

What factors are associated with self-harm in childhood?

**Learning from review-level
evidence**

Publication date: 24 January 2023



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01/2023 0945

Citation: This paper should be cited as Buckton CH, Riches E, Whitehead R, King C, McCalister K and Pulford A. What factors are associated with self-harm in childhood? Learning from review-level evidence. Edinburgh: Public Health Scotland; 2023.

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Acknowledgements: The authors would like to thank Seona Hamilton and Theresa King (PHS Knowledge Services); Sarah Couper and Shirley Windsor (PHS Public Mental Health); Sonya Scott, Neil Craig and Scott Heald (PHS); Hilary Third, Ian Macneill, Leeanne McSharry and Amy McLuskie (Scottish Government); Amy Chandler (University of Edinburgh); James McTaggart (Highland Council); and other members of the project advisory group for their valued contribution in completing this report.

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Glossary

Alexithymia: The inability to recognise or describe one's own emotions.

Cross-sectional study: Observational research that analyses data collected at one given point of time.

Dissociation: The disruption of the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behaviour.

Effect size: A value estimating the strength of the relationship between two variables in a population.

Heterogeneity: Variation across studies being summarised in a review which determines the extent to which data can be combined and comparisons can be made.

Mediator: A factor that explains the relationship between two variables.

Meta-analysis: A quantitative method to combine the results from several separate but similar studies to examine overall trends in the results and test statistical significance.

Moderator: A factor that affects the strength or direction of the relationship between two variables.

Primary prevention: The prevention of disease or injury before it ever occurs, by preventing exposure to risk factors that cause that type of disease or injury.

Prospective cohort study: A study that follows, over time, a group of similar individuals (cohorts) who differ with respect to certain factors under study, to determine how these factors affect rates of a particular outcome.

Risk of bias in systematic reviews (ROBIS) assessment: A tool used to assess the risk of bias in systematic reviews, as distinct from primary studies.

Secondary prevention: Reduction of the impact of a disease or injury that has already occurred.

Socioeconomic position: The social and economic factors that influence what positions individuals or groups hold within the structure of a society. It includes factors such as income, wealth, education, employment status and living conditions.

Executive summary

What we did

We carried out a rapid review of summary-level evidence to determine what is already known about the risk factors and protective factors associated with self-harm in children and young people. We also looked for evidence on effective interventions that might help in the primary prevention of this harmful behaviour.

Such review-level studies can only consider synthesised evidence where it exists, however, they do ensure a focus on the most robust evidence available.

What we found

We found 15 reviews for inclusion in this briefing. Of these:

- three examined the association of self-harm in children and young people with structural risk factors such as socioeconomic status and discrimination arising from sexual orientation
- eight examined the association with risk factors involving family and friends such as bullying, peer popularity and attachment security
- seven examined the association with individual risk factors such as body image, self-esteem and substance use
- no reviews were found that examined associations with the learning environment or community risk factors
- no reviews were found that evaluated the effectiveness of interventions in the primary prevention of self-harm in children and young people
- three qualitative reviews were found that examined the views of people with lived experience of self-harm

While the reviews on views of people with lived experience did not consider the primary prevention of self-harm, they provide useful context on the motivations underlying young people's self-harming behaviours and their parents' responses to it.

Evidence for structural risk factors

In the structural domain, there was evidence to suggest an increased risk of self-harm for those suffering discrimination due to their sexual orientation. There was little review-level evidence examining risk and protective factors for socioeconomic status and adverse childhood experiences and what we did find was inconclusive.

Evidence for family and friends risk factors

We found most of the available review-level evidence fell within the family and friends domain. Those experiencing all forms of bullying victimisation, traditional bullying perpetration and a lack of parental or peer attachment are most at risk of self-harm.

In this domain, evidence examining family structure, peer popularity and cyber-bullying perpetration was inconclusive.

Evidence for individual risk factors

Evidence for risk factors in the individual domain revealed an increased risk of self-harm for those suffering alexithymia (the inability to recognise or describe one's own emotions), body image issues, low self-esteem, dissociation (the disruption of the normal integration of consciousness), sleep disturbance and substance use. It has also been suggested that alexithymia may be a mediating factor in the relationship between low parental attachment and increased risk of self-harm.

Evidence from the voices of children, young people and their parents

Consideration of the qualitative reviews highlighted that the young people use self-harm to cope with unbearable emotions, take control, get immediate relief and reduce their emotional suffering. They identified the overarching theme of self-harm being a 'necessary pain'.

Reviews also noted that there can be discrepancies between a young person's desired response to self-harming behaviour and the actual response of their parents.

