GIG CYMRU NHS WALES
Iechyd Cyhoeddus Cymru
Public Health Wales

PHI Public Health Institute
LIVERPOOL JOHN MOORES UNIVERSITY

Identifying evidence to support action to reduce socioeconomic inequalities in health

A systematic scoping and mapping review

Identifying evidence to support action to reduce socioeconomic inequalities in health

Authors and contributors

Public Health Institute, Liverpool John Moores University

Lisa Jones, Professor Mark A. Bellis

Public Health Wales

Dr Rebecca Hill, Professor Karen Hughes and Sara Wood

Acknowledgements

We are very grateful for **Dr Ciarán Humphreys** from Public Health Wales for reviewing this report. We would also like to thank **Chloe Booth**, Liverpool John Moores University for her valuable contributions to the report, including assistance with literature searching, quality assessment and data extraction.

An earlier version of this work was presented to the **Welsh Health Equity Status Report initiative (WHESRi) Joint Scientific and Advisory Group** meeting on 31st January 2023. We are very grateful for the comments from the attendees at this meeting.

About this report

This report was commissioned by Public Health Wales. The Welsh Government is committed to eliminating inequality in all its forms (Welsh Government Programme for Government 2021-2026) while reducing health inequalities is a core component of NHS Wales Planning, and one which has become even more critical due to the impacts of the COVID-19 pandemic (NHS Wales Annual Planning Framework 2021-2022).

Contents

Tables of figures

Table of tables

Executive summary

What is known from equity-focused umbrella reviews and systematic reviews about which public health interventions, programmes and policies show evidence of reducing socioeconomic inequalities in health?

There has been considerable progress in the two decades since the WHO Commission on Social Determinants of Health was established in building an evidence base for action on health equity and identifying entry points for policies, programmes, and interventions. Different policy approaches have been proposed to reduce health inequalities but it is recognised that actions will be most effective if they are targeted at the level of the structural determinants. These reflect the social, economic and political mechanisms that influence the social position of different groups and individuals within society based on factors such as wealth, income, education, and occupation. The focus of this report is on inequalities in health between different socioeconomic groups ('socioeconomic inequalities in health'), which are one of the most important challenges for public health.

Many umbrella reviews and systematic reviews are available that examine the effects of interventions on reducing socioeconomic inequalities in health. However, there are limitations in the review-level evidence base about what works to reduce socioeconomic inequalities in health. A key issue is that most attempts to address socioeconomic inequalities in health do not focus on the structural or the intermediary determinants, but on individual behavioural determinants.

This report examines the review-level evidence that is available to guide action on reducing socioeconomic inequalities in health. Evidence about public health interventions, programmes and policies applied to populations, groups and other geographically defined areas or jurisdictions was sought to explore whether they preferentially improve the health outcomes of people experiencing socioeconomic inequalities. We identified 17 umbrella reviews, 106 systematic reviews and 30 other types of reviews that had an equity focus and had been published since 2000. Twelve umbrella reviews and 54 reviews were categorised as examining the wider social determinants of health. Seven umbrella reviews and 79 reviews were categorised as examining the behavioural determinants of health.

What evidence is there about the differential effects of public health interventions, programmes, and policies across socioeconomic groups?

Clear conclusions about the differential impact of interventions, policies, or programmes targeting the wider social determinants of health were not available across the included umbrella reviews. Three umbrella reviews, which covered a range of public health interventions, policies and programmes generally concluded that results were mixed or inconclusive. At the review-level, evidence about differential effects was available across six intervention, programme and policy areas, including education access and quality, air

pollution, infrastructure and workplace organisation. However overall, this evidence was also inconclusive.

For the behavioural determinants of health, one umbrella review provided a summary of population-level interventions that may be effective in improving health inequalities. However, this was not clearly based on evidence about differential effects and conclusions were drawn about effects from single studies. At the review level, evidence about differential impacts was identified across the key policy delivery areas. Price/tax increases on tobacco and high energy density foods and subsidies on fruit and vegetables were found to have overall positive equity effects. Across the included reviews, evidence from studies that examined voluntary, regional and partial smokefree environments, and controls, bans or restrictions on advertising, promotion and marketing and access were found to be weighted towards a negative equity impact. Mixed or inconsistent equity effects were found for smoking and health-related mass media campaigns. Inconclusive findings were noted across the studies that examined a range of interventions and programmes grouped under service provision.

What evidence is there about the effects of public health interventions, programmes and policies targeted specifically at disadvantaged groups or conducted in deprived areas?

There was evidence of selected interventions, programmes and policies having a positive impact on targeted populations. Navigation interventions and community-based peer support that aimed to engage patients in healthcare had positive effects among targeted populations. As did improvements to housing conditions targeted towards low income groups. There was further review-level evidence to suggest that food subsidy programmes can have a positive impact on disadvantaged families. Under the policy area of social and human capital, targeted approaches including community engagement, parenting education and breastfeeding promotion had positive impacts among low-income groups. Across the policy area of income security and social protection, there was a lack of evidence of the effects on health.

A mix of universal and targeted interventions were included across the reviews that addressed the behavioural determinants of health. Overall, 16 reviews exclusively examined targeted interventions and 12 reviews included both universal and targeted interventions. Examples of targeted interventions included behavioural smoking cessation interventions, health promotion interventions for weight, nutrition and physical activity and the prevention of unintentional injuries, and interventions to increase service uptake or attendance. The majority were categorised under the policy area of service provision. There was review level evidence to suggest that targeted (or tailored) interventions for community weight loss and primary care delivered tailored weight loss programmes, behaviour change interventions and behavioural smoking cessation support may have positive effects.

Overall, what is known about which public health interventions, programmes and policies show evidence of reducing socioeconomic inequalities in health?

The literature reviewed for this report suggests there are areas across the wider social and behavioural determinants of health where actions can have positive effects on health equity. However, reducing socioeconomic inequalities in health requires collaborative and cross-sectoral planning and action, and if we focus on the whole picture and not just single policy areas, then clear conclusions and directions for action are currently lacking. Methods for "systems perspective evidence synthesis" are still being developed but in future, such methods may better assist with capturing the full picture to prioritise action and improve decision-making.

1 Introduction

What are health inequalities?

Health inequalities are unfair and unjust systematic differences in people's health, which are observed across populations and between different social groups (1). Health inequalities are avoidable and in the two decades since the WHO Commission on Social Determinants of Health was established, there has been considerable progress in building an evidence base to act for health equity and identifying entry points for policies, programmes, and interventions (2). Health inequalities, however, remain a persistent challenge in the European Region and a major public health priority. As highlighted by the report of the Pan-European Commission on Health and Sustainable Development, health inequalities have been further exacerbated by the COVID-19 pandemic (3) and have demonstrably widened (4). In 2020, the WHO Regional Committee for Europe endorsed the new European Programme of Work (EPW) for 2020–2025 (5), which is focused on delivering "united action for better health in Europe". The EPW places a strong emphasis on addressing health inequalities to ensure that improvements in health leave no one behind.

Health inequalities and their causes

The 'social determinants of health' (SDH) describe the social, political, economic and environmental factors which shape the conditions in which people are born, grow, live, work and age. These in turn, have an impact on health and wellbeing. The WHO Commission framework (6) sets out the conceptual basis for the social determinants and draws an important distinction between two broad interlinked categories of determinants, the 'structural determinants' and the 'social determinants of health'. The 'structural determinants' (also referred to as the 'social determinants of health inequalities') reflect the social, economic and political mechanisms that influence the social (or socioeconomic) position of different groups and individuals within society based on factors such as wealth, income, education, and occupation. An individual's social position, in turn, then shapes their access and exposure to a set of intermediary determinants that have a direct impact on health and wellbeing, and which lead to unequal outcomes among groups and individuals. In the WHO framework, the 'social determinants of health' include material circumstances (e.g., availability of food), psychological circumstances (e.g., availability of social support), behavioural factors (e.g., ability to be physically active), biological (e.g., genetic) factors and health system factors. The concepts of social cohesion and social capital are positioned as cutting across the structural and intermediary determinants. While different policy approaches have been proposed to reduce health inequalities, it is recognised that actions will be most effective if they are targeted at the level of the structural determinants.

The focus of this report is on inequalities in health between different socioeconomic groups ('socioeconomic inequalities in health'), which are one of the most important challenges for public health (7, 8). Where data is available, it shows that all European countries experience

a socioeconomic gradient in mortality. That is, mortality in all countries is greater among people in the lowest socioeconomic groups compared to people in the middle, and greater among the middle compared to the highest socioeconomic groups (9).

Policy action on health inequalities

To turn policy into action, Solar and Irwin (6) have identified three broad policy approaches to reducing health inequalities:

1. Targeted programmes that aim to improve the health of low socioeconomic status (SES) populations *(targeted/disadvantage approach)*;
2. Approaches that directly target the health gaps between those in the poorest social circumstances and more affluent groups *(health-gaps approach)*; and
3. Programmes that aim to address the entire socioeconomic gradient in health by focusing on the association between socioeconomic position and health across the whole population *(health-gradient approach)*.

Many umbrella reviews and systematic reviews are available that examine the effects of interventions on reducing socioeconomic inequalities in health. However, there are limitations in the evidence base about what works. A key issue is that most attempts to address socioeconomic inequalities in health do not focus on the structural or the intermediary determinants, but on individual behavioural determinants. Most research on socioeconomic inequalities in health has been done on behaviour change interventions operating at an individual or interpersonal level (10). Further, focusing on the average effects of an intervention may mask important differences in intervention effects between groups (11). Systematic reviews reveal a lack of reporting on the differential effects of interventions across socioeconomic groups.

Review questions

The aim of this work is to provide an overview of what is known from equity-focused umbrella reviews and systematic reviews about which public health interventions, programmes and policies show evidence of reducing socioeconomic inequalities in health.

The key review questions were:

- What evidence is there about the differential effects of public health interventions, programmes and policies across socioeconomic groups?
- What evidence is there about the effects of public health interventions, programmes and policies targeted specifically at disadvantaged groups?
- What evidence is there about the effects of public health interventions, programmes and policies conducted in deprived areas?
- Overall, which public health interventions, programmes and policies have evidence to support that they preferentially improve the health outcomes of low SES populations?

2 Methods

Searches

The following databases were searched for umbrella review-level and review-level evidence:

- Cochrane Database of Systematic Reviews,
- Campbell Collaboration Library of Systematic Reviews (The Campbell Library),
- Medline (Ovid),
- PsycINFO (ProQuest),
- Cumulative Index of Nursing and Allied Health Literature (CINAHL; EBSCOHost),
- Social Sciences Citation Index (WoS),
- Database of Promoting Health Effectiveness Reviews (DoPHER; EPPI-Centre),
- Public Health Database (ProQuest)
- Health Systems Evidence (McMaster University/McMaster Health Forum).

Search filters were applied to identify review level evidence where feasible. Additional searches for grey literature search were conducted using Google Scholar, focusing on the first 200-300 results identified. We also searched the reference lists of eligible umbrella reviews. Searches were carried out in February 2022 and limited to evidence published since 2000. No language restrictions were applied in the searches, but only English language reviews were included.

Inclusion criteria

The following inclusion criteria were applied to select relevant reviews.

Participants/population

Children and adults of all ages.

Intervention(s), exposure(s)

Public health interventions, programmes and policies applied to populations, groups and other geographically defined areas or jurisdictions, and which aim to reduce socioeconomic inequalities were eligible. Three broad approaches to reducing inequalities have been identified: targeted programmes that aim to improve the health of low socioeconomic status (SES) populations; approaches that directly target the health gaps between those in the poorest social circumstances and more affluent groups; and programmes that aim to address the entire socioeconomic gradient in health by focusing on the association between socioeconomic position and health across the whole population. The criteria were purposefully broad to identify evidence related to a wide range of interventions, programmes and policies.

Comparator(s)/control

Systematic reviews and umbrella reviews have different units of interest (i.e., primary studies vs. systematic reviews), however for both underlying units of interest, studies with and without a control group were eligible.

Types of study to be included

We included systematic reviews, scoping reviews, evidence maps and umbrella reviews about the effectiveness of public health interventions, programmes and policies, which clearly identified equity as a focus. The three key elements of the Database of Abstracts of Reviews of Effects (DARE) criteria were applied to identify systematic reviews and umbrella reviews: a clear question; a transparent method for the search, selection, and appraisal of evidence (primary studies or systematic reviews); and synthesis of the evidence.

Context

Research in high-income countries only was included.

Main outcome(s)

The main outcome of interest was the effect of the public health intervention, programme or policy on socioeconomic inequalities in relation to their impact on health-related behaviours and practices, measures of personal or community wellbeing and outcomes relating to the social determinants of health (e.g., education, training or employment outcomes; access to green space; housing quality). Reviews also needed to include studies that reported measures of socioeconomic variation in health outcomes between groups or populations. Socioeconomic status needed to be defined as including one or more of the following measures: income, welfare, assets/resources at individual or household level, education, or occupation. Area level measures of deprivation were also relevant.

Data extraction

The results of the literature searches were imported into an Endnote library and deduplicated. Titles and abstracts were screened to identify systematic reviews, umbrella reviews and other forms of evidence syntheses with a major focus on health inequalities. Titles and abstracts were screened by one member of the research team. A random 10% of the sample were independently screened by a second reviewer.

Full papers were obtained, and potentially relevant references were screened to identify systematic reviews, umbrella reviews and other forms of evidence syntheses that met the three key elements of the DARE criteria and had a major focus on health inequalities. Whether a review had a major focus on health inequalities was based on the scope of PRISMA-Equity 2012, i.e., they either assessed the effects of interventions, policies or programmes: (a) targeted at disadvantaged or at-risk populations; or (b) aimed at reducing social gradients across populations or among subgroups of populations. A coding framework was developed to guide the selection and categorisation of the literature identified through the searches, with specific reference to the core research questions. Screening of full text papers was conducted by the research lead. The final decisions on inclusion were discussed with the wider review team.

Data analysis and synthesis

Using the coding framework, key data were extracted from the included reviews to provide a map of the evidence. Data extracted included: author; publication year; review methodology; inclusion and exclusion criteria; population(s) included; public health intervention, policy or programme(s); dimension(s) of inequality; number of included studies; and outcomes. Data coding was performed by one reviewer. The Assessment of Multiple Systematic Reviews 2 (AMSTAR 2) approach was used to quality assess the included reviews (12). Relevant data from the AMSTAR 2 checklist was extracted by one member of the review team and checked by the research lead.

Both pooled effect sizes (where reported) and information from narrative overviews was used to compile a description of the evidence available. Evidence across the included reviews was first categorised into two broad determinant categories according to whether the wider social or behavioural determinants of health were addressed, as described below. Within each of these categories, where possible, we aimed to further categorised the available evidence as follows:

(1) intervention/policy/programme preferentially improves health outcomes in low SES populations ('positive effects on health equity');
(2) targeted intervention/policy/programme improves health outcomes in low SES populations ('positive effects for low SES populations');
(3) intervention/policy/programme has no preferential impact by SES ('no effects on health equity');
(4) intervention/policy/programme preferentially improves health outcomes in high SES populations ('negative effects on health equity'); or
(5) intervention/policy/programme impact by SES unknown ('unclear/inconclusive effects on health equity' or 'absence of evidence').

In practice, however, clear patterns of the direction of effects on socioeconomic inequalities in health did not emerge across the intervention and determinant categories. This is discussed further in the report.

Categorisation of umbrella reviews and reviews into determinant categories

Wider social determinants of health

Our definition of the wider social determinants of health was based on the WHO definition that they are "the non-medical factors that influence health outcomes". We also drew on the Dahlgren and Whitehead rainbow model (13) as a framework to help with categorisation. Following this initial categorisation, evidence addressing the wider social determinants of health was organised under the following WHO Equity framework (14) policy areas:

- Health services
- Income security and social protection
- Living conditions
- Social and human capital

- Employment and working conditions

Behavioural determinants of health

Many public health interventions, programmes and policies focus on changing individual behaviours (for example, diet, physical activity, or smoking) and we therefore categorised evidence falling into this category as the behavioural determinants of health. The Behaviour Change Wheel (BCW) (15) makes a distinction between interventions and policies for achieving behaviour change. We therefore used the seven policy categories of the BCW to further categorise the evidence that addressed a behavioural determinant of health:

- Fiscal
- Regulation
- Legislation
- Communication/marketing
- Guidelines (this category was not relevant)
- Environmental/social planning
- Service provision

3 Summary of included reviews

Outcomes of the screening process

A total of 8,144 references were identified through the database searches. After the removal of duplicates, 4,859 references were retained. Titles and abstracts were screened by a single reviewer and 265 were selected, of which 258 were retrieved for full text screening. A total of 116 reviews were selected for inclusion and an additional 33 reviews were identified through the screening of reference lists ('citation searching'). The flow of study inclusion is shown in the PRISMA flow chart in Figure 1. A total of 141 reports were excluded based on full text screening. Citation details are provided in Appendix 1 with the reason for exclusion. Four reports were excluded for the reason 'Other'. For these four reports we identified a more current or complete version of the review.

In total, reports for 17 umbrella reviews and 132 reviews were selected for inclusion and categorised according to the determinant categories (wider social determinants or behavioural determinants). Twelve umbrella reviews (16-27) and 54 reviews (28-81) examined reviews of interventions, policies and programmes targeting the wider social determinants of health. Eight umbrella reviews (22, 24, 27, 82-86) and 79 reviews (74, 87-164) examined interventions, policies and programmes targeted at the behavioural determinants of health. Three umbrella reviews (22, 24, 27) and one review (74) were categorised under both determinant categories. A breakdown of the types of reviews by the determinant categories is shown in Table 1.

Table 1. Breakdown of review types across the determinant categories

Determinant category		Umbrella reviews	Systematic reviews	Scoping reviews	'Other' reviews
Wider social	Health services	1	6	1	2
	Income security & social protection	3	5	1	2
	Living conditions	6	9	3	1
	Social & human capital	2	15	-	2
	Employment & working conditions	4	6	-	-
	Total	*12*	*42*	*5*	*7*
Behavioural	Fiscal	4	10	1	-
	Regulation & legislation	2	15	-	-
	Communication/marketing	2	10	-	-
	Environmental & social planning	-	4	-	-
	Service provision	1	36	2	-
	Total	*8*	*76*	*3*	*0*
Total		17	116	8	7

'Other' reviews = 3 realist reviews, 2 individual patient data meta-analyses, 2 meta-narrative evidence syntheses

Of the reviews, 116 reports were systematic reviews (30-41, 43, 45-51, 54, 55, 59-61, 63-69, 71-80, 87-114, 116-137, 140-164), eight reports were scoping reviews (29, 42, 57, 62, 81, 115, 138, 139) and seven reports were of reviews described as 'other' types (28, 44, 52, 53, 56, 58, 70). Based on an analysis of the methods, three were realist reviews, two were individual patient data (IPD) meta-analyses, and two were meta-narrative evidence syntheses.

Quality assessment

The AMSTAR 2 approach was used to assess the quality of the included systematic reviews, with 109 individual assessments completed for 116 reviews (for full details of the assessment see Appendix 2). Assessments were not undertaken with AMSTAR 2 for the 17 umbrella reviews, eight scoping reviews and seven 'other' review types.

Seven of the AMSTAR 2 items (items 2, 4, 7, 9, 11, 13 and 15) are highlighted as critical domains for the validity of the review and its conclusions (12). Sixty-four reviews had issues in two or more of the critical domains (not including items 11 and 15 which only applied if a meta-analysis had been carried out). The maximum number of issues across the seven items was 5, and five reviews had issues across these five items. Examining each of the seven items in turn, a total of 59 out of the 108 reviews reported that a protocol had been registered before commencing the review (item 2). Three further reviews referred to a protocol, but it was unclear if the protocol had been publicly available before the review commenced. 100 reviews reported an adequate literature search (item 4). Three reviews (110, 135, 147) were based on secondary analysis of data included in another review (or reviews) and therefore did not report a search strategy. The item regarding justification for excluding individual studies (item 7) was where most of the included reviews did not meet the item criteria and authors in only 17 reviews had fully accounted for the studies excluded from the review. Many studies reported details of exclusions in a PRISMA flow chart, but it was not common for authors to fully explore the impact of excluding studies from their reviews. A total of 94 reviews reported that a satisfactory technique that been used to assess risk of bias across the individual studies included in the review (item 9). For 11 reviews, techniques used to assess risk of bias were either unsatisfactory or risk of bias assessment was not carried out. For four reviews, it was not possible to answer this item as insufficient details were provided about the technique. Whether review authors had considered the risk of bias when interpreting the results of the review (item 13) was difficult to assess across several reviews and for 40 reviews, this item was marked as 'Can't answer'. For 53 reviews there was an explicit reference to the potential impacts of risk of bias and this item was met. In total, 29 reviews reported a meta-analysis. Only one review did not report appropriate meta-analytical methods (item 11) as there was no discussion of the principles that guided the meta-analysis of data. Twenty reviews that reported a meta-analysis also carried out an adequate assessment of the presence and likely impact of publication bias (item 15).

