambling in the range of 0.6 to 17% in Canada and Australia, respectively, for land-based gambling venues.[40] People with problem gambling were significantly more likely to enroll in self-exclusion than those without problem gambling,[27] with one study reporting utilisation rates of 31.7% (people with problem gambling) versus 9.7% (people without problem gambling).[41] Online, people with problem gambling were less likely to seek help and to self-exclude, but in one study[42] they also reported less psychological distress. In general, middle-aged men self-exclude more often from land-based venues,[11, 20] while use of online self-management tools (including time-out tools) seems to be more common among younger men.[15, 17, 18, 27] Women who self-exclude are more often older in age, single, and prefer games that are based on chance.[27] Electronic Gambling Machines (EGMs), also known as slot machines, is the gambling type associated most commonly

with self-exclusion.[12, 15] One multi-venue exclusion programme appears to have increased utilisation rates at least initially.[20]

There are numerous barriers that prevent or delay enrollment in self-exclusion programmes. One study found that, on average, about eight years had passed between when someone became aware of their gambling problems and when they enrolled in a self-exclusion programme.[22] Weak promotion[27] contributes to a lack of awareness of the programme.[28] Lack of promotion can also mean that there is little information available for those who are aware of self-exclusion, especially for people who do not have access to the Internet.[21, 27, 32] Complicated enrollment processes[11, 21, 28] and a lack of access to support and counselling during self-exclusion[28] can further prevent people from enrolling. The inability to exclude from multiple venues at once[15, 28] and not enough choice of exclusion periods[28] can also limit the number of people who self-exclude in certain jurisdictions.

Problems related to venue staff, such as the provision of incomplete or incorrect programme information or lack of sensitivity or privacy, can hinder people's attempts to enter a self-exclusion programme.[15, 21, 27] A 2020 study of a multi-venue self-exclusion programme in Germany using trained participants found that staff reacted appropriately to signs of problem gambling only 7% of the time. The same study also found that third-party exclusion by the operator (i.e., when they are obligated) or initiated by family/concerned significant others represented only 1% of exclusions.[20] Barriers on the part of those who gamble include embarrassment,[32] unwillingness to admit that they have a problem,[28] perceptions that they can control their behaviour without using other tools,[18] and that it would be too easy to breach their agreement.[32] Most people interviewed for a study of current self-exclusion programme participants said they would prefer self-registration online for privacy, efficiency, and self-efficacy, but also mentioned drawbacks to this, such as a missed opportunity to access counselling.[21]

One of the most frequently reported motivations to enroll is financial difficulty.[11, 17, 31] However, financial difficulties were reported less often for those who gamble online. People who gambled online had more diverse motivations for excluding. The other most commonly reported motivation to enroll in self-exclusion for land-based gambling was the influence of significant others such as a partner, family members, and friends.[15, 31] One study showed that 23% of 113 people who self-excluded from Missouri casinos were persuaded by others to do so.[43] Yet, for those who gamble online, significant others were not as much of an influence in the decision to self-exclude. This may be because they are less likely to be married or living with a partner.[15] Other motivations can be related to legal, career, or health-related concerns.[17, 31, 34] Some participants in a 2016 study of those who had self-excluded in the Australian Capital Territory saw the programme as a way to prove to their family, employer, or legal system that they were taking concrete steps to control their gambling.[32] It seems that many people who gamble problematically and pathologically use self-exclusion programmes late in their gambling career, more as a last resort than a preventative strategy.[15, 22, 32, 34]

Reduction in gambling

Some research has reported a reduction in gambling[11, 13, 21] and gambling-related harm[12] associated with self-exclusion. A 2017 review found that improvements related to a decrease in gambling frequency, duration, expenditure, debt, and urge to gamble after exclusion were

all observed and maintained 12 months later.[12] Another review noted that studies reported an overall range of between 29% to 92% in reduced gambling.[14] Similarly, an Australian government review of self-exclusion from EGMs reported that 70% of people reduced their gambling expenditure by at least half.[28] A marked decrease in money[44] and time spent gambling was also observed in other studies.[25]

Problem gambling severity has been seen to decrease after people enter self-exclusion programmes, but this reduction was not observed once they had returned to gambling again.[12, 14] Indeed, the majority of people who self-exclude from land-based and online gambling have been found to gamble problematically or pathologically at the beginning of the programme.[15] Across several studies, most people who self-excluded from casinos showed pathological or problematic gambling.[14] However, it should be noted that these studies used screens instead of clinical diagnostic instruments to assess participants for degree of gambling severity, so their reported pathological or problematic gambling status may not be reliable.[22] Two reviews showed that people who self-exclude often experience reductions in their gambling risk status.[12, 27] A third review cited reduced DSM-IV scores (although this study looked at self-exclusion programmes that incorporated counselling).[44] A 2019 review of land-based self-exclusion programmes reported that between 61% and 95% of self-excluders displayed pathological gambling behaviour and that this decreased by half after entering the self-exclusion programme. However, there could be bias in some studies due to other factors that may have contributed to a decrease in pathological gambling behaviours, or characteristics of those who participated in the studies, that would predispose them to improvement.[14]

The ability to measure compliance rates (i.e., the number of people who abstain from gambling at the venues or sites covered by the self-exclusion agreement) is difficult due to the inaccuracy that comes with participants often self-reporting their behaviour in studies. In addition, assessing abstinence from all gambling it is not possible, as studies have not been able to track play in venues and sites not covered by the self-exclusion agreement, other than by self-report.[27] In other words, the self-exclusion programme normally applies to one gambling site or venue only, and people may still gamble elsewhere. Despite these limitations, self-reported complete abstinence rates from gambling in one review ranged between 25% and 46% of people who self-excluded[14] and compliance rates were 13% to 30% in another.[11] One study of 135 people with problem gambling who were enrolled in a self-exclusion programme found that even though about 75% of study participants started gambling again within six months, approximately 70% reduced the amount they spent on gambling by at least half.[45] Another small scale study of 32 people who had self-excluded in New Zealand found that 80% of participants reported that they had stopped gambling for a period of two to 24 months.[46] This may have been partly due to the counselling support that was provided as part of this self-exclusion programme.[28] A 2011 evaluation of British Columbia's self-exclusion programme found that 65% of participants reported that they never attempted to gamble at the casino, while 35% reported abstaining from gambling completely.[34]

Breaching is the opposite of compliance. Breaching rates (i.e., the number of people who reported or were detected gambling at a barred site during their exclusion period) ranged from 8% to 59% for land-based exclusions in one review.[14] Another review reported rates of between 26.6%

and 60%,[12] with a third review citing at least 50% across studies.[27] Other reviews cited single study rates of 46.4%[43] and over 50% within six months.[47] In addition, a 2011 evaluation of the self-exclusion programme in British Columbia, Canada found that 59% of participants reported they had gambled six months into their exclusion period, 69% by one year, and 54% by a year and a half. In fact, one of the main concerns of participants in this study was that consequences for breaching were often not invoked, especially with repeated violations.[34] One report determined that multiple breaches, as cited in the research, may range from 1.5% to 48%, depending on how multiple breaching was defined and if the information was gathered from operators or from those who had self-excluded.[30] In terms of the amount of breaches that are not caught by staff, anywhere between 33% to 77% may go undetected.[27] In a 2020 study of a multi-venue self-exclusion programme in Germany that used test players (i.e., participants who were trained to act like they had problem gambling), there were no identification checks upon entry 16% of the time and those who had self-excluded were able to play at 28% of gaming halls.[20] The probability of a breach may also increase over the course of a person's self-exclusion agreement.[27] In a 2018 study of three Swiss casinos, the authors reported that 90% of people who were applying to end their exclusion agreement had found another way to gamble, often using casinos abroad.[23]

It is important to consider whether self-exclusion is effective over longer periods of time. People seem to become less satisfied with the programme and perceive it to be less effective over time,[17, 37] with 88% of participants in one study supporting the idea of returning to gambling after their exclusion period.[12] Two reviews summarised that across many studies,[17] gambling severity decreased after self-exclusion but that the positive effects were not maintained following the exclusion period when people started gambling again.[12, 14] There is also no consensus in the literature about the optimum length of exclusion.[27, 28] One 2019 study of people at risk of harm from online gambling concluded that the illusion of control and the perceived inability to stop gambling decreased most at two months, or medium-term (versus seven days).[39] Further, in a 2018 study of self-exclusion among people who play online poker, more than two-thirds returned to gambling after their first self-exclusion, with half of these players returning to gambling within the first month. Considering that the protective effects seemed to be temporary, many of those who self-excluded did so more than once.[24] In a 2019 study by the same authors, short-duration self-exclusions (e.g., one week) from online poker showed no significant effect in terms of money spent for those most heavily involved in gambling. For the rest of the sample however, significant long-term effects (over 12 months) were found for amount of money and time spent. In the same study, positive long-term effects were also seen in terms of time spent for those who were most heavily involved in gambling.[25]

Despite low abstinence rates, high breaching rates, and low long-term effectiveness, self-exclusion programmes seem to demonstrate some effectiveness and benefits, even if not an overall reduction in gambling behaviour.[11, 15, 17, 28, 32, 36] One source suggested that positive outcomes of self-exclusion may largely derive from the decision to self-exclude, rather than aspects of the programme itself.[37] Benefits that have been reported in several studies include an improvement in perceived control, the belief that gambling was less disruptive to one's life, and enhanced self-confidence.[12] In a 2019 study, after two months of self-exclusion, a decrease in the desire dimension

of the Gambling Craving Scale was observed in people who gamble online. Although no reduction in gambling behaviour was observed with a short 15-day self-exclusion, participants reported that it helped them to reflect on their gambling.[39] Similarly, a majority of study participants agreed that self-exclusion was helpful, even though they continued to gamble during their exclusion period. Most participants (85%) also agreed that they would recommend the programme to others, and half reported at completion that they would enrol again.[12]

Reduction in mental health symptoms

Mental health issues may be common among those who self-exclude. A review cited in an included review reported that as many as 73% of people who self-exclude also experience depression, anxiety, and substance use.[48] Notably, this is similar to the rates among people with pathological gambling who have been tested outside of self-exclusion programmes. In a 2019 study of mental health among people who self-excluded from casinos, 68% reported affective, anxiety, and substance use disorders, which often had started prior to their problems with gambling.[22] This same 2019 study found that those who had excluded from casinos but had gambled in the past six months, reported more impaired mental health than those who remained abstinent.[22]

Positive changes in aspects of mental health after self-exclusion have been observed.[14] Studies highlighted reductions in anxiety and depression,[12, 16] emotional strain, and interpersonal difficulties.[12, 37] Decreases in anger, guilt, and substance use have also been found.[12] Reduction in familial difficulties was reported, as well as an increase in work performance.[12, 16] Studies have shown improvement in psychosocial functioning,[28] including starting four weeks after self-exclusion and lasting up to a year.[17] The research has also noted improvements in psychological distress and the consequences of gambling,[44] and in gambling-related quality of life.[12] However, the results of some of these studies may be unreliable, since improvements were seen largely in programmes where people were also offered counselling.[36, 44] Therefore, the counsellors could have connected clients with additional supports such as Gamblers Anonymous or debt counselling.[14]

Use of counselling

The use of counselling during self-exclusion is generally low. It seems that not all of those who self-exclude also wish to undertake counselling.[33] It may also be that people who self-exclude already have a treatment history.[37] One study found that 49% of those who enroll in self-exclusion may consider accessing additional counselling, with only 10% eventually following through.[47] A review concluded that the use of counselling through an external service provider increased during the self-exclusion period. However, this increased use largely depended on the interconnectedness of programmes, for example, where an individual might be directly offered a session with a counsellor during the self-exclusion registration process.[15] An evaluation of self-exclusion in British Columbia, Canada found that 38% of participants accessed counselling treatment. It also reported that participants who enrolled in counselling were about as likely to report gambling in the first six months of their exclusion period as those who did not receive counselling. However, this may have been a result of the greater severity of problem gambling among those who enroll in counselling.[34] Similarly, in terms of effectiveness, one review cited a study where the authors concluded that counselling on its own may be similar to the short-

term outcomes of self-exclusion.[49]

Accessing treatment during self-exclusion was not found to relate to any outcomes (i.e., gambling behaviour, gambling problems, and mental health), as measured by a 2018 evaluation of the Massachusetts voluntary self-exclusion programme. In a 2019 study on consumer perspectives of a multi-venue self-exclusion programme, participants considered counsellor support important for the duration of a self-exclusion period. Most participants thought that exclusion alone was not enough; people need to resolve the underlying issues with a counsellor that drive their gambling behaviour.[21] In addition, a report on self-exclusion in New Zealand found that 69% of participants had contacted support services prior to excluding self-excluding.[13] Counsellors were also commonly mentioned as a source of self-exclusion programme referral.[13, 21]

Unintended consequences of self-exclusion

Potential concerning aspects of self-exclusion programmes largely relate to the design and implementation of the programme, and how these are influenced by the extent that it is embedded into surrounding systems.[28] Therefore, rather than unintended consequences as a result of participation in the programme itself, the following are associated factors for consideration. One of the most frequently mentioned associated factors is that self-exclusion can cause people to gamble outside of the initiating venue. This may involve up to 75% of those who have self-excluded. There could also be increased gambling while self-excluded, with a maximum of 12% reporting this following land-based exclusion in one review.[14] Breaching is another associated factor of self-exclusion programmes. Due to low levels of enforcement at venues, those who self-exclude are largely responsible for regulating their own agreement terms.[12]

Other potential associated factors involve aspects of the registration process. For example, there is no automatic contact with professional counselling services in many self-exclusion programmes.[28] This may leave more opportunity for harm for those who are in need of additional support. However, there have been mixed opinions on mandatory counselling as part of self-exclusion programmes, as this could deter some people from enrolling.[27, 34] Another example is how there may be inadvertent exposure to gambling when those who are unsure of their self-exclusion status visit a venue to confirm when their term expires.[35]

It is important to offer appropriate exclusion lengths to ensure that specific durations offered do not inordinately add to participants' inability to comply with their agreement.[28] There is also a chance of harm from third-party exclusion (i.e., when family or friends of people with problem gambling are able to apply for exclusion on their behalf), if it is used inappropriately or abusively by family and/or concerned significant others.[27] Additionally, a lack of staff knowledge about self-exclusion policies and procedures may result in missed opportunities to offer information or missed detections of breaches. Poor communication related to the programme could also lessen the dedication of those enrolled, or the interest of those who have yet to enroll.[28]

Limitations and research gaps

There are aspects of the included studies that could limit the strength of their claims. In general, the quality of most studies and reviews was moderate to low based on the assessment tools that were used.[12] Many studies have small sample sizes[14] or self-selected samples, so they

would not be representative of all of those who self-exclude within a given jurisdiction. Similarly, the degree of implementation of the programmes has seldom been explored, so the study results are limited in their reliability and generalisability. Also, studies often rely on participants to report their own experience, rather than using more objective measures and methods, which can result in inaccuracies in the findings. Therefore, the research does not necessarily indicate the degree to which self-exclusion caused reported outcomes, but mainly that they may be linked.[28] In addition, some of the research that was summarised in reviews was done ten or more years ago. As such, it may not reflect current practices or technology, especially related to online gambling, for which evidence is lacking.[27]

There are also limitations related to the approach taken to produce this chapter. Although summarising reviews is an efficient way of synthesising the evidence, the conclusions about specific studies may overlap, as the authors of an included review pointed out.[16] As a result, caution should be taken when interpreting the volume of evidence for findings with multiple citations.

Included studies identified many gaps in the research. Highlighted were the need to examine the entire exclusion process, including from the consumer's perspective,[21] taking into account gambling practices during the exclusion,[39] the overall effectiveness of the programme,[27] and what leads to positive outcomes.[14] More robust studies are needed that aim to assess the effectiveness (and efficiency) of self-exclusion, both land-based and online, including systematic reporting of funding sources.[16] Other suggested areas for future research were the frequency of enrollment,[12] renewal and reinstatement rates,[28] and gambling using non-excluded venues and online providers.[14] Some researchers thought that more attention needs to be paid to identifying people who are more likely to self-exclude using online gambling behavioural data.[15, 17] Ways to improve breach detection and prevention, and to measure the effectiveness of breach management overall were also suggested.[30] Additionally, the identification of harm could be further studied so that self-exclusion and other approaches could be used more in a preventative way.[27] Several studies mentioned a lack of knowledge around what leads to positive outcomes.[12] This could include looking into comorbid conditions,[11] the role of concerned significant others,[20, 23] and people's larger social support networks.[11]

Populations identified as needing more research attention included people who gamble online,[12, 15] people with problem gambling,[12] young adults, those with unstable financial circumstances,[11, 23] cultural and regional minority groups,[28] and those who have not yet enrolled in self-exclusion.[12] Ways to better support staff to identify and approach people who seem to be experiencing problems was mentioned.[32] There were also suggestions of types of studies that are still needed. Evaluations with large, longitudinal samples,[28, 33] multi-method data collection,[12] and quantitative studies on renewal of self-exclusion and other programme improvements[21] were all specified. In addition, some researchers felt it was important to include the use of validated screening instruments so as to better understand the role of comorbidity.[14] Also discussed were more prospective study designs to examine causality[14] and more data to compare self-exclusion with other problem gambling interventions.[25]

Summary

Evidence for the effectiveness of self-exclusion is still limited and low in quality. The literature reflects

low compliance rates, high breaching rates, and low long-term effectiveness. Despite these and other limitations (i.e., lower quality, strength, and the age of some research), there is some evidence to support that self-exclusion is associated with a reduction in harmful gambling behaviour and mental health symptoms. Self-exclusion programmes also seem to demonstrate some benefits apart from reducing harmful gambling behaviour, which may help certain people with improvements in self-perception. Self-exclusion programmes are also largely underused and typically used later in a person's gambling career. Unintended consequences mainly stem from a lack of interconnections with surrounding systems (i.e., within the operator organisation, treatment organisations, and other gambling providers). It is possible that more active and targeted programme communications, and more accessible and flexible registration options, could encourage increased and earlier use. The design, implementation, and evaluation of included recommendations need to be done in partnership with treatment services, with input from operators. Future research could apply more robust methods and aim to understand the long-term effects of the self-exclusion process as a whole and within specific populations.

Guidance to inform a collective prevention and education plan

There were several recommendations provided in the included studies regarding how to implement the findings practically. Most recommendations, however, were from recent studies (published after May 2018) and publications identified through grey literature sources, rather than reviews published in academic journals. Overall, recommendations call for reducing barriers to self-exclusion, providing more support options, and increasing interconnections between operators and counselling services. They can be divided into five categories: 1) increased promotion; 2) a more straightforward and flexible registration process; 3) more integration between self-exclusion programmes and professional counselling services; 4) better strategies for venue and site control; and 5) simple reinstatement and renewal processes.

More active programme promotion

The most common recommendation related to self-exclusion was the need for more active and strategic promotion.[27] One of the goals would be to increase the number of people who use the programme to prevent the development of gambling problems by encouraging them to use it sooner.[18, 34] Information that frames self-exclusion, including multi-operator programmes, as an effective way to regulate gambling behaviour (also as an option for those who prefer not to discuss their issues using a helpline or other talk therapy) is needed,[13, 15, 28, 35, 36] as is information that addresses financial issues.[15, 21, 26] Promotion of the ability to detect self-exclusion violators may also help to encourage enrollment and discourage breaching, since one of the motivating factors for people who breach is believing that they will not be caught.[30, 34] In addition, regular provision of information about self-exclusion could be part of all loyalty programme communications.[33]

In terms of how the messages are communicated, a 2020 study by Gainsbury et al. advises a change in terminology across all content, including policy and regulations, from "responsible gambling", to "play management" or "account tools". These authors also endorse the placement of tools online to encourage use by all customers.[18] There is an opportunity for promotion to be tailored to the characteristics of online players as distinct from land-based players.[15] Materials and channels designed for target groups like significant others,

EGM players, new immigrants and those whose primary language is not English,[34, 38] those with low socioeconomic status,[15, 21, 26] and those who may be least aware of safer gambling tools (e.g., people who are less educated, unemployed, moderate or at-risk of problem gambling, or women)[26, 33] are also needed.