What this means for policy, practice and research

The often-hidden nature of self-harm, resulting in incomplete and inaccurate prevalence data, presents a particular challenge for policy and practice development aimed at primary prevention. This review provides an overview of the factors that are likely to put children and young people at higher risk of engaging in self-harm and illuminates some of the potential underlying motivations.

Implications for policy and practice

From a public mental health perspective, the evidence synthesised in this review supports self-harm prevention policies focused on supporting healthier familial and peer relationships for children.

Additionally, understanding individual risk factors, such as alexithymia, low self-esteem and dissociation, may be relevant to service commissioners and planners when prioritising service development aimed at primary prevention rather than harm reduction.

It is well established that structural determinants of mental health are rooted in the political and social decisions and priorities that result in the distribution of money, income, resources and power across the population and between groups. While we found relatively little review-level evidence relating to such structural risk factors, we did find specific evidence relating to discrimination against sexual minorities. Thus, policies and practices that support sexual diversity and equality may be helpful and could be considered alongside the evidence relating to relationships in the development of self-harm prevention strategies.

Learning from the small amount of review-level qualitative literature provides insight into the motivations underpinning self-harming behaviour, notably as a response to overwhelming emotional pain. Policies and practice that help reduce such pain early in childhood and help parents respond may therefore be beneficial when considering preventative responses to self-harm in childhood.

Implications for research

This review identified several gaps in review-level evidence. There was no evidence examining associations between self-harm and constructs in both the learning environment and community domains, very little evidence in the structural domain, and no primary prevention intervention evidence.

This suggests a need for systematic reviews in these areas, particularly to inform the development of primary prevention measures acting on structural determinants of health.

Introduction

The role of evidence in a public mental health approach

Advancing and supporting a public health approach to mental health in Scotland is one of Public Health Scotland's (PHS's) vital initiatives in the **strategic plan for 2022–25**. At the heart of this approach lies the primary prevention of mental health disorders. Put simply, this means preventing problems before they happen.

Primary prevention measures can target a range of factors that have the potential to influence health outcomes, including mental health and the risk of self-harm. These include: fundamental structural factors (the unfair and unequal distribution of power, income and wealth); social factors (the conditions in which people are born, learn, work and live) and individual factors (the choices people make).

Providing evidence that enables policy makers and practitioners to understand the impact of these determinants on mental health allows them to focus their attention on the key drivers and make effective strategic policy- and practice-related decisions.

Why understanding self-harm in childhood is important

Self-harm is increasingly common among young people and can be a sign of severe emotional distress.¹ It has the potential to do serious harm, resulting in long-term physical and psychological damage to the individual,² and is a strong predictor for future suicide risk.^{3,4}

Early intervention before and at the onset of the signs and symptoms of mental ill-health can improve mental health outcomes in childhood. It may act as a preventative measure for the development of future mental ill-health in adulthood.

Early onset of mental health disorders

The peak age of onset for all mental health disorders is estimated to be 14.5 years, with 35% starting before 14 years, 48% before 18 years and 63% before 25 years of age.⁵

The mental health of children and young people has deteriorated over the last five years. In 2021, one in six children aged 6–19 years had probable mental health disorders.⁶ Mental health disorders in childhood most commonly include anxiety and depression,⁷ both of which have been linked to an increased risk of self-harm.⁸

Impact of COVID-19

The COVID-19 pandemic has had a serious impact on young people's mental health. The Young Minds survey, which examines the impact of the pandemic on young people's mental health in 2021, revealed the scale of the impact. Many of the young people they spoke to reported that they were deeply anxious, had started self-harming again and were having panic attacks.⁹ A total of 67% of respondents believed that the pandemic would have a long-term negative effect on their mental health.

Statistics cited in the Scottish Parliament in 2021 highlighted a significant rise in the number of children presenting at hospital for self-harm in Scotland during the pandemic.^{10,11}

Why self-harm in childhood needs to be addressed

Our initial consultations with a range of stakeholders working on policy and practice in child mental health highlighted self-harm as a particular cause for concern for several reasons:

- the potential severity of the long-term consequences
- the worrying rise in self-harm in childhood, both prior to and during the COVID-19 pandemic
- the general decline in the mental health of young people in recent years

They emphasised the need to improve our understanding of the underlying causes of self-harm and identify effective ways to address them.

Aim of this briefing

This briefing paper provides an example of how evidence can be used to inform decision making in the primary prevention of self-harm without suicidal intent in children and young people.

We summarise learning from review-level evidence, examining the causes of self-harm, ranging from social determinants to individual factors, and highlight any important gaps in the evidence base.

What we did

We carried out a review of review-level evidence to answer two research questions:

- What is known about the risks and protective factors associated with self-harm without suicidal intent in children?
- What policies and interventions might be effective in the primary prevention of non-suicidal self-harm in this population?