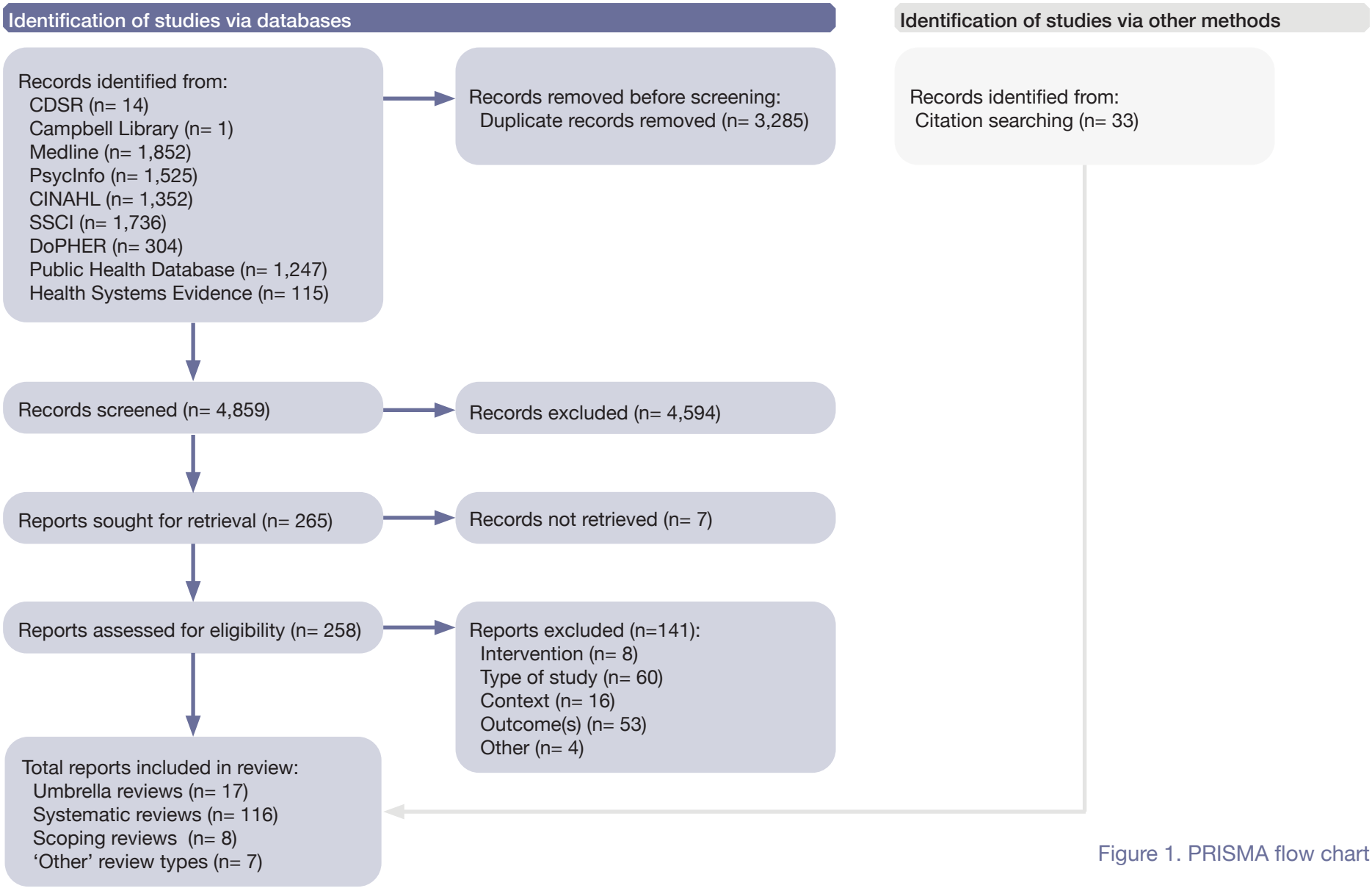

Figure 1. PRISMA flow chart

4 Wider social determinants of health

Twelve umbrella reviews (16-27) and 54 reviews (28-78, 80, 81, 165) examined reviews of interventions, policies and programmes targeting the wider social determinants of health (Table 2). Over 300 reviews were included across the umbrella reviews and there was some overlap in inclusion, particularly in the domains of the employment and working conditions and living conditions. All 12 umbrella reviews examined impacts on a broad range of health outcomes and two umbrella reviews (17, 23) examined non-health effects. Of the reviews, 30 (30-33, 36-41, 43-46, 48, 49, 54, 56, 58, 60, 61, 63, 64, 66, 67, 71-73, 75, 165) examined impacts on broad health outcomes (including physical and mental health outcomes), three (65, 70, 76) focused on mental health outcomes only and three (51, 55, 80) examined non-health outcomes (all education related outcomes). The remaining 12 systematic reviews (34, 35, 47, 50, 52, 53, 59, 68, 69, 74, 77, 78) examined a narrower range of health outcomes that were more specific to the intervention, policy or programme under consideration. Full details are reported in the summary data tables in Appendix 3.

Table 2. Summary of reviews of interventions, policies and programmes: wider social determinants of health

Reference	Review type	Target(s)/Intervention(s)	Policy action area(s)
Abimbola et al., 2019 (28)	Review	Decentralised governance	1
Ballesteros-Arjona et al., 2022 (29)	Scoping	Energy poverty	3
Bambra et al., 2007 (30)	Review	Reorganisation of work	5
Bambra et al., 2008a (32)	Review	Organisational level shift work	5
Bambra et al., 2008b (31)	Review	Compressed working week	5
Bambra et al., 2009 (16)	Umbrella	Organisational changes to the psychosocial work environment	5
Bambra et al., 2010 (17)	Umbrella	Social determinants of health	1, 2, 3, 4, 5
Bambra et al., 2014 (18)	Umbrella	Organisational and financial	1
Benmarhnia et al., 2014 (34)	Review	Air pollution	3
Black et al., 2012 (35)	Review	Food subsidy	3
Bonell et al., 2013 (36, 37)	Review	School environment	4
Brennenstuhl et al., 2012 (38)	Review	Welfare regimes	2
Brunton et al., 2015 (39)	Review	Community engagement	4
Butel and Braun, 2019 (40)	Review	Community collective efficacy	4
Buttazzoni et al., 2020 (41)	Review	Smart city	3
Cairns et al., 2015a (19)	Umbrella	20mph/30kmh zones and limits	3
Carter et al., 2018 (42)	Scoping	Patient navigation	1
Cheng et al., 2020 (43)	Review	eHealth	1
Cleland et al., 2020 (44)	Review	20mph/30kmh zones and limits	3
Cyril et al., 2015 (45)	Review	Community engagement	4
Dawson et al., 2015 (46)	Review	Nursing and midwifery governance	1
Durand et al., 2014 (47)	Review	Shared decision making	1
Egan et al., 2007a (48)	Review	Employee participation	5

Egan et al., 2007b (49)	Review	Privatisation	5
Fairbank et al., 2000 (50)	Review	Breastfeeding promotion	4
Finnie et al., 2019 (51)	Review	Year round school calendars	4
Gardner et al., 2017 (52, 53)	Review	Parenting	4
Gibson et al., 2011 (20)	Umbrella	Housing	3
Gibson et al., 2017 (54)	Review	Welfare to work	2
Wilson et al., 2011 (80); Hahn et al., 2015 (55)	Review	High school completion	4
Harris et al., 2015 (56)	Review	Community peer support	1
Hillier-Brown et al., 2019 (21)	Umbrella	Social protection policies	2
Hosford et al., 2021 (57)	Scoping	Road pricing policy	3
Hunter et al., 2019 (58)	Review	Urban green space	3
Ibanez et al., 2012 (59)	Review	Breastfeeding promotion	4
Joyce et al., 2010 (60)	Review	Flexible working conditions	5
Kim et al., 2016 (61)	Review	Community health workers	1
Klingbaum et al., 2021 (62)	Scoping	Light rail transit development	3
Ljungdahl & Bremberg, 2015 (63)	Review	Extended/compulsory secondary level education	4
Lucas et al., 2008 (64)	Review	Welfare	2
McGowan et al., 2021 (23)	Umbrella	Place-based	3
McGrath et al., 2021 (65)	Review	Welfare	2
Molloy et al., 2021 (66); Beatson et al., 2021 (33)	Review	Sustained nurse home visiting	4
Morrison et al., 2014 (67)	Review	Parenting	4
Mulvaney et al., 2015 (68)	Review	Cycling infrastructure	3
Naik et al., 2019 (24)	Umbrella	Macro-, population-level economic factors	2
Nelson et al., 2020 (69)	Review	Patient navigation	1
O'Campo et al., 2015 (70)	Review	Unemployment insurance	2
O'Dwyer et al., 2007 (71)	Review	Area-based	3
O'Mara-Eves et al., 2013 (72, 73)	Review	Community engagement	4
Olstad et al., 2017 (74)	Review	Built environment	3
Parry et al., 2021 (81)	Scoping	Primary care setting interventions to address poverty	2
Pega et al., 2013 (75)	Review	In-work tax credits	2
Pierron et al., 2018 (25)	Umbrella	Parenting	4
Shah et al., 2021 (26)	Umbrella	Social determinants of mental health	2, 3
Simpson et al., 2021 (76)	Review	Social security policy reforms	2
Smith et al., 2017 (77)	Review	Built environment	3
Stormacq et al., 2020 (78)	Review	Health literacy	1
Thomson et al., 2013 (79)	Review	Housing	3
Key to review types: Umbrella = umbrella review; Review = systematic review or 'other' review; Scoping = scoping review			
Key to policy action areas: 1 = Health services; 2 = Income security and social protection; 3 = Living conditions; 4 = Social and human capital; 5 = Employment and working conditions			

Health services

The health sector has a crucial role in addressing the wider social determinants of health. Factors including health system financing and the accessibility and availability of health care services are important in determining whether the sector has a positive or negative impact on health equity. One umbrella review (18) and one realist review (28) examined organisational and financial reforms to the health system. One umbrella review (17) and four reviews (46, 56, 61, 69) examined interventions which focused on access to health and social care services. At the review level, two key areas of intervention were identified that were targeted towards groups with low SES. Three reviews examined individual/community level interventions (56, 61, 69), one review examined organisational level interventions (46), and one review each examined shared decision making interventions (47) and health literacy interventions (78).

Organizational and financial reforms

Health equity was examined in nine reviews included in the umbrella review by Bambra et al. (18) on organisational and financial system interventions. Five areas of reforms were examined: general system financing, direct purchasing, organisation of services, health and social care integration, and resource allocation. Overall, the quality of the systematic review level evidence was judged to be of poor quality. The authors concluded that financial and organisational health care system reforms had either inconclusive or negative effects on health equity. They also came to a strong conclusion that market-based reforms to health and social care (i.e., introducing increased competition within a publicly funded system) have negative effects on health equity.

Using a realist approach to evidence synthesis, Abimbola et al. (28) examined how decentralization reforms and the move away from centrally governed health systems may impact on health system equity, efficiency, and resilience. The authors concluded that as decentralisation creates multiple centres of governance, the effects on health equity were dependent on both the horizontal and vertical relationships that form across these different centres. Decentralized health systems may have a positive effect on equity by being “close to the ground”.

Patient engagement in health care

One umbrella review (17) and three reviews (56, 61, 69) examined navigation and community-based/peer support interventions, which are commonly designed in response to the growing complexities of health service delivery, or to address social inequalities in access to care. Bambra et al. (17) included four reviews, three of which focused on targeted interventions to improve cultural access and one on improving geographic access. None of the reviews reported on differential effects, and effects on low-income populations were not reported separately from other forms of disadvantage. At the review-level, across three reviews there was evidence that both patient navigation interventions (69) and community-based peer support interventions (56, 61) had positive effects among targeted populations, including low SES populations. However, here also, effects on low SES populations were not explored separately from other forms of disadvantage. A realist review of community-

based support (56) concluded that the potential for the intervention to be effective was dependent upon an understanding of the surrounding equity context. Dawson et al. (46) examined the contribution of the nursing and midwifery workforce to health service accessibility and quality, but the findings were inconclusive.

Durand et al. (47) examined interventions designed to support shared decision making and identified both targeted and universal interventions. The authors concluded that shared decision making interventions were more effective for disadvantaged groups compared to more advantaged groups. A review of health literacy interventions that targeted low SES adults (78) found that interventions were more likely to be effective if they were theory-based and multi-faceted. Cheng et al. (43) examined the consideration of health literacy in electronic health (eHealth) intervention development for disadvantaged populations. Evidence about the effectiveness of eHealth interventions targeted at low SES populations was limited.

Income security and social protection

Income and poverty are clearly related to health outcomes (166), and social protection and welfare state policies that protect against loss of income are important policy tools for tackling health inequalities. Income security and social protection policy interventions that focus on the intermediary determinants typically follow a 'targeted' approach to reducing health inequalities as the aim is to assist groups vulnerable to poverty. Three umbrella reviews (17, 21, 24) examined income security and social protection policies. Across the three umbrella reviews, 13 systematic reviews were included: one of welfare advice services co-located in health settings; two of cash and other in work benefits; and five of active labour market programmes. Eight additional reviews (38, 54, 64, 65, 70, 75, 76, 81) were identified through the searches. Six systematic and other types of reviews (54, 64, 65, 70, 75, 76) examined specific income security and social protection policy interventions and one review examined structural determinants with a focus on macro income security and social protection policy (38).

Specific interventions

One umbrella review (17) and one review (65) examined evidence for welfare advice services co-located in health settings. Overall, there was limited evidence about the provision of legal and welfare advice in primary care and its impacts on health outcomes.

Three umbrella reviews (17, 21, 24), examined the evidence related to social protection including cash and other in work benefits and active labour market programmes. Eight reviews were included across the umbrella reviews, three of which were relevant to socioeconomic inequalities (64, 70, 75). Three further reviews were identified in the searches (54, 65, 76). Hillier-Brown et al. (21) rated their confidence in the findings of Pega et al. (75) and O'Campo et al. (70) as low and critically low, respectively, and Lucas et al. (64) did not identify evidence of effects on health equity, indicating an absence of evidence. The more recent review by McGrath et al. (65) reported inconclusive findings with regards to the health effects of active labour market programmes. Gibson et al. (54) also found that welfare to work programmes aimed at lone parents did not have important effects on

health. Simpson et al. (76) examined reforms to social security policy, finding that contractionary policies (for example, that decreased benefit generosity or tightened eligibility criteria) tend to have negative effects on health equity, whereas expansionary policies (for example, the introduction of a new benefit) have positive effects.

Welfare state policy

One review (38) examined the effects of welfare state policies on health equity. The findings were not consistent with welfare regime theory that countries with social democratic regimes (principally, the Scandinavian countries) have the lowest health inequalities compared with other regimes.

Living conditions

Living and environmental conditions are important intermediary determinants of health (167). Disadvantaged populations face greater exposures to environmental risks and threats and may lack secure access to basic goods and amenities, and adequate affordable housing.

Housing

Two umbrella reviews (17, 20), one systematic review (79) and one scoping review (29) examined the effects of interventions that aimed to improve housing conditions on health equity. Neither umbrella review identified evidence on differential effects by SES and most interventions aimed to address health inequalities by targeting disadvantaged groups. A recent scoping review with a specific equity focus (29), also identified a lack of studies that reported on differential effects by SES. A Cochrane review (79) that examined improvements to the physical fabric of housing also found that many interventions were targeted at low-income groups. This review concluded that overall, improvements to housing conditions targeted towards low-come groups could lead to improvements in health.

Environment and transport

Four umbrella reviews (17, 19, 23, 27) examined reviews of interventions and policies that targeted the environment and transport. Thomson et al. (27) and McGowan et al. (23) however, did not report any specific conclusions about the effects of interventions related to the environment on health equity. Further, none of the reviews included in the umbrella review by Bambra et al. (17) presented information relating to the effects of transport policies or interventions on health equity.

At the review level, eight reviews (34, 41, 57, 58, 62, 68, 74, 77) examined interventions and policies that targeted the environment and transport. Studies were lacking on the health equity effects of physical changes to urban green space (58), cycling infrastructure (68), changes to the built environment in disadvantaged communities (74) and smart city and high-tech urban interventions (41). Three studies that examined differential effects of interventions to reduce air pollution were identified for inclusion in the review by Benmarhnia et al. (34), and Smith et al. (77) identified three studies that examined the effects of built environment features on health equity. Results were mixed across both

intervention areas. One review (57), which examined road pricing, identified nine studies that assessed effects by income or SES (one study overlapped with (34)). The authors concluded that although effects were not consistent, they suggest that as congestion pricing is more disruptive to people with lower incomes it may have a negative effect on health equity. One scoping review (62) used a social determinants of health lens to examine light rail transit development, finding that it could be conceptualized as having a negative effect on health equity. One umbrella review (19) and one review (44) examined 20 mph interventions including zones and limits. Cleland et al. (44) identified one study that examined differential effects by SES, which found no effects on health equity based on pedestrian and road casualty outcomes.

Food security

One umbrella review (17) and two reviews (35, 65) examined policies affecting the availability of food. In their umbrella review, Bambra et al. (17) identified a review of monetary incentives, but this review did not have a clear focus on health equity. Black et al. (35) examined food subsidy programmes as one strategy for promoting healthy nutrition to low income families and found limited, but high-quality evidence of a positive effect. McGrath et al. (65) examined food insecurity interventions but only identified one study for inclusion.

Social and human capital

Both social and human capital are major determinants of health. According to the OECD (1998), human capital is the “knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity”. Polices that address gaps in children's experiences during early childhood and educational outcomes across the life course are therefore thought to be critical to achieving greater health equity. Social capital is a more complex concept and has been defined by Putnam (1993) according to several different characteristics: community networks, civic engagement, civic identity, reciprocity, and trust. There is therefore increasing interest in the role of community-centred approaches for building social capital and reducing health inequalities (168).

Education and learning across the life course

The scope of the umbrella review by Bambra et al. (17) included interventions related to education. However, the authors didn’t find any systematic reviews of the health effects of adult education interventions. At the review-level, two reviews carried out as part of the US Community Guide Review process examined education from a health equity perspective. Finnie et al. (51) examined the effects of year-round school calendars on educational attainment, finding mixed effects among low SES groups for single-track calendars in three studies. Two linked reviews by Wilson et al. (80) and Hahn et al. (55) examined programmes intended to increase high school completion, finding evidence that a variety of programmes could improve school completion rates. However, none of the reviews examined effects on health outcomes. A further review by Ljungdahl and Bremberg (63) examined findings from natural experiments of extended compulsory or secondary level education and the health effects for people with the lowest level of education. The authors concluded that it was

unlikely that extended compulsory education had a substantial impact on the health of people with a lower level of education.

Two reviews from the same research team (36, 37), examined the effects of interventions that targeted the school environment to improve health and wellbeing. Although examining the effects on health equity was a key objective for the review, insufficient data was identified indicating an absence of evidence.

Improving the social capital of individuals and communities

Community engagement

Community engagement is seen as an important strategy for health improvement and is defined by WHO as "a process of developing relationships that enable stakeholders to work together to address health-related issues and promote well-being to achieve positive health impact and outcomes" (169). There are different models of community engagement, which may vary in depth, level and breadth (170). Four reviews examined community engagement for improving the health of disadvantaged populations (39, 45, 72, 73). Three of the reviews were carried out by the same research team (39, 72, 73). Overall, the evidence suggests that community engagement models do lead to positive effects on health for disadvantaged populations. However, because of a lack of data, there is insufficient evidence to determine whether community engagement subsequently has positive effects on health equity through their effect on social inequalities.

Neighbourhood social environments

Butel and Braun (40) examined intervention activities designed to increase collective efficacy, a feature of the neighbourhood social environment, which broadly refers to the willingness of residents within a neighbourhood to intervene for the common good. As a construct, collective efficacy incorporates both social cohesion and informal social control (171) and Butel and Braun (40) identified evidence that improvement in community collective efficacy was linked to better community level outcomes. There was however a lack of evidence to determine whether collective efficacy had positive effects on health equity.

Early childhood development

Key interventions to promote children's development included positive parenting education, parent education on child health and development, breastfeeding promotion and the promotion of school readiness.

Parenting education

One umbrella review (25) examined reviews of parenting interventions. Three reviews that explained their results as supporting positive effects on social inequalities were identified and one review mentioned negative effects. The authors noted that most reviews were of interventions targeted towards disadvantaged populations and did not have health equity as a clear focus. Four reviews (33, 52, 53, 66, 67) examined interventions targeted at the early years and parenting. Morrison et al. (67) included studies of both universal and targeted parenting programmes. Two studies were of interventions using a proportionate universal approach, but the authors did not identify any studies that reported on differential

effects for disadvantaged groups. Two reviews from the same research group (33, 66), included studies of targeted programmes only and these approaches were found to have positive effects on parenting outcomes. Gardner et al. (52, 53) reviewed the differential effects of the Incredible Years programme by social disadvantage. The evidence from 15 trials suggests that the programme has no effects on equity, expressed from the perspective that the programme did not widen socioeconomic inequalities in conduct problems. Overall, there is an absence of evidence about the effects of parenting programmes on equity.

Breastfeeding promotion

Two reviews (50, 59) examined breastfeeding promotion and included studies of interventions, including health education and peer support approaches that targeted low SES women. Both reviews found evidence that health education approaches (based on informal, small, group-based classes) may have positive effects on breastfeeding promotion among low SES women.

Employment and working conditions

Work and employment conditions are important determinants of health and health inequalities. Four umbrella reviews (16, 17, 22, 27) examined reviews of organisational changes within the work environment. An umbrella review by Bambra et al. (16) concluded that there was 'tentative' evidence to suggest that organisational workplace interventions have the potential to effect health equity. The review identified that both the positive and negative effects of organisational changes to the psychosocial work environment on health were felt more by lower SES groups.

At the review-level, six reviews (30-32, 48, 49, 60) examined organisational changes within the work environment. Five of the six (30-32, 48, 49) were included in two of the umbrella reviews by Bambra et al. (16, 17). Across the five reviews only two primary studies reported differential effects by SES. Further, the review by Joyce et al. (60) concluded that the evidence was unclear about the effects of flexible working on health equity.