Information promoting the use of additional professional addiction treatment could be developed or be more prominently displayed so that it is regularly offered throughout the self-exclusion period.[15, 39] Promotion of, and changes to, the programme could be extended to a broad spectrum of support organisations.[28, 37, 38] Communication with support organisations could also include alerting them prior to the launch of a new promotion campaign, so that they could prepare for a potential increase in inquiries.[28]

Straightforward and flexible enrollment process

The evidence supports a simplified enrollment process,[15, 21, 27] including the use of plain language wording in the registration form, registration materials that are available in several languages, and clear communication about the responsibilities of the individual and operator.[33, 38] The research also supports more flexible options to encourage earlier use.[15, 28] There is support for the ability to register from multiple points,[28] including outside of the gambling venue.[15] This could mean online registration[20, 21] through an independent organisation (e.g., treatment provider)[28, 37] and even using the gambling machine itself.[28] In-venue options that avoid escort by security to the room where registration takes place are favoured to reduce embarrassment.[38] A 2020 study by Hayer et al. also mentions that third-party exclusion could play a bigger role, where it is the operator's duty to initiate exclusion. However, they caution that this could trigger gambling in other segments.[20] The ability to exclude from multiple forms and platforms at once may help to address this risk.[20, 28] Further, options for self-determined durations or degrees of exclusion (e.g., either from specific gambling segments or all of them)[15] and a wide variety of duration options,[28] including increased durations along with increased connections to professional support for those who enroll repeatedly,[34] were all mentioned. In addition, to provide options other than complete exclusion, operators could offer limitations on the frequency of visits or stakes.[23]

Integration with counselling services

Evidence also supports increased integration between self-exclusion and professional counselling services.[13, 21] Better accessibility of counselling in venues[14] with in-venue counselling services available for immediate help[13, 21] would be one way to facilitate greater integration. Alternatively, a counsellor could follow up within a few days after enrollment and weekly, or at time points identified as risky, such as three and six months into the exclusion period.[36, 37] Counsellors or programme staff could start by conducting an assessment of the person's treatment history and identifying programme goals.[37] Improved communication about the availability of other types of counselling, such as debt counselling and other addiction support services, during enrollment may encourage more use of these resources.[34, 37] Similarly, online registration could include clear links to a wide variety of treatment supports.[28] Assessment for comorbid mental conditions could be completed using validated instruments,[22] and offers of additional professional help could be extended to prevent relapse.[15, 24] Accompaniment from a health services organisation could also be built into the programme for those at-risk.[39] Interventions could

focus on symptoms in addition to gambling[14] and involve a personalised approach by customising information for specific profiles.[39]

Strategies for venue and site control

There is a need to determine the best approaches for venue and site control. Exclusion from multiple gambling venues and from multiples forms of gambling has broad support,[13-15, 18, 20, 21, 27, 35, 39] controlled either by a legal authority, as in France,[39] or by blocking gambling transactions through a financial institution.[18] Also called for is mandatory self-exclusion programmes as part of all online gambling sites with ways to prevent creating another account.[15] Staff training on early detection and all other aspects of self-exclusion could also be mandatory.[14, 15, 21, 22, 27] This could involve more in-depth training in customer interaction and motivational interviewing, potentially with some of this training assisted by counsellors, as well as regular staff reviews of programme requirements.[13, 27, 32, 33, 35, 37, 38]

To show more commitment to proactively intervening, management could reward staff for early detections and take disciplinary action when programme protocols are not followed.[27] Management could also make it known that staff will intervene if people display signs of problem gambling, as is the case for those who are intoxicated in bars.[27] Further, operators could explore ways to generate the support to allot resources to improve enforcement[27] through identification checks, including the use of personalised gambling identity cards that are inserted into machines,[14, 20] and improvement of technical detection systems.[21, 34] Operators could also explore escalating consequences and/or support for those who breach multiple times.[30, 38] The disallowing of winnings and specific restrictions for people who have self-excluded who try to access funds in venues could be clearly outlined during enrollment.[27, 29, 34] Penalties for venues that allow excluded customers to gamble could also be implemented.[21]

Simple reinstatement and renewal

As with registration, reinstatement and renewal procedures that are formalised, simple, and easy are recommended.[28, 31, 32] It is important to communicate during enrollment about what happens at the end of the self-exclusion period.[13, 35] This could be an email or phone call at the end of the exclusion period where straightforward options are presented[21] outside of the gambling environment or in the venue.[24, 27] Alternatively, there could be automatic renewal with an opt-out option if requested.[13, 21, 27, 31] For those who demonstrated breaching or other high-risk warning signs, a meeting with a counsellor could be required before being allowed to gamble again,[22, 24, 31] which might include the option of re-enrolling at the counsellor's office.[34] A meeting with a safer gambling staff person to create a safe gambling plan and/or completion of an educational programme could also be offered to all those who wish to reinstate, or be mandatory for those at higher risk. Returning to gambling may come with some conditions, such as exclusion for marketing and from loyalty programmes.[31] A probation period upon reinstatement that would involve monitoring could also be implemented for those who breached during their exclusion,[21] alongside education and support.[21]

It is critical that the design, implementation, and evaluation of recommendations be done in partnership with treatment services, and also while soliciting input from operators, with careful consideration for conflicts of interest.[28] Pilot testing recommendations was frequently advised. Mandatory evaluations of self-exclusions

programmes were also suggested.[14] Evaluations could measure outcomes such as awareness, identification, and initiation in the short-term, while long-term outcomes could include a decrease in harmful spending on gambling and an increase in perceived sense of control. Broader long-term outcomes may include fewer co-morbid conditions, reduced use of health, community support, and legal services, as well as improved health and wellbeing.[28]

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Brief biography

Sheila McKnight is a Knowledge Translation and Information Specialist at Greo. She supports the publication of research reviews and evidence briefs, which has involved mobilising self-exclusion evidence through syntheses and other knowledge products. She also coordinates the Research Snapshot programme and helps make resources available through Greo's online channels. Sheila has a Master of Library and Information Science from the University of Western Ontario and a BA from McGill University.

Conflict of interest statement

Sheila McKnight has no conflicts of interest to declare.

Greo transparency statement

All authors of this chapter were Greo employees during the stakeholder consultations and data analysis period. See Greo's transparency statement for more information.

4.5 Indicated Measures Summary

Indicated measures are designed for individuals at risk of, or currently experiencing, harm from gambling. Three measures were reviewed—brief online interventions, financial gambling blocks, and self-exclusion. Two of the measures, brief online interventions and self-exclusion, are undertaken as an individual choice by someone concerned about their gambling and with a desire to prevent further harm. Financial gambling blocks, or "hard" barriers, may be implemented by the gambling operator or regulator (e.g., removal of ATMs from the gaming floor, or lack of access to credit at gambling venues), or requested by an individual (e.g., applying blocking options to gambling transactions available through some business and financial services). Regardless of whether the person has direct control over the measure being used, all represent barriers to prevent further harm from occurring.

Indicated measures featured three types of review methods—systematic, scoping, and narrative—each of which was selected based on the extent of available research evidence. Even though the amount and quality of the literature varied between topics, the evidence presented for each measure offers insights for improving or expanding upon existing initiatives, and acts as a catalyst to future research and evaluation projects that would enhance the evidence base. Key findings for each measure are summarised separately below. Suggestions for integrating the findings into a comprehensive gambling harm prevention and education plan, as well as where future research efforts could be directed to better support the measures are highlighted.

Full references to the research evidence summarised here can be found in 'Chapter 4.2 Brief Internet Delivered Interventions for Gambling: Prevention, Early Intervention, and Harm Reduction'—Chapter 4.2 references begin on page 223; 'Chapter 4.3 Systems and Tools that Produce Actual ("Hard") Barriers and Limit Access to Funds'—Chapter 4.3 references begin on page 246; and, 'Chapter 4.4 Self-Exclusion'—Chapter 4.4 references begin on page 272.

EVIDENCE HIGHLIGHTS

Brief internet delivered interventions for gambling: prevention, early intervention, and harm reduction

Intervention is a way to minimise and prevent further gambling harm by modifying the frequency or intensity of gambling for people who might be at risk of or experiencing a gambling problem. In this systematic review, the focus was brief online interventions that were limited to no more than five hours, involved the delivery of content focused on prevention, harm reduction, or early intervention, and conducted a follow-up evaluation at a minimum of one week later. Brief interventions delivered online may be especially appealing because they can reach a wider audience, are accessible and convenient, and offer greater privacy and confidentiality. Further, they are easily adapted to personal preferences and can be tailored to individual needs. Fifteen studies met the inclusion criteria. These studies pointed to four types of brief interventions and their related effects.

Personalised feedback (PF) or Personalised normative feedback (PNF)

Personalised Feedback (PF) provides feedback to an individual on assessment measures such as gambling frequency, expenditure, and problem

gambling severity. The feedback report, which is based on player data and cumulative for a specific period of time (e.g., 12 months), is then given to the participant so they have a clearer picture of their gambling behaviour. Personalised Normative Feedback (PNF) adds a 'normative' component whereby the participant's scores or values are compared with other people who have similar characteristics and circumstances. This allows participants to understand their behaviour relative to others in a similar position, which can lead them to adjust their behaviour.

- → When PF is the sole treatment, PF has been linked to reduced time and financial expenditure when compared to control groups. In one of the studies, this was most evident for people who gamble who are at moderate risk of problem gambling.
- → In another study, PF combined with advice had the greatest impact on reducing spending when compared to other interventions.
- → Three studies addressing the impact of PNF reported reduced gambling spending and intensity over the short term (seven to 14 days). In another study, this reduction continued to be observed at the 24-week follow-up people at moderate risk of problem gambling only.
- → PNF for early intervention shows mixed findings at the three-month follow up assessment. One study reported reduced spending and problem gambling severity, and the other study found reduced gambling frequency at a one-month follow-up evaluation.

Limit setting

Limit setting is establishing a time-based or financial upper limit that can be applied to a single episode of play or extend across a specific time period such as a month or a year.

- → A reduction in gambling spending was seen in one-third of the limit setting studies at the three-month follow-up assessment.
- → Pop-up messages when a person reaches 80% rather than 100% of their spending limit can help to reduce gambling expenditure.
- → No studies were found that explored the effectiveness of different ways to help people set limits.

Self-directed Internet interventions

For this type of intervention, a package of information and/or educational resources is delivered online to participants. They work through modules that can contain audio and visual content, interactive activities, and quizzes. The content can be delivered according to a set time schedule and targeted at different population subgroups. Information may seek to build knowledge of gambling types, motivations, odds and probability, along with risk factors linked to problem gambling. It would also include a feedback assessment on gambling severity and/or other factors.

- → Engagement with content is a concern for this type of intervention since people may register but then not access the content and follow through with the intervention.
- → A study of self-directed Internet interventions that sought to prevent gambling behaviours from starting, and prevent gambling related harm, showed that at the two-month follow-up, gambling severity but not gambling expenditure had decreased.
- → There is some evidence that self-directed Internet interventions help to improve

gambling symptoms for people seeking help, but when given to people not actively seeking help the intervention was no longer effective. It may be that a different intervention type is needed for people not seeking help.

Online self-exclusion

This intervention involves a request from someone who gambles to an online gambling operator to ensure that the person cannot access online gambling activities for an agreed-upon period of time.

→ In two-thirds of the studies, online self-exclusion was related to reduced gambling severity and expenditure. This is similar to findings for land-based gambling venues.

→ After the online self-exclusion period ended, the level of gambling severity actually increased for people with gambling problems. Short-term, temporary, online self-exclusion may be more effective than long-term self-exclusion.

Evidence quality

Most studies were of moderate or strong quality. They all used consistently delivered, online survey tools, and focused on gambling expenditure, intensity, frequency, or level of problem gambling severity. The online data collection method meant that missing data was limited. Still, there were drawbacks in terms of dropout rates, selection bias, and the failure to address confounders, i.e., other factors that may have played a role in intervention outcomes.

At present, the limited evidence base for a range of online treatment options presents challenges for determining the best course of action. Further, most studies were based in the USA and Europe, and many were funded by the gambling industry.

The reviewed research points to differences in treatment effectiveness between people at risk of harm and those experiencing problem gambling. Online interventions could benefit from a more refined approach in future to meet the needs of people most effectively at different gambling risk levels.

Systems and tools that produce actual ("hard") barriers and limit access to funds

Although there is an established body of evidence for voluntary, or "soft", safer gambling tools (see "2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts" on page 66), much less research has assessed the effectiveness of financial blocks, or "*hard*" barriers that restrict access to money along with their role in gambling harm prevention. Since the evidence is limited, a scoping review was chosen to explore existing systems and tools that block access to cash and money, including attitudes and preferences toward them, their characteristics, target groups for which they are intended, and how their effectiveness differs by level of gambling risk. Unlike the previous measure, both online and land-based gambling venues and settings are included. The research examined for the review targets access to funds rather than the amount or speed of money spent on gambling. Only nine studies, published between 2004 and 2020, met the review criteria.

System tools and characteristics

Two types of systems and tools for hard barriers were identified: (1) systems and tools to assist with managing money involving restrictions to financial or banking systems (including credit and debit card blockers, and financial management systems), and (2) point of sale tools such as the removal of automated teller machines (ATMs, i.e., cash

machines) from gambling venues and electronic funds transfer point of sale (EFTPOS, also referred to as a card payment) restrictions.

Attitudes toward systems and tools

- → Many people are unaware of options for blocking financial transactions with gambling sites and venues. Most people who used them rated debit and credit blockers as a helpful way to control expenditures. At the time of the study, eight financial services offered card blocking options, which meant they were available to about 60% of people in the UK.
- → The most important factors when considering the ideal components for tools for banking systems to support money and cash control are a cooling off period between initiating and turning off the block, a requirement to talk to someone at the bank before turning off the block, and allowing a permanent block on a card for gambling expenditures. Receiving regular reminders of gambling expenditures and having a specialist in gambling harm in the financial institution to provide advice would also be helpful.
- → For financial blocking systems, including a limit on cash withdrawals and having a time-release lock would be highly effective.
- → Hard barriers imposed by third parties (i.e., social services) are more effective than soft mechanisms involving family members, which can negatively affect relationships. Having control over one's own finances, as opposed to someone else controlling access to funds, appears to be more therapeutic in some cases than financial assistance for strain involving debt reduction after stopping gambling.
- → Men with gambling problems were supportive of credit card prohibition as a way to limit financial harm. Harm prevention and minimisation tools used in land-based venues are not always applied to online gambling websites.

Attitudes toward ATM prohibition

- → The removal of ATMs was strongly supported because it imposed a break in play and helped people control impulsive spending.
- → People with problem gambling as well as people who do not gamble were more likely to favour the removal of ATMs from gambling venues.
- → Removing ATMs from gambling venues was seen as helpful for sticking to financial limits, however the extent of support for removal varied by whether ATMs had already been removed, whether they were removed fully across the jurisdiction, or at specific venues only.
- → There was some concern that removing ATMs meant that cash would be withdrawn through EFTPOS, which have no restrictions. Some people with problem gambling felt that EFTPOS should be completely removed from gambling venues.
- → In another study, just under half of the participants agreed with the removal of EFTPOS facilities from gaming venues, with the highest percentage being people who do not gamble followed by people with problem gambling. Similarly people who do not gamble and people with problem gambling were the least likely to agree that ATMs and EFTPOS should be permitted inside gaming rooms.

Effectiveness of hard barriers

- → An essential part of an effective financial

management system for people experiencing harm from gambling is that the barrier cannot be overturned easily (as opposed to personal self-management systems) and that access to money is controlled by the institution.

Of note is that most studies focused on people gambling in EGM venues and those with gambling problems. There is currently a lack of research on systems and tools for people at no or low-risk of gambling harm, despite studies that suggest that financial harm can affect people in these categories as well. Only one study considered hard financial barriers for people who gamble online. Finally, two-thirds of the studies originated in Australia and only one each in the UK, Canada, and Finland. None of the studies were funded by gambling operators.

Evidence quality

Overall, the evidence quality was low, with only two studies that could be rated as moderate. Although these two studies had a post-study evaluation follow-up, neither included a control group. The lack of quantitative literature will have to be addressed in future so that a meta-analysis can be performed. Such an analysis would provide more substantive evidence of the effectiveness and perhaps identify unintended consequences of hard financial limits.

Self-exclusion

Self-exclusion programmes had the most developed body of evidence, with several systematic reviews having been conducted since 2010. Self-exclusion is better known as a harm minimisation strategy, but some aspects of its delivery and implementation lend themselves to gambling harm prevention and education. For this measure, a narrative review summarised evidence from existing reviews, and then extended to include evidence from studies published from 2018 to 2020. Six review studies and 22 more recent articles and reports met the inclusion criteria. The research focused mostly on land-based self-exclusion, with only a few studies specific to online self-exclusion or that addressed both formats. Few studies have evaluated the effectiveness of self-exclusion for gambling harm reduction. Most focus on other aspects such as rate of uptake, and consumer profiles, motives, and perspectives.

Programme use

- → Self-exclusion programmes are widely underused, with one review showing a use rate of between 0.6% to 17% for people with gambling problems.
- → Barriers that prevent or delay enrollment include weak promotion, complicated enrollment processes, lack of access to counselling and support during self-exclusion, being unable to exclude from multiple venues at once, and insufficient choice for exclusion periods.
- → Venue staff may also hinder enrollment due to providing incorrect or incomplete programme information, and a lack of sensitivity or privacy during the sign-up process.
- → Personal factors also contribute to programme underuse such as people believing that they do not have a problem, that using other tools can help them to control their gambling, and that self-exclusion agreements are easily breached.
- → Experiencing financial difficulty is often reported as a motivation to enroll, with health-related, career, or legal concerns also mentioned.
- → Self-exclusion is often used by people with gambling problems as a last resort rather than

as a harm prevention strategy.

Reduced gambling

→ Some studies report reductions in the amount of gambling and in gambling related harm linked to participation in a self-exclusion programme.

→ Although the severity of problem gambling may decrease after enrolling, the decrease was not seen when people began gambling again.

Compliance

→ Compliance with a self-exclusion agreement is challenging to measure due to the reliance on self-report, and because the agreement normally applies to one venue only. This means that people can still gamble elsewhere during the self-exclusion period.

→ Breaching (the opposite of compliance) often occurs. Although breaching rates vary, it estimated that at least 50% of people will breach their agreement. The likelihood of breaching increases over the course of the agreement as people may become less satisfied and perceive self-exclusion to be less effective.

→ There is no consensus at present about the optimal length of exclusion.

Effectiveness of self-exclusion programmes

→ Several studies report a relationship between self-exclusion and improvements in sense of control, self-confidence, and the belief that gambling is less disruptive to one's life following self-exclusion.