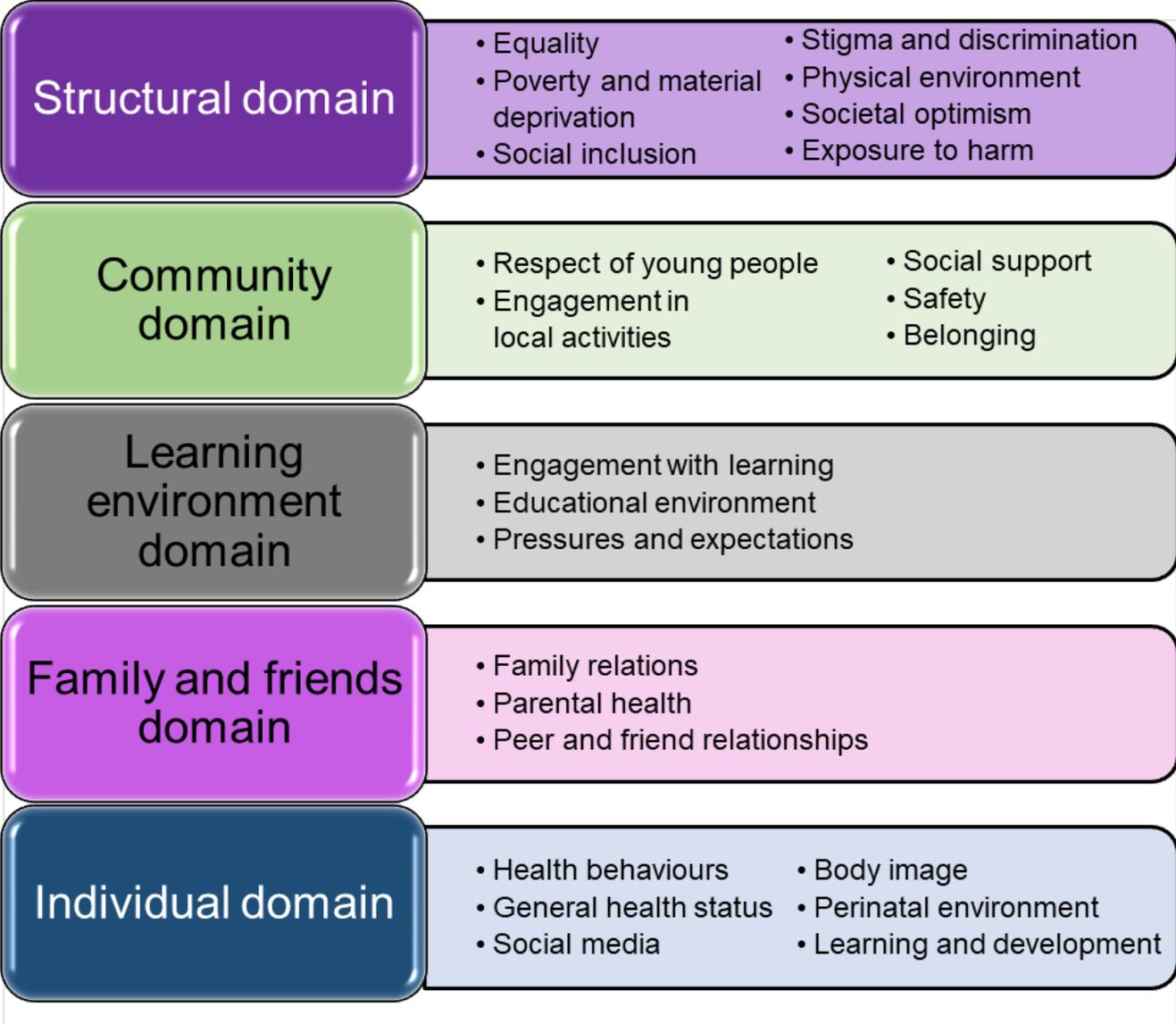
The detailed methodology of our review is provided in a separate **technical document**.

We searched six electronic bibliographic databases and undertook an advanced Google search to identify peer-reviewed and non-peer-reviewed (grey) literature for the period up to 28 October 2021.

We included reviews reporting findings for high-income countries to ensure any findings would be relevant to the Scottish context. We included reviews that examined the association between any potential risk factor, protective factor, policy or intervention and the outcome of self-harm without suicidal intent.

Our findings are presented according to the framework of domains and constructs identified in the **PHS children and young people mental health indicator set**¹² (Figure 1). This framework summarises the constructs (risks and protective factors affecting the mental health of young people) under five domains: structural, community, learning environment, family and friends, and individual.