Table 3. Evidence of effects table: wider social determinants of health

Policy action area		References		Evidence on socioeconomic inequalities
		Umbrella reviews	Systematic reviews	
Health services	Organizational and financial reforms	Bambra et al., 2014 (18)		Inconclusive or negative effects on health equity. Evidence on the organisation of services suggests that market-style reforms have negative effects on health equity.
	Decentralisation		Abimbola et al., 2019 (28)	Effects of decentralisation at a governance or system level on health equity are dependent on horizontal and vertical relationships across the different centres of governance.
	Navigation and peer support	Bambra et al., 2010 (17)	Harris et al., 2015 (56); Nelson et al., 2020 (69); Kim et al., 2016 (61)	Navigation and peer support may have positive effects for targeted populations. Potential is dependent on surrounding equity context.
	Health literacy and shared decision-making		Cheng et al., 2020 (43); Durand et al., 2014 (47); Stormacq et al., 2020 (78)	Health literacy and shared decision-making interventions may have positive effects for targeted populations. Success may be dependent on the inclusion of operational components, such as tailoring.
Income security and social protection	Welfare state policies		Brennenstuhl et al., 2012 (38)	Findings on health equity are not consistent with welfare regime theory that countries with social democratic regimes have the lowest health inequalities.
	Welfare advice co-located in health settings	Bambra et al., 2010 (17)	McGrath et al., 2021 (65)	Absence of evidence as limited evidence on the measurable benefits for health.
	Social protection (including cash and other in work benefits and active labour market programmes)	Bambra et al., 2010 (17) Hillier-Brown et al., 2019 (21) Naik et al., 2019 (24)	Pega et al., 2013 (75); O'Campo et al., 2015 (70); Lucas et al., 2008 (64); Simpson et al., 2021 (76); McGrath et al., 2021 (65)	Absence of evidence.
Living conditions	Housing and fuel/energy deprivation (targeted)	Bambra et al., 2010 (17) Gibson et al., 2011 (20)	Thomson et al., 2013 (79); Ballesteros-Arjona et al., 2022 (29)	Improvements to housing conditions may have positive effects for targeted low SES populations.
	Changes to urban and built environment	Gibson et al., 2011 (20) McGowan et al., 2021 (23)	Hunter et al., 2019 (58); Buttazzoni et al., 2020 (41); Olstad et al., 2017 (74)	Unclear/inconclusive effects on health equity.

Policy action area		References		Evidence on socioeconomic inequalities
		Umbrella reviews	Systematic reviews	
	Infrastructure (cycling and walking routes, outdoor gyms…)		Mulvaney et al., 2015 (68);Smith et al., 2017 (77)	Absence of evidence.
	Transport policies	Cairns et al., 2015 (19)	Cleland et al., 2020 (44); Benmarhnia et al., 2014 (34); Hosford et al., 2021 (57)	Absence of evidence for speed restrictions/limits. Unclear/inconclusive effects for other policies.
	Water and sanitation	Bambra et al., 2010 (17)		Absence of evidence.
	Food insecurity	Bambra et al., 2010 (17)	Black et al., 2012 (35); McGrath et al., 2021 (65)	Food subsidy programmes may have positive effects for targeted low SES populations.
Social and human capital	Education and learning across the life course	Bambra et al., 2010 (17)	Bonell et al., 2013a,b (36, 37); Finnie et al., 2019 (51); Wilson et al., 2011; Hahn et al., 2015 (55, 80); Ljungdahl & Bremberg, 2015 (63)	Absence of evidence.
	Parenting education	Pierron et al., 2018 (25)	Morrison et al., 2014 (67); Gardner et al., 2017; Gardner et al., 2019 (52, 53); Molloy et al., 2021; Beatson et al., 2021 (33, 66)	Parenting education may have positive effects for targeted populations. Incredible Years programme has no effects on health equity.
	Breastfeeding promotion		Fairbank et al., 2000 (50); Ibanez et al., 2012 (59)	Health education approaches may have positive effects for targeted low SES populations.
	Improving the social capital of individuals and communities		Brunton et al., 2015 (39); Cyril et al., 2015 (45); O'Mara-Eves et al., 2013 (72); O'Mara-Eves et al., 2015 (73)	Community engagement may have positive effects for targeted populations.
Employment and working conditions	Workplace reorganisation	Bambra et al., 2009 (16); Bambra et al., 2010 (17)	Bambra et al., 2007 (30); Bambra et al., 2008a (31); Bambra et al., 2008b (32); Egan et al., 2007a (48) Joyce et al., 2010 (60)	Unclear/inconclusive effects for organisational changes to the psychosocial work environment.
	Privatisation of public utilities and industries		Egan et al., 2007b (49)	Absence of evidence.

5 Behavioural determinants of health

Eight umbrella reviews (22, 24, 27, 82-86) and 79 reviews (74, 87-164) examined interventions, policies and programmes targeted at the behavioural determinants of health (Table 4).

Four umbrella reviews (27, 83, 85, 86) examined reviews of interventions targeted at multiple health behaviours; five (22, 24, 27, 83, 84) examined reviews of interventions in relation to tobacco control and smoking cessation; three (22, 27, 83) examined reviews of interventions in relation to weight, nutrition, and physical activity; and one (82) examined alcohol tax/pricing policies. The included reviews examined a range of population, community, organisational and individual-level approaches. Many reviews included studies of both targeted and universal interventions, but this was not always clearly reported. The individual health behaviours addressed across the reviews were as follows:

- Weight, nutrition or physical activity (WNPA; n=32)
- Tobacco control and smoking prevention (n=19)
- Multiple health behaviours (n=9)
- Service uptake (n=6), in the areas of cancer screening (n=2), vaccination or immunisation (n=4) and oral health (n=1)
- Injury prevention (n=4)
- Oral health (n=3)
- Alcohol (n=1)
- Chronic disease management (n=2)
- Mental health (n=2)
- Maternal health (n=1)

The reviews examined behavioural health outcomes that were relevant to the intervention, policy or programme under consideration. Full details are reported in the summary data tables in Appendix 3.

Table 4. Summary of reviews of interventions, policies and programmes: behavioural determinants of health

Reference	Review type	Health behaviour(s)	Universal or Targeted?	Policy action areas
Anselma et al., 2020 (87)	Review	WNPA	Targeted	5
Attwood et al., 2016 (88)	Review	WNPA	Universal	5
Baker et al., 2015 (141)	Review	WNPA	Universal	5
Bambra et al., 2015 (32)	Review	WNPA	Both	5
Beauchamp et al., 2010 (91)	Review	Tobacco	Universal	1, 5
Beauchamp et al., 2014 (142)	Review	WNPA	Universal	5
Behbod et al., 2018 (143)	Review	Tobacco	Universal	5
Black et al., 2017 (92)	Review	WNPA	Targeted	5
Boland et al., 2018 (93)	Review	Tobacco	Targeted	5

Reference	Review type	Health behaviour(s)	Universal or Targeted?	Policy action areas
Brown et al., 2019 (144)	Review	WNPA	Universal	5
Brown et al., 2014a (94)	Review	Tobacco	Universal	3, 5
Brown et al., 2014b (95)	Review	Tobacco	Universal	1, 2, 3, 5
Brown et al., 2014c (96)	Review	Tobacco	Universal	1, 2, 3, 5
Brown et al., 2016 (97)	Review	Multiple	Universal	5
Bryant et al., 2011 (98)	Review	Tobacco	Targeted	5
Bull et al., 2018 (99, 164)	Review	Multiple	Targeted	5
Cairns et al., 2015b (100)	Review	WNPA	Both	5
Carr et al., 2011 (101)	Review	Chronic diseases	Universal	5
Chamberlain et al., 2017 (145)	Review	Tobacco	Universal	5
Crocker-Buque 2017 (146)	Review	Service uptake	Both	5
De Bourdeaudhuij et al., 2011 (147)	Review	WNPA	Universal	5
De Sa & Lock 2008 (148)	Review	WNPA	Universal	5
De Silva et al., 2016 (149)	Review	Oral health	Universal	5
Dowswell & Towner 2002 (102)	Review	Injury	Targeted	5
Frazer et al., 2016 (150)	Review	Tobacco	Universal	2
Gardner et al., 2013 (103)	Review	Service uptake	Targeted	5
Gates et al., 2021 (104)	Review	Service uptake	Both	5
Guindon et al., 2022 (82)	Umbrella	Alcohol	Universal	1
Harbers et al., 2020 (105)	Review	WNPA	Universal	4
Hardman et al., 2020 (106)	Review	Chronic diseases	Universal	5
Hendry et al., 2015 (151)	Review	WNPA	Universal	2
Hill et al., 2014 (107)	Review	Tobacco	Both	1, 2, 3, 5
Hillier-Brown et al., 2017 (152)	Review	WNPA	Universal	4
Hillier-Brown et al., 2014a (108)	Review	WNPA	Both	5
Hillier-Brown et al., 2014b (109)	Review	WNPA	Both	5
Hollands et al., 2015 (153)	Review	Multiple	Universal	4
Iheozor-Ejiofor et al., 2015 (154)	Review	Oral health	Universal	2
Jackson et al., 2010 (160)	Review	Alcohol	Universal	1
Kader et al., 2015 (155)	Review	WNPA	Universal	5
Kavanagh et al., 2009 (110)	Review	Mental health	Universal	5
Kendrick et al., 2008 (111)	Review	Injury	Universal	5
Kendrick et al., 2012 (156)	Review	Injury	Universal	5
Kock et al., 2019 (112)	Review	Tobacco	Both	5
Kornet-van der Aa et al., 2017 (163)	Review	WNPA	Targeted	5
Lehne & Bolte 2017 (113)	Review	WNPA	Universal	5
Lorenc et al., 2013 (22)	Umbrella	WNPA	Universal	1, 2, 3
Love et al., 2019 (114, 115)	Review	WNPA	Universal	5
Machado et al., 2021 (116)	Review	Service uptake	Targeted	5
Macintyre et al., 2020 (83)	Umbrella	Multiple	Both	Unclear

Reference	Review type	Health behaviour(s)	Universal or Targeted?	Policy action areas
Main et al., 2008 (84)	Umbrella	Tobacco	Universal	1, 2
McGill et al., 2015 (117)	Review	WNPA	Universal	1, 2, 3
McLaren et al., 2016 (90, 118)	Review	WNPA	Universal	2
Michie et al., 2009 (119)	Review	Multiple	Targeted	5
Moodie et al., 2012 (162)	Review	Tobacco	Universal	2
Moore et al., 2015 (120)	Review	Multiple	Universal	5
Murray et al., 2009 (121)	Review	Tobacco	Targeted	5
Naik et al., 2019 (24)	Umbrella	Multiple	Universal	Unclear
Nanninga et al., 2019 (122)	Review	Tobacco	Universal	2
Niederdeppe et al., 2008 (157)	Review	Tobacco	Both	3
Oldroyd et al., 2008 (123)	Review	WNPA	Both	5
Olstad et al., 2016 (74)	Review	WNPA	Universal	1, 3, 4
Olstad et al., 2017 (124)	Review	WNPA	Targeted	5
Pastor & Tur, 2020 (125)	Review	WNPA	Targeted	5
Pearson et al., 2012 (126)	Review	Injury	Targeted	5
Raison & Harris, 2019 (127)	Review	Service uptake	Both	5
Rice et al., 2009 (161)	Review	Tobacco	Universal	1
Saad et al., 2021 (128)	Review	Maternal health	Universal	5
Schuz et al., 2021 (129)	Review	WNPA	Universal	4
Secker-Walker et al., 2002 (158)	Review	Tobacco	Universal	5
Shen et al., 2021 (130)	Review	Oral health	Universal	2, 5
Smith et al., 2020 (131)	Review	Tobacco	Universal	1, 2, 3, 5
Spadea et al., 2010 (132)	Review	Service uptake	Targeted	5
Sumar & McClaren, 2011 (159)	Review	WNPA	Universal	2, 3
Thomas et al., 2018 (133)	Review	WNPA	Universal	3
Thomas et al., 2008 (134)	Review	Tobacco	Universal	1, 2, 3, 5
Thomson et al., 2018 (27)	Umbrella	Multiple		1
Thomson et al., 2019 (85)	Umbrella	Multiple	Universal	5
Tinner et al., 2018 (135)	Review	Multiple	Universal	1, 2, 5
Turnbull et al., 2020 (136)	Review	Chronic diseases	Universal	5
Van De Ven et al., 2020 (137)	Review	Multiple	Universal	5
Venturelli et al., 2019 (138)	Scoping	WNPA	Universal	5
Welch et al., 2016 (86)	Umbrella	Multiple	Both	3
Welsh et al., 2015 (139)	Scoping	Mental health	Both	5
Western et al., 2021 (140)	Review	WNPA	Universal	5

Key to review types: Umbrella = umbrella review; Review = systematic review or 'other' review; Scoping = scoping review

Key to health behaviour(s): WNPA = Weight, nutrition or physical activity

Key to policy action areas: 1 = Fiscal; 2 = Regulation and legislation; 3 = Communication/marketing; 4 = Environmental/social planning; 5 = Service provision

Fiscal policies

Three umbrella reviews (22, 27, 82) and eleven reviews (95, 96, 107, 117, 124, 131, 134, 138, 142, 160, 161) examined the effects of fiscal measures, including use of taxation, tax relief and prices, on health equity. Consistent evidence was reported across four reviews (95, 96, 107, 131) and one umbrella review (27) that fiscal measures for tobacco control have positive effects on health equity. One umbrella review (27) and three reviews (117, 124, 138) that examined price/tax increases on high energy density foods and subsidies on fruit and vegetables found that fiscal measures had either no effect or a positive effect on health equity. Review level evidence for the effects of alcohol pricing and taxation policies on health equity were sparse as few reviews have examined socioeconomic differences in price responsiveness (82, 160).

Regulation and legislation

Although the Behaviour Change Wheel has separate policy categories for regulation and legislation, we found that these terms were used interchangeably across the intervention categories we examined and so they were combined. Michie and West (172) refer to *legislation* as "the use of laws, bylaws and similar legislative instruments" and *regulation* as the "development and implementation of rules".

Smokefree environments (legislative and voluntary)

One umbrella review (27) and eight reviews (95, 96, 107, 122, 131, 134, 150, 162) examined policy-level interventions including smoke-free polices/legislation or regulation in a range of settings and environments. Studies examining smoke-free policies and controls on advertising/marketing and access were associated with negative effects on health equity (131). However, Nanninga et al. (122) reported finding generally no effects on health equity of smoke-free interventions on children's second-hand smoke exposure at home. Brown et al. (96) found that there were differences in effects on health equity between national comprehensive smokefree legislation compared to voluntary policies, with the former having positive effects.

Restrictions on advertising, promotion, marketing and access

One umbrella review (27) and seven reviews (95, 96, 107, 117, 131, 134, 162) examined restrictions on advertising/marketing/promotion and access through controls and bans. McGill et al. (117) didn't identify any studies in the domain of healthy eating and the remainder of the reviews examined tobacco control interventions. Across three reviews (95, 96, 107), the evidence on controls on advertising, promotion and marketing of tobacco was mixed but predominantly showed evidence of no effects on health equity. However, the most recent review (131) judged that the evidence was now weighted towards a negative effect on health equity. One further systematic review (162) was not able to draw any conclusions about the effects of plain tobacco packaging on health equity.

Product reformulation or fortification (including water fluoridation)

Five reviews (90, 117, 118, 151, 159) examined reformulation of food products. These reviews examined fortification policy on folic acid (159), reformulation of products

containing salt (90, 117, 118) and limits on artificial trans-fatty acids (151), respectively. Sumar and McLaren (159) identified evidence that mandatory fortification policy on folic acid was less likely than information campaigns to a negative effect on health equity but the overall direction of the effects of fortification policy on health equity were unclear. Data was also lacking on the health equity effects of reformulation of salt containing products and limits on artificial trans-fatty acids. One umbrella review (17) identified a review on water fluoridation but it did not report on the health equity effects. Two further reviews (130, 154), which examined water fluoridation, had secondary objectives to examine effects on health equity but were unable to draw conclusions.

Communications and marketing

Ten reviews examined mass media campaigns: six reviews of campaigns targeting smoking behaviours (94-96, 107, 131, 157) and four reviews of campaigns targeting weight, nutrition, and/or physical activity (117, 124, 133, 159). The overall effects on health equity across both behavioural categories were mixed and inconsistent across the included studies.

Environmental and social planning

The environmental and social planning policy area in the Behaviour Change Wheel refers to policies focused on changing the physical and social environment (172). Five reviews (105, 124, 129, 152, 153) examined interventions related to 'choice architecture' (or 'nudges') in food environments. Choice architecture has been applied to a range of intervention types, but with a core focus on interventions "that involve altering small-scale physical and social environments, or micro-environments" (173). Most of the interventions examined across the included reviews were about nutrition and calorie labelling interventions. The effects on health equity were not consistent across the included studies, with some showing negative effects (129).

Service provision

School and community-based health promotion intervention for children and young people

Twenty reviews examined the effects of pre-school, school or community-based health promotion interventions for children and young people. Five reviews (91, 108, 124, 138, 144) were focused on obesity prevention, two on physical activity (114, 147), four on healthy eating (92, 117, 123, 148), two on mental health (110, 139), two on multiple adolescent health behaviours (120, 135), two on oral health (130, 149), and two on tobacco control (95, 143). A mix of universal and targeted interventions were included across the reviews, but this wasn't always clearly described at the review-level. Four further reviews (74, 87, 125, 163) examined obesity prevention/healthy eating interventions targeted towards children and adolescents from low SES populations.

Findings were unclear and generally inconclusive across the reviews. The review by Moore et al. (120) had a specific focus on universal school-based interventions for smoking, alcohol, diet and physical activity, and identified 20 studies that reported differential

effectiveness by SES. Effects differed according to the types of intervention components involved. Studies of interventions that included educational components alone or in combination with environmental change or family involvement showed a negative effect on health equity and studies of interventions that included environmental change components, alone or combined with education showed a positive effect on health equity. Hillier-Brown et al. (108) highlighted that the specific intervention components that are most likely to have a positive effect on health equity related to obesity remain unclear.

Two further reviews (130, 149) examined oral health interventions for children. A Cochrane review of community-based child oral health promotion (149) had secondary objectives to examine the effects on health equity but it not possible to draw conclusions. A recent review by Shen et al. (130) included 13 studies covering oral health promotion and topical fluoridates. Whole population interventions showed the most consistent positive effect on health equity related to dental caries.

Four reviews examined health promotion interventions for the prevention of unintentional injuries (102, 111, 126, 156). Unintentional injuries in the home may be targeted through home safety interventions, which were examined in two related reviews by Kendrick et al. (111, 156). Although the review by Kendrick et al. (111) explored whether the effects of the included studies varied by social group, the findings were not clearly reported, and it was not clear which studies had reported effects according to social group. The Cochrane review by Kendrick et al. (156) evaluated the effect of home safety interventions by social group across five covariates: child age, gender, ethnic group, single parent family, living in rented accommodation and at least one parent not in paid employment. The review found that there was generally no evidence of differential effects across these factors. Two further reviews (102, 126) found some positive effects of interventions that had targeted individual children and parents from low SES populations, but the overall quality of the evidence was judged to be low quality. Overall, there was a lack of evidence on the effects of injury prevention interventions on health equity.

Community-based health promotion interventions for adults and/or general population

Seven reviews examined the effects of community-based health promotion interventions for adults or the general population. The included reviews examined health promotion interventions for physical activity (141) obesity prevention (91, 109), healthy eating (117), and tobacco control (96, 107). Findings at the review-level indicated that the evidence was generally inconclusive across the studies done in these settings. A comprehensive systematic review by Hillier-Brown et al. (89, 109) found evidence for short-term positive effects of community-based weight loss interventions for low-SES groups and across the SES gradient.

Three reviews used behaviour change theory to examine the effects of interventions targeted at low SES populations to reduce smoking or increase physical activity and/or healthy eating (99, 119, 164). Authors of both reviews identified evidence that behaviour change interventions had positive effects and that certain behaviour change techniques

were more effective. A review by Western et al. (140) of interventions deploying digital technologies to increase physical activity identified a potential negative effect on health equity. Digital behaviour change interventions aimed at increasing physical activity were found to preferentially improve outcomes for people of high SES.

Workplace health promotion

Six reviews examined the effects of workplace health promotion interventions, including interventions focused on obesity prevention (91, 100, 109), tobacco control (96), healthy eating (117) and multiple health behaviours (137). There was overlap between the reviews in the studies included and overall, there was evidence to suggest that workplace health promotion may have a positive effect on health equity (100, 117, 137).

Increasing service uptake and attendance

Two reviews (103, 132) examined interventions to increase uptake of cancer screening among low SES women. Gardner et al. (103) examined interventions to increase the uptake of mammography, finding that approaches had positive effects for low SES women. Spadea et al. (132) included studies of universal and targeted interventions for improving attendance in female cancer screening and found that attendance at cancer screening by women from low SES groups could be increased with organized screening programs tailored to their needs. Both reviews concluded, however, that the effects on health equity were not clear.

Two reviews (104, 146) examined health equity related to vaccination. Crocker-Buque et al. (146) examined interventions that aimed to increase vaccine uptake. Both universal and targeted interventions were included but it was unclear which studies reported differential effects by SES. Gates et al. (104) included interventions aimed at reducing health inequities related to vaccination by increasing access but only identified two studies. Authors of both reviews noted that there was a lack of studies that explicitly focused on health equity. One further review (116) examined interventions to increase routine childhood immunization uptake in low SES populations. The review found that multicomponent interventions had positive effects on health equity related to immunization coverage. One review (127) examined the effects of interventions on SES inequalities in dental service utilisation, but an absence of evidence was identified.

Secondary prevention interventions

Smoking cessation support

Ten reviews (93-96, 98, 107, 112, 121, 131, 142) examined the effects of smoking cessation support on health equity. Interventions either combined pharmacotherapies with behavioural support or provided behavioural or pharmacological support only. Across the equity focused reviews, authors distinguished between population- and individual-level cessation support, with population-level interventions defined as those ‘applied to populations, groups, areas, jurisdictions or institutions’ after Fayter et al. (174). Although one review (107) reported that population-level smoking cessation services were likely to have a negative effect on health equity, the findings of two reviews (96, 131) suggest there

is a consensus towards population-level cessation support having an overall positive effect on health equity.

Three reviews (93, 98, 112) examined the effects of behavioural smoking cessation interventions targeted towards disadvantaged groups and one review (145) examined behavioural interventions for supporting women to stop smoking in pregnancy. Bryant et al. (98) found promising evidence for targeted approaches with some disadvantaged groups, including low-income smokers, but judged the overall findings to be inconsistent. A more recent review (112) found consistent evidence for a positive effect of individual-level behavioural interventions targeted at disadvantaged groups. However, tailored behavioural interventions were not found to be any more effective than non-tailored (112). Boland et al. (93) highlighted a scarcity of high-quality technology-based intervention research aimed at disadvantaged smokers. Chamberlain et al. (145) found overall that individual interventions provided during pregnancy had no effect on health equity. One further review, Murray et al. (121) found mixed evidence for the effects of approaches that aimed to proactively identify and recruit disadvantaged smokers into smoking cessation services, and/or improve access to these services.