→ Mental health problems are positively affected by self-exclusion. There is evidence for reduced levels of anxiety and depression, less emotional strain, anger, guilt, and substance use, and fewer interpersonal difficulties. Improvements have also been noted for psychosocial functioning, work performance, and gambling-related quality of life. However, the counselling offered with many self-exclusion programmes may have contributed to some of these improvements.

Counselling

→ Uptake of counselling during self-exclusion is limited.

→ Evidence is mixed concerning accessing treatment during self-exclusion. One study found no relationship between treatment access and gambling behaviour, gambling problems, and mental health. Still, another study reported that most people who self-exclude felt self-exclusion on its own was insufficient, since people also need to resolve underlying issues related to excessive gambling.

Unintended consequences of self-exclusion

→ Self-exclusion at one venue may lead to gambling at others.

→ People who self-exclude are mostly responsible for complying with their terms of agreement due to low levels of operator enforcement. This can lead to higher breaching rates.

→ Some self-exclusion programmes have mandatory counselling as a requirement, which can be a deterrent to enrollment. Other programmes have no automatic contact with counselling services. This may represent a missed opportunity for those in need.

Evidence quality

→ The quality of most studies was rated as moderate to low. Some of the issues included non-representative samples due to small sample sizes or self-selection, the degree of implementation of the programmes not being measured, and using self-report rather than more objective research techniques.

Shared considerations for indicated measures

Three measures were reviewed to assess how gambling harm prevention and early intervention is offered for the benefit of individuals at risk of or experiencing harm from gambling. Very little research exists to address "*Brief online interventions*" and "*Systems and tools that produce hard barriers and limit access to funds*." These measures are becoming more widely established, and it is likely that brief online treatment increased during the COVID-19 lockdown. Financial gambling blocks have only gained traction relatively recently, with many gambling participants and stakeholders still unaware of them. Therefore, research in this area is limited in scope and the findings should be approached with some caution. As a newer approach, perhaps not surprisingly customers are also finding loopholes to financial blocks. For example, other payment methods used by operators such as digital wallets or cryptocurrencies do not carry a merchant category code, which can limit the effectiveness of financial blocks.[1] Since the Evans et al.[2] report was published, there have been continuing developments with banks, including cooling-off periods for Barclays,[3] NatWest,[4] and HSBC[5] customers. The Gambling Commission has published a list and some guidance on applying blocks with signposting to participating financial insitutions,[6] as has GamBan.[7] GamCare have also linked with financial institutions strengthening existing blocks and addressing loopholes.[1, 8] Further, Monzo[9] has launched a pilot for an Open Banking gambling block.

The evidence shows some promising directions, but more high-quality evidence is needed to confirm the best approach to implementing these measures for harm prevention and early intervention, and to address the many gaps in the literature. This is also true of the fourth indicated measure in the National Strategy,[10] "*Customer interaction*," which was not included in the review since the literature is too early in development. This topic should be monitored, and a review undertaken when the evidence base is sufficiently developed. By contrast, self-exclusion has received much more research attention, and the literature is growing. A number of reviews have already been conducted and there are newer studies to add to the evidence base since the most recent review was published in 2019.

It is important to bear in mind that indicated measures are designed primarily as harm minimisation initiatives for people with gambling problems, rather than as a prevention and education strategy. People who enter into these arrangements have usually moved beyond a low risk level. This is not to say that the measures would not be beneficial for preventing harm for people categorised as low or moderate-risk. Rather, the programmes could be tailored and promoted to people in these risk categories to enhance their appeal and reduce the amount of gambling-related harm that is experienced by these groups. As with other harm prevention tools, flexibility is important in meeting individual needs. One relatively consistent finding is that people in various risk categories often respond differently to a specific measure. It is also likely that these

measures will appeal more or less to different population subgroups. Future initiatives and research could consider whether differences exist by demographic factor (e.g., gender, age cohort, socio-economic status, etc.), health status (e.g., comorbid conditions), or preferred gambling type (e.g., poker, EGM, or lottery play).

4.6 Guidance for How this Information May be Used to Inform a Collective Prevention and Education Plan

Although the evidence base for indicated measures was relatively small, each chapter offered at least some considerations for developing and implementing a gambling harm prevention and education plan. The key points are summarised by measure.

EVIDENCE TO GUIDE BRIEF INTERNET-DELIVERED INTERVENTIONS FOR GAMBLING

With only 15 studies of brief online interventions that met the review's requirements, the evidence base may still be too limited to develop a specific harm prevention and education plan. Even so, the following guidance is advanced:

- → There may be opportunities to leverage existing technology infrastructure if researchers and industry are willing to work together. This approach could lead to high quality interventions at a relatively low cost but may require government facilitation given the current debates about industry involvement in research (for more information on these debates see Cassidy, 2014,[11] and Livingstone and Adams, 2016[12]).
- → Behavioural tracking (PF and PNF) seems to be more effective for people at-risk of gambling harm than people experiencing problem gambling. Consideration could be given to whether the reports or process could be made more meaningful for people experiencing harm.
- → People registering for but not engaging with the content to complete the programme is the biggest challenge for Internet-delivered interventions. New and effective ways for people to remain connected to programmes are needed.
- → Internet-delivered interventions can be personalised to meet participants' needs and circumstances. There is a need for an expanded suite of interventions that are relevant and appropriate to people with low levels of gambling problems.
- → It may be that brief or short-term online self-exclusion is more helpful as an early intervention strategy rather than longer term exclusion periods.
- → A blended approach to using technology to deliver interventions to people who gamble at land-based venues may be effective due to extensive technology use.

EVIDENCE TO GUIDE SYSTEMS AND TOOLS THAT PRODUCE HARD BARRIERS AND LIMIT ACCESS TO FUNDS

Like the previous measure, the small body of evidence means that caution is needed when

developing harm prevention and education plan. At present, the following points could be considered:

- → Many study participants were unaware that they could implement a financial block to gambling specific debit or credit card transactions. There is a need to increase public awareness and inform customers when opening accounts, and on financial statements where problematic gambling activity could potentially be identified.
- → Card blockers could be applied in conjunction with other programmes such as self-exclusion or when implementing gambling website blockers.
- → Financial mechanisms are useful not only for gambling harm prevention and minimisation, but also as a form of early intervention and treatment.
- → Financial mechanisms could be implemented to help offset debt when a person is no longer gambling. The post-recovery period is stressful when dealing with gambling-related debt, and hard barriers to limit access may be helpful in preventing relapse.

EVIDENCE TO GUIDE SELF-EXCLUSION PROGRAMMES

Self-exclusion programmes have received more attention from researchers than other indicated measures. Most suggestions for self-exclusion within a gambling harm prevention and education plan are drawn from more recent articles and the grey literature.

- → Promote self-exclusion programmes more actively. This could increase participation at an earlier stage for people at risk of gambling problems.
- → When communicating messages about self-exclusion, consider new terminology emphasising 'play management' or 'account tools' rather than 'responsible gambling'.
- → Improve and promote the ability to detect breaching since the lack of enforcement of self-exclusion agreements can be a deterrent to enrollment.
- → Allow self-exclusion from multiple venues simultaneously.
- → The enrollment process could be simplified by using plain language wording, making materials available in multiple languages, and more clearly communicating the individual's and the operator's responsibilities.
- → Offer more flexibility in the duration of self-exclusion as well as the option to choose the gambling types from which to exclude (i.e., EGMs, casino table games, online poker, etc.)
- → For land-based gambling, offer registration from points beyond the gambling venue such as online, through treatment organisations, or even through the gambling machine itself.
- → Since people who self-exclude from online and land-based venues differ, messages could be tailored to specific groups of players who are vulnerable to gambling harm such as EGM players, new immigrants, and non-native English speakers. Self-exclusion could also be promoted among at-risk groups.
- → Counselling and addiction treatment services could be more actively promoted and displayed throughout the course of the self-exclusion programme. Counselling services could be better integrated with in-venue services available for immediate help.

Online self-enrollment could also offer links to different treatment support options.

→ Improve detection of breaching through, for example, exclusion from multiple gaming venues and gambling forms, blocking gambling transactions through financial institutions, and enhanced staff training. Greater management commitment to intervening, administering disciplinary action when protocols are not followed, and enforcing escalating consequences for multiple breaching is also needed.

→ During reinstatement and renewal, ensure the procedures are worded simply and formalised. For people with a history of breaching, a meeting with a counsellor could be mandated before allowing them to resume gambling.

→ When designing, implementing, and evaluating self-exclusion programmes, multiple stakeholders could be involved such as treatment services and gambling operators.

→ All recommendations require pilot testing and evaluating prior to implementation to assess their effectiveness and identify potential unintended consequences.

LIMITATIONS AND RESEARCH GAPS

A number of research gaps were noted for the indicated measures. They are summarised below.

Brief internet delivered interventions

→ To improve the evidence quality, all interventions should be delivered with a control group using randomised samples.

→ Early intervention may need new intervention types. Future research could assess a stepped-care approach to self-directed, Internet interventions for non-treatment seekers tailored to their needs and preferences.

→ There were no studies of online interventions that focused on Internet gambling and harm prevention. Studies could be targeted to specific populations such as young people and assess effective ways to direct them away from online gambling sites, or to ensure there are age checks and parental consent.

→ Since only one intervention was school-based, future research might consider pinpointing PNF and PF components that could be of value in school-based interventions. More research is also needed comparing PF and PNF since the finding that they are similarly effective online gambling does not align with research on land-based gambling.

→ Outcome measures could be considered beyond gambling frequency, expenditure, and gambling severity status since they may not be ideal for prevention, early intervention, and harm reduction. New measures of harm, along with a more consistent approach to the timing of follow-up evaluations are needed.

Systems and tools that produce hard barriers and limit access to funds

→ There is a massive gap in the literature for financial gambling blocks. Almost all studies addressing financial limits referred to voluntary systems rather than hard barriers. Financial gambling blocks have been largely overlooked by researchers, policy makers, and treatment providers. There was also little discussion of this measure by study participants themselves. This topic should be advanced in future studies due to its potential for helping to prevent and reduce gambling harm.

- → Studies of hard financial barriers should include an outcome evaluation. Only two of the reviewed studies had a pre-post design, and neither included a control group.
- → There was little research about children and money. It would be worth considering the effectiveness of financial blocks for app-based gambling activities like loot boxes, and to consider parental preferences for accessing blocking programmes and software.
- → Financial institutions are well positioned to support harm prevention. Researchers could partner with banks and financial institutions to evaluate the impacts of barriers to gambling implemented by financial services, which would be timely given the recent, increased uptake by British financial institutions.
- → It would be worthwhile to include experiences and attitudes of people working in the gambling industry toward hard financial barriers.

Self-exclusion

- → The entire self-exclusion process needs to be examined, including from the consumer's perspective, regarding factors that lead to positive outcomes, gambling practices while excluded, and the overall effectiveness of the programme.
- → Other areas where evidence gaps exist are enrollment frequency, renewal and reinstatement rates, and gambling while self-excluded at other venues and online.
- → There is little research on breaching, which could include ways to prevent breaches from occurring, improving detection when it occurs, and assessing the effectiveness of breach management.
- → Specific areas where more study is needed is for online self-exclusion (also noted for brief Internet interventions) and among the following population groups: young adults, people with unstable finances, people with problem gambling, and cultural and regional minority groups.
- → In terms of study design, there is a call for self-exclusion research with larger samples, longitudinal designs, multiple methods of data collection, and the use of validated screening instruments to better understand comorbidity.
- → More systematic reporting of funding sources is needed.

CONCLUSION

Indicated measures are designed for the benefit of individuals at risk of or experiencing gambling harm. Although a number of measures exist that address online and in-person gambling, the research has not yet caught up with newer measures such as financial gambling blocks, brief online interventions, and customer interaction. Where a developed body of evidence does exist for self-exclusion, several suggestions for programme improvement have been advanced. The challenge is to increase the uptake of self-exclusion among people experiencing harm and reduce the amount of breaching. For all indicated measures though, there is a need for strategic promotion so that people who gamble and their significant others are aware of these options. Put simply, if they are unaware of these measures or if what is involved in the initiatives is not clearly communicated, people will not take advantage of them.

As with other measures, a stronger evidence base consisting of high-quality research is desired to confidently support a comprehensive gambling

harm prevention programme. A secure funding stream that would allow for ongoing research programmes assessing indicated measures would greatly assist with quality improvement as well as the quantity of evidence that could be considered during policy development.

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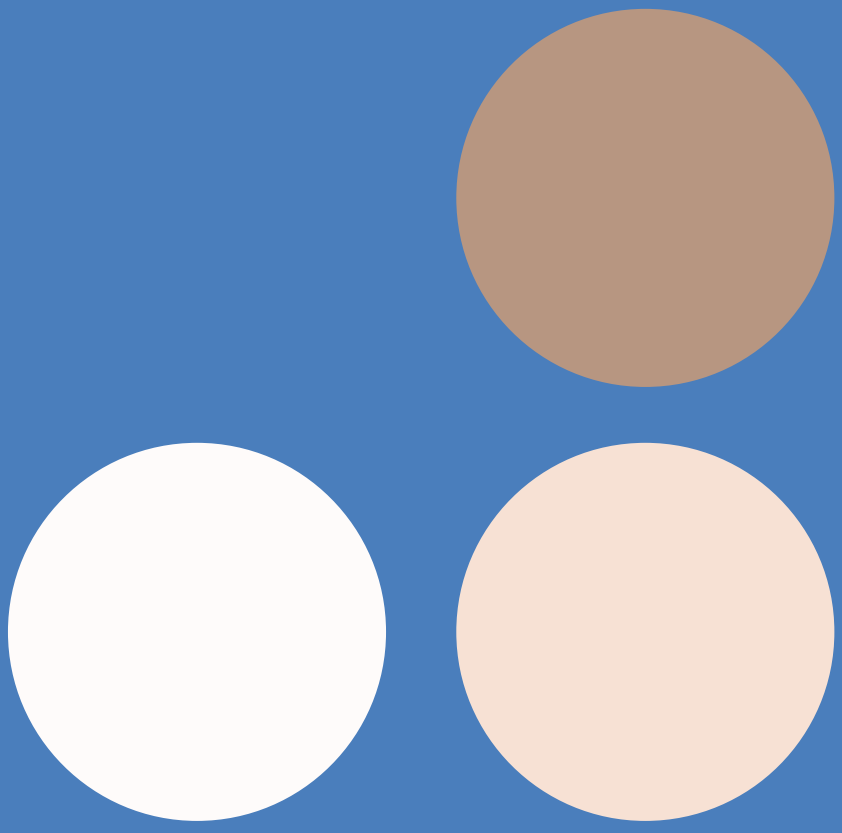
Prevention and Education Review: Gambling-Related Harm

5.0 Stakeholder Insights



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5.0 Stakeholder Insights

Stakeholder Consultations: Insights From Third Sector Charities

By Dr. Margo Hilbrecht, Brittany Gottvald, Jess Voll

INTRODUCTION

Evidence presented in the preceding chapters of this report is drawn from research conducted by the academic community. This collective body of evidence represents a form of expertise that can be described as academic, scientific, or technical. It is based largely on quantitative studies that rely on statistics and measures that have been tested to ensure accurate and reliable results.[1] We can also learn from other types of expertise when considering effective approaches to reducing gambling harm. Knowledge gained through stakeholders' experiences and insights provides a different vantage point from which to inform, support, or even question the research evidence. Integrating knowledge derived from both forms of expertise creates a more complete body of evidence to inform the design of programmes, policies, and initiatives with strong potential to prevent and reduce gambling-related harm.

In this chapter, we explore the perspectives, insights, and experiences of stakeholders that design and deliver gambling harm prevention and education programmes in Great Britain. Put simply, stakeholders are people or organisations with an interest in the success of an initiative, project, or policy. There are many stakeholders in gambling harm prevention. They represent community, public health, treatment, education, finance, and social service sectors. We are interested in the expertise of stakeholders who represent third sector charities—those that operate without a profit goal in mind to achieve socially beneficial outcomes. The purpose of this chapter is to provide the context of expert knowledge from those who are actively involved in designing and delivering gambling harm prevention and education initiatives.

THE ROLE OF THIRD SECTOR CHARITIES

Third sector charities are organisations that are independent of government, motivated by social welfare goals, and operate outside the commercial sector. They are sometimes referred to as 'not-for-profit' or 'civic' organisations. Examples would include community and volunteer organisations, social enterprises, associations, and self-help groups. According to the National Audit Office, third sector charities provide six primary benefits:[2]

- An understanding of community and service user needs,
- Closeness and access to people or groups of interest to the public sector,
- The ability to deliver outcomes that are otherwise difficult for the public sector to achieve,
- Service delivery performance,
- Innovative solution development; and
- Advocacy for addressing people's needs to the public sector and society at large.

As such, third sector charities are regularly and directly involved with people who are either experiencing or at risk of experiencing harm from gambling, and/or indirectly involved through those who work with them. Third sector charities have

unique perspectives that may be locally specific or are relevant to distinct population sectors.

The mandates of third sector charities that seek to prevent and educate about gambling harm are diverse. In some organisations, the sole focus is providing support to people who gamble and to their affected others (those who experience harm caused by the person who gambles' behaviour). Other organisations have a broader mandate where gambling prevention and education is one concern in addition to other health, financial, or educational issues. Some third sector charities focus on individual treatment or specific population groups such as children and youth, while others direct gambling harm prevention and education messaging to the entire population. The third sector charities represented in this chapter have varying alignment with the universal, selective, and indicated measures discussed in the preceding chapters. Measures are courses of action to be considered for an effective gambling harm prevention and education plan. Most organisations addressed more than one type of measure. Taken together, the third sector charities offer expert knowledge gained from day-to-day and, often, face-to-face interaction with people vulnerable to and/or experiencing gambling-related harm.

Although third sector charities aim to address social welfare goals, some programmes and services may lead to different outcomes than expected. Sometimes there are unanticipated effects, or unintended consequences that emerge which have an unforeseen negative effect.[3] By their very definition, unanticipated consequences cannot be predicted. Even so, learning from unintended consequences in addition to positive outcomes is critical to informing planning, programming, and policy decisions.

Considering the range and scope of third sector charities, the consultations were designed to address two broad research questions:

1. **What are the insights and experiences of the third sector charity representatives regarding the effectiveness, ineffectiveness, and/or unintended consequences of existing gambling harm prevention and education programmes?**
2. **What guidance is offered by third sector charity representatives for ensuring positive outcomes to gambling harm prevention and education initiatives and avoiding negative consequences?**

To answer these questions, personal interviews were conducted with representatives of third sector charities in Great Britain. Details about the interview method, participant selection process, and how their responses were analysed are described in the next section.

THE CONSULTATIONS

Participants

The Gambling Commission assisted in identifying third sector charities and representatives with expertise in designing and delivering gambling harm prevention and education programmes. It provided a list of 13 third sector charities operating in Great Britain, including contact information for representatives best positioned to share their insights and perspectives. Each person was invited by Greo to participate, with the knowledge that they had been identified by the Gambling Commission. Based on a description of the Prevention and Education Review and how their voices could contribute to informing policy and practice, all organisations agreed to participate. Participants agreed to a formal consent process prior to their interview. Fourteen interviews

took place. One person asked that their CEO also be included in the study, and the two were interviewed at separate times. One interview had three participants since the contact person felt that it was important that the voices of two other staff members were heard. Both requests were accommodated. This resulted in 16 participants across 13 third sector charities, including six women and 10 men.