Figure 1: Determinants of mental health outcomes for children and young people – framework of domains and constructs identified in the PHS mental health indicators project¹²



To provide further context to this review, we carried out a scoping exercise to identify relevant review-level qualitative evidence that examined:

- children's and families' experiences of common childhood mental health problems
- views on/experiences of what causes common childhood mental health problems, for example, poor-quality housing and insecure family income
- perspectives on and experiences of the implementation of interventions designed to prevent common childhood mental health problems

We then identified qualitative reviews that specifically examined self-harm.

What we found

Evidence for risk and protective factors

We identified 15 reviews for inclusion in this briefing (Figure 2). Of these:

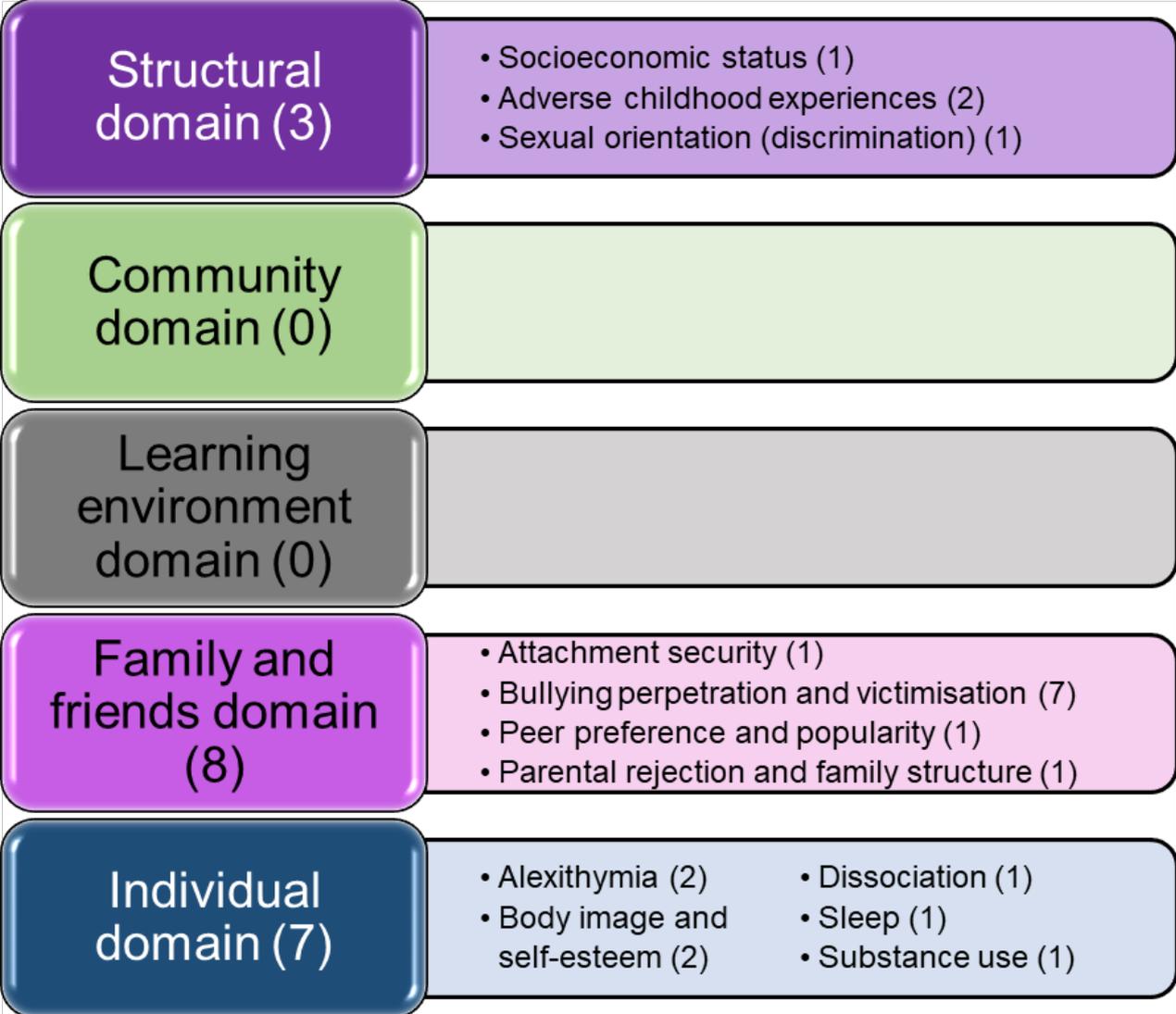
- three investigated the association of self-harm with structural factors (socioeconomic status, adverse childhood experiences and sexual orientation)^{13–15}
- eight examined aspects of family and friends (attachment security, bullying perpetration and victimisation, peer preference and popularity, parental rejection and family structure)^{13,14,16–21}
- seven covered individual factors (alexithymia, body image, self-esteem, dissociation, sleep and substance use)^{13,14,22–27}

No peer-reviewed evidence or grey literature was found that examined any of the constructs within the learning environment or community domains.