Individual-level interventions targeting weight, nutrition and physical activity

Nine reviews (88, 91, 108, 109, 113, 117, 123, 138, 144) examined secondary prevention treatment programmes for individuals, families, or groups focusing on overweight or obese children, families, or adults.

Two systematic reviews by Hillier-Brown et al. (89, 108, 109) examined the effects of individual-level interventions aimed at reducing obesity in children and adults. Among adults there was evidence that primary care-delivered tailored weight loss programmes targeted at low-income women were effective. Drawing on a different body of literature, McGill et al. (117) highlighted that individual-level dietary counselling among the general population had negative effects on health equity. Attwood et al. (88) examined primary care-based physical activity interventions but concluded there was insufficient evidence to draw conclusions about the effects on health equity.

Three further reviews (97, 101, 128) identified a lack of data on health equity. Brown et al. (97) examined health promotion interventions for smoking, alcohol and weight management delivered in community pharmacy settings, Carr et al. (101) examined health-related lifestyle advisors, and Saad et al. (128) examined mobile interventions targeting common mental disorders and stress among pregnant women.

Managing chronic conditions

Two reviews (106, 136) examined interventions for self-managing chronic conditions. There was limited evidence from 7 studies included in the review by Hardman et al. (106) to suggest that SES may affect the outcomes of self-management support interventions. Turnbull et al. (136) reported that there was mixed evidence of differential effects for web-based self-care interventions. Most of the evidence on the effects on health equity came from a small number of studies.

Table 5. Evidence of effects table: behavioural determinants of health

Policy action area		Evidence from		Evidence on socioeconomic inequalities
		Umbrella reviews	Systematic reviews	
Fiscal (price/tax)	Tobacco price/tax increases	Lorenc et al., 2013 (22); Thomson et al., 2018 (27)	Beauchamp et al. 2014 (142); Brown et al. 2014b (95); Brown et al. 2014c (96); Hill et al. 2014 (107); Smith et al. 2020 (131); Rice et al 2009 (161); Thomas et al. 2008 (134)	Consistent evidence of positive effects on health equity.
	Price/tax increases on high energy density foods and subsidies on fruit and vegetables	Thomson et al., 2018 (27)	McGill et al. 2015 (117); Olstad et al. 2016 (74); Venturelli et al. 2019 (138)	Consistent evidence of positive or no effects on health equity.
	Controls on alcohol price	Thomson et al., 2018 (27)	Jackson et al., 2010 (82)	Absence of evidence.
Regulation and legislation	Smokefree environments (legislative and voluntary)	Thomson et al., 2018 (27)	Brown et al. 2014b (95); Brown et al. 2014c (96); Frazer et al 2016 (150); Hill et al. 2014 (107); Nanninga et al. 2019 (122); Smith et al. 2020 (131); Thomas et al. 2008 (134)	Negative effects on health equity dominate studies of voluntary, regional and partial smoke free policies. Evidence from more comprehensive national/state-level policies tend towards positive effects on health equity.
	Restrictions, controls or bans on advertising, promotion, and marketing	Thomson et al., 2018 (27)	Brown et al. 2014b (95); Brown et al. 2014c (96); Hill et al. 2014 (107); Moodie et al 2012 (162); Smith et al. 2020 (131); Thomas et al. 2008 (134); McGill et al. 2015 (117)	Mixed but predominantly no effects on health equity in earlier reviews. More recent evidence weighted towards a negative effect on health equity.
	Product reformulation and fortification		McGill et al., 2015 (117); Sumar & McClaren, 2011 (159)	Absence of evidence.
	Artificial fluoridation of drinking water		Iheozor-Ejiofor et al 2015 (154); Shen et al. 2021 (130)	Absence of evidence.
Communication and marketing	Smoking mass media campaigns and health warnings		Brown et al. 2014a (94); Brown et al. 2014b (95); Brown et al. 2014c (96); Hill et al. 2014 (107); Niederdeppe et al 2008 (157); Smith et al. 2020 (131)	Unclear/inconclusive effects on health equity.

Policy action area		Evidence from		Evidence on socioeconomic inequalities
		Umbrella reviews	Systematic reviews	
	Health information campaigns focused on diet/physical activity		McGill et al. 2015 (117); Olstad et al. 2016 (74); Sumar & McClaren, 2011 (159); Thomas et al. 2018 (133);	Unclear/inconclusive effects on health equity.
Environmental/ social planning	Altering aspects of physical micro-environments (nudge/choice architecture)		Harbers et al. 2020 (105); Hillier-Brown et al. 2017 (152); Olstad et al. 2016 (74); Schuz et al. 2021 (129)	Unclear/inconclusive effects on health equity.
Service provision	School and community-based health promotion interventions for children and young people focused on smoking, alcohol, diet and physical activity		Beauchamp et al. 2014 (142); Brown et al. 2019 (144); De Bourdeaudhuij et al. 2011 (147); De Sa & Lock 2008 (148); Hillier-Brown et al. 2014a (108); Love et al. 2019 (114, 115); McGill et al. 2015 (117); Oldroyd et al. 2008 (123); Olstad et al. 2016 (74); Venturelli et al. 2019 (138); Brown et al. 2014b (95); Moore et al. 2015 (120); Tinner et al. 2018 (135)	Unclear/inconclusive effects on health equity. Evidence that effects may differ according to the types of components involved.
	School and community-based health promotion interventions for children and young people focused on oral health promotion		De Sa & Lock 2008 (148); Shen et al. 2021 (130)	Unclear/inconclusive effects on health equity.
	School and community-based health promotion interventions for children and young people focused on unintentional injury prevention		Dowswell & Towner 2002 (102); Kendrick et al. 2008 (111); Kendrick et al. 2012 (156); Pearson et al. 2012 (126)	Absence of evidence.
	Community-based health promotion for adults/general population		Baker et al. 2015 (141); Beauchamp et al. 2014 (142); Hillier-Brown et al. 2014b (109); McGill et al. 2015 (117); Brown et al. 2014c (96); Hill et al. 2014 (107)	Mixed or no effects on health equity. Community-based weight loss interventions and behaviour change interventions may have positive effects for targeted populations.

Policy action area		Evidence from		Evidence on socioeconomic inequalities
		Umbrella reviews	Systematic reviews	
	Workplace health promotion		Beauchamp et al. 2014 (142); Brown et al. 2014c (96); Cairns et al. 2015b (100); Hillier-Brown et al. 2014b (109); McGill et al. 2015 (117); Van De Ven et al. 2020 (137)	Positive effects on health equity across behaviours.
	Smoking cessation support (individual and population level support)		Beauchamp et al. 2010 (91); Brown et al. 2014a (94); Brown et al. 2014b (95); Brown et al. 2014c (96); Chamberlain et al 2017 (145); Hill et al. 2014 (107); Kock et al. 2019 (112); Smith et al. 2020 (131)	Population-level cessation support has positive effects on health equity. Individual-level cessation support may have positive effects for targeted populations.
	Individual-level interventions targeting weight, nutrition and physical activity		Attwood et al. 2016 (88); Beauchamp et al. 2014 (142); Brown et al. 2019 (144); Hillier-Brown et al. 2014a (108); Hillier-Brown et al. 2014b (109); Lehne & Bolte 2017 (113); McGill et al. 2015 (117); Oldroyd et al. 2008 (123); Venturelli et al. 2019 (138)	Primary care-delivered tailored weight loss programmes may have positive effects for targeted population. Dietary counselling interventions have negative effects on health equity.
	Increasing service uptake and attendance		Crocker-Buque 2017 (146); Machado et al. 2021 (116); Spadea et al. 2010 (132)	Interventions for attendance at cancer screening and childhood immunization may have positive effects for targeted populations.
	Managing chronic conditions		Hardman et al., 2020 (106); Turnbull et al., 2020 (136)	Unclear/inconclusive effects on health equity.

6 Discussion

The aim of this review was to provide an overview of the review level evidence that is available to guide action on reducing socioeconomic inequalities in health. We identified 17 umbrella reviews, 116 systematic reviews and 15 other types of reviews that had an equity focus and had been published since 2000. Our main aim was to map and explore the evidence for the effects of public health interventions, programmes, and policies on socioeconomic inequalities. Twelve umbrella reviews and 54 reviews were categorised as examining the wider social determinants of health. Eight umbrella reviews and 79 reviews were categorised as examining the behavioural determinants of health.

What evidence is there about the differential effects of public health interventions, programmes, and policies across socioeconomic groups?

Three umbrella reviews (19, 20, 86) that examined interventions, policies and programmes targeting the social determinants of health reported that they did not identify any reviews that assessed the effects of interventions, policies or programmes aimed at reducing social gradients. Clear conclusions about the differential impact of interventions, policies, or programmes were not available across the included umbrella reviews. Three umbrella reviews (17, 27, 83), which covered a range of public health interventions, policies and programmes generally concluded that results were mixed or inconclusive. At the review-level, evidence about differential effects was available across six intervention, programme and policy areas, including education access and quality, air pollution, infrastructure and workplace organisation. However overall, this evidence was also inconclusive.

For the behavioural determinants of health, one umbrella review (27) provided a summary of population-level interventions that may be effective in improving health inequalities. However, this was not clearly based on evidence about differential effects and conclusions were drawn from single studies. At the review level, evidence about differential impacts was identified across the Behaviour Change Wheel policy delivery areas. Price/tax increases on tobacco and high energy density foods and subsidies on fruit and vegetables were found to have overall positive effects on health equity. Across reviews, evidence from studies that examined voluntary, regional and partial smokefree environments, and controls, bans or restrictions on advertising, promotion and marketing and access were found to be weighted towards a negative equity impact. Mixed or inconsistent equity effects were found for smoking and health-related mass media campaigns. Inconclusive findings were noted across the studies that examined a range of interventions and programmes grouped under service provision.

What evidence is there about the effects of public health interventions, programmes and policies targeted specifically at disadvantaged groups or conducted in deprived areas?

There was evidence of selected interventions, programmes and policies having a positive impact on targeted populations. Navigation interventions and community-based peer support that aimed to engage patients in healthcare had positive effects among targeted populations. As did improvements to housing conditions targeted towards low income groups. There was further review-level evidence to suggest that food subsidy programmes can have a positive impact on disadvantaged families. Under the policy area of social and human capital, targeted approaches including community engagement, parenting education and breastfeeding promotion had positive impacts among low-income groups. Across the policy area of income security and social protection, there was a lack of evidence about the effects on health.

A mix of universal and targeted interventions were included across the reviews that addressed the behavioural determinants of health. Overall, 16 reviews exclusively examined targeted interventions and 12 reviews included both universal and targeted interventions. Examples of targeted interventions included behavioural smoking cessation interventions, health promotion interventions for weight, nutrition and physical activity and the prevention of unintentional injuries, and intervention to increase service uptake or attendance and the majority were categorised under the policy area of service provision. There was review level evidence to suggest that targeted (or tailored) interventions for community weight loss and primary care delivered tailored weight loss programmes, behaviour change interventions and behavioural smoking cessation support may have positive effects.

Overall, what is known about which public health interventions, programmes and policies show evidence of reducing socioeconomic inequalities in health?

The literature reviewed for this report suggests there are policy areas across the social and behavioural determinants of health where actions can have positive effects on health equity. However, reducing socioeconomic inequalities in health requires collaborative and cross-sectoral planning and action, and if we focus on the whole picture and not just single policy areas, then clear conclusions and directions for action are currently lacking from the review level evidence. Calls for the application of more sophisticated and multidisciplinary approaches to better understand the potential impact of interventions, programmes and policies on socioeconomic inequalities in health are not new. However, developments have been uneven with, for example, more progress made in understanding how to address inequalities in smoking and obesity than other areas of health. As the root causes of socioeconomic inequalities in health across smoking, obesity and other health behaviours are in part the result of the same system (i.e., one that reflects the socioeconomic and political context and structural determinants which shape health outcomes) then we require a better understanding of how action in the single policy areas should be underpinned by

wider structural interventions, programmes and policies. The amount of literature identified for inclusion in this review shows that we are not lacking evidence. However, it is a limitation of current evidence synthesis methods applied to review level evidence that the interconnections in the evidence for equity-focused interventions, programmes and policies across policy areas remains unclear. Methods for "systems perspective evidence synthesis" are still being developed (175) but in future, such methods may better assist with capturing the full picture to prioritise action and improve decision-making.

7 References

1. Whitehead M. The concepts and principles of equity and health. Health Promotion International. 1991;6(3):217-28.
2. Mackenbach J. Tackling inequalities in health: the need for building a systematic evidence base. Journal of Epidemiology & Community Health. 2003;57(3):162-.
3. European Observatory on Health Systems and Policies, McKee M. Drawing light from the pandemic: a new strategy for health and sustainable development. Copenhagen: WHO Regional Office for Europe; 2021.
4. Transforming the health and social equity landscape: promoting socially just and inclusive growth to improve resilience, solidarity and peace: executive summary. Copenhagen: WHO Regional Office for Europe; 2023.
5. World Health Organization Regional Office for Europe. United Action for Better Health in Europe: European Programme of Work, 2020–2025. Copenhagen: World Health Organization Regional Office for Europe; 2020.
6. Solar O, Irwin A. A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice). Geneva: World Health Organization; 2010. Report No.: 9241500859.
7. Marmot M. Social determinants of health inequalities. The Lancet. 2005;365(9464):1099-104.
8. Mackenbach JP. Health inequalities: Europe in profile. Report of the project ‘‘Tackling Health Inequalities: Governing for Health’’. Brussels: European Commission; 2006.
9. Mackenbach JP, Rubio Valverde J, Bopp M, Brønnum-Hansen H, Costa G, Deboosere P, et al. Progress against inequalities in mortality: register-based study of 15 European countries between 1990 and 2015. European Journal of Epidemiology. 2019;34(12):1131-42.
10. Brown AF, Ma GX, Miranda J, Eng E, Castille D, Brockie T, et al. Structural interventions to reduce and eliminate health disparities. American Journal of Public Health. 2019;109(S1):S72-S8.
11. Tugwell P, de Savigny D, Hawker G, Robinson V. Applying clinical epidemiological methods to health equity: the equity effectiveness loop. BMJ. 2006;332(7537):358-61.
12. Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017;358.
13. Dahlgren G, Whitehead M. European strategies for tackling social inequities in health: Levelling up Part 2. WHO Regional office for Europe Copenhagen; 2006.
14. World Health Organization. Health Equity Policy Tool: a framework to track policies for increasing health equity in the WHO European Region. Bonn: WHO Regional Office for Europe; 2019.
15. Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation Science. 2011;6(1):1-12.
16. Bambra C, Gibson M, Sowden AJ, Wright K, Whitehead M, Petticrew M. Working for health? Evidence from systematic reviews on the effects on health and health inequalities of organisational changes to the psychosocial work environment. Preventive Medicine. 2009;48(5):454-61.
17. Bambra C, Gibson M, Sowden A, Wright K, Whitehead M, Petticrew M. Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews. Journal of Epidemiology & Community Health. 2010;64(4):284-91.
18. Bambra C, Garthwaite K, Hunter D. All things being equal: does it matter for equity how you organize and pay for health care? A review of the international evidence. International Journal of Health Services. 2014;44(3):457-77.

19. Cairns J, Warren J, Garthwaite K, Greig G, Bambra C. Go slow: an umbrella review of the effects of 20 mph zones and limits on health and health inequalities. Journal of Public Health. 2015;37(3):515-20.

20. Gibson M, Petticrew M, Bambra C, Sowden AJ, Wright KE, Whitehead M. Housing and health inequalities: a synthesis of systematic reviews of interventions aimed at different pathways linking housing and health. Health & Place. 2011;17(1):175-84.

21. Hillier-Brown F, Thomson K, McGowan V, Cairns J, Eikemo TA, Gil-Gonzale D, et al. The effects of social protection policies on health inequalities: Evidence from systematic reviews. Scandinavian Journal Public Health. 2019;47(6):655-65.

22. Lorenc T, Petticrew M, Welch V, Tugwell P. What types of interventions generate inequalities? Evidence from systematic reviews. Journal of Epidemiology & Community Health. 2013;67(2):190-3.

23. McGowan VJ, Buckner S, Mead R, McGill E, Ronzi S, Beyer F, et al. Examining the effectiveness of place-based interventions to improve public health and reduce health inequalities: an umbrella review. BMC Public Health. 2021;21(1):1888.

24. Naik Y, Baker P, Ismail SA, Tillmann T, Bash K, Quantz D, et al. Going upstream - an umbrella review of the macroeconomic determinants of health and health inequalities. BMC Public Health. 2019;19(1):1678.

25. Pierron A, Fond-Harmant L, Laurent A, Alla F. Supporting parenting to address social inequalities in health: a synthesis of systematic reviews. BMC Public Health. 2018;18(1):1087.

26. Shah N, Walker IF, Naik Y, Rajan S, O'Hagan K, Black M, et al. National or population level interventions addressing the social determinants of mental health - an umbrella review. BMC Public Health. 2021;21(1):2118.

27. Thomson K, Hillier-Brown F, Todd A, McNamara C, Huijts T, Bambra C. The effects of public health policies on health inequalities in high-income countries: an umbrella review. BMC Public Health. 2018;18(1):869.

28. Abimbola S, Baatiema L, Bigdeli M. The impacts of decentralization on health system equity, efficiency and resilience: a realist synthesis of the evidence. Health Policy & Planning. 2019;34(8):605-17.

29. Ballesteros-Arjona V, Oliveras L, Munoz JB, Lima AOD, Carrere J, Ruiz EM, et al. What are the effects of energy poverty and interventions to ameliorate it on people's health and well-being?: A scoping review with an equity lens. Energy Research & Social Science. 2022;87:19.

30. Bambra C, Egan M, Thomas S, Petticrew M, Whitehead M. The psychosocial and health effects of workplace reorganisation. 2. A systematic review of task restructuring interventions. Journal of Epidemiology & Community Health. 2007;61(12):1028.

31. Bambra C, Whitehead M, Sowden A, Akers J, Petticrew M. "A hard day's night?" The effects of Compressed Working Week interventions on the health and work-life balance of shift workers: a systematic review. Journal of Epidemiology & Community Health. 2008;62(9):764-77.

32. Bambra CL, Whitehead MM, Sowden AJ, Akers J, Petticrew MP. Shifting schedules: the health effects of reorganizing shift work. American Journal of Preventive Medicine. 2008;34(5):427-34.

33. Beatson R, Molloy C, Perini N, Harrop C, Goldfeld S. Systematic review: An exploration of core componentry characterizing effective sustained nurse home visiting programs. Journal of Advanced Nursing. 2021;77(6):2581-94.

34. Benmarhnia T, Rey L, Cartier Y, Clary CM, Deguen S, Brousselle A. Addressing equity in interventions to reduce air pollution in urban areas: a systematic review. International Journal of Public Health. 2014;59(6):933-44.

35. Black AP, Brimblecombe J, Eyles H, Morris P, Vally H, Odea K. Food subsidy programs and the health and nutritional status of disadvantaged families in high income countries: a systematic review. BMC Public Health. 2012;12:1099.

36. Bonell C, Jamal F, Harden A, Wells H, Parry W, Fletcher A, et al. Systematic review of the effects of schools and school environment interventions on health: evidence mapping and synthesis. NIHR Journals Library. 2013;06:06.

37. Bonell C, Wells H, Harden A, Jamal F, Fletcher A, Thomas J, et al. The effects on student health of interventions modifying the school environment: Systematic review. Journal of Epidemiology & Community Health. 2013;67(8):677-81.

38. Brennenstuhl S, Quesnel-Vallee A, McDonough P. Welfare regimes, population health and health inequalities: a research synthesis. Journal of Epidemiology & Community Health. 2012;66(5):397-409.

39. Brunton G, Caird J, Stokes G, Stansfield C, Kneale D, Richardson M, et al. Review 1: Community engagement for health via coalitions, collaborations and partnerships: A systematic review. London: EPPI-Centre; 2015.

40. Butel J, Braun KL. The role of collective efficacy in reducing health disparities: a systematic review. Family & Community Health. 2019;42(1):8-19.

41. Buttazzoni A, Veenhof M, Minaker L. Smart City and high-tech urban interventions targeting human health: an equity-focused systematic review. International Journal of Environmental Research & Public Health. 2020;17(7):30.

42. Carter N, Valaitis RK, Lam A, Feather J, Nicholl J, Cleghorn L. Navigation delivery models and roles of navigators in primary care: a scoping literature review. BMC Health Services Research. 2018;18(1):96.

43. Cheng C, Beauchamp A, Elsworth GR, Osborne RH. Applying the Electronic Health Literacy Lens: Systematic Review of Electronic Health Interventions Targeted at Socially Disadvantaged Groups. Journal of Medical Internet Research. 2020;22(8):e18476.

44. Cleland CL, McComb K, Kee F, al e. Effects of 20 mph interventions on a range of public health outcomes: A meta-narrative evidence synthesis. Journal of Transport & Health. 2020;17.

45. Cyril S, Smith BJ, Possamai-Inesedy A, Renzaho AM. Exploring the role of community engagement in improving the health of disadvantaged populations: a systematic review. Global Health Action. 2015;8:29842.

46. Dawson AJ, Nkowane AM, Whelan A. Approaches to improving the contribution of the nursing and midwifery workforce to increasing universal access to primary health care for vulnerable populations: a systematic review. Human Resources for Health. 2015;13:1-23.

47. Durand MA, Carpenter L, Dolan H, Bravo P, Mann M, Bunn F, et al. Do interventions designed to support shared decision-making reduce health inequalities? A systematic review and meta-analysis. PLoS ONE. 2014;9(4):e94670.

48. Egan M, Bambra C, Thomas S, Petticrew M, Whitehead M, Thomson H. The psychosocial and health effects of workplace reorganisation. 1. A systematic review of organisational-level interventions that aim to increase employee control. Journal of Epidemiology & Community Health. 2007;61(11):945-54.