The consultation process was reviewed by the Office of Research at the University of Waterloo and granted ethics clearance (ORE #42588). To protect participants' confidentiality, each is assigned a gender-neutral pseudonym. Features of third sector charities that could assist in identifying specific organisations are provided at an aggregate level only. The data were securely stored in a password-protected file on the shared Greo drive. The file was only visible to staff members on the research team.

The third sector charities differed in organisational size and mandate. The number of employees was used as an approximation of size. There were four small organisations with fewer than 15 employees, six medium-size organisations with between 15 to 29 employees, and three large organisations with 30 or more employees. Additionally, there were differences in participant roles and experiences. They ranged from senior executive roles (e.g., CEOs, managing directors, and founders) to treatment services, prevention and education, operations, and research. Eleven participants had been active in gambling harm prevention and education for between five to nine years, two had been involved for less than five years, and three had more than 10 years of experience. Six organisations delivered programmes and initiatives that addressed all three levels of measures: universal (whole population), selective (targeted to specific population groups), and indicated (for vulnerable and at-risk individuals). Three organisations delivered both selective and indicated measures and two organisations delivered both universal and indicated measures. Two organisations focused on selective measures only. There was some geographic variation. Seven third sector charities were based in London, two had offices in London and elsewhere in Britain, one was in the South West region of England, two in the North East region, and another in Scotland.

Interviews

The interviews followed a pragmatic approach,[4, p.436] with questions aimed at specific topics within measures. The goal was to yield useful insights into developing effective programmes and policies for reducing gambling harm. It should be noted that the stakeholder consultation brief did not request that every topic presented in the preceding chapters be addressed. For example, regulatory measures were not included in the scope of the interviews, although in some cases it was inevitable that these were mentioned since they could influence gambling harm prevention and education (e.g., ineffective advertising regulations aimed at minors).

An interview guide was developed based on the project scope agreed upon in conjunction with the study commissioners. It was pilot tested in Ontario, Canada with an internationally based third sector charity that had offices in Great Britain. This stakeholder was selected to pilot test the interview guide for three reasons: (1) the organisation shared the same mandate as its UK equivalent, (2) doing so avoided having a third sector charity in the UK excluded from the limited list of participants, and (3) past involvement with Greo meant that the authors could match the representative's role with their counterpart in the UK. Although differences

in third sector charity reach and regulations exist between Great Britain and Canada, the interview questions were sufficiently broad that they could be easily understood and answered by participants in either country. Following minor revisions recommended by the pilot test participant, semi-structured interviews were completed in 2020. The interview questions were shared with all participants in advance in case they wished to consider their responses prior to the interview. The interviews were designed to be 30 minutes in length. However, the average interview length was 51 minutes. The interviewer used a conversational strategy[4] during the interviews to allow flexibility in probing certain experiences or topics in greater depth, and when new, unanticipated areas arose.

All levels of measures were addressed in the interview. Questions about universal measures focused on whether participants' organisations were involved in efforts to promote or advance safer gambling among the general population. Questions about selective measures centred on safer gambling campaigns for children, youth, and older adults. Participants were also asked whether their organisation delivered safer gambling campaigns at the selective measures level for any of the following groups identified by the Gambling Commission as particularly vulnerable to harm: ethnocultural, affected others, employees, university students, military personnel and veterans, people experiencing homelessness, and people who are incarcerated. Where applicable, participants reflected on the success and effectiveness of such efforts, and whether any unintended, negative consequences could be identified. The interview questionnaire is available in the supplementary materials on the Documentation Hub.

A single Greo staff member conducted the interviews using either WebEx or Microsoft Teams with a research assistant present. Initial transcripts of the interviews were produced using Otter.ai software and then checked for accuracy. All participants were given the opportunity to review the audio file and/or a verbatim transcript of their interview. Information provided by the participants was kept strictly confidential, with the understanding that only summary findings would be shared publicly, and any direct quotations used to support the analysis would be anonymised.

Analysis

A qualitative descriptive approach, as outlined by Sandelowski,[5, 6] guided the interview analysis. The objective of this approach is to provide a summary of interview data in plain language where most participants would agree that the meanings attributed to responses are accurate. The focus is on descriptive and interpretive validity.[5] Qualitative description primarily applies a deductive approach to the analysis of interview transcripts. The approach allows researchers to match the range of expert knowledge with research goals while taking into consideration the background context.[7] The initial coding system was developed based on the interview guide, as well as the main topics and subtopics relevant to the research questions. The transcripts were then coded line by line to inductively build upon the coding system and to identify further subcategories within each topical area. The subcategories were checked for relevance to the research questions, as well as overlap within and between them.

The lead researcher and a research assistant independently coded two transcripts using MAXQDA software to test the degree of intercoder agreement. After agreeing to include the interview questions in the coded segments, the Kappa value of code occurrence for each coded transcript was

k = .75, indicating a high-moderate, acceptable level of agreement.[8] Participants had the opportunity to review their transcripts, and an initial draft of the findings was circulated to all participants to ensure that their comments and insights were accurately reflected. Of the eight who responded, only three requested small changes, all of which were incorporated into the text.

An overview of the key findings is presented in the next section. The findings represent experiences and perspectives of third sector charity representatives who design and deliver programmes and initiatives to prevent and mitigate gambling harm.

FINDINGS

The findings are presented in the order of the research questions. For the first question regarding stakeholders' experiences and insights about existing gambling harm prevention and education programmes, the findings are structured according to level of measure, beginning with universal population-based efforts, followed by selective measures for children, youth, and older adults. Lastly, the findings for selective measures delivered to other vulnerable groups are discussed. The second research question addresses stakeholders' guidance for third sector charity representatives to ensure positive outcomes to gambling harm prevention and education initiatives is presented separately. Each section summarises participants' responses and includes verbatim commentary to illustrate discussion points.

Universal measures

There were five main categories of responses to questions about universal efforts delivered to the general population. These covered a range of topics, grouped into critiques of population-based messaging; effective practices for designing and delivering universal efforts; gambling harm prevention and education awareness and training; conducting evaluations and measuring outcomes; and unintended consequences.

Critiques of population-based messaging

Four participants began by critiquing the current population-based messaging about safer gambling. Some comments were specific to the "*When the fun stops, stop" campaign slogan. One stakeholder commented that "from a public health messaging perspective, it's not being very well received*" [Morgan]. More specifically, another expressed doubt about the overall effectiveness of the campaign since "*the word 'fun' is in the first clause*" [Robin].

Stakeholders also provided insight about the realities of delivering population-based messaging. For example, when asked about population-based efforts, one participant suggested that "*most of what we think of as kind of generic, population-based actually isn't very population-based because it's almost always—because we've got a limited budget—targeted at the population that gambles. So, it's already targeted straight away*" [Logan]. Without access to more substantial resources, including funding and staff, the priority audience for messaging defaulted to people who gambled and were at greater risk of experiencing harms.

Due to the tendency to focus on specific groups rather than the whole population—whether intentionally or not—three people expressed concerns about message content that could either exclude people at risk or inadvertently encourage gambling participation. For instance, one stakeholder mentioned that some people at risk of gambling harm are excluded from population-based messaging because "*it's not targeted at*

you. It's targeted at people who have a problem gambling on football, but not on computer games, or skin gambling, or loot boxes" [Robin]. Similarly, another noted that "*the one-size-fits-all messaging that we've had in the UK hasn't been very effective. It's focused on the gambler. I would like to see it focusing more on the harms, and not so much the glamorous side to gambling*" [Chris]. This stakeholder also raised concerns about population-based messaging that uses responsible gambling language. This type of language emphasises the the person who gambles' personal responsibility for their choices and minimises other environmental factors over which they may have no control:

> *We've heard feedback from people that talking about gambling in the context of being responsible and it being an individual responsibility, which, as you well know, is something that has had some pushback on. We've found that that can increase people's feelings of guilt and anxiety and shame around the issue as if it's their issue, not something that's happened to them in the way that some other mental health conditions and other addictions are perceived. So, we've also been careful to steer away from the responsible gambling language in case that did have unintended consequences* [Logan].

The underlying message would not necessarily be noted by the general population or people who gamble, most of whom are unaware of the tensions and potential outcomes related to using responsible versus safer gambling language in messaging. (Differences between the two concepts are described in Chapter 1.0, Toward a Common Understanding of Terms on page 2).

Three participants identified a need for gambling harm prevention and education to achieve parity with drug, alcohol, and sexual health prevention and education efforts. For instance, a stakeholder commented that, "*there's always been drugs and alcohol that have been at the head of conversation when it comes to addictions, and gambling has only been, maybe in the last five years, really highlighted*" [Casey]. Referencing equality with other public health issues, this stakeholder observed: "*it was about really embedding the issue, giving it a seat around the table to the issue of gambling-related harm from a public health perspective, alongside the likes of drugs, alcohol, sexual health, everything else, so sort of a position there*" [Morgan].

Effective practices for designing and delivering universal efforts

Half of the stakeholders shared insights into effective design and delivery of population-based gambling harm prevention and education initiatives. Three spoke in detail about the models and approaches they employ, including their rationale for using them. For example, while comparing universal and selective approaches, one participant explained that "*we've gone universal first because that gives us the opportunity to have some really broad evaluations and accreditation around what we do. It gives us a base of evidence and a base of resources that we can then adopt to take to a more targeted group*" [Sandy].

Another emphasised the value of drawing from health behaviour change programme models that have been successful in other contexts: "*so, starting with a piece of research, moving on to seeding more public conversation through the media, and following that up with targeted communications to our different audiences, through social media, but also through a variety of other routes*" [Jordan]. Basing their initiatives on proven models designed for other health issues was seen as a way to potentially improve outcomes.

"there's always been drugs and alcohol that have been at the head of conversation when it comes to addictions, and gambling has only been, maybe in the last five years, really highlighted"

Three other participants highlighted developing and delivering digital content with an emphasis on the use of social media as an important way to connect with their audiences [Rowan; Sam; Logan]. Other media and platforms for digital content mentioned during the consultations included: podcasts [Rowan], YouTube [Rowan], websites [Sam], and TV [Logan].

Some stressed the need to be knowledgeable about the gambling industry as well as changes to the ways different forms of gambling are marketed. While discussing how gambling operators are beginning to train their employees about gambling-like gaming, a participant noted that, "*it is important that if you are involved in a gambling support service, you need to be aware of what the market is doing*" [Chris]. Another mentioned the value of being able to analyse conversations on social media platforms at a more advanced level. For example, they raised concerns about how eSports advertising uses language (e.g., "*risk-free bets*") that differs from other gambling forms, and summarised, "*I think the first thing is to kind of know that this is happening...just an awareness*" [Robin].

Gambling harm prevention and education, awareness, and training

Seven stakeholders spoke of the need to raise awareness of gambling harm among health care practitioners and service providers. This stakeholder highlighted the need to raise awareness about gambling harm by sharing that, "*we did some interviews with physicians and really talked to them about gambling, what they knew about it, whether they knew where to signpost patients to, and really, there was a real gap in their knowledge*" [Ali].

Three discussed integrating screening for problem gambling into existing services. For instance, one participant pointed out that the programme they were developing would entail "*screening for problematic gambling and gambling-related harm at the point of engagement within our organisation's local offices*" [Morgan]. Another described adding a screening question to service providers' referral forms [Ali]. One participant outlined an initiative to include screening for problem gambling within an existing service that provides advice to people experiencing personal difficulties. They reported that their service providers are given training on the most effective language to use while screening, explaining that "*we often coach them to describe gambling slightly differently. We talk a lot about betting and gaming and lottery. So we use words that are less loaded*" [Rowan].

Another three mentioned the need to extend prevention and education training to other people in leadership positions. As this participant reported, "*what we found is that there's a lot of people in positions of authority that don't actually have a lot of gambling addiction awareness and knowledge*" [Casey]. Similarly, another observed that, "*the risk is they struggle to convince their managers that [gambling harm prevention and education] is a priority or it is something that should be as much of a priority as the tobacco education or alcohol education*" [Addison]. Addressing this knowledge gap would benefit employers and employees who may not have considered harm from gambling as a public health issue.

Conducting evaluations and measuring outcomes

Four stakeholders identified conducting evaluations and measuring outcomes as part of effective practices for designing and delivering population-based gambling harm prevention and education efforts. Regarding one specific programme, a

participant noted, "*we've tracked it's impact on the key target groups, and we've done some before and after tracking using a publicly available survey with a large population sample and survey method*" [Logan]. While describing the value of using population surveys, they added:

> *It's shown behaviour change particularly in our target audience in terms of reduction of impulsive betting and reduction of spending and participation over a period of time...but even in those non-target groups that would [also] be exposed to the messaging, there's been an improvement in their self-reported level of gambling harm* [Logan].

While public data sources can provide general insights, a challenge common to third sector charities is ensuring that specific programme evaluation is integrated into their initiatives.

Considering unintended consequences

To address potential unintended consequences, five stakeholders used the strategies of modelling and cautious design of initiatives, as well as signposting to other organisations. For example, one stakeholder expressed that "*we're doing more public health forecasting and modelling these days*" [Morgan]. One mentioned dark logic modelling[9] specifically (i.e., a process to guide assessment of potential harms associated with public health interventions). While discussing how their organisation addresses unintended consequences, another participant stated that,

> *The initial campaign ideas that were proposed were things that could have been either triggering or patronizing or could in some way encourage people to take up gambling rather than encourage them to gamble less impulsively. So, we designed those out and we were very cautious* [Logan].

Two participants stressed the importance of making people aware of (i.e., "signposting" to) other services to address any potential unintended consequences that might arise due to organisational limitations. For instance, one explained that "*before we deliver any programme, we make sure that the signposting is there, and the people who are coming to any of our sessions are going to be able to go and talk to people if they need to. If they can't do that, we won't deliver the programme*" [Kai]. Similarly, while discussing how to manage expectations of programme participants, a stakeholder related that "*if somebody has support needs which require more specialist support, whether it's a mental health condition, or whether, for example, there's domestic abuse, or there's really severe financial harms, we have to signpost those individuals to other organisations*" [Chris].

Overall, stakeholders championed linking into other organisations' services and programmes as a useful strategy to ensure that clients had access to tools that could mitigate against unintended consequences.

Selective measures for children, youth, and older adults

Participants' insights about selective gambling harm prevention and education measures targeting children, youth, and older adults covered a broad range of topics. These topics are grouped into five categories: 1) effective practices for training practitioners, 2) effective design and delivery of initiatives, 3) building capacity among children and youth, 4) best practices for incorporating experts by experience, and 5) addressing unintended consequences. Although older adults were a population of interest, this subsection focuses primarily on children and youth. Only two initiatives targeted older adults who gamble.

Effective practices for training practitioners

Five stakeholders highlighted the importance of delivering training that increases the confidence of practitioners who work with children and youth. As this stakeholder relates, "*it's a lot to do with explaining what a gambling issue would look like for a young person and supporting those professionals to have the confidence to have a conversation and do some very basic screening with young people about the harms that may be arising from gambling*" [Sam]. Similarly, another observed that following training "*there was an increase in confidence, whether they're practitioners, teachers, or youth workers, to have those conversations with young people within their care, but also having confidence around the signs [of gambling-related harm]*" [Sandy].

Three participants believed that developing training sessions and educational resources that are easily adaptable to different contexts was key. For instance, in some cases, resources pertaining to gambling and harm could be adapted to different aspects of the educational curriculum:

> *It can be delivered as part of a Maths curriculum, as part of an English curriculum. Some examples might be, you can look at probability and luck, and you can do that through the lens of a Maths lesson in school, or you can do some form of desktop research, through the lens of an IT or an English session in school, or even bring Drama into it as well* [Sandy].

By doing so, gambling is no longer seen as a health issue only, but can be integrated into other subjects in the form of examples, issues, and skill development.

A few participants indicated that they had created more opportunities for professional development among professionals. For example, one stakeholder discussed "*twilight training sessions for teachers [who were] using the tools, thinking that if they had some support and additional information, they might find it easier to plan [gambling harm prevention and education] into their timetables*" [Logan]. A different stakeholder created a network for practitioners who wished to stay engaged after attending training:

> *We have regular meetings where they can find out any updates or any recent research and findings relevant for the people they work with. But also, it's an opportunity to share ideas and best practices of how to include gambling education in services, and we find that this is really powerful because the people we train are frontline practitioners* [Addison].

Like population-based efforts for gambling harm prevention and education, two stakeholders identified learning opportunities drawn from tobacco, drug, and alcohol education when discussing gambling harm prevention initiatives for children and youth. For instance, one stakeholder noted that, "*there are basic tools, basic approaches to education that are safe and effective, and they are evidence-based, and that can be learned from drug and alcohol education, or it can be learned from what's already been evaluated in the gambling space*" [Sam]. Likewise, another commented that "*possibly there are lessons to be learned from tobacco education or health and education where it gets into the curriculum at an earlier age than 10 or 12*" [Addison].

Effective design and delivery of initiatives

Almost half of the stakeholders offered perspectives on how to effectively design and

"it's a lot to do with explaining what a gambling issue would look like for a young person and supporting those professionals to have the confidence to have a conversation and do some very basic screening with young people about the harms that may be arising from gambling"

deliver gambling harm prevention and education initiatives for children and youth. Some were comparable to comments made regarding population-based efforts. For example, four participants highlighted the importance of digital engagement when delivering initiatives to children and youth. This stakeholder explained:

> *Young people have told us that they want more of a certain type of content. So, the services that we've offered up until now have been quite analog because we're going into schools, and we're going into youth settings where we're running the sessions in-person. And while young people like that, there's been an impetus to do more digital engagement. So, engaging through social media channels, developing better video content, e-learning, etc.* [Sam].

Another reflected similarly on the need for resources that youth use regularly: "*You have to get out of your comfort zone and be able to work with YouTubers and YouTube influencers, and TikTok and Reddit and all these things that young people are engaged with if you want to reach the relevant audience*" [Rowan]. One stakeholder suggested "*building up resources that you can share as short videos or, even if they're not themselves social posts, can be then shared on other discussion platforms and platforms where young people are*" [Robin].

Others spoke about ways to foster engagement among young people. For example, this organisation included a by youth, for youth approach to designing and delivering programmes. They noted, "*we have promoted young people to create their own gambling awareness initiatives, really encouraging local youth groups to think about what they felt would have been relevant for their local community and taking ownership of those ideas and carrying them out*" [Addison].

Another stakeholder stressed that, "*it's really important to hear young people's views around things*" [Alex] to facilitate interaction and engagement. Providing opportunities for young people to actively participate in programme design showed that their contributions were valued to make the initiatives relevant and, presumably, more effective.

Building capacity among children and youth

Four participants saw gambling harm prevention and education initiatives for children and youth as contributing to the overall development of agency (i.e., the ability to act independently and make one's own choices), and self-efficacy (i.e., a person's belief in their power to affect situations, critical thinking, and decision-making skills). Capacity development (i.e., obtaining and improving skills, knowledge, resources, and tools) was often intentional, as demonstrated by this stakeholder:

> *We're very interested in trying to develop young people's autonomy and sense of agency. So, rather than taking an approach that simply presents them with a whole set of harms for a behaviour, really supporting their ability to act in situations that might involve gambling or other issues. And one way of doing that is helping them to explore their intrinsic values or explore their values and then see, does a behaviour like gambling chime with their values and what they want out of their life and what they want in the long-term? Or does it actually contradict, undermine, or is just not in their best interests in the long run?* [Taylor].

While discussing how their programming encourages children and youth to reflect and make empowered choices about gambling, another

stakeholder described the questions they pose to young people including, for example: "*Is this a life choice that you want to make? Is that a healthy choice? Whether or not you're going to go on to have a problem with it, how do you feel about it? Do you want to do it?*" [Jordan].