Six of the reviews included a quantitative method to combine the results from several studies and thus examine overall trends (meta-analysis).^{15–17,20,23,27} Three were rated low risk of bias^{21,23,27} using the risk of bias in systematic reviews (ROBIS) assessment.²⁸

A risk of bias assessment, sometimes referred to as a quality assessment or critical appraisal, can be used to identify design flaws in a systematic review and thus helps to establish transparency of evidence synthesis results and findings. A summary of the key features of these papers is provided in Appendix 1.

Figure 2: Summary of review-level evidence identified for risk and protective factors ^a



^a Number of reviews in brackets

Evidence for primary prevention interventions

We found no peer-reviewed evidence or grey literature that examined the effectiveness of policies or interventions in the primary prevention of self-harm without suicidal intent in children and young people that answered our specific research question. This does not mean there is no primary prevention intervention evidence – just that it has not been synthesised in a review.

Primary prevention is typically harder to evidence than secondary prevention or more treatment-focused interventions, as it entails the prevention of a disease or injury before it ever occurs. It is challenging to demonstrate that the intervention was the reason for this non-occurrence. Self-harm appears to be particularly difficult to produce primary prevention evidence for as it is not well measured in terms of prevalence or incidence.

Understanding the evidence base for risk and protective factors can help develop primary prevention activities in the absence of specific intervention evidence.

Evidence for lived experience

We identified two reviews of qualitative studies that examined young people's and their parents' experiences of living with self-harm.^{29,30} A third paper systematically reviewed research related to the emotional and behavioural impact on children and young people who view or share web-based self-harm-related videos or images.³¹ While this evidence did not specifically focus on primary prevention, it does provide some useful context on the motivations behind young people's self-harming behaviour and their parents' responses to it.

Detailed findings for risks and protective factors

Evidence for the structural domain

Socioeconomic status

One review involving 18 prospective cohorts in eight countries in community-based adolescents examined socioeconomic status as a predictor of self-harm.¹⁴

This review identified four studies that investigated socioeconomic position (the social and economic factors that influence what positions individuals or groups hold within the structure of a society) but found no overall effect on the risk of self-harm. However, they noted the difficulty in drawing clear conclusions due to the variability of the underlying studies.

Adverse childhood events

Two reviews considered the association between adverse childhood events and self-harm.^{13,14} Valencia-Agudo et al noted that evidence for life events was inconsistent and the potential to determine robust predictors of self-harm was limited by the variation or heterogeneity of the underlying studies.¹⁴

Conversely, the review across the life course by Silva and Botti concluded that there was an association between sexual abuse in childhood and subsequent self-harm in adolescence.¹³

Sexual orientation/discrimination

Batejan et al theorised that the psychological distress arising from the discrimination experienced by sexual minority groups (social groups differentiated by sexual orientation) may put them at higher risk for self-harm.¹⁵

To test this theory, they conducted the first meta-analysis comparing risk for self-harm between sexual minority and heterosexual persons. Although only three of

the 15 studies included were relevant, the authors were able to conclude that sexual minority adolescents are at particular risk for self-harm, with the overall risk compared to heterosexual populations decreasing, but remaining statistically significant, with age.¹⁵

Evidence for the family and friends domain

Bullying

The most frequently examined risk factor in the literature was bullying, covered by seven of the 15 reviews.^{13,14,16–20} Aspects of bullying considered included perpetration, victimisation, traditional physical bullying and cyber-bullying. Three of the reviews performed a quantitative meta-analysis.^{16,17,20} In all seven reviews, the underlying primary studies were a mix of prospective cohort and cross-sectional studies.

Six of the seven reviews, considering 108 relevant primary studies, identified that exposure to traditional bullying victimisation increased the risk of self-harm in both child and adolescent general populations. Van Geel et al found a significant association between self-harm and bullying victimisation based on a meta-analysis of data from nine studies involving 20,898 adolescents.²⁰ They found that the odds of victims of bullying reporting self-harm were over twice that of non-victims. Only one review did not identify such an association, however, the exposure measured in this instance was peer victimisation more generally, which encompasses all episodes of cruelty, rather than bullying victimisation specifically with its emphasis on repeated acts of aggression.¹⁶ Two of the reviews also considered bullying perpetration.^{17,19} Both identified an increased risk of self-harm for bullying perpetrators, although not as consistently as for victimisation.