49. Egan M, Petticrew M, Ogilvie D, Hamilton V, Drever F. "Profits before people"? A systematic review of the health and safety impacts of privatising public utilities and industries in developed countries. Journal of Epidemiology & Community Health. 2007;61(10):862-70.

50. Fairbank L, O'Meara S, Renfrew MJ, Woolridge M, Sowden AJ, Lister-Sharp D. A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. Health Technology Assessment. 2000;4(25):1-171.

51. Finnie RKC, Peng Y, Hahn RA, Johnson RL, Fielding JE, Truman BI, et al. Examining the effectiveness of year-round school calendars on improving educational attainment outcomes within the context of advancement of health equity: a community guide systematic review. Journal of Public Health Management & Practice. 2019;25(6):590-4.

52. Gardner F, Leijten P, Harris V, Mann J, Hutchings J, Beecham J, et al. Equity effects of parenting interventions for child conduct problems: a pan-European individual participant data meta-analysis. Lancet Psychiatry. 2019;6(6):518-27.

53. Gardner F, Leijten P, Mann J, Landau S, Harris V, Beecham J, et al. Could scale-up of parenting programmes improve child disruptive behaviour and reduce social inequalities? Using individual participant data meta-analysis to establish for whom programmes are effective and cost-effective. NIHR Journals Library. 2017;12:12.

54. Gibson M, Thomson H, Banas K, Lutje V, McKee MJ, Martin SP, et al. Welfare-to-work interventions and their effects on the mental and physical health of lone parents and their children. Cochrane Database of Systematic Reviews. 2017(8).

55. Hahn RA, Knopf JA, Wilson SJ, Truman BI, Milstein B, Johnson RL, et al. Programs to increase high school completion: a community guide systematic health equity review. American Journal of Preventive Medicine. 2015;48(5):599-608.

56. Harris J, Springett J, Croot L, Booth A, Campbell F, Thompson J, et al. Can community-based peer support promote health literacy and reduce inequalities? A realist review. NIHR Journals Library. 2015;02:02.

57. Hosford K, Firth C, Brauer M, Winters M. The effects of road pricing on transportation and health equity: a scoping review. Transport Reviews. 2021;41(6):766-87.

58. Hunter RF, Cleland C, Cleary A, Droomers M, Wheeler BW, Sinnett D, et al. Environmental, health, wellbeing, social and equity effects of urban green space interventions: A meta-narrative evidence synthesis. Environment International. 2019;130:20.

59. Ibanez G, de Reynal de Saint Michel C, Denantes M, Saurel-Cubizolles MJ, Ringa V, Magnier AM. Systematic review and meta-analysis of randomized controlled trials evaluating primary care-based interventions to promote breastfeeding in low-income women. Family Practice. 2012;29(3):245-54.

60. Joyce K, Pabayo R, Critchley JA, Bambra C. Flexible working conditions and their effects on employee health and wellbeing. Cochrane Database of Systematic Reviews. 2010(2):CD008009.

61. Kim K, Choi JS, Choi E, Nieman CL, Joo JH, Lin FR, et al. Effects of community-based health worker interventions to improve chronic disease management and care among vulnerable populations: a systematic review. American Journal of Public Health. 2016;106(4):e3-e28.

62. Klingbaum A, Afful A, Gunaseelan V, Sathiyamoorthy T. Impacts of light rail transit development on neighborhood health: A scoping review through a social determinants of health lens. Journal of Transport & Health. 2021;21:17.

63. Ljungdahl S, Bremberg SG. Might extended education decrease inequalities in health?-a meta-analysis. European Journal of Public Health. 2015;25(4):587-92.

64. Lucas PJ, McIntosh K, Petticrew M, Roberts HM, Shiell A. Financial benefits for child health and well-being in low income or socially disadvantaged families in developed world countries. Cochrane Database of Systematic Reviews. 2008(2):1-93.

65. McGrath M, Duncan F, Dotsikas K, Baskin C, Crosby L, Gnani S, et al. Effectiveness of community interventions for protecting and promoting the mental health of working-age adults experiencing financial uncertainty: a systematic review. Journal of Epidemiology & Community Health. 2021;75(7):665-73.

66. Molloy C, Beatson R, Harrop C, Perini N, Goldfeld S. Systematic review: Effects of sustained nurse home visiting programs for disadvantaged mothers and children. Journal of Advanced Nursing. 2021;77(1):147-61.

67. Morrison J, Pikhart H, Ruiz M, Goldblatt P. Systematic review of parenting interventions in European countries aiming to reduce social inequalities in children's health and development. BMC Public Health. 2014;14:1040.

68. Mulvaney CA, Smith S, Watson MC, Parkin J, Coupland C, Miller P, et al. Cycling infrastructure for reducing cycling injuries in cyclists. Cochrane Database of Systematic Reviews. 2015;2015(12):CD010415.

69. Nelson HD, Cantor A, Wagner J, Jungbauer R, Fu RW, Kondo K, et al. Effectiveness of Patient Navigation to Increase Cancer Screening in Populations Adversely Affected by

Health Disparities: a Meta-analysis. Journal of General Internal Medicine. 2020;35(10):3026-35.

70. O'Campo P, Molnar A, Ng E, Renahy E, Mitchell C, Shankardass K, et al. Social welfare matters: a realist review of when, how, and why unemployment insurance impacts poverty and health. Social Science & Medicine. 2015;132:88-94.

71. O'Dwyer LA, Baum F, Kavanagh A, Macdougall C. Do area-based interventions to reduce health inequalities work? A systematic review of evidence. Critical Public Health. 2007;17(4):317-35.

72. O'Mara-Eves A, Brunton G, McDaid D, Oliver S, Kavanagh J, Jamal F, et al. Community engagement to reduce inequalities in health: a systematic review, meta-analysis and economic analysis. NIHR Journals Library. 2013;11:11.

73. O'Mara-Eves A, Brunton G, Oliver S, Kavanagh J, Jamal F, Thomas J. The effectiveness of community engagement in public health interventions for disadvantaged groups: a meta-analysis. BMC Public Health. 2015;15:129.

74. Olstad DL, Ancilotto R, Teychenne M, Minaker LM, Taber DR, Raine KD, et al. Can targeted policies reduce obesity and improve obesity-related behaviours in socioeconomically disadvantaged populations? A systematic review. Obesity Reviews. 2017;18(7):791-807.

75. Pega F, Carter K, Blakely T, Lucas PJ. In-work tax credits for families and their impact on health status in adults. Cochrane Database of Systematic Reviews. 2013(8).

76. Simpson J, Albani V, Bell Z, Bambra C, Brown H. Effects of social security policy reforms on mental health and inequalities: A systematic review of observational studies in high-income countries. Social Science & Medicine. 2021;272:113717.

77. Smith M, Hosking J, Woodward A, Witten K, MacMillan A, Field A, et al. Systematic literature review of built environment effects on physical activity and active transport - an update and new findings on health equity. International Journal of Behavioral Nutrition & Physical Activity. 2017;14(1):158.

78. Stormacq C, Wosinski J, Boillat E, Van den Broucke S. Effects of health literacy interventions on health-related outcomes in socioeconomically disadvantaged adults living in the community: a systematic review. JBI Evidence Synthesis. 2020;18(7):1389-469.

79. Thomson H, Thomas S, Sellstrom E, Petticrew M. Housing improvements for health and associated socio-economic outcomes. Cochrane Database of Systematic Reviews. 2013(2):CD008657.

80. Wilson SJ, Tanner-Smith EE, Lipsey MW, Steinka-Fry K, Morrison J. Dropout prevention and intervention programs: Effects on school completion and dropout among school- aged children and youth. Campbell Systematic Reviews. 2011;8:1-62.

81. Parry J, Vanstone M, Grignon M, Dunn JR. Primary care-based interventions to address the financial needs of patients experiencing poverty: a scoping review of the literature. International Journal for Equity in Health. 2021;20(1):219.

82. Guindon GE, Zhao K, Fatima T, Garasia S, Quinn N, Baskerville NB, et al. Prices, taxes and alcohol use: a systematic umbrella review. Addiction. 2022;117(12):3004-23.

83. Macintyre AK, Torrens C, Campbell P, Maxwell M, Pollock A, Biggs H, et al. Socioeconomic inequalities and the equity impact of population-level interventions for adolescent health: an overview of systematic reviews. Public Health. 2020;180:154-62.

84. Main C, Thomas S, Ogilvie D, Stirk L, Petticrew M, Whitehead M, et al. Population tobacco control interventions and their effects on social inequalities in smoking: placing an equity lens on existing systematic reviews. BMC Public Health. 2008;8:178.

85. Thomson K, Hillier-Brown F, Walton N, Bilaj M, Bambra C, Todd A. The effects of community pharmacy-delivered public health interventions on population health and health inequalities: A review of reviews. Preventive Medicine. 2019;124:98-109.

86. Welch V, Petkovic J, Pardo Pardo J, Rader T, Tugwell P. Interactive social media interventions to promote health equity: an overview of reviews. Health Promotion & Chronic Disease Prevention in Canada. 2016;36(4):63-75.

87. Anselma M, Chinapaw MJM, Daniëlle AK-vdA, Altenburg TM. Effectiveness and promising behavior change techniques of interventions targeting energy balance related behaviors in children from lower socioeconomic environments: A systematic review. PLoS One. 2020;15(9).

88. Attwood S, van Sluijs E, Sutton S. Exploring equity in primary-care-based physical activity interventions using PROGRESS-Plus: a systematic review and evidence synthesis. International Journal of Behavioral Nutrition & Physical Activity. 2016;13:60.

89. Bambra CL, Hillier FC, Cairns JM, Kasim A, Moore HJ, Summerbell CD. How effective are interventions at reducing socioeconomic inequalities in obesity among children and adults? Two systematic reviews. NIHR Journals Library. 2015;01:01.

90. Barberio AM, Sumar N, Trieu K, Lorenzetti DL, Tarasuk V, Webster J, et al. Population-level interventions in government jurisdictions for dietary sodium reduction: a Cochrane Review. International Journal of Epidemiology. 2017;46(5):1551-63.

91. Beauchamp A, Backholer K, Magliano D, Peeters A. The effect of obesity prevention interventions according to socioeconomic position: a systematic review. Obesity Reviews. 2014;15(7):541-54.

92. Black AP, Katina DO, McDermott R, Vally H, Kerin OD. How effective are family-based and institutional nutrition interventions in improving children's diet and health? A systematic review. BMC Public Health. 2017;17:1.

93. Boland VC, Stockings EA, Mattick RP, McRobbie H, Brown J, Courtney RJ. The Methodological Quality and Effectiveness of Technology-Based Smoking Cessation Interventions for Disadvantaged Groups: A Systematic Review and Meta-analysis. Nicotine & Tobacco Research. 2018;20(3):276-85.

94. Brown T, Platt S, Amos A. Equity impact of European individual-level smoking cessation interventions to reduce smoking in adults: a systematic review. European Journal of Public Health. 2014;24(4):551-6.

95. Brown T, Platt S, Amos A. Equity impact of interventions and policies to reduce smoking in youth: systematic review. Tobacco Control. 2014;23(e2):e98-105.

96. Brown T, Platt S, Amos A. Equity impact of population-level interventions and policies to reduce smoking in adults: a systematic review. Drug & Alcohol Dependence. 2014;138:7-16.

97. Brown TJ, Todd A, O'Malley CL, Moore HJ, Husband AK, Bambra C, et al. Community pharmacy interventions for public health priorities: a systematic review of community pharmacy-delivered smoking, alcohol and weight management interventions. NIHR Journals Library. 2016;03:03.

98. Bryant J, Bonevski B, Paul C, McElduff P, Attia J. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. Addiction. 2011;106(9):1568-85.

99. Bull ER, McCleary N, Li X, Dombrowski SU, Dusseldorp E, Johnston M. Interventions to promote healthy eating, physical activity and smoking in low-income groups: a systematic review with meta-analysis of behavior change techniques and delivery/context. International Journal of Behavioral Medicine. 2018;25(6):605-16.

100. Cairns J-M, Bambra C, Hillier-Brown FC, Moore HJ, Summerbell CD. Weighing up the evidence: a systematic review of the effectiveness of workplace interventions to tackle socio-economic inequalities in obesity. Journal of Public Health. 2015;37(4):659-70.

101. Carr SM, Lhussier M, Forster N, Geddes L, Deane K, Pennington M, et al. An evidence synthesis of qualitative and quantitative research on component intervention techniques, effectiveness, cost-effectiveness, equity and acceptability of different versions of health-related lifestyle advisor role in improving health. Health Technology Assessment. 2011;15(9):iii-iv, 1-284.

102. Dowswell T, Towner E. Social deprivation and the prevention of unintentional injury in childhood: a systematic review. Health Education Research. 2002;17(2):221-37.

103. Gardner MP, Adams A, Jeffreys M. Interventions to Increase the Uptake of Mammography amongst Low Income Women: A Systematic Review and Meta-Analysis. Plos One. 2013;8(2):13.

104. Gates A, Rahman S, Sim S, Pillay J, Ismail SJ, Tunis MC, et al. Health inequities related to vaccination: An evidence map of potentially influential factors and systematic review of interventions. Vaccine. 2021;39(29):3825-33.

105. Harbers MC, Beulens JWJ, Rutters F, de Boer F, Gillebaart M, Sluijs I, et al. The effects of nudges on purchases, food choice, and energy intake or content of purchases in real-life food purchasing environments: a systematic review and evidence synthesis. Nutrition Journal. 2020;19:1-27.

106. Hardman R, Begg S, Spelten E. What impact do chronic disease self-management support interventions have on health inequity gaps related to socioeconomic status: a systematic review. BMC Health Services Research. 2020;20(1):150.

107. Hill S, Amos A, Clifford D, Platt S. Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence. Tobacco Control. 2014;23(e2):e89-97.

108. Hillier-Brown FC, Bambra CL, Cairns JM, Kasim A, Moore HJ, Summerbell CD. A systematic review of the effectiveness of individual, community and societal level interventions at reducing socioeconomic inequalities in obesity amongst children. BMC Public Health. 2014;14:834.

109. Hillier-Brown FC, Bambra CL, Cairns JM, Kasim A, Moore HJ, Summerbell CD. A systematic review of the effectiveness of individual, community and societal-level interventions at reducing socio-economic inequalities in obesity among adults. International Journal of Obesity. 2014;38(12):1483-90.

110. Kavanagh J, Oliver S, Lorenc T, Caird J, Tucker H, Harden A, et al. School-based cognitive-behavioural interventions: A systematic review of effects and inequalities. Health Sociology Review. 2009;18(1):61-78.

111. Kendrick D, Smith S, Sutton A, Watson M, Coupland C, Mulvaney C, et al. Effect of education and safety equipment on poisoning-prevention practices and poisoning: systematic review, meta-analysis and meta-regression. Archives of Disease in Childhood. 2008;93(7):599-608.

112. Kock L, Brown J, Hiscock R, Tattan-Birch H, Smith C, Shahab L. Individual-level behavioural smoking cessation interventions tailored for disadvantaged socioeconomic position: a systematic review and meta-regression. Lancet Public Health. 2019;4(12):e628-e44.

113. Lehne G, Bolte G. Impact of universal interventions on social inequalities in physical activity among older adults: an equity-focused systematic review. International Journal of Behavioral Nutrition & Physical Activity. 2017;14(1):20.

114. Love R, Adams J, van Sluijs EMF. Are school-based physical activity interventions effective and equitable? A meta-analysis of cluster randomized controlled trials with accelerometer-assessed activity. Obesity Reviews. 2019;20(6):859-70.

115. Love RE, Adams J, van Sluijs EMF. Equity effects of children's physical activity interventions: A systematic scoping review. International Journal of Behavioral Nutrition & Physical Activity. 2017;14:11.

116. Machado AA, Edwards SA, Mueller M, Saini V. Effective interventions to increase routine childhood immunization coverage in low socioeconomic status communities in developed countries: A systematic review and critical appraisal of peer-reviewed literature. Vaccine. 2021;39(22):2938-64.

117. McGill R, Anwar E, Orton L, Bromley H, Lloyd-Williams F, O'Flaherty M, et al. Are interventions to promote healthy eating equally effective for all? Systematic review of socioeconomic inequalities in impact. BMC Public Health. 2015;15:457.

118. McLaren L, Sumar N, Barberio AM, Trieu K, Lorenzetti DL, Tarasuk V, et al. Population-level interventions in government jurisdictions for dietary sodium reduction. Cochrane Database of Systematic Reviews. 2016(9):117.

119. Michie S, Jochelson K, Markham WA, Bridle C. Low-income groups and behaviour change interventions: a review of intervention content, effectiveness and theoretical frameworks. Journal of Epidemiology & Community Health. 2009;63(8):610-22.

120. Moore GF, Littlecott HJ, Turley R, Waters E, Murphy S. Socioeconomic gradients in the effects of universal school-based health behaviour interventions: a systematic review of intervention studies. BMC Public Health. 2015;15:907.

121. Murray RL, Bauld L, Hackshaw LE, McNeill A. Improving access to smoking cessation services for disadvantaged groups: a systematic review. Journal of Public Health. 2009;31(2):258-77.

122. Nanninga S, Lehne G, Ratz T, Bolte G. Impact of Public Smoking Bans on Social Inequalities in Children's Exposure to Tobacco Smoke at Home: An Equity-Focused Systematic Review. Nicotine & Tobacco Research. 2019;21(11):1462-72.

123. Oldroyd J, Burns C, Lucas P, Haikerwal A, Waters E. The effectiveness of nutrition interventions on dietary outcomes by relative social disadvantage: a systematic review. Journal of Epidemiology & Community Health. 2008;62(7):573.

124. Olstad DL, Teychenne M, Minaker LM, Taber DR, Raine KD, Nykiforuk CI, et al. Can policy ameliorate socioeconomic inequities in obesity and obesity-related behaviours? A systematic review of the impact of universal policies on adults and children. Obesity Reviews. 2016;17(12):1198-217.

125. Pastor R, Tur JA. Effectiveness of Interventions to Promote Healthy Eating Habits in Children and Adolescents at Risk of Poverty: Systematic Review and Meta-Analysis. Nutrients. 2020;12(6):25.

126. Pearson M, Hunt H, Garside R, Moxham T, Peters J, Anderson R. Preventing unintentional injuries to children under 15 years in the outdoors: a systematic review of the effectiveness of educational programs. Injury Prevention. 2012;18(2):113-23.

127. Raison H, Harris RV. Interventions to reduce socio-economic inequalities in dental service utilisation - a systematic review. Community Dental Health. 2019;36(1):39-45.

128. Saad A, Magwood O, Aubry T, Alkhateeb Q, Hashmi SS, Hakim J, et al. Mobile interventions targeting common mental disorders among pregnant and postpartum women: An equity-focused systematic review. PLoS ONE. 2021;16(10):e0259474.

129. Schuz B, Meyerhof H, Hilz LK, Mata J. Equity Effects of Dietary Nudging Field Experiments: Systematic Review. Front. 2021;9:668998.

130. Shen A, Bernabe E, Sabbah W. Systematic Review of Intervention Studies Aiming at Reducing Inequality in Dental Caries among Children. International Journal of Environmental Research in Public Health. 2021;18(3):01.

131. Smith CE, Hill SE, Amos A. Impact of population tobacco control interventions on socioeconomic inequalities in smoking: a systematic review and appraisal of future research directions. Tobacco Control. 2020;29:29.

132. Spadea T, Bellini S, Kunst A, Stirbu I, Costa G. The impact of interventions to improve attendance in female cancer screening among lower socioeconomic groups: a review. Preventive Medicine. 2010;50(4):159-64.

133. Thomas MM, Phongsavan P, McGill B, O'Hara BJ, Bauman AE. A review of the impact of physical activity mass media campaigns on low compared to high socioeconomic groups. Health Education Research. 2018;33(5):429-46.

134. Thomas S, Fayter D, Misso K, Ogilvie D, Petticrew M, Sowden A, et al. Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. Tobacco Control. 2008;17(4):230-7.

135. Tinner L, Caldwell D, Hickman M, MacArthur GJ, Gottfredson D, Lana Perez A, et al. Examining subgroup effects by socioeconomic status of public health interventions targeting multiple risk behaviour in adolescence. BMC Public Health. 2018;18(1):1180.

136. Turnbull S, Cabral C, Hay A, Lucas PJ. Health equity in the effectiveness of web-based health interventions for the self-care of people with chronic health conditions: systematic review. Journal of Medical Internet Research. 2020;22(6):e17849.

137. van de Ven D, Robroek SJW, Burdorf A. Are workplace health promotion programmes effective for all socioeconomic groups? A systematic review. Occupational & Environmental Medicine. 2020;77(9):589-96.

138. Venturelli F, Ferrari F, Broccoli S, Bonvicini L, Mancuso P, Bargellini A, et al. The effect of Public Health/Pediatric Obesity interventions on socioeconomic inequalities in childhood obesity: A scoping review. Obesity Reviews. 2019;20(12):1720-39.

139. Welsh J, Strazdins L, Ford L, Friel S, O'Rourke K, Carbone S, et al. Promoting equity in the mental wellbeing of children and young people: a scoping review. Health Promotion International. 2015;30 Suppl 2:ii36-76.

140. Western MJ, Armstrong MEG, Islam I, Morgan K, Jones UF, Kelson MJ. The effectiveness of digital interventions for increasing physical activity in individuals of low socioeconomic status: a systematic review and meta-analysis. International Journal of Behavioral Nutrition & Physical Activity. 2021;18:1-21.

141. Baker PR, Francis DP, Soares J, Weightman AL, Foster C. Community wide interventions for increasing physical activity. Cochrane Database Syst Rev. 2015;1(1):CD008366.

142. Beauchamp A, Peeters A, Tonkin A, Turrell G. Best practice for prevention and treatment of cardiovascular disease through an equity lens: a review. European Journal of Cardiovascular Prevention & Rehabilitation. 2010;17(5):599-606.

143. Behbod B, Sharma M, Baxi R, Roseby R, Webster P. Family and carer smoking control programmes for reducing children's exposure to environmental tobacco smoke. Cochrane Database of Systematic Reviews. 2018;1(1):CD001746.