One participant observed that this skill building is integral to situating gambling harm within the broader context of health and wellbeing.

> *I think children could certainly do with more education around empathy, self-awareness, and understanding health and wellbeing because you've got to place the risk of gambling into a context, and you can't just say gambling is bad because you could lose all your money. It affects your health. There's got to be some context to it* [Chris].

Working with children and youth was a key opportunity to advance knowledge, build skills, and allow them to reflect on a broader set of values linked to quality of life.

Best practices for incorporating experts by experience

A few stakeholders emphasised revisiting gambling harm prevention and education subject matter throughout the school year rather than having, for example, a one-time assembly featuring an expert by experience. As this participant explained: "*we think it shouldn't just be an isolated session, there should be follow-up to it. If you look at evidence in other addictions, it shouldn't be one-off sessions where you go in and do an hour's sort of presentation. It should be the start of the process, not the complete process*" [Kai]. A different stakeholder referred to this as a "*whole school approach*" explaining that this ensures "*[gambling harm] is not just discussed in an assembly when the individual comes in and then is never touched on again*" [Logan].

Three participants shared concerns about involving experts by experience in their programmes, including the potential for increasing students' interest in gambling. One participant commented that,

> *One of the biggest risks is that you actually make the behaviour attractive to your audience, or you create some kind of curiosity about the behaviour. . . So, yeah, I guess that is always the risk when you're providing education or self-awareness training around these types of behaviours is that you know that is a—sadly, that could be—a side effect of what you're trying to do* [Chris].

Another stakeholder was concerned about the lack of educational training to work effectively with students. They observed that "*sometimes you had people going in to tell their stories who didn't have any sort of training in how to educate young people about any issue in PSHE [personal, social, health, and economic education]*" [Taylor]. Another elaborated on the potential risk that experts by experience may not deliver a balanced message:

> *Literature at the moment warns about the risk of our "just say no" approach and often people who have lived experience, because of the extreme harms that they unfortunately have experienced, will have very strong messages about how negative gambling can be and the fact that people should just not do it because the risks are that big. While we understand that, the risk is that can also disengage young people from understanding how gambling harms can be a reality to them, even if they were not to gamble to that extent* [Addison].

A different participant echoed these concerns

and suggested, "*having a structure for E-by-E [experts by experience] for people to contribute to*" [Sandy]. Alternatively, a stakeholder mentioned that employing practitioners who have "*educational qualifications as well as a gambling history*" [Kai] to deliver gambling harm prevention and education initiatives has been particularly impactful. The combination of qualifications and experience would allow practitioners to understand potential gambling-related harms first-hand, as well as how to effectively educate and engage with children and youth about these issues in an age-appropriate way.

Addressing unintended consequences

Careful consideration and design of initiatives as well as preliminary risk assessments were needed to avoid potential unintended consequences for children and youth. For example, one participant noted that "*we're really conscious of [potential unintended consequences] and I think we worked really hard to design them out. Hopefully, we've anticipated most things before they happen*" [Logan]. Another participant commented that conducting a "*very thorough risk assessment work to start with*" [Addison] had likely contributed to the absence of any unintended consequences resulting from the delivery of their gambling harm prevention and education programmes.

Five participants used external evaluations to identify and address any potential unintended consequences. They variously described working with "*an entity via the Charities Evaluation Service*" [Sasha], having their programme "*externally evaluated*" [Sam], and the appointment of "*an external evaluator to look at all the data and do an independent assessment*" [Addison]. Another reported commissioning "*an organisation to support us in independently evaluating that programme to make sure that we understand well which aspects of it are working and which aspects of it might need to be tweaked in order to make it more successful*" [Logan]. The evaluation process was seen as key to understanding not only whether goals were met, but also if any unintended consequences had occurred.

Programmes and initiatives for older adults

Gambling harm education and prevention programming for older adults (age 60 and older) was mentioned by only two of the 13 third sector charities. Often, the participating organisations did not specify older adults in their mandate. It could also be that at present this population group is largely overlooked or not seen as high-risk. One participant mentioned an armed forces community programme [Morgan]. Another shared their experience of an initiative developed in response to a weekly activity for an older adult group that includes socialising and bingo [Chris]. The stakeholder was concerned that some people who were extending the activity to include side-bets, etc., may not have been aware of the potential for harms.

Selective measures for other at-risk groups

At-risk groups are communities or populations that share a trait (or traits) associated with a greater likelihood of experiencing harm from gambling. Many of these traits are linked to the social determinants of health,[10] thereby making them susceptible to poorer health outcomes. For this report, selected groups in Great Britain identified as particularly vulnerable to gambling harm included ethnocultural groups, affected others, employees at gambling venues and elsewhere, university students, military personnel and veterans, people experiencing homelessness,

"an organisation to support us in independently evaluating that programme to make sure that we understand well which aspects of it are working and which aspects of it might need to be tweaked in order to make it more successful"

and people who are incarcerated. Since each group is unique, stakeholders' experiences and insights pertaining to gambling harm prevention and education measures varied widely. Not all stakeholders provided services to each type of group; therefore, limited information is presented for each at-risk group. This section begins with general principles for delivering prevention and education initiatives to vulnerable groups, then presents initiatives separately for each selected group, and concludes with unintended consequences.

General principles for delivering prevention and education initiatives to at-risk groups

One of the challenges for stakeholders is locating and engaging with people belonging to specific at-risk groups. This was accomplished in various ways. For example, one participant mentioned relying on a specialist agency, explaining that "*they're specialists in finding people [to participate in research] no matter what the issue is*" [Logan]. Similarly, a different stakeholder noted the challenge of engaging with people who are incarcerated or experiencing homelessness: "*you probably need a very niche specialist service with some very special people working in it*" [Ali]. Another reflected on their outreach model, explaining that employing active community outreach "*is an essential strategy if we are serious about reaching vulnerable gamblers*" [Chris]. Otherwise, there was little assurance that they could find or deliver a programme to those groups.

Three participants also recognised the importance of reaching out to those already working with at-risk groups or those who are involved in different capacities:

> *In order to reach the most vulnerable families, you have to remember to turn to professionals that they trust. So, any one strand of activity is important, but none of them work on their own. You have to have the trusted adults, you have to have the trusted professionals, you have to have the peer-to-peer element, you have to have the public discourse. It isn't that any one of those is particularly effective. It's that when you bring them all together, then you can achieve a behaviour change* [Jordan].

Another commented that "*we've always sought to find out who the trusted gatekeepers are in the communities we want to reach because trust is a massive, massive barrier for individuals with any kind of problem to come forward, particularly of gamblers*" [Chris]. In both cases, building trust is seen as essential to reaching vulnerable populations.

Four stakeholders discussed how to ensure measures are relevant for the groups to which they are being delivered. One provided the following insight: "*you do have to take the time and the trouble to understand the group that you're developing materials for and make sure that you take on board any specific issues that will impact your delivery of the message*" [Jordan]. Another related how they tailor their training content: "*if we're working with people from the juvenile justice system, we will focus specifically on how to work with people who have maybe experienced or been involved in crime. If we work with a youth homelessness service, we talk about the links between gambling and homelessness*" [Addison]. The additional effort required to better understand each group was seen as critical to ensuring that harm prevention and education initiatives would be effective.

Initiatives for ethnocultural groups

One effective approach for working with ethnocultural groups was to employ gambling harm prevention and education practitioners who share the same ethnocultural background as the community to which an initiative is being delivered [Morgan]. This stakeholder added that part of their success in a community-based approach had been to include the translation of materials into different languages.

While discussing gambling harm awareness raising among parents who belong to ethnocultural groups, a different stakeholder felt that when reaching out to these young ethnocultural groups it was important to be sensitive to family dynamics. They commented, "*it's the mothers that will seek health care and other support services, so our service is able to refer the mother into the service to give her the skills and the education and the help that she needs to help her child*" [Ali]. Therefore, it was important to understand communication channels within family structures to meet harm prevention goals for the target population.

Initiatives for affected others

Affected others include family and friends who may experience harm due to a loved one's gambling activities. One stakeholder expressed the importance of raising awareness among affected others to enhance early gambling harm prevention and education processes:

> *We see it in terms of not enough awareness. For instance, the victim may be in a position to intervene if it's clear that bills are not being paid and that [their partner isn't] where [they're] supposed to be, [they're] at the casino or in the bookies all day when [they] should be taking [their] daughter to wherever. All these little things that come up in conversation in that relationship, we want to try and get the victim to have the knowledge to maybe intervene and de-escalate what could happen* [Casey].

A different stakeholder mentioned the importance of accessing support networks, particularly when a spouse has been incarcerated for gambling-related crime:

> *Probation officers didn't know how to support the prisoners on release, but they also didn't know how to support the affected others. So, they didn't know how to support the wife who'd been left in the lurch with massive amounts of debt, debt collectors knocking on the door. So, things like the mental health side of it, the debt side of it, etc. So, we did quite a bit with CRC's [Community Rehabilitation Companies] in terms of where the support networks were around each of the different bits* [Kai].

Another described their organisation's process for providing counselling to people experiencing gambling problems and affected others:

> *We would set up counselling for the person who gambles, and we would set up counselling for the affected other. So, they can both attend at the same time with different counsellors, but they're both able to have treatment. It isn't collective in terms of going through that process together, we would flag post them to get support elsewhere if they wanted to do couples counselling* [Alex].

One participant pointed out the need for suicide bereavement programming due to high rates of gambling problems among people coping with a loved one's suicide. Initiatives such as these recognise that harm from gambling extends beyond the individual person who gambles to a much broader social network and underscore the importance of addressing their needs.

Initiatives for employees

Workplace initiatives were offered by four stakeholder organisations. One participant discussed working with employers to develop organisational policies to assist employees who experience gambling harm. A different stakeholder noted that "*in terms of employee interventions, we've got some budget next year to look at working through unions and large organisations to implement HR policies*" [Logan]. Similarly, a different stakeholder was active in "*providing training to Human Resources and Personnel departments to ensure that they have the right knowledge and skills to be able to help employees around gambling*" [Chris]. This participant shared their approach to working with employers to implement gambling harm policies:

> *We want a commitment from [the employer], we want them to build that approach, we want them to promote it, and then get into providing support and training champions within the workplace, which facilitates individuals into treatment, or helps them to get into some type of recovery. Also, the commitment that the employer will handle those experiencing gambling-related harm with parity and sensitivity as opposed to a punitive approach* [Morgan].

People who work in the gambling sector specifically are more likely to experience harm from gambling than other occupational sectors.[11, 12] Most training initiatives delivered to employees emphasised providing support to customers experiencing gambling-related harms, rather than offering prevention and education programming for the employees themselves. As this example illustrates, "*the work that we've done has been around upskilling venue staff to be able to intervene when they identify people experiencing gambling harms*" [Logan]. The vulnerabilities of gambling sector employees seemed not to be recognised or given as much consideration.

Initiatives for university students

Almost half of the stakeholders had some involvement with programmes targeting post-secondary institutions. Two participants spoke of raising awareness and providing training for professionals who work with university students. While discussing a prevention and education programme that trains and employs university students for the purpose of peer-to-peer engagement, one stakeholder stressed that "*we feel it's our duty to work with the universities directly, not just the students, and increase their awareness and understanding of not just where the young people can seek support externally, but how the universities can support their young people as well*" [Sasha]. Another shared that after providing gambling harm prevention and education training to people in student support roles, they "*encourage each university or college to do social campaign where they share harm reduction messages around gambling harms to make our students aware that student services within schools can provide support to students needing to chat about those topics*" [Addison].

Three stakeholders addressed the value of prevention and education initiatives created and/or delivered by university students themselves. As one participant explained, "*we're always constantly evaluating and assessing the most effective delivery methods and I think especially the [university] student community passing that message through to other students is probably a lot more effective than hearing it from adults*" [Arya]. Another provided the following insight into the design and delivery of measures for university students:

"it's the mothers that will seek health care and other support services, so our service is able to refer the mother into the service to give her the skills and the education and the help that she needs to help her child"

> *You have to allow them to define how they want the messages to be delivered and not assume and go in there with just anything. So, we've actually launched a website for university students written by university students, and we did quite a lot of testing before it was launched. But immediately post-launch we started to get users and the first thing they said to us was "we hate your strapline. It doesn't speak to us at all". I think that giving them the space to do their own creation is the best way to go with university students* [Jordan].

Clearly, peer-to-peer initiatives and input from students into programme design were seen as effective means of engagement to ensure that the messages and programming were successful.

Initiatives for military personnel and veterans

Almost half of the stakeholders were involved in providing gambling harm prevention and education measures to active military personnel and veterans. Some commented on the importance of connecting with a community gatekeeper or someone with military experience for programme delivery. (A gatekeeper is someone with the power to determine who has access to a group and who does not). As Logan explained, "*in terms of military and veterans, again, this is a group where you need a gatekeeper to help you to get in*". Another participant elaborated further by stating that "*it's about having the sensitivity to be able to engage with that particular group*" [Morgan].

When delivering population-based initiatives to the military, one stakeholder shared their approach:

> *We recognize that the military are an at-risk group, but you have to be very careful with the military not to describe them as an at-risk group. You need them to sort of almost recognise, "oh, this might be something that's affecting our personnel", rather than saying, "do you know that military have more risk?" because they can often sort of shut down if you go hard in with them like that* [Rowan].

Another participant was similarly cautious when delivering their initiative, noting that theirs is,

> *. . . a preventative campaign and they're not tweaking the campaign material at all. They're putting it out as though it was for the general population. Again, that was deliberate because military-specific campaigns might suggest that this particular issue is more significant within the military and create unintended consequences* [Logan].

More specifically, when discussing unintended consequences, there is a need to be sensitive to the strict military regulations surrounding debt. These regulations had created a barrier for military personnel to attend Gamblers Anonymous meetings off base because of the common relationship between gambling problems and debt. To address the issue, one stakeholder felt it was essential to respect the military hierarchy by "*going to the very top first…because what you don't want to do when you talk about unintended consequences, you don't want to make people more vulnerable*" [Kai]. It was critical to provide amnesty to active military personnel who wish to seek support for harmful gambling. The same stakeholder recalled that "*[the military] basically said, 'if anybody wants to come forward and talk about this, even if there's debt involved, then we're prepared to have a bit of an amnesty for a period of time'*". Due to one of the participant's organisational initiatives, support networks are now based in barracks in selected geographic regions in Britain, "*where serving military can go*

and actually speak to people in confidence without jeopardising their career" [Kai]. This ensured that people experiencing gambling harms who were in the military had access to the help they needed without potential negative career outcomes.

Other stakeholders mentioned delivering programmes to new military recruits. One reflected that working with the new recruits at their training colleges is an excellent opportunity to deliver initiatives. A different participant explained:

> *[The military] is possibly a target group that could quite benefit from gambling prevention education in the sense that if they have young people going into the armed forces at 18 or 19, they get a regular paycheque, but they don't have to spend annual get on food, housing, clothes. There is quite a lack of, from what we see and what we have been told by partner organisations, quite a lack of financial skills* [Addison].

Like other young adults, they may not yet have the necessary skills for understanding financial management, and how gambling expenditures fit into their budget.

Initiatives for people experiencing homelessness

Four participants worked to address gambling harm among people experiencing homelessness. They recognised that an effective way to connect with this group is to provide gambling harm prevention and education training to employees of housing organisations. These employees are often an important point of contact and guidance for people experiencing homelessness. This stakeholder, whose organisation delivered a number of mental health initiatives, shared that, "*all of our housing team are aware of our gambling service. So, if anybody at any point is identified to have any issues around their gambling, [they can receive support]*" [Alex]. Another noted, "*we've also worked with housing associations to provide additional training to their staff to ensure that their tenancy management takes into account gambling and what problems gambling may trigger*" [Chris].

While discussing gambling harm prevention and education measures targeted at people experiencing homelessness, one stakeholder noted the importance of having a gambling harm screening tool that considered the realities faced by people experiencing homelessness. They described their experience in trying to meet this goal:

> *We did a project where we developed a cognitive screen that made much more sense in the context of a homelessness service than some of the screening tools that are out there at the moment. So, it didn't necessarily talk about impacts on friends and family, it didn't talk about losing jobs and things like that because it built on the fact that a lot of the people that were experiencing homelessness would always answer that these things were just not relevant to them. So, it was a more relevant new tool* [Logan].

By adapting the screening tool to the needs of people experiencing homelessness, it was more meaningful for the clients, and produced more useful, relevant information for the organisation.

Initiatives for people who are incarcerated

Like the perspectives offered about delivering initiatives to some of the other vulnerable groups, two stakeholders spoke of embedding screening for gambling harm early in the process. For example, this participant spoke about "*screening and intervention at the point of arrest in the UK*"

[Morgan]. Another discussed how they had refined a screening tool to embed screening for gambling harm within the criminal justice system. In this case, it was adapted in consideration of time constraints experienced by criminal justice staff:

> *So, there's lots of validated tools for identifying gambling harm, most of them are two or three questions. Well, those questions don't sit well in a criminal justice context where staff are extremely pressed to process people quickly. They've already got many pages of questions that they have to ask the person that they're processing, for example, in a custody suite. So, we've boiled the questions down to one very simple question and we're seeking to get validation for that question as well academically so that it can be used more widely in other contexts* [Sam].

A different stakeholder emphasised the importance of protections for people who are incarcerated and wish to seek support for gambling harm, like the amnesty for active military personnel mentioned in the previous subsection. The participant wanted to ensure that people who participated in gambling harm prevention and education initiatives in prisons would not be subject to negative outcomes. They had asked the governor, if people want to talk about gambling only, "*can we have a promise that they're not going to be shipped out? And he said, 'yeah, but no one will come, no one's got a problem with gambling'. Over the next six months, we had 192 people who went through that programme*" [Kai].

Among larger social institutions like the military and justice systems, gambling harm prevention and educational programming is most likely to reach people in need if there are measures in place to ensure they will not be penalised for accessing these services.

Addressing unintended consequences among at-risk groups

Stakeholders were asked to describe any unintended consequences that may have resulted from gambling harm prevention and education initiatives for at-risk groups. Most relied on programme evaluation to identify outcomes, both positive and negative, but two expressed the need for longer-term evaluations of behaviour change to assess consequences:

> *I'm just saying it does require a lot of data collection and evaluation to have the impact [of the programme] recorded and evaluated. But that's the story of all sorts of educational programmes where it will take time to actually figure out what is the impact of what we are doing* [Addison].

> *These [programmes] tended to be more kind of one-off sessions. So, we didn't really have the opportunity to go back say several weeks or months later to say, you know, had there been any kind of behavioural changes, you know, as a result* [Chris].

Overall, stakeholders noted more positive outcomes than negative consequences. They felt that many negative outcomes could be avoided by careful planning and research. As one participant pointed out:

> *It's the first time we'd ever done a safer gambling campaign and we didn't want to take any risks with it in terms of how we messaged. So, we tested it out. We used a group of people who have lived experience to understand whether they would think that it could have negative consequences"* [Logan].

Another reinforced the importance of consistent, well-planned messaging based on research evidence rather than a reactive approach that

"all of our housing team are aware of our gambling service. So, if anybody at any point is identified to have any issues around their gambling, [they can receive support]"

might have unintended outcomes beyond the sphere of gambling harm:

> *It has to be frank, and it has to be accurate, and I think with the Internet safety messages, what's happened is that we've slipped sometimes into sharing information ahead of the evidence being there, or we've reacted to parental worries and concerns that might not actually have any basis in fact, and that's kind of stimulated a really fearful environment for the conversation that parents have with children, which has the unintended consequences of parents becoming more restrictive, which is not supportive of digital resilience* [Jordan].