One meta-analysis of data from 27 studies, involving 156,284 participants, considered cyber-bullying victimisation as a risk factor independently from traditional bullying.¹⁷ The results suggested that victims of cyber-bullying were over three times more likely to be at risk of self-harm. This was also true where cyber-bullying and

traditional bullying victimisation occurred together. No studies examining cyber-bullying perpetration were identified for inclusion.¹⁷

Attachment security

One systematic review, without meta-analysis, explored the relationship between attachment, both parental and peer attachment, and the specific measure of self-harm.²¹ Of the 13 underlying primary studies, 12 found a positive association between a lack of attachment security and increased risk of self-harm, the majority of which were conducted in the general population.

Various dimensions of attachment were examined in the primary studies covered by this review, including attachment anxiety, attachment quality and low levels of attachment security. All demonstrated positive associations.

Peer, friend and family relationships: popularity and rejection

A total of 17 of the primary studies covered by one review examined the association between aspects of relationships (peer popularity, peer rejection and parental rejection) and self-harm. These studies had mixed results, making it difficult to draw any firm conclusions in this area.¹⁶

Family structure

One review commented on the lack of evidence examining the impact of family structure on self-harm in community-based adolescents. It concluded that such variables received less attention in the literature and therefore conclusions could not be drawn.¹⁴

Evidence for the individual domain

Alexithymia

Alexithymia is the inability to recognise or describe one's own emotions. Two systematic reviews, both with low risk of bias and including meta-analysis, considered the relationship between alexithymia and self-harm, both reporting significant and positive associations between self-harm and alexithymia.^{23,27} However, only a small number of the studies meta-analysed in these two reviews were specific to the population under consideration for this review of reviews (12 out of 57), therefore it is not appropriate to report an estimate of the strength of the relationship between alexithymia and self-harm.^{23,27}

Additionally, in a review with a low risk-of-bias score, Woo et al found evidence to suggest that alexithymia could act as a factor that explains the positive association between low parental attachment and self-harm (mediator).²¹ That is, low parental attachment could cause alexithymia, which could then lead to self-harm.

Greene et al report that age had contrasting moderating effects on the associations between alexithymia and both self-harm and risky drinking. They suggest that the associations between difficulties identifying or describing feelings and self-harm were stronger for younger participants. They also suggest that young adults and adolescents with high levels of alexithymia may engage in self-harm to regulate their emotions but shift to consuming high levels of alcohol as it becomes more readily available to them.²³

Body image, bodily sensations and self-esteem

A systematic review by Hielscher et al, considering the impact of self-perception in self-harm, identified seven relevant studies out of 67 included in their narrative synthesis. Five of these included studies reported on large and nationally representative samples of adolescents in a range of Organisation for Economic Co-operation and Development (OECD) countries.²⁴ The authors concluded that persons engaging in self-harm reported greater levels of body dissatisfaction, body

disownership, physical symptoms without a medical explanation, and difficulty distinguishing between physical and emotional symptoms, compared to non-self-harming populations. There was stronger evidence for girls than boys.

Valencia-Agudo et al conducted a review of predictors (factors that can be used to predict the value of another variable), mediators (factors that explain the relationship between two variables) and moderators (factors that affect the strength or direction of the relationship between two variables) of self-harm in adolescents drawn from 18 cohorts in eight countries. They highlighted that the effect of general psychological distress, conduct problems and self-concept related variables were shown to be significant predictors of self-harm.¹⁴

Dissociation

Dissociation is the disruption of the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control and behaviour.

Černis et al examined the relationship between dissociation and adolescent self-harm, with nine of the underlying primary studies using community and school-based samples. They reported a significant association between dissociation and self-harm. Throughout these studies more severe dissociation was found to positively correlate with more severe self-harm (frequency, method and number of locations harmed on the body).²² However, they also noted that self-harm can be used to induce or escape dissociation and it was not possible to determine in which direction the association lies.

Sleep

A single review examined the relationship between sleep and self-harm, identifying 16 primary studies, eight of which were relevant. The overall pattern indicated that sleep problems were associated with a higher risk of self-harm, particularly in adolescents (e.g. sleep disturbances, short sleep duration and poor sleep quality). Emotional dysregulation, depression and post-traumatic stress disorder appeared to mediate this association between sleep problems and self-harm.²⁵

Substance use

A systematic review of self-harm and substance use in the general population found that nearly all 42 included studies reported consistent associations between self-harm and substance use, with half being relevant to this review of reviews.²⁶ That is, young people who engage in risky substance use were also at increased risk of self-harm.

It also noted that the association between self-harm and substance use may be due to similar motivations for engaging in risky substance use and self-harming behaviours.

Evidence from the voices of children, young people and their parents

Understanding why

Lindgren et al examined qualitative data from 10 separate studies carried out in five countries to understand the experiences of children and young people who self-harm.³⁰ They concluded that the young people in the included studies used self-harm to cope with unbearable emotions, take control, get immediate relief and reduce their emotional suffering.