144. Brown T, Moore TH, Hooper L, Gao Y, Zayegh A, Ijaz S, et al. Interventions for preventing obesity in children. Cochrane Database of Systematic Reviews. 2019;7(7):CD001871.

145. Chamberlain C, O'Mara-Eves A, Porter J, Coleman T, Perlen SM, Thomas J, et al. Psychosocial interventions for supporting women to stop smoking in pregnancy. Cochrane Database of Systematic Reviews. 2017;2(2):CD001055.

146. Crocker-Buque T, Edelstein M, Mounier-Jack S. Interventions to reduce inequalities in vaccine uptake in children and adolescents aged <19 years: a systematic review. Journal of Epidemiology & Community Health. 2017;71(1):87-97.

147. De Bourdeaudhuij I, Simon C, De Meester F, Van Lenthe F, Spittaels H, Lien N, et al. Are physical activity interventions equally effective in adolescents of low and high socio-economic status (SES): results from the European Teenage project. Health Education Research. 2011;26(1):119-30.

148. de Sa J, Lock K. Will European agricultural policy for school fruit and vegetables improve public health? A review of school fruit and vegetable programmes. European Journal of Public Health. 2008;18(6):558-68.

149. de Silva AM, Hegde S, Akudo Nwagbara B, Calache H, Gussy MG, Nasser M, et al. Community-based population-level interventions for promoting child oral health. Cochrane Database of Systematic Reviews. 2016;9(9):CD009837.

150. Frazer K, Callinan JE, McHugh J, van Baarsel S, Clarke A, Doherty K, et al. Legislative smoking bans for reducing harms from secondhand smoke exposure, smoking prevalence and tobacco consumption. Cochrane Database of Systematic Reviews. 2016;2(2):CD005992.

151. Hendry VL, Almíron-Roig E, Monsivais P, Jebb SA, Benjamin Neelon SE, Griffin SJ, et al. Impact of regulatory interventions to reduce intake of artificial trans–fatty acids: a systematic review. American Journal of Public Health. 2015;105:e32-e42.

152. Hillier-Brown FC, Summerbell CD, Moore HJ, Routen A, Lake AA, Adams J, et al. The impact of interventions to promote healthier ready-to-eat meals (to eat in, to take away or to be delivered) sold by specific food outlets open to the general public: a systematic review. Obesity Reviews. 2017;18(2):227-46.

153. Hollands GJ, Shemilt I, Marteau TM, Jebb SA, Lewis HB, Wei Y, et al. Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco. Cochrane Database of Systematic Reviews. 2015;2015(9):CD011045.

154. Iheozor-Ejiofor Z, Worthington HV, Walsh T, O'Malley L, Clarkson JE, Macey R, et al. Water fluoridation for the prevention of dental caries. Cochrane Database of Systematic Reviews. 2015;2015(6):CD010856.

155. Kader M, Sundblom E, Elinder LS. Effectiveness of universal parental support interventions addressing children's dietary habits, physical activity and bodyweight: A systematic review. Preventive Medicine. 2015;77:52-67.

156. Kendrick D, Young B, Mason-Jones AJ, Ilyas N, Achana FA, Cooper NJ, et al. Home safety education and provision of safety equipment for injury prevention. Cochrane Database of Systematic Reviews. 2012(9):CD005014.

157. Niederdeppe J, Kuang X, Crock B, Skelton A. Media campaigns to promote smoking cessation among socioeconomically disadvantaged populations: what do we know, what do we need to learn, and what should we do now? Social Science & Medicine. 2008;67(9):1343-55.

158. Secker-Walker RH, Gnich W, Platt S, Lancaster T. Community interventions for reducing smoking among adults. Cochrane Database of Systematic Review. 2002;2002(3):CD001745.

159. Sumar N, McLaren L. Impact on social Inequalities of population strategies of prevention for folate intake in women of childbearing age. American Journal of Public Health. 2011;101:1218-24.

160. Jackson R, Johnson M, Campbell F, Messina J, Guillaume L, Meier P, et al. Interventions on control of alcohol price, promotion and availability for prevention of alcohol use disorders in adults and young people. London: The University of Sheffield, for NICE Centre for Public Health Excellence. 2010.

161. Rice N, Godfrey C, Slack R, Sowden A, Worthy G. A systematic review of the effects of price on the smoking behaviour of young people. York: Public Health Research Consortium. 2010.

162. Moodie C, Stead M, Bauld L, McNeill A, Angus K, Hinds K, et al. Plain tobacco packaging: a systematic review. London: Public Health Research Consortium; 2012.

163. Kornet-van der Aa D, Altenburg T, van Randeraad-van der Zee C, Chinapaw M. The effectiveness and promising strategies of obesity prevention and treatment programmes among adolescents from disadvantaged backgrounds: a systematic review. Obesity Reviews. 2017;18(5):581-93.

164. Bull ER, Dombrowski SU, McCleary N, Johnston M. Are interventions for low-income groups effective in changing healthy eating, physical activity and smoking behaviours? A systematic review and meta-analysis. BMJ Open. 2014;4(11):e006046.

165. Thomson H, Thomas S, Sellström E, Petticrew M. Housing improvements for health and associated socio-economic outcomes: a systematic review. Campbell Systematic Reviews. 2013;9(1):1-348.

166. Lundberg O, Dahl E, Fritzell J, Palme J, Sjöberg O. Social protection, income and health inequities. Final report of the Task group on GDP, taxes, income and welfare. Copenhagen: WHO Regional Office for Europe; 2016.

167. Prüss-Üstün A, Wolf J, Corvalán C, Bos R, Neira M. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. Geneva: World Health Organization; 2016. Report No.: 9241565195.

168. South J. A guide to community-centred approaches for health and wellbeing. London: Public Health England; 2015.

169. WHO community engagement framework for quality, people-centred and resilient health services. Geneva: World Health Organization; 2017.

170. Community engagement: a health promotion guide for universal health coverage in the hands of the people. Geneva: World Health Organization; 2020.

171. Mayne SL, Hannan C, DiFiore G, Virudachalam S, Glanz K, Fiks AG. Associations of neighborhood safety and collective efficacy with dietary intake among preschool-aged children and mothers. Childhood Obesity. 2022;18(2):120-31.

172. Michie S, West R. The Behaviour Change Wheel: A Guide to Developing Interventions. London: Silverback Publishing; 2014.

173. Hollands GJ, Shemilt I, Marteau TM, Jebb SA, Kelly MP, Nakamura R, et al. Altering micro-environments to change population health behaviour: towards an evidence base for choice architecture interventions. BMC Public Health. 2013;13(1):1218.

174. Fayter D, Main C, Misso K, Ogilvie D, Petticrew M, Sowden A, et al. Population tobacco control interventions and their effects on social inequalities in smoking. York: Centre for Reviews and Dissemination, University of York; 2008.

175. Hong QN, Bangpan M, Stansfield C, Kneale D, O'Mara-Eves A, van Grootel L, et al. Using systems perspectives in evidence synthesis: A methodological mapping review. Research Synthesis Methods. 2022;13:667-80.

Appendix 1. Excluded studies

Reference	Reason for exclusion
Albert-Ballestar, S., et al. (2021) Measuring health inequalities: a systematic review of widely used indicators and topics. International Journal for Equity in Health 20 1-15.	Exclude on Type of Study
Alcantara, C., et al. (2020) Social determinants as moderators of the effectiveness of health behavior change interventions: scientific gaps and opportunities. Health Psychology Review 14 132-144.	Exclude on Type of Study
Allen, L.N., et al. (2020) Addressing social determinants of noncommunicable diseases in primary care: a systematic review. Bulletin of the World Health Organization 98 754-765B.	Exclude on Intervention
Allmark, P., et al. (2013) Assessing the health benefits of advice services: using research evidence and logic model methods to explore complex pathways. Health & Social Care in the Community 21 59-68.	Exclude on Type of Study
Alshamsan, R., et al. (2010) Impact of pay for performance on inequalities in health care: systematic review. Journal of Health Services Research & Policy 15 178-184.	Exclude on Context
Alvidrez, J., et al. (2019) Building the evidence base to inform planned intervention adaptations by practitioners serving health disparity populations. American Journal of Public Health 109 S94-S101.	Exclude on Type of Study
Angelelli, J., et al. (2021) Effect of social determinants of health interventions on adults living with disabilities: a scoping review. Archives of Physical Medicine & Rehabilitation 27 27.	Exclude on Outcomes
Arundell, L.L., et al. (2020) Advancing mental health equality: a mapping review of interventions, economic evaluations and barriers and facilitators. Systematic Reviews 9 115.	Exclude on Type of Study
Avancena, A.L.V., et al. (2021) Examining equity effects of health interventions in cost-effectiveness analysis: a systematic review. Value in Health 24 136-143.	Exclude on Outcomes
Bailey, J.E., et al. (2021) Early patient-centered outcomes research experience with the use of telehealth to address disparities: scoping review. Journal of Medical Internet Research 23 e28503.	Exclude on Context
Baker, P., et al. (2018) What enables and constrains the inclusion of the social determinants of health inequities in government policy agendas? a narrative review. International Journal of Health Policy & Management 7 101-111.	Exclude on Type of Study
Barker, M., et al. (2018) Intervention strategies to improve nutrition and health behaviours before conception. Lancet 391 1853-1864.	Exclude on Outcomes
Barnett, M.L., et al. (2018) Mobilizing community health workers to address mental health disparities for underserved populations: a systematic review. Administration & Policy in Mental Health 45 195-211.	Exclude on Outcomes
Baugh Littlejohns, L., et al. (2019) Strengthening complex systems for chronic disease prevention: a systematic review. BMC Public Health 19 729.	Exclude on Type of Study
Benach, J., et al. (2013) A new typology of policies to tackle health inequalities and scenarios of impact based on Rose's population approach. Journal of Epidemiology & Community Health 67 286-291.	Exclude on Type of Study
Birch, J., et al. (2021) P41 A systematic review of inequalities in the uptake of, adherence to, and effectiveness of behavioural weight management interventions in adults. Journal of Epidemiology & Community Health 75 A60-A61.	Exclude on Type of Study
Blackman, T., et al. (2011) A qualitative comparative analysis of factors associated with trends in narrowing health inequalities in England. Social Science & Medicine 72 1965-1974.	Exclude on Type of Study
Blankenship, K.M., et al. (2000) Structural interventions in public health. AIDS 14 S11-S21.	Exclude on Type of Study
Bonevski, B., et al. (2014) Reaching the hard-to-reach: a systematic review of strategies for improving health and medical research with socially disadvantaged groups. BMC Medical Research Methodology 14 42.	Exclude on Type of Study
Braveman, P.A., et al. (2011) When do we know enough to recommend action on the social determinants of health? American Journal of Preventive Medicine 40 S58-S66.	Exclude on Type of Study
Breeze, P.R., et al. (2017) Cost-effectiveness of population-based, community, workplace and individual policies for diabetes prevention in the UK. Diabetic Medicine 34 1136-1144.	Exclude on Outcomes
Brose, L.S., et al. (2017) Maintaining abstinence from smoking after a period of enforced abstinence - systematic review, meta-analysis and analysis of behaviour change techniques with a focus on mental health. Psychological Medicine 1-10	Exclude on Outcomes
Brown, C., et al. (2021) Reducing inequities during the Covid-19 pandemic: a rapid review and synthesis of public health recommendations. Public Health Reviews 42 1604031.	Exclude on Type of Study
Brownson, R.C., et al. (2006) Shaping the context of health: A review of environmental and policy approaches in the prevention of chronic diseases. Annual Review of Public Health 27 341-370.	Exclude on Outcomes

Reference	Reason for exclusion
Burgemeister, F.C., et al. (2021) Place-based approaches to improve health and development outcomes in young children: a scoping review. PLoS One 16.	Exclude on Outcomes
Bygrave, A., et al. (2020) Assessing the implementation of interventions addressing socioeconomic inequalities in cancer screening in high-income countries. Journal of Public Health Research 9 1713.	Exclude on Outcomes
Candy, B., et al. (2007) The health impact of policy interventions tackling the social determinants of common mental disorder: a systematic review. Journal of Public Mental Health 6 28-39.	Exclude on Outcomes
Carey, G., et al. (2015) Systems change for the social determinants of health. BMC Public Health 15 662-662.	Exclude on Type of Study
Carey, G., et al. (2015) Systems science and systems thinking for public health: a systematic review of the field. BMJ Open 5 e009002.	Exclude on Type of Study
Carey, G., et al. (2019) Personalisation schemes in social care and inequality: review of the evidence and early theorising. International Journal for Equity in Health 18 170.	Exclude on Outcomes
Castillo, E.G., et al. (2019) Community interventions to promote mental health and social equity. Current Psychiatry Reports 21 35.	Exclude on Type of Study
Centre for Reviews and Dissemination (2000) Promoting the initiation of breastfeeding. York: Centre for Reviews and Dissemination.	Other
Coenen, P., et al. (2020) Socioeconomic inequalities in effectiveness of and compliance to workplace health promotion programs: an individual participant data (IPD) meta-analysis. International Journal of Behavioral Nutrition & Physical Activity 17 112.	Exclude on Context
Cohen, B., et al. (2018) Indicators to guide health equity work in local public health agencies: a locally driven collaborative project in Ontario. Health Promotion & Chronic Disease Prevention in Canada 38 277-285.	Exclude on Type of Study
Cook, W.K. (2008) Integrating research and action: a systematic review of community-based participatory research to address health disparities in environmental and occupational health in the USA. Journal of Epidemiology & Community Health 62 668-76.	Exclude on Context
Courtin, E., et al. (2020) Can social policies improve health? a systematic review and meta-analysis of 38 randomized trials. Milbank Quarterly 98 297-371.	Exclude on Context
Dauvrin, M., et al. (2014) Culturally competent interventions in Type 2 diabetes mellitus management: an equity-oriented literature review. Ethnicity & Health 19 579-600.	Exclude on Outcomes
Davies, J.K., et al. (2011) The gradient in health inequalities among families and children: A review of evaluation frameworks. Health Policy 101 1-10.	Exclude on Type of Study
Dorling, H., et al. (2017) The NIHR public health research programme: intervention approaches to tackle health inequalities. Journal of Public Health 39 856-862.	Exclude on Type of Study
Duffy, S.W., et al. (2016) Rapid review of evaluation of interventions to improve participation in cancer screening services. Journal of Medical Screening 24 127-145.	Exclude on Outcomes
Enns, J.E., et al. (2019) Interventions aimed at reducing poverty for primary prevention of mental illness: a scoping review. Mental Health & Prevention 15 9.	Exclude on Outcomes
Fletcher, A., et al. (2008) Interventions addressing the social determinants of teenage pregnancy. Health Education 108 29-39.	Exclude on Type of Study
Fox, K.E., et al. (2021) Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: a systematic review. Work & Stress 36 30-59.	Exclude on Outcomes
Garzon-Orjuela, N., et al. (2020) An overview of reviews on strategies to reduce health inequalities. International Journal for Equity in Health 19 192.	Exclude on Outcomes
Gibson, M., et al. (2018) Potential effects of universal basic income: a scoping review of evidence on impacts and study characteristics. The Lancet 392.	Exclude on Outcomes
Giskes, K., et al. (2007) Applying an equity lens to tobacco-control policies and their uptake in six Western-European countries. Journal of Public Health Policy 28 261-80.	Exclude on Type of Study
Guglielmin, M., et al. (2018) A scoping review of the implementation of health in all policies at the local level. Health Policy 122 284-292.	Exclude on Intervention
Guignard, R., et al. (2018) [Interventions for smoking cessation among low socioeconomic status smokers: a literature review]. Sante Publique 30 45-60.	Exclude on Type of Study
Hagberg, L.A., et al. (2005) Is promotion of physical activity a wise use of societal resources? Issues of cost-effectiveness and equity in health. Scandinavian Journal of Medicine & Science in Sports 15 304-312.	Exclude on Outcomes
Hahn, R.A., et al. (2016) Early childhood education to promote health equity: a community guide systematic review. Journal of Public Health Management & Practice 22 E1-8.	Exclude on Context
Hallam, A. (2008) The effectiveness of interventions to address health inequalities in the early years: a review of relevant literature. Edingburgh: Scottish Government.	Exclude on Type of Study
Han, H.R., et al. (2021) Trauma informed interventions: a systematic review. PLoS ONE 16 e0252747.	Exclude on Outcomes

Reference	Reason for exclusion
Hanckel, B., et al. (2021) The use of Qualitative Comparative Analysis (QCA) to address causality in complex systems: a systematic review of research on public health interventions. BMC Public Health 21 877.	Exclude on Type of Study
Harvey, J.R., et al. (2014) Obesity treatment in disadvantaged population groups: Where do we stand and what can we do? Preventive Medicine 68 71-75.	Exclude on Type of Study
Hilts, K.E., et al. (2021) Hospital partnerships for population health: a systematic review of the literature. Journal of Healthcare Management 66 170-198.	Exclude on Outcomes
Hunter, B.D., et al. (2011) The importance of addressing social determinants of health at the local level: the case for social capital. Health & Social Care in the Community 19 522-30.	Exclude on Type of Study
Hyseni, L., et al. (2017) Systematic review of dietary salt reduction policies: Evidence for an effectiveness hierarchy? PLoS One 12 .	Exclude on Outcomes
Jackson, N.W., et al. (2005) Interventions implemented through sporting organisations for increasing participation in sport .Cochrane Database of Systematic Reviews.	Other
Jamaludin, M., et al. (2018) Smoke-free legislation and socioeconomic inequalities in smoking-related morbidity and mortality among adults: a systematic review. Tobacco Induced Diseases 16.	Exclude on Type of Study
Jepson, R., et al. (2006) A review of the effectiveness of mass media interventions which both encourage quit attempts and reinforce current and recent attempts to quit smoking. NICE.	Exclude on Outcomes
Jepson, R.G., et al. (2010) The effectiveness of interventions to change six health behaviours: a review of reviews. BMC Public Health 10 538.	Exclude on Outcomes
Johri, M., et al. (2012) Can cost-effectiveness analysis integrate concerns for equity? Systematic review. International Journal of Technology Assessment in Health Care 28 125-32.	Exclude on Outcomes
Kendrick, D., et al. (2000) The effect of home visiting programmes on uptake of childhood immunization: a systematic review and meta-analysis. Journal of Public Health Medicine. 22 90-8	Exclude on Context
Khanassov, V., et al. (2016) Organizational interventions improving access to community-based primary health care for vulnerable populations: a scoping review. International Journal for Equity in Health 15.	Exclude on Outcomes
Koeman, J., et al. (2021) Prescribing housing: a scoping review of health system efforts to address housing as a social determinant of health. Population Health Management 24 316-321.	Exclude on Context
Kristjansson, E., et al. (2015) Food supplementation for improving the physical and psychosocial health of socio-economically disadvantaged children aged three months to five years. Cochrane Database of Systematic Reviews.	Exclude on Context
Kristjansson, E., et al. (2015) Supplementary feeding for improving the health of disadvantaged infants and young children: a systematic and realist review. London: 3ie International Initiative for Impact Evaluation.	Exclude on Context
Laba, T.L., et al. (2013) Strategies to improve adherence to medications for cardiovascular diseases in socioeconomically disadvantaged populations: a systematic review International Journal of Cardiology 167 2430-40	Exclude on Intervention
Lafortune, L., et al. (2014) Effectiveness and cost-effectiveness of mid-life interventions for increasing the uptake and maintenance of healthy lifestyle behaviours and the prevention or delay of dementia, disability, frailty and non-communicable chronic diseases related to modifiable lifestyle risk factors Review 3 for NICE Guidance Disability, dementia and frailty in later life - mid-life approaches to prevent or delay the onset of these conditions http://www.nice.org.uk/guidance/gid-phg64/resource	Exclude on Outcomes
Langford, R., et al. (2015) The World Health Organization's Health Promoting Schools framework: a Cochrane systematic review and meta-analysis BMC Public Health 15	Exclude on Outcomes
Lee, J., et al. (2018) Addressing health equity through action on the social determinants of health: a global review of policy outcome evaluation methods. International Journal of Health Policy & Management 7 581-592.	Exclude on Type of Study
Lehne, G., et al. (2019) Equity impact assessment of interventions to promote physical activity among older adults: a logic model framework. International Journal of Environmental Research & Public Health 16 01.	Exclude on Type of Study
Levy, J.K., et al. (2019) Characteristics of successful programmes targeting gender inequality and restrictive gender norms for the health and wellbeing of children, adolescents, and young adults: a systematic review. Lancet Global Health 8 E225-E236.	Exclude on Outcomes
Lifsey, S., et al. (2015) Building the evidence base for population-level interventions: barriers and opportunities. Health Education & Behavior 42 133S-40S.	Exclude on Type of Study
Lindberg, R.A., et al. (2010) Housing interventions at the neighborhood level and health: a review of the evidence. Journal of Public Health Management & Practice 16 S44-52.	Exclude on Type of Study