A different stakeholder elaborated on challenges regarding the risk of unintended consequences resulting from prevention and education initiatives. They mitigated against this risk by seeking accreditation and conducting evaluations:

> *I was constantly reminded that there's no research into this whole space of what you're going into. You know, "what you are going to do, you're going to raise curiosity of young minds, whether they be children in school or whether they be students in university, and your programme is flawed". That's perhaps why we've spent so much time and effort going through all the accreditation, all of the evaluation, to make sure that we are learning on insight, we're measured in our responses* [Sandy].

Although most felt that the outcomes of their programmes were generally positive, it is important to understand the value of thinking through potential negative consequences at all stages. Research and evaluation beyond the initial design was important for anticipating negative consequences. One participant shared that, "*sometimes maybe we've questioned to what extent some activities have been impactful, but it's never been obvious what's negative. It's always been a matter of either following up with people and collecting data or to have some impact evaluation*" [Addison]. As this stakeholder summarised:

> *Believe me, there are always negative consequences. But we're really conscious of that and I think we worked really hard to design them out... Hopefully we've anticipated most things before they happen. I think that's the joy of being a pessimist really, you know what's gonna go wrong* [Logan].

Three others reflected on the importance of discussing and learning from failures. For example, one participant commented: "*I think it's really important to own your failures and iterate fast. You know, particularly when you're trying to reach a group that might not be your primary audience, you have to go above and beyond*" [Jordan].

In summary, although most stakeholders shared positive outcomes, they recognised that negative consequences could occur. They tried to mitigate against them through careful planning, conducting and paying attention to programme evaluation outcomes, and using an evidence base to support their initiatives. Still, there were challenges to understanding outcomes because research and evaluation were often short-term, with little opportunity for identifying those consequences that might arise over a longer period of time.

Guidance

This section describes insights and experiences shared by stakeholders regarding guidance for organisations working in the field of gambling harm prevention and education. There are three subsections: responsiveness to feedback and changing landscape; policy, legislation, and regulations; and collaboration with other organisations.

Responsiveness to feedback and changing landscape

When asked to share guidance for other organisations developing and delivering gambling harm prevention and education initiatives, ten stakeholders emphasised the importance of receiving input and feedback from their target audiences. They recognised that it was essential for appropriately adapting prevention and education resources.

One participant observed that "*any support really should be co-produced. You need to listen to the people that are going to benefit from the service, you need to have their input, they need to be part of the process*" [Chris]. Similarly, a different stakeholder described co-creation sessions with individuals belonging to minority groups. They explained how it involved "*looking at our materials, looking at our message, and also just getting their insight in terms of how we can reach more adolescents within those communities*" [Sasha]. Another representative from the same organisation added: "*make sure anything that you do has got a really good theory of change, so you understand the impact that you're trying to achieve. Actually, do that thinking piece early on*" [Sandy]. One participant relayed that seeking feedback from experts by experience helps "*inform us on how we can deliver better*" [Alex].

Although they were not asked directly about women who experience gambling harm, two stakeholders raised the issue of developing a better understanding of their experiences and behaviours. One participant offered the following insight:

> *We have had very good qualitative conversations with women about their experiences which has helped to enrich the understanding and the development of that [advisory group], which I mentioned earlier, to again enrich our understanding of goals and drive the issue up the agenda so that women aren't excluded from that policy conversation* [Sam].

Another stakeholder believed that "*links between domestic abuse and gambling", as well as "cross addictions and multiple addictions*" [Casey] were areas in need of further attention.

Policy, legislation, and regulations

Several stakeholders spoke about the importance of government policy and legislation for: advertising [Ali, Chris], spending limits [Casey], high value customers [Casey], and gambling terms and conditions [Robin]. These topics are addressed in the academic literature but as identified in earlier chapters, much of the research is either just beginning to emerge (e.g., high value customers) or of poorer quality (e.g., advertising legislation).

Six participants also expressed concerns about the funding model for gambling harm prevention and education organisations in the UK. As this stakeholder explained: "*the model needs to be looked at because it does create some tension. It's very difficult in the UK to champion practice, especially if that practice has been funded somewhere by the [gambling] industry*" [Chris]. The implications of perceived or real industry influence through research funding are not lost on the third sector charity community.

Collaboration with other organisations

Almost half of the stakeholders stressed the necessity of connecting and collaborating with other organisations working in gambling harm prevention and education. It is important to act on opportunities to share information of value to others. As one participant advised:

> *Speak to other organisations that are working*

> *in the field. Nobody has to reinvent the wheel here. There's a lot of good information. I am quite frustrated by organisations who hold on to things and do nothing with the belief that we need more research, we need more information. That ends up in a situation whereby we don't do anything until we know everything. We know enough* [Morgan].

Another stakeholder mentioned that, because of the relationships between drugs, alcohol, and gambling, "*there's definitely opportunities for these gambling organisations and rehab centres to do more work together*" [Casey]. Collaboration is seen as key among stakeholders in the broader gambling harm prevention landscape. As [Kai] reflected, "*The way that we're going to improve this field is by collaborating with researchers, with practitioners, with treatment providers, and everything else. I think one group alone trying to change the world with this just won't happen. It needs to be a real combined collaborative effort.*" Working with multiple stakeholder groups would involve an integrated systems approach where representatives of each group could contribute to and act upon information shared amongst themselves.

LEARNINGS

The following section summarises what has been learned by consulting third sector charities regarding approaches to designing and delivering effective gambling harm prevention and education initiatives. Included in the discussion are unintended consequences and guidance for other stakeholders to ensure positive programme outcomes. Consistent with a qualitative description approach,[6] we begin by reviewing the main findings at universal and selective measure levels, followed by unintended consequences and guidance for successful programme design and delivery.

Universal measures

Messaging

Stakeholders shared concerns about gambling harm prevention and education messaging. While intentions were to provide initiatives that addressed the whole population, resource constraints often limited their ability to do so. This meant that decisions had to be made as to where resources could be most effectively allocated. Consequently, universal measures often became selective measures targeted at people who gamble and other people most susceptible to gambling harm. On the other hand, there were concerns about a 'one size fits all' approach since people tend to ignore messages when they believe the situation does not apply to them or their preferred gambling format.

Stakeholders also expressed concerns about the language used in messaging. The slogan, "*When the fun stops, stop*" was seen to be inconsistent with public health messaging and the word "*fun*" was inappropriate for a gambling harm prevention message. Stakeholders further cautioned against using responsible gambling language in messages since it could increase feelings of anxiety, shame, and guilt. Safer gambling language was recommended because it recognises contextual factors and removes the full burden of responsibility from the person.

Effective design and delivery

It was important to first consider what works at a broader level, and then narrow and refine the delivery approach to target certain groups. Participants recommended reviewing the design and delivery of services addressing other public

health issues such as tobacco and substance abuse for initiatives that could be transferrable to addressing gambling harm. They strongly recommended that programmes include digital engagement, especially social media, since those platforms have a broad reach. They also felt it was important to pay attention to what is happening in the gambling market. It changes quickly and stakeholders need to be aware of current trends to understand and meet the needs of people at risk of harm.

Gambling harm prevention and education, awareness, and training

Stakeholders cautioned that not everyone in a position to address gambling harm is fully aware of the negative outcomes, especially when compared to other health concerns. There is a need to raise awareness among health care providers, educators, employers, and others in positions of authority. It was further suggested that integrating screening for gambling harm at intake for other health issues or into the justice system may help to increase awareness.

Like concerns expressed earlier, people in these positions need to be sensitive to loaded or stigmatising language. Any training that they undergo should include how to phrase questions or reframe conversations to reduce potential negative outcomes.

Conducting evaluations, measuring outcomes

Many stakeholders discussed the importance of evaluation to increase the effectiveness of programme outcomes. Ideally, evaluation could be integrated into programme design. While some initiatives did include a custom designed evaluation component to measure outcomes, others did not. In some cases, stakeholders made use of publicly available government data to assess outcomes.

Unintended consequences of universal measures

Stakeholders were aware of the potential for unintended consequences but did not provide examples of those that had occurred at the population level beyond issues related to the "When the fun stops, stop" slogan. Instead, they spoke about mitigating against negative programme outcomes through careful planning, considering risk scenarios, or modelling harmful outcomes. Some participants also described signposting to other stakeholders that could provide support if needed. This involved sharing information about other resources, including contact information.

Selective measures

Children, youth, and older adults were considered separately from other vulnerable groups. The stakeholders overwhelmingly shared their experiences and insights about gambling harm prevention programmes for children and youth, with almost no mention among the participants of programmes and initiatives for older adults.

Many discussed specialised training for people who work with children and youth. The training was considered important not only for programme delivery, but also seemed to increase the confidence of professionals who may have had little exposure to or understanding of gambling harm. Creating ongoing opportunities for professional development was also useful so that people could meet regularly to reinforce training and learn about new developments. As with universal measures, stakeholders recommended learning from other public health issues for effective training and programme delivery.

Programme design and delivery for children and youth could be enhanced by several factors. Digital engagement, particularly in the form of social media, was important since it is how most youth now receive, process, and share information. Fostering the participation of youth when designing programmes led to more effective programming and a sense of ownership among participants. Engaging in the design process was also a way of building capacity among children and youth. Contributing to programme design encouraged the development of agency, critical thinking, and decision-making skills.

Stakeholders expressed some caution about incorporating experts by experience. Although their testimonials can be powerful, some issues were identified. First, the testimonial can inadvertently peak children's interest in gambling. Participants also reported that some experts by experience lacked educational training for age appropriateness. Beyond educating about harm from gambling, there is a need to integrate prevention in presentations. There was also a desire expressed for a more balanced approach to discussions of gambling harm.

Other at-risk groups

Seven additional population subgroups vulnerable to harm from gambling were addressed. Even though there was considerable diversity among them, there were some common themes across subgroups. Stakeholders mentioned challenges accessing the groups or, in a few cases, of locating them. This could be due to the nature of their vulnerability (e.g., experiencing homelessness) or being outside of the group's cultural frame of reference (e.g., military personnel). In these situations, gatekeepers and other agencies already working with the group were essential for access. The agencies had developed a trusted relationship with these groups and could help to build trust with other stakeholders. Another commonality was the importance of learning as much as possible about the unique issues and concerns of each group. An awareness of specific contextual factors and how they affected experiences of gambling harm was essential to effective design and delivery of programmes and initiatives.

Understanding the audience was essential for all subgroups and took specific forms relative to gambling harm prevention and education.

→ For **ethnocultural groups**, stakeholders identified the need for sensitivity to culture and language (including translating materials when needed) and recognising communication channels within the family and community. Having people of the same ethnicity delivering programmes was useful since they would have insights into the community's perspective on gambling and harm, and they are in a strong position to build trust.

→ Among **affected others**, there was a need for early awareness for the prevention of gambling harm. Ensuring support networks were in place with people sensitive to the vulnerabilities of affected others was helpful to managing and improving their situation.

→ **Employees** were a target audience for a few stakeholders. Prevention and education initiatives were mostly undertaken by larger employers with Human Resources or Personnel Departments that could help to facilitate non-punitive interventions. Gambling industry employees' needs were generally not addressed. The gambling harm prevention and education training these employees received focused mainly on customers' needs.

- For **university students**, raising awareness among staff who interact with them was important. Stakeholders also recommended involving students at the design stage to ensure appropriate programming. Peer-to-peer initiatives were recommended as an effective approach.
- **Military personnel and veterans** were subject to regulations and restrictions that could affect access to gambling harm prevention and education. Having people with a military background involved in programme design and delivery was highly advantageous. They were aware of military culture and its parameters so that unintended consequences could be avoided. A sensitivity to the hierarchical organisational culture allowed stakeholders to address barriers to prevention and education of which others might not be aware. There was also a need to modify language to the general rather than specific population level to facilitate programme delivery and avoid implications of vulnerability.
- For **people experiencing homelessness**, a helpful approach is to train the people with whom this population is in contact for other needs. People experiencing homelessness can be a difficult to reach population, so building upon existing relationships is seen as an effective way to engage them. Screening tools can also be adapted so that questions are more relevant to the experience of homelessness.
- **People who are incarcerated** may also experience unintended consequences if prison officials adopt a punitive approach to gambling problems. By connecting with people in positions of authority, at least one stakeholder was able to implement a programme to support people who are incarcerated. Screening tools at time of intake can be adapted for improved efficiency. This involves an awareness of procedures and demands on staff, and a sensitivity to the prison culture.

Unintended consequences for selective measures

Only a few stakeholders could identify unintended consequences. For children and youth, unintended consequences of gambling harm prevention and education initiatives were mentioned only in relation to presentations given by experts by experience. Attention was drawn to these presentations since they could peak students' interest in gambling, were not always appropriate from an educational perspective, and could be unbalanced in terms of prevention, education, or personal biases. Unintended consequences were also identified for people who are incarcerated and among military personnel. The justice system and military are highly regulated institutions with strict regulations about gambling and/or debt. According to stakeholders, known involvement in gambling support groups could affect whether people are transferred to another institution. For the military, there could be negative career implications based on a person's level of debt, which is a common financial harm for people with gambling problems.

As with universal measures, when asked about unintended consequences the stakeholders focused mostly on the importance of careful planning, risk assessment, and evaluation to avoid negative outcomes associated with any activities that were undertaken. At least one stakeholder mentioned the value of learning from failure to avoid similar negative outcomes in future.

Stakeholder guidance

Responding to feedback and changing conditions

Stakeholders valued feedback from participants who had participated in their programmes and services. It allowed them to refine their initiatives on an ongoing basis to better meet the needs of their clients. Most conducted programme or service evaluations but felt somewhat limited in terms of assessing longer-term outcomes. They recommended a participatory approach to programme design, encouraging input from members of their target audiences to ensure the programme would be relevant, accessible, and sensitive to any special needs. This also allowed them to consider other target groups, such as women and people with comorbid conditions that could benefit from their services. Comorbidities (i.e., the presence of two or more mental or physical health conditions in the same person) and women's unique experiences are well established in the gambling harms literature (e.g., see Yakovenko & Hopkins,[13] McCarthy et al.[14]). They believed that keeping up with changes to gambling provision was essential for delivering effective, relevant programmes and services.

Policy and regulation

Several stakeholders recommended that policy makers revisit government regulations for gambling, particularly in the areas of advertising, spending limits, high value customers, and more broadly, gambling terms and conditions. (It should be noted that a review of the 2005 Gambling Act began after the interviews had taken place). A thorough consideration of the current research funding model and implications of industry funding needed to be undertaken to avoid potential conflicts of interest. This is an active conversation among members of the gambling research community internationally (e.g., see Livingstone et al.,[15] Cassidy,[16] and Cowlishaw[17]) and may have implications for approaches to gambling harm prevention and education undertaken by third sector charities.

Collaboration among stakeholders

Several participants recommended increasing the level of collaboration with other third sector charities, researchers, and practitioners. Often, organisations might have useful information that could be shared with others. Not only would greater collaboration help to inform the design and delivery of programmes and services, but it could also reduce overlap in their provision. Further, it could help to facilitate action and avoid unnecessary studies assessing the viability of services.

Limitations

As with any study or consultation process, there are some limitations that should be noted. The stakeholder consultations were conducted with an established group of third sector charities identified by the Gambling Commission as active in designing and implementing gambling harm prevention and education initiatives. This meant that some organisations that may be less established or whose programmes were less well-known were excluded from the consultations. Some stakeholders that took part may have felt the need to emphasise their organisation's strengths to the Gambling Commission and perhaps not fully share negative outcomes, even though we have tried to ensure that they could not be identified. The findings therefore should not be generalised since other stakeholders may have had different experiences. Further, some of the stakeholders' challenges may not have been fully disclosed. Still, many of the findings are broad ranging and worthy of consideration.

To protect the anonymity of participants, we

sometimes excluded information that could have been relevant. Including it, however—especially if they were the only organisation delivering programmes to a specific population group—heightened the risk of identification, which would be in breach of our ethics agreement.

CONCLUSION

The significance of this chapter is that it provides an additional knowledge base to support the development of a comprehensive gambling harm prevention and education plan. The chapter shares the insights, experiences, and perspectives of third sector charity representatives directly involved in the design, delivery, and evaluation of prevention and education initiatives. It also provides guidance for other third sector charities and/or stakeholder groups seeking to reduce harm from gambling. The expert knowledge shared through the consultations adds 'flesh to the bones' of the academic evidence presented in earlier chapters.

The organisations represented in the consultations were diverse in size, mandate, and the measurement levels at which they addressed harm from gambling. Even so, the stakeholders shared many similarities in their observations and reflections and were broadly consistent and complimentary in their approaches. They emphasised the importance of understanding the target audience, using safer gambling language, learning from other health issues, encouraging a participatory approach to programme design, and carefully considering initiatives prior to implementation and including an evaluation component. By following these guidelines, the effectiveness of gambling harm prevention and education initiatives could be enhanced.

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Conflict of interest statement

Margo Hilbrecht has no conflicts of interest to declare. She has received conference travel funding from the Alberta Gambling Research Institute (AGRI).

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Brief biography

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Conflict of interest statement

Brittany Gottvald has no conflicts of interest to declare.

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Conflict of interest statement

Jess Voll has no conflicts of interest to declare.

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Greo transparency statement

All authors of this chapter were Greo employees during the stakeholder consultations and data analysis period. See Greo's transparency statement for more information.

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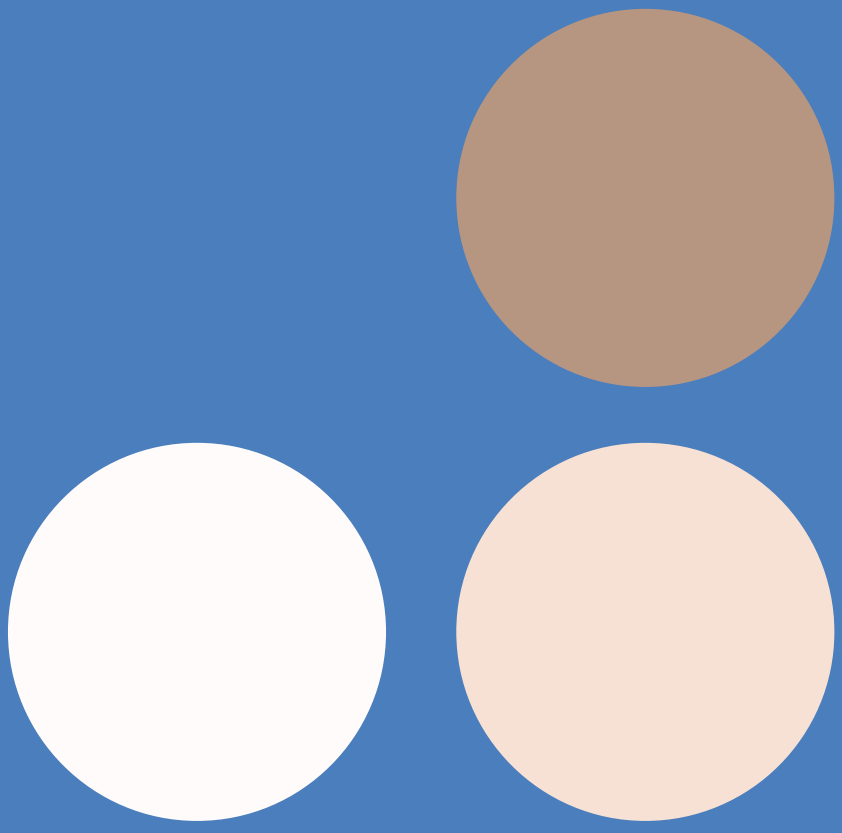
Prevention and Education Review: Gambling-Related Harm

6.0 Advancing Prevention and Education



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6.0 Advancing Prevention and Education

Advancing an Evidence-Based Gambling Harm Prevention and Education Objective

INTRODUCTION

This report brings together evidence from the academic literature and stakeholder consultations to support the prevention and education objective of the National Strategy. The measures that were examined provide an indication of the broad scope of programmes and activities to be included in a comprehensive strategy that could benefit the general population, people who are at risk of harm due to specific social determinants or circumstances, and individuals who are at risk or, or currently experiencing, harm from gambling. Given the range of measures addressed at the universal, selective, and indicated levels, participation will be required from multiple actors and contributors to advance an effective prevention and education strategy. These sectors could include regulators, educators, health professionals, financial services, social welfare agencies, third sector charities, and gambling operators. In this section, common threads that arose throughout the report are presented. They are important to keep in mind along with the substantive evidence presented in each chapter when considering next steps for gambling harm prevention and education.