They identified the overarching theme of self-harm being a 'necessary pain', with underlying motivations including: coping (control, relief and security, and overwhelming feelings); suffering (self-punishment, addiction, shame and guilt); alienation (loneliness, hiding oneself and being judged); and communication (speaking without words and cry for help).³⁰

Views of available support

Curtis et al approach the topic by examining perspectives of how young people and their parents view the support they do, or would like to, receive.²⁹ They included four

studies carried out with young people and 10 that reported the impact of adolescent self-harm on parents.

Most notably, they highlighted the discrepancies between the most common responses of parents and the wishes of young people. For example, while young people would like their parents to be open-minded and non-judgemental while respecting their privacy, parents typically find communication with their child about self-harm to be a difficult process, leaving them fearful and uncertain how to address the subject.

A key finding of the study was the need for parents to receive support to enable them to overcome the feelings of guilt, shame and being ill-equipped to deal with the situation.²⁹

Impact of videos or images

Finally, Marchant et al systematically reviewed research focusing on the impact of web-based self-harm-related videos or images on young people.³¹

From the 19 included studies, they identified a range of both positive and negative reactions in response to posting and viewing images. These ranged from empathy and solidarity to negative reinforcement and normalisation.

Summary of findings

We found most of the available review-level evidence fell within the family and friends domain, with those experiencing all forms of bullying victimisation, traditional bullying perpetration and a lack of parental or peer attachment most at risk of self-harm. In this domain, evidence examining family structure, peer popularity and cyber-bullying perpetration was inconclusive.

Evidence for risk factors in the individual domain revealed an increased risk of self-harm for those suffering alexithymia, body image issues, low self-esteem, dissociation, sleep disturbance and substance use. It has also been suggested that

alexithymia may be a mediating factor in the relationship between low parental attachment and increased risk of self-harm.

In the structural domain, there was evidence to suggest an increased risk of self-harm for those suffering discrimination due to their sexual orientation. There was little review-level evidence examining risk and protective factors for socioeconomic status and adverse childhood experiences and what we did find was inconclusive.

No review-level evidence was identified for risk and protective factors in the learning environment or community domains, or for self-harm primary prevention interventions.

Consideration of review-level qualitative studies highlighted the importance of understanding the motivations underlying young people's engagement in self-harm and the impact of responses from those around them, both family and peers.

What this review means for policy, practice and research

The often-hidden nature of self-harm, resulting in incomplete and inaccurate prevalence data, presents a particular challenge for policy and practice development aimed at primary prevention.

This review provides an overview of the factors that are likely to put children and young people at higher risk of engaging in self-harm and illuminates some of the potential underlying motivations. While no reviews were found on primary prevention interventions, this review provides valuable insights into what might be priority areas for the development of policy and practice targeted at the underlying risk factors associated with self-harm.

Implications for policy and practice

Support healthier familial and peer relationships

From a public mental health perspective, the evidence synthesised in this review supports self-harm prevention policies focused on supporting healthier familial and peer relationships for children.

Support sexual diversity and equality

We found relatively little review-level evidence relating to structural risk factors, defined as the economic, social, policy and organisational factors. However, we did find evidence relating to discrimination against sexual minorities. Thus, policies and practices that support sexual diversity and equality may be helpful and could be considered alongside the evidence relating to relationships in the development of self-harm prevention strategies.

Identify high-risk individuals

The individual risk factors identified here are less amenable to public health interventions at a population level. However, understanding these factors could be used to identify higher-risk groups, such as those suffering from alexithymia, low self-esteem and dissociation, which may be relevant to service commissioners and planners when prioritising service development. This could be used to inform the design of future services aimed at primary prevention rather than harm reduction.

Learning from the small amount of review-level qualitative literature provides insight into the motivations underpinning self-harming behaviour, notably as a response to overwhelming emotional pain and guilt. Policies and practice that help reduce such pain early in childhood may therefore be beneficial when considering preventative responses to self-harm in childhood.

Inform self-harm prevention strategies

The learning from this review of review-level literature may also be helpful in the development of the Scottish Government self-harm prevention strategy. The exploratory phase of this is taking place in 2022/23.

Understanding what drives young people to alleviate extreme distress via self-harming behaviours may suggest levers for primary prevention interventions, for example, by removing the source of distress.

Implications for research

The lack of evidence on effective interventions for the primary prevention of self-harm is not surprising given the nature of the disorder. Associations with anxiety, depression and suicidality make the causes and prevention of self-harm difficult to study, particularly when studied at an individual level without considering the circumstances in which people live.