Reference	Reason for exclusion
Lucherini, M., et al. (2019) Potential for non-combustible nicotine products to reduce socioeconomic inequalities in smoking: a systematic review and synthesis of best available evidence. BMC Public Health 19 1469.	Exclude on Intervention
Ludbrook, A., et al. (2004) Do interventions to increase income improve the health of the poor in developed economies and are such policies cost effective? Applied Health Economics & Health Policy 3 115-20.	Exclude on Type of Study
Mackenbach, J.P. (2011) Can we reduce health inequalities? An analysis of the English strategy (1997-2010). Journal of Epidemiology & Community Health 65 568-575.	Exclude on Type of Study
Maden, M., et al. (2018) Toward a theory-led metaframework for considering socioeconomic health inequalities within systematic reviews. Journal of Clinical Epidemiology 104 84-94.	Exclude on Type of Study
Marshall Lee, E.D., et al. (2021) Addressing deep poverty-related stress across multiple levels of intervention. Journal of Psychotherapy Integration 32 34-48.	Exclude on Type of Study
Matwiejczyk, L., et al. (2018) Characteristics of effective interventions promoting healthy eating for pre-schoolers in childcare settings: an umbrella review. Nutrients 10 293.	Exclude on Outcomes
McCollum, R., et al. (2016) How equitable are community health worker programmes and which programme features influence equity of community health worker services? A systematic review. BMC Public Health 16 419.	Exclude on Context
McGill, E., et al. (2021) Evaluation of public health interventions from a complex systems perspective: a research methods review. Social Science & Medicine 272 113697.	Exclude on Type of Study
McGill, R., et al. (2013) PP09 Assessing the potential effect of healthy eating policy interventions on socioeconomic inequalities: systematic review. Journal of Epidemiology & Community Health 67.	Exclude on Type of Study
McMahon, N.E. (2021) Framing action to reduce health inequalities: what is argued for through use of the 'upstream-downstream' metaphor? Journal of Public Health 27 27.	Exclude on Type of Study
Messing, S., et al. (2019) How can physical activity be promoted among children and adolescents? a systematic review of reviews across settings. Frontiers in Public Health 7 55.	Exclude on Outcomes
Millward, L., et al. (2007) Smoking and public health: a compendium of smoking behaviour initiatives that address socially disadvantaged populations: evidence review. NICE.	Exclude on Type of Study
Mohan, G., et al. (2020) Cost-effectiveness of leveraging social determinants of health to improve breast, cervical, and colorectal cancer screening: a systematic review. JAMA Oncology 6 1434-1444.	Exclude on Outcomes
Mon Kyaw Soe, N., et al. (2018) STI health disparities: a systematic review and meta-analysis of the effectiveness of preventive interventions in educational settings. International Journal of Environmental Research & Public Health 15 11.	Exclude on Outcomes
Murty, S., et al. (2009) Policies/programs for reducing health inequalities by tackling nonmedical determinants of health in the United Kingdom. Social Science Quarterly 90 1403-1422.	Exclude on Type of Study
Newman, L., et al. (2015) Addressing social determinants of health inequities through settings: a rapid review. Health Promotion International 30 Suppl 2 ii126-43.	Exclude on Outcomes
Orkin, A.M., et al. (2019) Defining and measuring health equity in research on task shifting in high-income countries: a systematic review. SSM - Population Health 7 100366.	Exclude on Type of Study
Orton, L.C., et al. (2019) What is the evidence that differences in 'control over destiny' lead to socioeconomic inequalities in health? A theory-led systematic review of high-quality longitudinal studies on pathways in the living environment. Journal of Epidemiology & Community Health 73 929.	Exclude on Type of Study
Ost, K., et al. (2021) Large-scale infectious disease testing programs have little consideration for equity: findings from a scoping review. Journal of Clinical Epidemiology 143 30-60.	Exclude on Outcomes
Parker, R.G., et al. (2000) Structural barriers and facilitators in HIV prevention: a review of international research. AIDS 14 S22-S32.	Exclude on Type of Study
Pennington, M., et al. (2013) Cost-effectiveness of health-related lifestyle advice delivered by peer or lay advisors: synthesis of evidence from a systematic review. Cost Effectiveness & Resource Allocation 11 30.	Exclude on Outcomes
Perry, M., et al. (2015) Community-based interventions for improving maternal health and for reducing maternal health inequalities in high-income countries: a systematic map of research. Global Health 10 63.	Exclude on Type of Study
Petticrew, M., et al. (2008) Systematic reviews - do they 'work' in informing decision-making around health inequalities? Health Economics Policy & Law 3 197-211.	Exclude on Type of Study
Petticrew, M., et al. (2014) It is surely a great criticism of our profession...' The next 20 years of equity-focused systematic reviews. Journal of Epidemiology & Community Health 68 291.	Exclude on Type of Study
Pinto, A.D., et al. (2018) Employment interventions in health settings: a systematic review and synthesis. Annals of Family Medicine 16 447-460.	Exclude on Outcomes
Plamondon, K.M., et al. (2019) Connecting knowledge with action for health equity: a critical interpretive synthesis of promising practices. International Journal for Equity in Health 18 202.	Exclude on Type of Study

Reference	Reason for exclusion
Plamondon, K.M., et al. (2020) The integration of evidence from the Commission on Social Determinants of Health in the field of health equity: a scoping review. Critical Public Health 30 415-428.	Exclude on Type of Study
Pons-Vigues, M., et al. (2014) Social and health policies or interventions to tackle health inequalities in European cities: a scoping review. BMC Public Health 14 198.	Exclude on Outcomes
Prady, S.L., et al. (2021) inequalities in the identification and management of common mental disorders in the perinatal period: an equity focused re-analysis of a systematic review. PLoS ONE 16 e0248631.	Exclude on Outcomes
Priest, N., et al. (2008) Interventions implemented through sporting organisations for increasing participation in sport. Cochrane Database of Systematic Reviews.	Exclude on Outcomes
Raison, H., et al. (2018) A systematic review of interventions using cue-automaticity to improve the uptake of preventive healthcare in adults: applications to dental visiting. Community Dental Health 35 37-46.	Exclude on Outcomes
Ramon, I., et al. (2018) Early childhood education to promote health equity: a community guide economic review. Journal of Public Health Management & Practice 24 e8-e15.	Exclude on Outcomes
Reece, S., et al. (2002) A review of the effectiveness and experiences of welfare advice services co-located in health settings: A critical narrative systematic review. Social Science & Medicine 296 114746.	Exclude on Context
Regmi, K., et al. (2020) A systematic review of the factors - barriers and enablers - affecting the implementation of clinical commissioning policy to reduce health inequalities in the National Health Service (NHS), UK. Public Health 186 271-282.	Exclude on Intervention
Reyes, A.M., et al. (2021) Interventions addressing social needs in perinatal care: a systematic review. Health Equity 5 100-118.	Exclude on Outcomes
Rigolon, A., et al. (2021) Green space and health equity: a systematic review on the potential of green space to reduce health disparities. International Journal of Environmental Research & Public Health 18 2563.	Exclude on Intervention
Rikke Lambertz-Nilssen, H., et al. (2022) Sustaining equality and equity. a scoping review of interventions directed towards promoting access to leisure time physical activity for children and youth. International Journal of Environmental Research & Public Health 19 1235.	Exclude on Outcomes
Robroek, S.J.W., et al. (2020) Socio-economic inequalities in the effectiveness of workplace health promotion programmes on body mass index: an individual participant data meta-analysis. Obesity Reviews 21 13.	Exclude on Context
Rodgers, M., et al. (2021) P40 Is there an evidence base on reducing lifestyle risk behaviours in disadvantaged groups? A scoping review of systematic reviews. Journal of Epidemiology & Community Health 75 A60.	Exclude on Type of Study
Ruiz-Perez, I., et al. (2019) Effectiveness of interventions to improve cancer treatment and follow-up care in socially disadvantaged groups. Psycho-Oncology 28 665-674.	Exclude on Intervention
Russell, C.G., et al. (2016) Effects of parent and child behaviours on overweight and obesity in infants and young children from disadvantaged backgrounds: systematic review with narrative synthesis. BMC Public Health 16 151.	Exclude on Intervention
Salmi, L.R., et al. (2017) Interventions addressing health inequalities in European regions: the AIR project. Health Promotion International 32 430-441.	Exclude on Type of Study
Sanchez, A.L.M.S., et al. (2018) The effectiveness of school-based mental health services for elementary-aged children: a meta-analysis. Journal of the American Academy of Child & Adolescent Psychiatry 57 153.	Exclude on Outcomes
Sapienza, M., et al. (2020) Community engagement: reducing inequalities acting on environmental health. a systematic review. European Journal of Public Health 30.	Exclude on Type of Study
Shakir, A., et al. (2021) Effectiveness of school-based behavioural interventions to improve children's oral health by reducing sugar intake and promoting oral hygiene: a rapid review of randomised controlled trials. Community Dental Health 38 275-283.	Exclude on Outcomes
Shareck, M., et al. (2013) Reducing social inequities in health through settings-related interventions - a conceptual framework. Global Health Promotion 20 39-52.	Exclude on Type of Study
Shepherd, J., et al. (2010) The effectiveness and cost-effectiveness of behavioural interventions for the prevention of sexually transmitted infections in young people aged 13-19: a systematic review and economic evaluation. Health Technology Assessment14 1-206.	Exclude on Outcomes
Smith, C.E., et al. (2020) Impact of specialist and primary care stop smoking support on socio-economic inequalities in cessation in the United Kingdom: a systematic review and national equity analysis. Addiction 115 34-46.	Exclude on Context
South, E., et al. (2022) Reducing lifestyle risk behaviours in disadvantaged groups in high-income countries: a scoping review of systematic reviews. Preventive Medicine 154 13.	Exclude on Outcomes
Steed, L., et al. (2019) Community pharmacy interventions for health promotion: effects on professional practice and health outcomes. Cochrane Database of Systematic Reviews.	Exclude on Outcomes
Stewart, E., et al. (2021) OP75 Mapping UK policies and strategies relevant to child and maternal health to identify opportunities for upstream evaluations: initial findings from the	Exclude on Type of Study

Reference	Reason for exclusion
maternal and child health network (MatCHNet). Journal of Epidemiology & Community Health 75 A35-A36.	
Tan, M.M., et al. (2017) Does routine screening for cardiovascular risk factors widen socioeconomic inequalities in health?: a systematic review. Value in Health 20	Exclude on Type of Study
Thomson, H., et al. (2002) Housing improvement and health gain: a summary and systematic review.	Other
Thomson, H., et al. (2005) Is housing improvement a potential health improvement strategy?	Other
Thomson, H., et al. (2006) Do urban regeneration programmes improve public health and reduce health inequalities? A synthesis of the evidence from UK policy and practice (1980-2004). Journal of Epidemiology & Community Health 60 108-15	Exclude on Context
Thomson, K., et al. (2017) The effects of public health policies on health inequalities: a review of reviews. The Lancet 390.	Exclude on Type of Study
Tugwell, P., et al. (2006) Reduction of inequalities in health: assessing evidence-based tools International Journal for Equity in Health 5 11	Exclude on Type of Study
Van Daalen, K.R., et al. (2021) Health equity audits: a systematic review of the effectiveness. BMJ Open 11 e053392.	Exclude on Context
Van Rijn, R.M., et al. (2016) Work as treatment? The effectiveness of re-employment programmes for unemployed persons with severe mental health problems on health and quality of life: a systematic review and meta-analysis. Occupational & Environmental Medicine 73 275-9.	Exclude on Outcomes
Vilhelmsson, A., et al. (2018) Reducing health inequalities with interventions targeting behavioral factors among individuals with low levels of education - A rapid review. PLoS ONE 13 e0195774	Exclude on Outcomes
Wahlbeck, K., et al. (2017) Interventions to mitigate the effects of poverty and inequality on mental health. Social Psychiatry & Psychiatric Epidemiology 52 505-514.	Exclude on Type of Study
Wallace, C., et al. (2018) Community boundary spanners as an addition to the health workforce to reach marginalised people: a scoping review of the literature. Human Resources for Health 16 13.	Exclude on Outcomes
Walters, R., et al. (2020) Establishing the efficacy of interventions to improve health literacy and health behaviours: a systematic review. BMC Public Health 20 1040.	Exclude on Outcomes
Ward, T., et al. (2022) Incorporating equity concerns in cost-effectiveness analyses: a systematic literature review. PharmacoEconomics 40 45-64.	Exclude on Outcomes
Welch, V., et al. (2012) Does consideration and assessment of effects on health equity affect the conclusions of systematic reviews? A methodology study. PLoS ONE 7 e31360	Exclude on Type of Study
Welch, V., et al. (2022) How effects on health equity are assessed in systematic reviews of interventions. Cochrane Database of Systematic Reviews.	Exclude on Type of Study

Appendix 2. AMSTAR 2 Quality assessment

AMSTAR 2 Items:

1. Did the research questions and inclusion criteria for the review include the components of PICO?
2. Did the report of the review contain an explicit statement that the review methods were established prior to conduct of the review and did the report justify any significant deviations from the protocol?
3. Did the review authors explain their selection of the study designs for inclusion in the review?
4. Did the review authors use a comprehensive literature search strategy?
5. Did the review authors perform study selection in duplicate?
6. Did the review authors perform data extraction in duplicate?
7. Did the review authors provide a list of excluded studies and justify the exclusions?
8. Did the review authors describe the included studies in adequate detail?
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?
10. Did the review authors report on the sources of funding for the studies included in the review?
11. If meta-analysis was justified did the review authors use appropriate methods for statistical combination of results?
12. If meta-analysis was performed did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?

Reference	Review type	AMSTAR2 Items (*critical domains)															
		1	2*	3	4*	5	6	7*	8	9*	10	11*	12	13*	14	15*	16
Anselma et al., 2020 (87)	Systematic review	Y	Y	N	Y	Y	Y	PY	Y	Y	N	NA	NA	PY	Y	NA	Y
Attwood et al., 2016 (88)	Systematic review	Y	Y	N	PY	Y	Y	PY	PY	PY	N	NA	NA	Y	Y	NA	?
Baker et al., 2015 (141)	Systematic review	Y	Y	Y	PY	Y	Y	Y	Y	Y	N	NA	NA	Y	Y	NA	Y
Bambra et al., 2007 (30)	Systematic review	Y	N	N	N	?	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Bambra et al., 2008a (32)	Systematic review	Y	N	N	Y	?	?	N	PY	Y	N	NA	NA	Y	N	NA	N
Bambra et al., 2008b (31)	Systematic review	Y	N	N	Y	Y	?	N	Y	Y	N	NA	NA	Y	Y	NA	Y
Beauchamp et al., 2010 (91)	Systematic review	Y	N	N	PY	?	?	N	PY	N	N	NA	NA	N	N	NA	Y
Beauchamp et al., 2014 (142)	Systematic review	Y	N	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Behbod et al., 2018 (143)	Systematic review	Y	Y	N	Y	Y	Y	Y	Y	Y	N	NA	NA	Y	Y	NA	Y
Benmarhnia et al., 2014 (34)	Systematic review	Y	Y	N	N	Y	Y	N	PY	Y	N	NA	NA	Y	Y	NA	?

Reference	Review type	AMSTAR2 Items (*critical domains)															
		1	2*	3	4*	5	6	7*	8	9*	10	11*	12	13*	14	15*	16
Black et al., 2012 (35)	Systematic review	Y	N	PY	Y	Y	N	N	Y	Y	N	NA	NA	Y	Y	NA	Y
Black et al., 2017 (92)	Systematic review	Y	N	N	Y	PY	?	PY	Y	Y	N	NA	NA	Y	Y	NA	Y
Boland et al., 2018 (93)	Systematic review	Y	N	PY	Y	Y	PY	N	Y	Y	N	Y	N	PY	PY	N	Y
Bonell et al., 2013 (36, 37)	Systematic review	Y	N	Y	Y	Y	Y	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Brennenstuhl et al., 2012 (38)	'Research synthesis'	Y	N	N	PY	?	Y	N	N	N	N	NA	NA	?	Y	NA	?
Brown et al., 2014a (94)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Brown et al., 2014b (95)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Brown et al., 2014c (96)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	NA	NA	N	Y	NA	Y
Brown et al., 2016 (97)	Systematic review	Y	Y	Y	Y	Y	Y	N	PY	Y	N	Y	Y	Y	N	Y	?
Brown et al., 2019 (144)	Systematic review	Y	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y
Bryant et al., 2011 (98)	Systematic review	PY	N	N	Y	PY	?	N	Y	Y	N	Y	N	N	PY	N	N
Bull et al., 2018 (99, 164)	Systematic review	Y	PY	N	Y	N	?	N	PY	PY	N	Y	N	N	PY	PY	Y
Butel and Braun, 2019 (40)	Systematic review	PY	N	N	PY	N	N	N	Y	N	N	NA	NA	N	N	NA	?
Buttazzoni et al., 2020 (41)	Systematic review	Y	N	N	Y	?	?	N	Y	Y	N	NA	NA	N	N	NA	Y
Cairns et al., 2015a (100)	Systematic review	Y	N	N	PY	?	Y	N	Y	Y	N	NA	NA	?	N	NA	Y
Carr et al., 2011 (101)	Systematic review	Y	Y	Y	Y	?	Y	Y	PY	Y	N	NA	NA	?	Y	NA	Y
Chamberlain et al., 2017 (145)	Systematic review	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Cheng et al., 2020 (43)	Systematic review	Y	N	N	Y	N	PY	PY	Y	Y	N	NA	NA	N	N	NA	N
Crocker-Buque, 2017 (146)	Systematic review	Y	Y	N	PY	Y	?	N	PY	Y	N	NA	NA	?	Y	NA	?
Cyril et al., 2015 (45)	Systematic review	PY	N	N	PY	PY	PY	N	PY	N	N	NA	NA	N	?	NA	Y
Dawson et al., 2015 (46)	Systematic review	Y	N	N	PY	?	?	N	Y	PY	N	NA	NA	?	?	NA	PY
De Bourdeaudhuij et al., 2011 (147)	Systematic review	Y	N	N	?	?	?	N	N	?	N	NA	NA	?	Y	NA	Y
De Sa & Lock 2008 (148)	Systematic review	Y	Y	Y	PY	Y	?	N	PY	N	N	NA	NA	?	N	NA	?
De Silva et al., 2016 (149)	Systematic review	Y	Y	N	PY	Y	Y	Y	PY	Y	N	Y	Y	Y	Y	Y	Y
Dowswell & Towner, 2002 (102)	Systematic review	Y	N	N	Y	Y	?	N	Y	Y	N	NA	NA	PY	?	NA	N
Durand et al., 2014 (47)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	Y	N	Y	Y	Y	Y

Reference	Review type	AMSTAR2 Items (*critical domains)															
		1	2*	3	4*	5	6	7*	8	9*	10	11*	12	13*	14	15*	16
Egan et al., 2007a (48)	Systematic review	Y	N	N	Y	Y	Y	N	PY	PY	N	NA	NA	?	Y	NA	Y
Egan et al., 2007b (49)	Systematic review	Y	N	N	N	Y	Y	N	PY	Y	N	NA	NA	?	N	NA	?
Fairbank et al., 2000 (50)	Systematic review	Y	N	Y	Y	Y	PY	PY	Y	Y	N	NA	NA	Y	Y	NA	N
Finnie et al., 2019 (51)	Systematic review	Y	N	N	PY	?	?	N	PY	?	N	Y	Y	?	Y	N	Y
Frazer et al., 2016 (150)	Systematic review	Y	Y	N	N	Y	Y	Y	Y	Y	N	NA	NA	Y	N	NA	Y
Gardner et al., 2013 (103)	Systematic review	PY	N	N	PY	Y	Y	N	Y	Y	N	Y	Y	Y	PY	Y	Y
Gates et al., 2021 (104)	Systematic review	PY	Y	N	Y	Y	PY	PY	Y	Y	N	NA	NA	Y	Y	NA	Y
Gibson et al., 2017 (54)	Systematic review	Y	Y	Y	Y	Y	PY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harbers et al., 2020 (105)	Systematic review	Y	Y	N	PY	Y	N	N	PY	Y	N	NA	NA	?	N	NA	?
Hardman et al., 2020 (106)	Systematic review	Y	Y	N	PY	Y	?	N	PY	Y	N	NA	NA	?	Y	NA	?
Hendry et al., 2015 (151)	Systematic review	Y	N	N	PY	Y	Y	N	PY	PY	N	NA	NA	Y	N	NA	Y
Hill et al., 2014 (107)	Systematic review	Y	N	N	PY	Y	?	N	N	?	N	NA	NA	?	Y	NA	?
Hillier-Brown et al., 2014a (108)	Systematic review	Y	Y	Y	PY	Y	?	N	PY	Y	N	NA	NA	?	Y	NA	?
Hillier-Brown et al., 2014b (109)	Systematic review	Y	Y	Y	PY	Y	?	N	PY	Y	N	NA	NA	?	Y	NA	?
Hillier-Brown et al., 2017 (152)	Systematic review	Y	Y	Y	PY	Y	Y	Y	Y	Y	N	NA	NA	?	N	NA	Y
Hollands et al., 2015 (153)	Systematic review	Y	Y	Y	PY	Y	Y	Y	PY	Y	N	Y	Y	Y	Y	Y	Y
Ibanez et al., 2012 (59)	Systematic review	PY	N	N	Y	PY	?	N	Y	PY	N	N	N	N	N	N	Y
Iheozor-Ejiofor et al., 2015 (154)	Systematic review	Y	Y	N	PY	Y	Y	Y	PY	Y	N	Y	Y	Y	Y	Y	Y
Jackson et al., 2010 (160)	Systematic review	Y	PY	N	Y	N	N	N	Y	Y	N	NA	NA	Y	Y	NA	N
Joyce et al., 2010 (60)	Systematic review	Y	Y	N	Y	?	Y	Y	Y	Y	N	NA	NA	Y	Y	NA	N
Kader et al., 2015 (155)	Systematic review	Y	N	N	PY	N	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Kavanagh et al., 2009 (110)	Systematic review	Y	N	N	?	?	Y	N	N	PY	N	Y	?	?	Y	N	Y
Kendrick et al., 2008 (111)	Systematic review	Y	N	N	PY	?	Y	N	PY	PY	N	Y	?	?	Y	Y	Y
Kendrick et al., 2012 (156)	Systematic review	Y	Y	N	PY	Y	Y	Y	PY	Y	N	Y	Y	Y	Y	Y	Y
Kim et al., 2016 (61)	Systematic review	PY	N	N	Y	Y	N	PY	Y	PY	Y	NA	NA	PY	N	NA	Y
Kock et al., 2019 (112)	Systematic review	Y	Y	N	PY	Y	Y	N	Y	Y	N	Y	Y	?	Y	Y	Y