MOVING FROM PREVALENCE TO HARM

It is worth reiterating that this report takes a public health policy approach to reducing harm from gambling. This means that a social determinants of health lens is applied to prevent harm at the population level. People across the risk spectrum of gambling harm are included, and the focus is on the causes and prevalence of harmful outcomes.[1] This is in contrast to the medical model of gambling policy, where the focus is on people with problem gambling, their effective treatment, and the prevalence and etiology of pathological or disordered gambling.[1] Historically, gambling studies have aligned more directly with the medical model, as evidenced by a substantial body of literature dealing with problem gambling, its treatment, and how it develops.[2] Consequently, much of the research that informed the reviews was designed to address at-risk and problem gambling behaviours and attitudes, with less emphasis on reducing gambling harm more broadly. This would be anticipated when reviewing measures at the indicated level with potential to benefit individuals at risk such as brief online treatments or self-exclusion; however, more research at all levels from a public health vantage point could be encouraged that considers the extent to which harmful outcomes that also extend beyond the individual are prevented or reduced.

As the movement toward 'counting harms' (as opposed to 'counting heads,' i.e., prevalence of harmful gambling)[3] progresses, more researchers will likely incorporate direct measures of gambling harm such as the Short Gambling Harms Screen (SGHS)[4, 5] or the Harm Questionnaire (HQ),[6, 7] both developed in Australia, or the gambling harm component of the Problem and Pathological Gambling Measure (PPGM) introduced by North American researchers,[8] or perhaps new measures to come. These measures address a range of potential harms from gambling, including whether gambling harm effects people close to the person who gambles, and can be used independently of prevalence measures such as the Problem

Gambling Severity Index.[9] Using tools such as these would enhance understanding of harmful outcomes, and offer greater accuracy in follow-up assessments and evaluations of gambling harm prevention programmes, activities, and interventions.

CONSISTENCIES ACROSS MEASURE LEVELS FOR EFFECTIVE HARM PREVENTION AND EDUCATION

The evidence reviewed for this report varies in both depth and breadth depending on the specific measures. Even so, they shared some similarities in terms of what was most effective. The following themes should be considered.

- What is effective for people with gambling problems is sometimes less so or even ineffective for people who gamble recreationally or not at all. Almost all reviews reported differences related to gambling risk severity level in harm prevention and education outcomes. For example, people with gambling problems are more influenced than those without such problems by the concentration of gambling venues in a neighbourhood or region, gambling advertising, gambling harm awareness campaigns, and they more often set higher spending limits and exceed their limits. They are also more likely to support the removal of ATMs from gambling venues and a credit card ban, than people at no or low levels of risk.
- A 'one-size-fits-all' approach to harm prevention and education will decrease its value. Tailored approaches are often more effective. Differences have been noted in message uptake by gambling risk level, gender, age, and psychological profile (e.g., having a financially focused self-concept). Perhaps more obvious are prevention and education activities at the selective measures level. Not only do they need to be appropriate to age and level of cognitive development, there are other considerations depending on qualities associated with specific at-risk groups. At the indicated level, interventions that allow greater flexibility (e.g., options for a wider range of self-exclusion periods) are desired by participants and would likely improve uptake of the intervention.
- Both the form and content of communications have an impact. Social and other digital media strategies can enhance approaches to prevention and education, especially among younger age groups. Messages with a positive tone that focus on beneficial actions (e.g., using gambling management tools) are more persuasive than negative messages that centre on harmful outcomes. Content needs to be clearly communicated in simple language, and intentions should be specific rather than vague (e.g., 'set a safe gambling limit' versus 'gamble safely'). Further, there needs to be better communication about gambling management tools so that people are aware of these tools, understand what is involved in using them, and how they can easily access them.
- Some measures were endorsed across multiple levels, which suggests that they could be more widely promoted and implemented. Personalised Normative Feedback (PNF), for example, where an individual assessment of a person's gambling behaviour is compared to an 'average' for others sharing similar qualities, was noted as effective in gambling

harm prevention at the universal, selective, and indicated levels. Safer gambling messages and individualised reports that encourage people to appraise their behaviour in comparison to others were linked to more awareness of, and less time spent, gambling and a reduction in gambling problems. Although mostly positive, there is some evidence of a 'boomerang' effect of PNF among emerging adults who may be tempted to increase their gambling to reach the average of their peers.[10] This again demonstrates the need for a flexible approach to harm prevention activities and an awareness of unintended consequences.

DIVERSE INFORMATION SOURCES ENHANCE PREVENTION AND EDUCATION PLANNING

Consistent with the review types used in this report, most of the evidence represents academic research expertise. Findings from scientific reports can inform decision making about which prevention and education approaches are most or least effective, ineffective, or where unintended consequences have been observed. This information will allow programmes and initiatives to be developed with more realistic expectations of positive outcomes.

Academic and grey literature

The authors assessed articles published in the academic and grey literature. Academic articles undergo a rigorous peer review process to ensure research quality, as do many grey literature materials. Additionally, grey literature may be the most current information source, include diverse sources of information, and is useful when there is little information available in the academic literature.[11] An advantage of including both information types is that it broadens the body of evidence that can be examined, which is especially important for more recently introduced measures where formal assessment is just beginning to take place. This was particularly helpful for financial gambling blocks, where so little evidence is currently available in either format.

Although the authors were asked to consider evidence using a range of research methods, both quantitative and qualitative, most evidence included in this report was derived from quantitative methods. Much of this may be due to gambling research having a longer history of contributions related to problem gambling from a psychological perspective,[12] where quantitative methods are most commonly applied. Depending on the topic and typical research methods, qualitative research was included into the reviews in a more limited way to share insights, perspectives, and experiences that may not be as easily captured by quantitative methods.

Still, research evidence is not the only form of useful knowledge. An indepth understanding of jurisdictional regulations, cultural attitudes, and the contributions of people who have experienced harm from gambling is also relevant. Although these factors were beyond the scope of the report, insights from stakeholders from third sector charities were incorporated. They represent expert knowledge, another form of evidence that can enrich discussions and design of effective gambling harm prevention and education activities.

Expert knowledge

Consultations with representatives of third sector charities (referred to as 'stakeholders') complement the academic literature in several

ways. Stakeholder insights can lend support to or challenge research evidence and trends. The direct experiences of stakeholders allow considerations for programme design and delivery that might be less obvious to researchers lacking similar experiences. Stakeholders also can suggest areas where more attention is needed for future research or recommend potentially fruitful partnerships to enhance programmes and other activities. Some examples of each are, as follows:

Alignment of expert knowledge with research findings

- → Both the stakeholders and researchers agreed that 'one-size-fits-all' messaging at the population level is less effective than targeted messaging because people who do and do not gamble will respond differently to the same message depending on content and tone. More tailored approaches to gambling harm prevention are needed.
- → Stakeholders and research findings support social media as an effective way of reaching younger people, although use patterns of gambling operators and third sector charities differ. Gambling operators have been active on social media for a longer time, using it both for advertising and required safer gambling messaging and taglines. Third sector charities that are less well established on social media have more limited reach, yet they are aware of the value of this form of communication.
- → Both information sources supported the importance of peer-to-peer design and delivery of gambling harm prevention and education programmes, and other initiatives, especially for children and emerging adults.
- → Both sources agreed that it can be useful to borrow from successful behaviour change models designed for other public health issues such as alcohol, tobacco, and substance use. Due to health-risk commonalities, existing models may be easily adaptable to gambling harm prevention and education strategies.
- → Concerns have been noted in the academic literature and by stakeholders about gambling industry funding for research and gambling harm prevention programmes.

Providing insights into the design and delivery of programmes and activities

- → Stakeholders often mentioned the importance of a participatory approach to programme design and delivery, and how it benefitted participants, both for gambling harm prevention and education, and capacity development for people at greater risk of harm. Very little academic research on gambling harm prevention and education examines how the design process for programming and messaging can influence outcomes, other than a limited amount of research on peer-to-peer approaches.
- → Some stakeholders expressed concerns that messaging meant for the general population was often targeted to groups at greater risk of experiencing harms due to limited resources. The evidence for safer gambling/responsible gambling messaging did not appear to address resource issues that could divert original messaging intentions. Rather, it examined factors related to messaging tone and content. It may be that more consideration needs to be given to message intent and available resources before a population-level initiative is undertaken.

Identifying areas for future research or research partnerships

- → Both stakeholders and the research evidence signaled the need for more evaluation, including long-term follow-up, for messaging, programming, and policy change. Researchers could provide evaluation and research support through community-university partnerships for methodologies such as surveys, focus groups, or participatory action research.
- → Stakeholders identified some unintended consequences for children and youth from incorporating people with lived experience of gambling harm in their prevention and education strategies. As a commonly used strategy, researchers could assist in evaluating outcomes of this approach, both positive and negative, to determine best practices if this strategy is to continue.
- → There is very little research evidence for gambling harm among older adults. Similarly, only two examples were given by stakeholders to support older adult gambling harm prevention and education initiatives. Since older adults are seen as a priority group, more directed attention from the research community and third sector charities is warranted.

RESEARCH IDENTIFYING UNINTENDED CONSEQUENCES IS LIMITED

Unintended consequences refer to unanticipated or unpredicted negative outcomes resulting from a programme, intervention, or activity. It is important to recognise unintended consequences because they help to facilitate understanding of what is ineffective or simply does not work when planning a prevention and education strategy. This allows initiatives to be redesigned or adjusted to avoid negative effects or, if necessary, to be eliminated altogether.

Very little research noted unintended consequences that may have resulted from gambling harm prevention and education initiatives, although some reviews identified one or two potential negative outcomes. Such limited reporting of unintended consequences could be due to a number of factors. Many studies lacked a long-term follow-up component where sufficient time had elapsed for unintended consequences to become evident. Although such consequences can arise in the short-term, it often takes some time for problems or issues related to an initiative or intervention to appear. Further, unintended consequences can surface in other domains of daily life that may not be immediately linked to a harm prevention activity. It could also be that even if an evaluation is conducted, participants are only asked about or tested for a narrow range of outcomes, and unintended consequences may not be among them.

Representatives of third sector charities recognised the possibility of unanticipated consequences and took steps to prepare and mitigate against them. Their expertise in programme delivery and regular contact with people at risk of or experiencing gambling harm allowed insights into ongoing issues and potential problems as they occurred. Many recognised the importance of risk management, as well as evaluation, even if their staff capacity was such that it had to be outsourced to external parties. They paid close attention to what might lead to negative effects. In some cases, it was as simple as avoiding responsible gambling language emphasising personal choice versus factors such as game

design and advertising over which people have no control. For others, it was rethinking how experts by experience might contribute to gambling harm prevention and education for children and youth in a way that was developmentally appropriate and unlikely to inadvertently encourage gambling participation. Third sector charities ensured that they knew their target audiences well and understood their specific circumstances, so as not to trigger negative outcomes that might occur due to participating in gambling harm prevention activities. Further, they pointed the way to a variety of resources provided by other stakeholders so that support was available for a wide range of unpredictable outcomes.

Their attention to unanticipated consequences demonstrates the importance of integrating academic and expert knowledge. Research evidence can point to initiatives and interventions that may be either more or less likely to be effective among certain groups or individuals, and researchers are required to assess the risk of harm to participants during the ethics clearance process. Third sector charities, on the other hand, have a wealth of experience and insights derived from long-term involvement and relationships with people who participate in their programmes. This knowledge can contribute a broader perspective on unintended consequences and groups or individuals most likely to be affected.

JURISDICTIONAL CONTEXT IS IMPORTANT

This report brings together evidence from around the world. Most of the evidence, including case studies, was derived from research and measures implemented in high-income nations. It is important to include international evidence because countries are at different stages of development in implementing a public health approach to gambling harm. Those who lead the way offer new strategies and initiatives to think about and implement with the potential for similar, positive outcomes. Other countries can also demonstrate what might work well, albeit with some adaptations for another host country.

Direct applicability of the evidence may be limited due to different stages of development in adapting a public health approach, different health priorities, and other public health issues (e.g., COVID-19 pandemic) that may require more intensive resources and policy attention. Further, each jurisdiction has a unique policy structure and set of gambling regulations, not to mention cultural factors, that may affect attitudes, traditions, and belief systems associated with gambling, as well as treatment seeking behaviour and experiences of stigma. These need to be considered in the British context. Measures 'borrowed' from another jurisdiction would need to be pilot tested, evaluated, and quite likely adapted before widespread implementation. Still, there is considerable potential to implement initiatives found to be successful elsewhere in combination with locally contextualised knowledge.

THE GAMBLING LANDSCAPE IS CONTINUALLY CHANGING

All reviews of prevention and education measures as well as the stakeholder consultations recognised the continually changing nature of the gambling landscape and the need to keep pace with new developments. Gambling harm prevention and education is most effective when stakeholders are aware of advancements in gambling forms, their delivery format, and who may be at greater risk of harm.

Online gambling and new technologies have

transformed the gambling ecosystem. As some reviews noted, there is currently an overfocus of research attention on land-based gambling. The evidence base for harm prevention and education for online gambling will need to expand, particularly in the wake of the COVID-19 pandemic when more people either migrated to or began gambling online during the lockdown periods.[13]

There are new developments in payment methods. Although there is a credit card ban in Great Britain for gambling payment, gambling operators accept other payment methods such as e-Wallets, debit cards, pre-paid cards, faster payments (instant bank transfers), and cryptocurrencies. At the same time, people with financial blocks to gambling are finding new ways to circumvent them using some of the alternate payment methods. This is but one example of where prevention and education initiatives could be positioned to prevent harm. Advancements are already being made by GamCare and stakeholders in the financial services and treatment sectors in the UK to address such loopholes in barriers to access money for gambling.[14]

THE EVIDENCE BASE VARIES BY QUANTITY AND QUALITY

Reviewing measures at the universal, selective, and indicated levels allowed insights into the quantity and quality of available research evidence. Although this report originally was meant to consist of systematic literature reviews only, it was not possible due to a considerable imbalance in the literature for different measures. This necessitated the use of approaches such as scoping and narrative reviews that are better suited to a smaller body of existing literature. Where these methods were applied, they went beyond what is normally expected of such review types[15] by employing a peer reviewed, systematic search strategy, and incorporating either a formal or informal evidence quality assessment guided by validated tools.

To fully support the prevention and education strategic priority, there is an urgent need for more research and evaluation at each level of measures. Suggestions that would help to improve the evidence base are outlined in detail in each chapter. For example, at the universal measures level more high-quality evidence is needed to assess responsible/safer gambling messaging and tools for the general public, and for studies of gambling providers in terms of how they promote prevention and education activities that align with regulatory restrictions. At the selective measures level for at-risk groups, studies of emerging adults (aged 18 to 25 years)—the cohort with the highest prevalence of at-risk gambling[16, 17]—could move beyond students to include their peers who are working, as well as those who are neither working nor in school. Further, there is almost no evidence to inform harm prevention and education for older adults, despite this cohort being at greater financial risk when retired, or seen as a lucrative segment by gambling operators.[18] At the indicated measures level, more evaluation and long-term follow-up is needed to support increased uptake of self-exclusion and reduce breaching rates. Brief online interventions require long-term evaluation and new approaches to be developed specifically for early intervention rather than as a treatment for gambling problems. The evidence for financial blocks is extremely limited at present, although early outcomes are promising. Finally, there is not enough evidence yet to support a review of any kind for the role of customer interaction. This oversight needs to be addressed since front-line staff are often the first point of contact for harm prevention initiatives. These are just a few

examples of areas where more evidence is needed, amongst the other knowledge gaps identified in each chapter.

Also of concern is the evidence quality, which was generally assessed as being low or moderate. The lack of a strong evidence base affects the ability to respond effectively to prevention and education needs. Yet, this does not mean that the lack of research should impede efforts to develop a comprehensive strategy. Rather, planning could begin with the measures for which the evidence base is most developed, while at the same time support could be provided for additional research activities with enhanced quality controls to strengthen understanding of harm prevention and education initiatives for other measures. In general, new research projects would benefit from including appropriate control groups (with random assignment to control and intervention groups), larger sample sizes, follow up assessments for interventions, and measures of harm in addition to problem gambling severity. The importance of long-term evaluation cannot be underestimated to assess whether policy changes or programmes are effective, including for whom they are most (or least) effective, and in what context. Further, access to data from operators (for online accounts or loyalty cards) would vastly improve understanding of actual gambling behaviour compared to recall studies that are known to be less accurate.

STRENGTHS AND LIMITATIONS

This report presents evidence to inform a range of measures included in the prevention and education objective of the National Strategy to Reduce Gambling Harm.[19] It brings together information in a way that is conducive to supporting a public health approach that is relevant to people across the full gambling risk spectrum from people who gamble recreationally to people who are experiencing gambling problems. It offers guidance by sharing what is effective, where the findings are mixed and, where possible, unanticipated consequences. It also suggests areas where high-quality research programmes could be undertaken to fill knowledge gaps. Collectively, the information will help to advance the design and delivery of gambling harm prevention and education for the British population.

Designing and implementing a prevention and education plan with an array of measures is a complex task. Along with the substantive evidence, each chapter provides guidance to support the development of a comprehensive plan. The guidance is drawn directly from the evidence reviewed and provides some valuable insights. It highlights academic and expert stakeholder knowledge that is foundational for harm prevention and education policies, programmes, initiatives, and research. Guidance ranges from the general (e.g., see Chapter 2.3 Population-Based Safer Gambling/ Responsible Gambling Efforts, for advice that could be considered across all measures) to the more specific (e.g., see Chapter 4.4 Self-Exclusion, for a well-developed summary of how to improve and enhance self-exclusion programmes and processes). Rather than reiterate the suggestions here, readers are encouraged to review the guidance for each measure and in the section summaries (see Universal Measures Summary on page 109, Selective Measures Summary on page 188, Indicated Measures Summary on page 278, and, Stakeholder Insights, Learnings on page 318). Beyond the researchers' suggestions, the complexity of such a wide-ranging plan also requires input from stakeholders in both design and implementation.