Lack of evidence to inform action on key risk factors

This review identified several gaps in review-level evidence, specifically, there was no evidence examining associations between self-harm and constructs in both the learning environment and community domains. There was also very little evidence in the structural domain and no primary prevention intervention evidence.

This suggests a need for systematic reviews in these areas, particularly to inform the development of primary prevention measures acting on structural determinants of health.

Considerations for the development of evidence and gap maps

This review was conducted by PHS's Evidence for Action and Public Mental Health teams as part of a feasibility study to develop online evidence tools, specifically evidence and gap maps and an online intervention tool.

The development phase of the project has highlighted the need to tailor the scope of the evidence included depending on the mental health disorder under consideration. For example, in the case of the self-harm outcome, the inclusion of studies in clinical settings and considering secondary prevention may identify evidence on intervention effectiveness, which represents a key gap in this review.

Limitations of this review

While these findings are limited to evidence available in review-level literature only, conducting a review of reviews is an established method for evidence synthesis which produces robust results.

The variability of the studies reviewed made it challenging to provide data on overall effect sizes, as evidenced by the fact that few authors attempted to meta-analyse the underlying data and limited themselves to providing a narrative synthesis.

A total of 12 of the 15 reviews were assessed as being at high risk of bias. However, this is not surprising given that quality assessment tools such as ROBIS use stringent criteria designed to apply to systematic reviews, which was not the case for most of

the reviews in this study. In most cases, this was due to not pre-registering a defined protocol and not quality assessing the primary studies reviewed. This should be taken into consideration when interpreting the findings of this review.

Appendix 1: Summary of literature

Table 1: Summary of review-level literature examining associations with self-harm in children and young people

Author, year	Title of paper	Age range	Exposure domain	Exposure construct(s)	Meta-analysis	Risk of bias
Batejan, 2015 ¹⁵	Sexual orientation and non-suicidal self-injury: a meta-analytic review	Adolescent	Structural	Sexual orientation	Yes	High
Cernis, 2019 ²²	What is the relationship between dissociation and self-harming behaviour in adolescents?	Adolescent	Individual	Dissociation	No	High
Cheek, 2020 ¹⁶	Social rejection, popularity, peer victimization, and self-injurious thoughts and behaviours among adolescents: a systematic review and meta-analysis	Childhood Adolescent	Family and relationships	Peer/friend relationships, bullying, parental rejection	Yes	High
Silva, 2017 ¹³	Self-injurious behaviour along the vital cycle: integrative literature review	Childhood Adolescent	Family and relationships, structural	Multiple	No	High
van Geel, 2015 ²⁰	A meta-analysis on the relation between peer victimization and adolescent non-suicidal self-injury	Adolescent	Family and relationships	Bullying	Yes	High

Author, year	Title of paper	Age range	Exposure domain	Exposure construct(s)	Meta-analysis	Risk of bias
Greene, 2020 ²³	The associations between alexithymia and both non-suicidal self-injury and risky drinking: a systematic review and meta-analysis	Adolescent	Individual	Alexithymia	Yes	Low
Heerde, 2019 ¹⁷	Are bullying perpetration and victimization associated with adolescent deliberate self-harm? A meta-analysis	Adolescent	Family and relationships	Bullying	Yes	High
Hielscher, 2019 ²⁴	When the body is the target - representations of one's own body and bodily sensations in self-harm: a systematic review	Adolescent	Individual	Body image	No	High
Karanikola, 2018 ¹⁸	The association between deliberate self-harm and school bullying victimization and the mediating effect of depressive symptoms and self-stigma: a systematic review	Adolescent	Family and relationships	Bullying	No	High
Khazaie, 2021 ²⁵	Relationship between sleep problems and self-injury: a systematic review	Adolescent	Individual	Sleep	No	High
Moller, 2013 ²⁶	Deliberate self-harm, substance use, and negative affect in nonclinical samples: a systematic review	Adolescent	Individual	Substance use	No	High
Norman, 2020 ²⁷	The relationship between self-harm and alexithymia: a systematic review and meta-analysis	Adolescent	Individual	Alexithymia	Yes	Low

Author, year	Title of paper	Age range	Exposure domain	Exposure construct(s)	Meta-analysis	Risk of bias
Serafini, 2021 ¹⁹	The relationship between bullying victimization and perpetration and non-suicidal self-injury: a systematic review	Childhood, adolescent	Family and relationships	Bullying	No	High
Valencia-Agudo, 2018 ¹⁴	Non-suicidal self-injury in community adolescents: a systematic review of prospective predictors, mediators and moderators	Adolescent	Family and relationships, individual, structural	Multiple	No	High
Woo, 2020 ²¹	The relationship between attachment and self-injurious behaviours in the child and adolescent population: a systematic review of the literature	Adolescent	Family and relationships	Attachment security	No	Low

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