The quality and quantity of evidence to support the prevention and education objective is a recognised limitation to advancing new policies and initiatives. There were a number of mixed or inconclusive findings that detract from drawing broad conclusions. There is an opportunity to enhance research quality using suggestions provided in the report. Beyond issues related to research design, partnerships that would allow access to player data without compromising the integrity of the study or the researchers (e.g., see concerns about gambling industry influence by Cassidy[20] and the Nature editorial board[21]) would result in more accurate assessments of tools and initiatives used to prevent gambling harm. A recent social network analysis of gambling harms research in Great Britain[22] shows that the evidence base to support the framework of harms[23] and co-author networks are well developed for mental health harm from gambling, but much less so for harm to other domains such as relationships (partners, families, friends, and community) and resources (employment, money and debt, and crime). Research appears not to be well coordinated with other researchers for these factors at present and could benefit from a sustained source of support. This would allow targeted programmes for gambling harm prevention and education to advance and ensure capacity development for the next generation of scholars.

Another limitation is that in the time since the evidence searches were conducted, new materials have been published that could broaden the scope of recommended strategies for the gambling harm prevention and education objective. The reviews could be updated at regular intervals so that the most recent and relevant information is readily accessible to regulators, operators, educators, and other stakeholders in formats that are most accessible to each group. Also of note is that the search strategies were created by Information Specialists at Greo and the University Health Network rather than the authors themselves, mainly for reasons of consistency among chapters. For at least one chapter, this constrained the precision of items retrieved and would be alleviated in future by encouraging more direct input from authors.

The voices of experts by experience—people with direct experience of harm from gambling—are not included in the report. This omission would be felt most directly at the selective measures level, which is why at-risk groups will be addressed separately in future reports. These groups have unique qualities and circumstances that need focused attention. To do so requires not only academic and expert knowledge of third sector charities, but also the insights and perspectives of people belonging to groups most at-risk of harm and with direct experience of gambling harm prevention and education initiatives.

In summary, the report brings together evidence to support prevention and education measures, guidance for harm prevention and education planning, and identifies knowledge gaps where future research initiatives could be directed. It will allow progress in harm prevention and education by informing how measures can be used and improved for greater effectiveness. Fostering the development of an enhanced evidence base is an important goal, so that greater attention is given to measures for which there is little or no information available and to ensure research quality improvements. There is an opportunity to learn from evidence beyond academic research, such as programme evaluations, stakeholder insights, and the experiences of people experiencing gambling harm. This would require mechanisms for community-academic

partnerships, research funding, and knowledge translation so that the evidence is available in an accessible format to all who would benefit from it. Hopefully, this report will encourage further evidence development and multisectoral collaboration so that there is clear direction and a comprehensive approach to gambling harm prevention and education at multiple levels in Great Britain.

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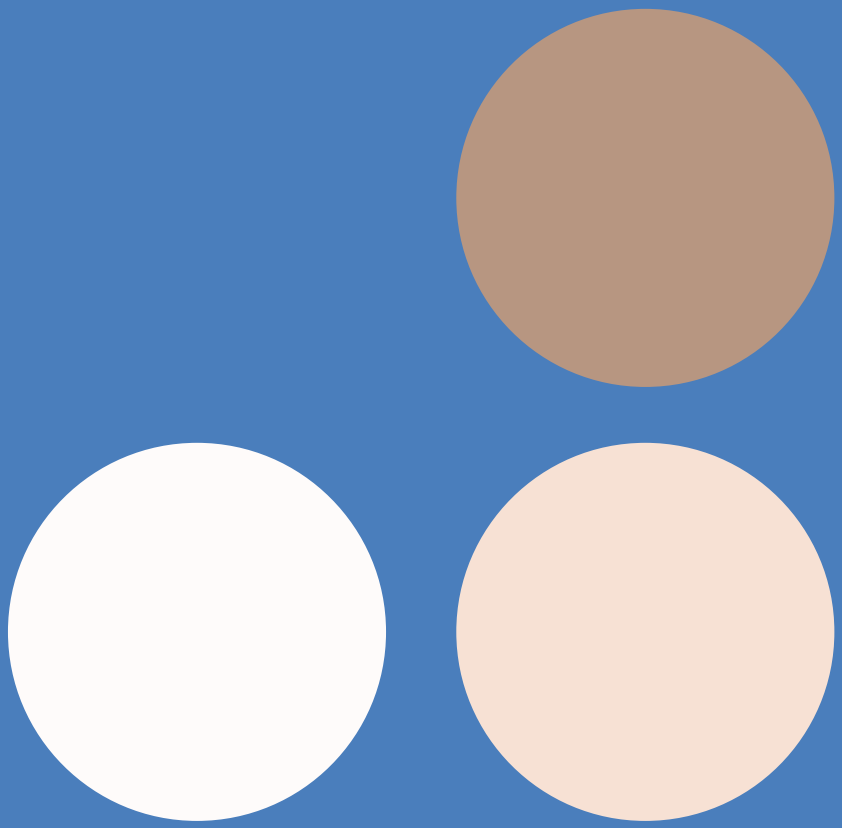
Prevention and Education Review: Gambling-Related Harm

Glossary



Glossary

ACTIVE TREATMENT GROUP/ INTERVENTION GROUP	The group of research participants that receive an intervention (e.g., treatment, drug, etc.). The active treatment or "intervention" group is usually compared to a control group.
ADHERENCE TOOLS	Responsible gambling tools that are designed to encourage players to set a limit on their play and then stay within that limit.
AFFECTED OTHERS	People close to someone who gambles (e.g., family, friends) who experience harm caused by the gambler's behaviour.
AGENCY	The ability to act independently and make one's own choices.
BEHAVIOUR TRACKING/ PERSONALIZED BEHAVIOURAL FEEDBACK	Giving players information about their gambling behaviour using their player account data. Personalised feedback uses behaviour tracking software that is activated when the player uses a player account card when gambling (typically a loyalty programme membership card or an online gambling account).

BLINDING	Not letting participants or the researchers know to which group (e.g., treatment, control) participants are assigned.
CAPACITY DEVELOPMENT	Obtaining and/or improving skills, knowledge, resources, and tools.
CASE-CONTROL DESIGN	A type of observational research study design where participants are selected based on a difference in outcome (those with the outcome are 'cases' and those without are 'controls'). The groups are compared based on a potential causal factor.
CASH OUT	The opportunity to get paid for a bet before the event has ended.
COGNITIVE BIASES	Unconscious errors in thinking that result from the tendency of people to perceive information based on their own preferences and experiences.

COHORT-ANALYTIC DESIGN	A research design that involves studying two groups pre- and post-intervention (not RCT).
COMORBIDITIES	The presence of two or more mental or physical health conditions in the same person.
CONFOUNDERS	Other factors that could be influencing the outcome of a statistical test (e.g., regression analysis), but were not identified or accounted for in the statistical test.
CONTROL GROUPS	A group of study participants that are compared to another group of participants to determine the effects of an intervention.
CONVENIENCE SAMPLE	A type of non-probability sampling where study participants are recruited because they are 'convenient' to the researcher or easy to reach.

CROSS-SECTIONAL DESIGN	A research design where information is collected at one time-point only.
CROSS-SECTIONAL RETROSPECTIVE SURVEYS	A research design where information is collected at one time-point only and relies on participants' recall of experiences, activities, and behaviours.
DAILY FANTASY SPORTS	Participants place a monetary wager to select imaginary teams composed of proxies of real players of a professional sport. Outcomes are based on the statistical performance of those players in actual games over a limited time.
DARK LOGIC MODELLING	A process to guide assessment of potential harms associated with public health interventions.
DEMAND CHARACTERISTICS	Any potential cues during a study that may cause participants to change their behaviour based on their interpretation of the cue or study purpose.

DEMOGRAPHIC QUESTIONS	Questions meant to determine characteristics of a study participant such as age, sex, marital status, education, and income.
DISORDERED GAMBLING OR GAMBLING DISORDER	An Addictive Disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). It is currently the only recognised behavioural addiction. It is characterised by persistent and recurring problem gambling behaviour among individuals who demonstrate at least four of nine specific criteria in a 12-month period (e.g., needs to gamble with increasing amounts of money to achieve the desired excitement, often gambles when feeling distressed, lies to conceal the extent of gambling involvement).
DISSOCIATION	A psychological state where a person disconnects from their thoughts, feelings, memories, or sense of identity.
ECOLOGICAL VALIDITY	During experimental research, the artificial nature of environment where the data is being collected, may not match-up completely with the related real-world environments.
EMPIRICAL ASSESSMENT	A way of obtaining research results through observation, experiment, or experience.

EMPIRICALLY TESTED	Results obtained through empirical assessment (see above).
ERRONEOUS COGNITIONS	For gambling, the faulty beliefs about how games of chance work.
EXCESSIVE GAMBLING	Spending more time and/or money gambling than intended.
EXCLUSION CRITERIA	Reasons for which studies would be excluded from a review, or for which participants from a target population would be excluded from a study.
EXPERIMENTAL RESEARCH	A type of study where the researcher has control over conditions of the study such as when and where it takes place, randomisation of control groups, and who is exposed to an intervention.

EXPERIMENTER EFFECTS	The unintended influence of the experimenter's expectations on the behaviour of research participants.
EXTERNAL VALIDITY	The extent to which study results can be expected to apply to other people and settings.
FACE VALIDITY	The extent to which a measure seems to intuitively make sense.
FIXED ODDS BETTING TERMINALS (FOBT) (OR B2 MACHINES)	A type of electronic gaming machine found in betting shops where players bet on the outcome of various games and events that have fixed odds. The theoretical percentage return to player (RTP) must be displayed on the machine.
GAMBLING MANAGEMENT TOOLS	Safeguards for people who gamble to prevent excessive gambling. Some examples are players setting monetary and time limits, self-exclusion agreements, operators making information about safer gambling and other help resources readily available.

GAMBLING SPEND OR EXPENDITURES	The amount of money spent on gambling during a period (e.g., a session, day, month, or year).
GATEKEEPER	Someone with the power to determine who has access to a group and who does not, normally a member of the community.
GENERALISABILITY	The extent to which findings from a research study can be applied to the general population.
INCLUSION CRITERIA	Reasons for which studies would be included in a review, or for which participants from a target population would be included a study.
IN-PLAY SPORTS BETS (ALSO LIVE-ACTION BETTING)	Bets placed while an event is taking place.

INTERNAL VALIDITY	The extent to which study results are attributable to the effects of an intervention or treatment rather than to flaws in the research design.
JURISDICTION	A specific geographic area that has a defined legal authority such as a national, state, or provincial government.
KNOWLEDGE SYNTHESIS	A way to summarise relevant studies for a specific question, identify gaps in the research evidence, and share inconsistencies in the findings. All types of evidence reviews are a form of knowledge synthesis.
LAND-BASED GAMBLING	Gambling that takes place in a land-based setting (e.g., casino, pub, betting shop) as opposed to gambling that takes place online.
LEGALISED GAMBLING	A regulated style of gambling that includes a variety of gambling types such as casinos, electronic gaming machines, horse racing, lottery tickets, scratch cards, bingo, and legal sports betting, among others.

LIMIT ADHERENCE	Not exceeding preset financial or time-based upper limits.
LIMIT SETTING	Setting a monetary or time-based upper limit that may be specific to a single gambling episode or over a select period (e.g., a year).
LONGITUDINAL RESEARCH DESIGN	A research design whereby information is collected from the same study participants at more than one time point.
META-ANALYSIS	A research design where results of individual studies on the same topic are combined and further analysis is conducted to determine overall trends and consistencies in intervention outcomes.
MICRO-BETS	Quick bets placed during a sports match on minor outcomes where the results are almost immediately known (e.g., whether the next serve in a tennis match will be an ace or a fault).

NARRATIVE REVIEW	A type of knowledge synthesis where findings from research studies are typically presented in their original form, followed by some explanation and interpretation of the evidence.
NEGATIVE OR LOSS-FRAMED MESSAGING	Messages that focus on the harmful consequences of risky behaviour.
OBJECTIVE MEASURES	Measures that can be assessed independently of the research participants or their beliefs, e.g., date of birth, highest level of education, marital status, etc.
OBJECTIVE ODDS	The probability that something will occur based on recorded observations of past occurrences. By contrast, subjective odds are based on personal estimates.
OFFSHORE GAMBLING	Gambling that takes place at online sites operating outside of national borders. These sites may be licensed to operate in their own jurisdiction, but they may not be secure or have protective measures for vulnerable players.

PLAYER MANAGEMENT TOOLS	Safeguards for people who gamble to prevent excessive gambling. Some examples are setting monetary and time limits, and self-exclusion agreements.
POINT-OF-SALE SAFER GAMBLING MESSAGING	Point-of-sale messaging targets players at the place of purchase by drawing attention to safer gambling messages and tools.
POSITIVE OR GAIN-FRAMED MESSAGING	Messages that focus on the benefits of action.
PRE-COMMITMENT	Restricting the amount of money spent on gambling to an affordable limit, before play begins.
PRIMARY RESEARCH	A research methodology where researchers collect data for the study, rather than using data previously collected by others or for other research projects.

PRISMA DIAGRAM	PRISMA is the short form of Preferred Reporting Items for Systematic Reviews and Meta-Analyses. A PRISMA diagram shows the flow of information through a knowledge synthesis by depicting the number of records identified, excluded and included, and why records were excluded.
PROBLEM GAMBLING	Occurs when a person's gambling causes harm to themself or others.
PROBLEM GAMBLING SEVERITY INDEX (PGSI)	A standardised measure of the severity of gambling problems for the general population. It identifies four risk categories: non-problem, low-risk, moderate-risk, and problem gamblers.
PROSPECT THEORY	People will react differently to messages that are factually equivalent depending on whether they are framed positively to emphasise benefits (gain-framed) or negatively to emphasise costs (loss-framed).
PUBLICATION BIAS	The selection of a study for publication based on the study outcome or strengths of its statistical results. Studies without statistical significance are less likely to be published.

RANDOMISATION	Research participants are assigned to groups in a way that is entirely due to chance. Each person has an equal probability of being placed in a group (e.g., intervention group, control group).
RANDOMISED CONTROL TRIALS (RCT)	Participants are randomly assigned to one of two groups: one receiving a treatment or intervention, and one receiving an alternate or no treatment. The groups are assessed post-intervention to see if there are differences in the outcome.
RANDOMISED DESIGN	A research design where participants in a study are randomly assigned to either an intervention or a control group. It assumes that on average, extraneous factors will affect each group in the same way so that any significant differences between groups will be due to the intervention.
RATIONAL-EMOTIVE EDUCATION	Rational-emotive therapy helps people to identify negative thought patterns and irrational beliefs that could lead to behavioural or emotional issues. Rational-emotive education focuses on classroom activities to help teach rational thinking to children and youth.
RECALL BIAS	An error that occurs when research participants do not accurately remember past events or experiences or may leave out details.

REGULATORY MEASURES	Any regulation, law, policy, procedure, rule, or administrative action.
RELIABILITY	The consistency or stability of a measure when used from one study to the next so that when repeated, measurements of the same thing produce identical or very similar outcomes.
REPLICABILITY	The ability to reproduce the findings of other researchers to increase confidence in those findings.
REPRESENTATIVE SAMPLE	A sample that has similar characteristics to the population from which it was drawn. Information and statistical outcomes can be generalised to the population. Random methods are normally used to draw the sample.
RESEARCH SYNTHESES	The process of assessing two or more research studies to summarise evidence relating to a specific question. It is used to make sense of a body of research.

RESPONSE BIAS	A response that is affected by the interaction between a researcher and a study participant.
RESPONSIBLE GAMBLING INFORMATION CENTRE	An information centre with tools, tips, and information to support a positive gambling experience.
REVERSE WITHDRAWAL	A term used by online casinos to describe the waiting period imposed between when a withdrawal request is made, and the request is processed. During that time, the player can reverse the request so that the money goes back into the player's account, and they can continue to access it.
RISK PROFILE	A series of questions that can help to determine a person's risk for developing a gambling problem. Gambling risk profile is often assessed using the Problem Gambling Severity Index (PGSI).
RISKY GAMBLING BEHAVIOUR	Behaviours such as spending excessive amounts of time and money gambling that contribute to the development of gambling problems.

SAFER GAMBLING MESSAGING	Messaging about safer gambling tools, options, and practices delivered through population-based advertising campaigns, in-venue responsible gambling information centres, on electronic gambling machines [EGMs], and other point-of-sale opportunities.
SCOPING REVIEW	A type of knowledge synthesis used to assess the potential size and scope of the evidence base. It is well suited to topics where there is a less established research presence. Scoping reviews are effective in identifying the current state of evidence and recommending priorities for future investigation.
SCREENING	A preliminary assessment of whether a person has a gambling problem and may require a full assessment.
SEARCH TERMS	A word or set of words used to retrieve articles about a specific topic from an electronic database.
SELECTION BIAS	A type of bias that occurs when the researcher decides which participants will be included in a study instead of using a random selection process. It means that groups may already differ before receiving an intervention. It can also occur when people self-select for a study.

SELF-APPRAISAL	The process of evaluating or assessing one's strengths and weaknesses.
SELF-EFFICACY	A person's belief in their power to affect situations, critical thinking, and decision-making skills.
SELF-MONITORING	The process of being aware of and keeping track of one's behaviours, thoughts, and feelings in relation to a specific goal.
SET AND FORGET BETS	A form of sports betting where the bet is placed before the event and left to run its course without cashing out.
SIGNPOST	Providing directions or links to useful resources.

STAKEHOLDERS	People or organisations with an interest in the success of an initiative, project, or policy.
STRUCTURAL CHARACTERISTICS (OF GAMBLING ACTIVITIES)	Design features of gambling types or products that can influence how people play (e.g., jackpot size, audiovisual features of electronic gambling machines, near-miss characteristics, and speed of play).
SUBJECTIVE MEASURES	Something that can only be learned from the research participants (e.g., whether they agree or disagree with a certain phenomenon, how they feel about events or activities, etc.) and not observed directly by the researcher.
SYSTEMATIC REVIEW	A type of knowledge synthesis that systematically searches for, appraises quality, and summarises research evidence while adhering to strict guidelines for what information is to be included or excluded. It relies upon having an established evidence base.
TEMPORAL PRECEDENCE	Establishes a cause-effect relationship between two factors in that the cause is shown to occur before a related effect or outcome.

THEORETICAL LOSS	A measure of gambling intensity that is a product of total bet size and the house advantage. It indicates the amount of money a player is willing to risk.
THEORETICAL/ NON-EMPIRICAL PAPERS	A paper focused on a theory or abstract principle that describes or explains a specific area of knowledge. A theoretical paper does not normally present research data.
THIRD SECTOR CHARITIES	Organisations that are independent of government, and operate without a profit goal in mind, to achieve socially beneficial outcomes (also known as not-for-profit or civic organisations).
TOTAL CONSUMPTION MODEL	A strong association between the total consumption (i.e., time and money spent gambling) and the prevalence of excessive/harmful gambling in a population.
UMBRELLA REVIEW	A form of knowledge synthesis that systematically compiles evidence from other reviews, or knowledge syntheses. It is commonly used to assess what is known about a topic, what is unknown, and where further research is needed.

UNINTENDED CONSEQUENCES	Unanticipated and unpredictable effects that emerge following an intervention, and have an unforeseen negative effect.
VARIABLE-RATIO REINFORCEMENT SCHEDULE	A response is reinforced or rewarded after an unpredictable number of responses or "attempts."
VOLUNTARY DEPOSIT LIMIT TOOL	A gambling management tool where players set a monetary limit on deposits to their registered player account that may be specific to a single gambling episode or over a select period (e.g., a year).

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FOLLOW THE EVIDENCE

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