Reference	Review type	AMSTAR2 Items (*critical domains)															
		1	2*	3	4*	5	6	7*	8	9*	10	11*	12	13*	14	15*	16
Kornet-van der Aa et al., 2017 (163)	Systematic review	PY	Y	N	Y	Y	Y	N	Y	Y	N	NA	NA	Y	N	NA	Y
Lehne & Bolte, 2017 (113)	Systematic review	Y	Y	N	PY	Y	N	N	PY	Y	N	NA	NA	?	Y	NA	?
Ljungdahl & Bremberg, 2015 (63)	Meta-analysis	PY	N	PY	PY	Y	?	N	N	N	N	Y	N	N	N	N	Y
Love et al., 2019 (114)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	Y	?	?	Y	Y	Y
Lucas et al., 2008 (64)	Systematic review	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	PY	Y	N	Y
Machado et al., 2021 (116)	Systematic review	PY	N	N	Y	?	?	N	Y	Y	N	NA	NA	Y	PY	NA	PY
McGill et al., 2015 (117)	Systematic review	Y	Y	N	PY	Y	?	PY	PY	Y	N	NA	NA	?	Y	NA	?
McGrath et al., 2021 (65)	Systematic review	Y	Y	N	Y	Y	?	PY	PY	Y	N	NA	NA	N	PY	NA	Y
McLaren et al., 2016 (118)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Michie et al., 2009 (119)	Systematic review	Y	N	PY	Y	PY	PY	PY	Y	N	1	NA	NA	N	Y	NA	Y
Molloy et al., 2021 (66)	Systematic review	PY	Y	Y	Y	N	N	PY	Y	Y	N	NA	NA	PY	Y	NA	Y
Moodie et al., 2012 (162)	Systematic review	PY	N	Y	Y	Y	Y	PY	Y	Y	N	NA	NA	Y	Y	NA	N
Moore et al., 2015 (120)	Systematic review	Y	PY	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	?
Morrison et al., 2014 (67)	Systematic review	Y	Y	N	PY	N	?	N	PY	N	N	NA	NA	?	Y	NA	?
Mulvaney et al., 2015 (68)	Systematic review	Y	Y	N	Y	Y	Y	Y	PY	Y	N	NA	NA	Y	Y	NA	Y
Murray et al., 2009 (121)	Systematic review	PY	N	PY	Y	Y	?	N	Y	Y	N	NA	NA	PY	PY	NA	P
Nanninga et al., 2019 (122)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Nelson et al., 2020 (69)	Meta-analysis	Y	Y	N	Y	Y	N	PY	Y	Y	N	Y	Y	PY	Y	Y	Y
Niederdeppe et al., 2008 (157)	Systematic review	Y	N	N	PY	?	?	N	PY	N	N	NA	NA	?	Y	NA	Y
O'Dwyer et al., 2007 (71)	Systematic review	N	N	N	Y	PY	?	N	Y	PY	N	NA	NA	?	N	NA	N
O'Mara-Eves et al., 2013 (72, 73)	Systematic review	Y	Y	N	Y	?	Y	PY	Y	Y	N	Y	N	Y	Y	Y	Y
Oldroyd et al., 2008 (123)	Systematic review	Y	N	N	PY	Y	Y	N	Y	PY	N	NA	NA	?	Y	NA	?
Olstad et al., 2016 (74)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Olstad et al., 2017 (124)	Systematic review	Y	Y	Y	Y	PY	Y	PY	Y	Y	N	NA	NA	PY	PY	NA	Y
Pastor & Tur, 2020 (125)	Systematic review	N	Y	N	PY	Y	?	N	Y	?	N	Y	N	N	PY	Y	Y
Pearson et al., 2012 (126)	Systematic review	Y	N	N	Y	N	N	PY	Y	Y	N	NA	NA	Y	Y	NA	Y

Reference	Review type	AMSTAR2 Items (*critical domains)															
		1	2*	3	4*	5	6	7*	8	9*	10	11*	12	13*	14	15*	16
Pega et al., 2013 (75)	Systematic review	Y	Y	Y	Y	PY	Y	Y	Y	Y	N	NA	NA	Y	Y	NA	Y
Raison & Harris, 2019 (127)	Systematic review	Y	N	N	Y	Y	Y	PY	PY	Y	N	NA	NA	N	PY	NA	N
Rice et al., 2009 (161)	Systematic review	Y	N	N	PY	Y	Y	N	PY	Y	N	NA	NA	Y	N	NA	Y
Saad et al., 2021 (128)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	Y	Y	Y	N	N	?
Schuz et al., 2021 (129)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	N	NA	Y
Secker-Walker et al., 2002 (158)	Systematic review	Y	Y	N	Y	Y	Y	N	PY	Y	N	NA	NA	Y	N	NA	Y
Shen et al., 2021 (130)	Systematic review	Y	Y	N	N	Y	?	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Simpson et al., 2021 (76)	Systematic review	Y	Y	Y	PY	Y	Y	N	PY	Y	N	NA	NA	?	N	NA	?
Smith et al., 2017 (77)	Systematic review	Y	Y	N	PY	Y	?	N	PY	Y	N	NA	NA	Y	Y	NA	?
Smith et al., 2020 (131)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Spadea et al., 2010 (132)	Systematic review	Y	N	N	PY	Y	?	N	PY	Y	N	NA	NA	Y	Y	NA	Y
Stormacq et al., 2020 (78)	Systematic review	Y	Y	N	Y	Y	?	Y	Y	Y	N	NA	NA	N	Y	NA	PY
Sumar & McClaren, 2011 (159)	Systematic review	Y	Y	N	PY	Y	?	N	PY	Y	N	NA	NA	?	Y	NA	?
Thomas et al., 2008 (134)	Systematic review	Y	N	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	Y	NA	Y
Thomas et al., 2018 (133)	'Qualitative review'	Y	N	N	PY	Y	?	N	PY	N	N	NA	NA	?	Y	NA	Y
Thomson et al., 2013 (79, 165)	Systematic review	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Tinner et al., 2018 (135)	Systematic review	Y	Y	N	?	?	Y	N	Y	Y	N	Y	N	?	N	N	?
Turnbull et al., 2020 (136)	Systematic review	Y	Y	N	PY	N	N	N	PY	Y	N	NA	NA	Y	N	NA	Y
Van De Ven et al., 2020 (137)	Systematic review	Y	Y	N	PY	Y	Y	N	PY	Y	N	NA	NA	?	N	NA	?
Western et al., 2021 (140)	Systematic review	Y	Y	N	Y	Y	Y	PY	Y	Y	N	Y	PY	PY	Y	Y	Y
Wilson et al., 2011 (80)	Meta-analysis	Y	N	N	Y	?	PY	N	PY	N	N	Y	N	N	PY	Y	Y

Y = yes; N = no; PY = partial yes; ? = can't answer; NA = not applicable.

Appendix 3. Summary data extraction tables

Table 6. Summary data tables for umbrella reviews

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
Bambra et al., 2009 (16)	Organisational changes to the psychosocial work environment	Health (including specific diseases and general measures; sickness absence; health behaviours; injuries) and wellbeing (physical and mental; social impacts' psychosocial outcomes)	N=7 systematic reviews	Examined impacts on inequalities in health or wellbeing, primarily by SES Extracted differences in health or wellbeing outcomes by SES	Employment and working conditions, n=5 reviews examined differences by socioeconomic or demographic group	Evidence tentatively suggests that organisational workplace interventions may have the potential to impact on health inequalities amongst employees
Bambra et al., 2010 (17)	Interventions aimed at influencing the wider social determinants of health (housing and living environment; work environment; transport; health and social care services; agriculture and food; unemployment and welfare; water and sanitation; education)	Health and wellbeing, and non-health effects	N=30 systematic reviews	Examined impacts on inequalities, primarily by SES and considered as outcome the non-health effects on people from a disadvantaged group with a pre-existing health condition.	Effects on inequalities considered in 15 reviews. Employment and working conditions, n=5 [3] Health services, n=4 targeted [0] Income security and social protection, n=3 targeted [0] Living conditions: Housing, n=5 targeted [0]; Transport, n=0; Agriculture and food, n=0; Water and sanitation, n=0 Social and human capital, Education, n=0	Evidence suggests that some categories of intervention (in the fields of housing and the work environment) may impact positively on inequalities or on the health of specific disadvantaged groups Evidence on the differential impacts of interventions by socioeconomic position was largely absent

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
Bambra et al., 2014 (18)	Organizational and financial health system interventions	Access to health care, service need, service use, and general health	N= 9 systematic reviews	Health equity defined in terms of SES inequalities in access and utilization, health outcomes, or income, and in terms of differences in outcomes by SES or outcomes for the most vulnerable or deprived groups. SES measures: Area, SES, Income, Poverty	Health services, n=9	Strong conclusion that market-style reforms are bad for health equity.
Cairns et al., 2015a (19)	20 mph interventions	Health outcomes, including morbidity, health behaviours, mortality, accidents and injuries	N=5 reviews	Unclear. Extracted SES inequality outcomes.	Living conditions, none examined health inequalities	There was no evidence of the effects on SES inequalities.
Gibson et al., 2011 (20)	Housing and neighbourhood interventions	Health and wellbeing outcomes	N=5 systematic reviews;	Included reviews that particularly focused on health inequalities, either via targeting interventions at disadvantaged groups or by reporting differential impacts according to social subgroups.	Living conditions, Housing, n=5 reviews of targeted interventions [0]	Relatively strong evidence for interventions aimed at improving area characteristics and compelling evidence for warmth and energy efficiency interventions targeted at vulnerable individuals.
Guindon et al., 2022 (82)	Alcohol tax and price policies	Price elasticities, drinking behaviour	N=30 reviews	Unclear. Examined socioeconomic differences in price responsiveness.	Behavioural determinants Alcohol	Inconclusive on SES. Limited evidence on socioeconomic differences in price responsiveness.
Hillier-Brown et al., 2019 (21)	Social protection policies	Health measures including morbidity, health behaviours,	N=6 systematic reviews	Studies needed to report socioeconomic health inequality	Social determinants Income security and social protection, n=6	Notes that there has been very little research examining the effects of

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
		mortality, accidents and injuries.		outcomes. Considered outcome related to health inequalities in terms of SES.	reviews of targeted interventions [0]	specific welfare state policies on health inequalities. Evidence is mixed and inconclusive.
Lorenc et al., 2013 (22)	Non healthcare interventions	Health outcomes	N=9 systematic reviews and n=3 umbrella reviews	Included systematic reviews which evaluated the effectiveness of any non-healthcare intervention in a high-income country on any health outcome, and which reported differences in intervention effectiveness between population groups, defined in terms of PROGRESS-Plus.	Behavioural determinants Weight, nutrition and physical activity, n=5 reviews Tobacco, n=3 reviews Injury prevention, n=1 review	Suggest that findings are consistent with 'downstream' preventive interventions being more likely to increase health inequalities than 'upstream' interventions.
Macintyre et al., 2020 (83)	Population level interventions for adolescent health	Adolescent outcomes including health, happiness and wellbeing; successful transition from adolescence to adulthood	N=140 reviews	Data were extracted in six domains to identify 'equity-focused' reviews.	15 'equity-focused' reviews Social determinants Social and human capital, School environment, n=1 review Behavioural determinants Tobacco, n=4 reviews Weight, nutrition and physical activity, n=6 reviews Multiple health behaviours, n=1 review	"For 'equity focused' reviews, there was insufficient evidence to identify which interventions were effective for reducing inequalities.

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
					Mental health, n=1 review Sexual and reproductive health, n=1 review	
Main et al., 2008 (84)	Population tobacco control interventions	Smoking-related outcomes	N=19 reviews	Included reviews that reported characteristics of the participants in at least some of the included primary studies in terms of at least one socio-demographic variable (SES, religion, place of residence or area-level index of deprivation).	Behavioural determinants Tobacco, n=2 reviews explicitly considered health inequalities according to SES	Concludes that there is preliminary evidence that increases in tobacco price may have the potential to reduce smoking related health inequalities.
McGowan et al., 2021 (23)	Place-based interventions; changes in physical, social, or economic environment	Health (physical and mental, mortality) including health behaviours (physical activity, dietary behaviours, active travel), measures of personal or community wellbeing, or outcomes relating to the social determinants of health, including social cohesion, crime and safety, housing or neighbourhood condition and access to services, or training and employment opportunity outcomes	N=13 systematic reviews	Measures of inequalities in the health outcomes between groups or populations according to PROGRESS-Plus factors were collected as secondary outcomes.	Wider social determinants Living conditions, Environment and transport, n=1 review examined equity effects	Note that the differential effect of these interventions and impact on health inequalities is unclear.

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
Naik et al., 2019 (24)	Macro-, population-level economic factors	Health outcomes including morbidity, mortality, prevalence and incidence of conditions and life expectancy.	N=62 reviews	Health inequalities by gender, ethnicity or SES were included as secondary outcomes.	Income security. Unclear which of the included reviews examined health inequalities by SES. Much of the included evidence was from observational studies.	
Pierron et al., 2018 (25)	Parenting support	'Perceived' health and psychosocial outcomes	N=20 reviews	Reviews were analysed for the consideration they gave to social inequalities using PRISMA-E.	Social and human capital, Early childhood development, n=1 review Behavioural Maternal health, n=1 review Mental health, n=1 review 10 reviews addressed social inequalities; 4 reviews integrated equity into an analysis strategy	Three reviews explained results as supporting a reduction in social inequalities; one review mentioned an increase in inequalities. Most studies were of targeted interventions.
Shah et al., 2021 (26)	National or population level policies or interventions that address the social determinants of mental health.	Mental health and wellbeing; symptoms of mental health; suicide	N=20 reviews	Reviews were included if they reported national/population level policies or initiatives that incorporated a social determinant of mental health as recognised by WHO.	Income security, n=7 reviews Living conditions, n=5 reviews Other, n=5 reviews	Small, low-quality evidence base for population level interventions addressing the social determinants of mental health.
Thomson et al., 2018 (27)	Upstream, population-level public health interventions	Health outcomes including morbidity, mortality, health	N=29 reviews	Inequalities by SES were included as primary outcome measures.	Social determinants Living conditions, n=2 reviews	Results were mixed across the public health domains.

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
		behaviours, accidents, or injuries			Employment and working conditions, n=1 review Behavioural determinants Tobacco, n=3 reviews Alcohol, n=1 review Managing chronic conditions, n=1 review Weight, nutrition and physical activity, n=8 reviews Oral health, n=1 review Control of infectious diseases, n=1 review Sexual and reproductive health, n=1 review	Reduce health inequalities = taxes on unhealthy food and drinks, food subsidy programmes for low SES women, and fiscal incentive schemes for childhood vaccinations, controlling tobacco advertising, water fluoridisation, requiring proof of immunisation for school entry and regulating traffic speeds, national tooth brushing education programme, nutrition programme targeted at low-income families. Fiscal interventions with no overall effect = tobacco taxes and free fruit provision in schools. Regulatory interventions with no effect = mandatory fortification to increase folate intake; legislative salt reduction; and trans-fat ban and calorie labelling in restaurants. Educational interventions with limited effects = smoking cessation campaigns,

Reference	Intervention(s)	Outcome(s)	Number of reviews	Equity approach	Determinant categories Number of reviews reporting on health inequalities [differential effects]	Summary of findings
						health information campaigns and the promotion of childhood vaccinations through the media. Interventions that appear to increase inequalities = lowering alcohol taxes, 20 mph zones and low emission zones.
Thomson et al., 2019 (85)	Community pharmacy interventions	Health, physiology and biochemical outcomes; behavioural outcomes	N=7 reviews	Examined how the effects of the interventions were moderated in terms of PROGRESS-Plus factors.	Multiple health behaviours, n=1 equity focused review	At present, little is known about how community pharmacy-delivered public health interventions impact on health inequalities.
Welch et al., 2016 (86)	Interactive social media interventions	Physical (e.g., weight change, functional status), psychosocial health (e.g., quality of life and self-efficacy), satisfaction, behaviour change and adverse effects (e.g., addiction, depression)	N=11 systematic reviews	Determined whether results were presented separately across characteristics associated with privilege or disadvantage and assessed whether interventions were aimed at disadvantaged populations based on PROGRESS-Plus factors.	Multiple health behaviours, none of the included reviews presented disaggregated analyses across characteristics associated with disadvantage.	

Table 7. Summary data tables for review-level evidence: wider social determinants of health

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
Abimbola et al., 2019 (28)	Decentralised governance; including the process of decentralizing the governance of a jurisdiction or of specific functions or as a process of redistributing powers, resources or responsibilities away from a central government.	Equity, efficiency and resilience	n=51 studies	Aim was to understand why, how and under what circumstances decentralization influences health system equity, efficiency, and resilience. SES measures: not explicitly considered.	Health services	Decentralization creates multiple centres of governance. Equity effects may depend on both horizontal and vertical relationships.
Bambra et al., 2007 (30)	Reorganisation of work structures in three clusters: task variety, teamworking, and autonomous groups.	Psychosocial work environment and health outcomes (specific diseases and general measures)	n=19 studies	Impacts on health inequalities were considered as outcomes	Employment and working conditions, n=1 study differentiated outcomes by SES.	Authors conclude provided little insight into health inequalities.
Bambra et al., 2008a (32)	Organizational-level shift work interventions	Health-related; incidence of specific diseases, physical or psychological health and well-being, sickness absence, health-service usage, health behaviours, occupational injuries, physiological measures, work-life balance.	n=26 studies	Differences in outcome by social group, age, and gender were noted	Employment and working conditions	No studies examined health inequalities
Bambra et al., 2008b (31)	Compressed working week interventions	Health and work-life balance	n=40 studies	Impacts on inequalities in health were considered as outcomes.	Employment and working conditions	No studies examined health inequalities
Benmarhnia et al., 2014 (34)	Interventions to reduce air pollution, including regulation, low emission zones, and congestion charging schemes.	Pollution, health effects of pollution	n=8 studies	Studies evaluating effects simultaneously on different populations or areas were included	Living conditions, n=3 studies examined differential effects by SES.	Results were mixed. Deprived areas had both more benefit and less benefit across studies.
Black et al., 2012 (35)	Food subsidy programmes that provided subsized food alone or in	Nutritional intake/food purchases, weight/BMI, physical health, pregnancy	N=14 studies	Targeted. Included studies of interventions that targeted socio-	Living conditions	Limited (high-quality) evidence suggests positive impacts of food

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
	combination with other health interventions	related outcomes, child growth and development, health service utilisation		economically disadvantaged adults, children or families living independently in the community		subsidy programs on the health and nutrition of adults and children
Bonell et al., 2013a,b (36, 37)	School environment interventions	Health and well-being	N=10 studies	Unclear. Examined subgroup effects but little information provided on methods.	Social and human capital, N=1 study of a targeted intervention examined effects by SES.	Studies provided few data relevant to health inequalities.
Brennenstuhl et al., 2012 (38)	Different types of welfare regimes based on dominant typologies (e.g. liberal, conservative, social democratic)	Health outcomes	n=33 studies	Studies needed to explicitly compare health outcomes (including health inequalities) based on welfare state theory as a primary objective.	Income security, n=10 studies of health inequalities	One study reported no differences by regime type, while the remainder either countered the hypothesis that inequalities would be lowest in social democratic regimes or reported equivocal results.
Brunton et al., 2015 (39) (Update of O'Mara-Eves et al., 2015)	Community engagement as a 'direct or indirect process of involving communities in decision making and/or in the planning, design, governance, and delivery of services using methods of consultation, collaboration, and/or community control.	Health outcomes	N=28 studies	Targeted. Included studies of community engagement that involved disadvantaged communities, including low-income groups (studies contained a high proportion focused on ethnic minority groups).	Social and human capital	Higher levels of community engagement are linked to greater beneficial effects than lower community engagement for interventions that target health outcomes amongst disadvantaged groups.
Butel and Braun, 2019 (40)	Activities to increase collective efficacy among communities	Health outcomes	n=8 studies	Targeted. Studies needed to include a measure of a health disparity.	Social and human capital	Collective efficacy may be a mediating factor in community health outcomes but lack of evidence about whether reduces health inequalities.

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
Buttazzoni et al., 2020 (41)	Smart city interventions aimed at improving human health or well-being	Health outcomes	N=28 studies	Used PROGRESS-Plus to code equity characteristics in the included studies.	Living conditions.	No differential effects and no interventions targeted at low SES groups.
Cheng et al., 2020 (43)	Applied an eHealth literacy lens to explore current practices in the development of eHealth interventions targeting socially disadvantaged groups.	'Clinical' health outcomes; health knowledge and behaviour	N=51 studies	Targeted. Included studies of interventions that targeted socially disadvantaged groups with any health condition, including age, education, migrant status, living in a rural or remote area, or SES	Health services, n=20 studies targeted low-income groups	Effectiveness of eHealth interventions was mixed
Cleland et al., 2020 (44)	20 mph or 30km/h zones and speed limits interventions	'Public health' outcomes	N=12 studies	Unclear. 'Inequalities' extracted under outcomes.	Living conditions, n=1 study examined differential effects by SES	Authors concluded that research is lacking about 20 mph restrictions and health inequalities.
Cyril et al., 2015 (45)	Community engagement	Health outcomes including health behaviours, public health planning, health service access, and health literacy		Targeted. Included studies of that evaluated community engagement as a component of a health programme for disadvantaged populations.	Social and human capital	Well-designed and implemented community engagement models can lead to improved health and health behaviours among disadvantaged populations.
Dawson et al., 2015 (46)	Nursing and midwifery governance and workforce interventions	Availability of health services; accessibility, acceptability and quality of health care; health outcomes		Included studies with demonstrable outcomes for access and health equity.	Health services	Inconclusive.
Durand et al., 2014 (47)	Interventions or strategies designed to engage disadvantaged patients in medical decision-making and/or facilitate shared decision-making, patient involvement in medical decision-making and patient activation	Unclear, included knowledge, participation, decisional conflict, and self-efficacy	n=19 studies	Targeted. Included studies that assessed the effect of interventions on disadvantaged groups (or health inequalities) or included at least 50% of people	Health services, n=7 studies examined SES effects [3 targeted].	The authors concluded that interventions were more beneficial for disadvantaged groups compared to more advantaged groups

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
				from disadvantaged groups.		
Egan et al., 2007a (48)	Organisational-level interventions to increase employee participation in workplace decision-making	Psychosocial (including demand, control and support related measures) and health (including physical health, mental health, absenteeism and physical measures) outcomes	n=18 studies	Unclear, examined whether studies reported differential effects by social group	Employment and working conditions	No studies reported differential effects by SES
Egan et al., 2007b (49)	Privitisation (i.e. transferring or partially transferring public assets and shares to private ownership and facilitating greater private sector investment in a business) of public sector industries and utilities	Health outcomes, including measures of physical health, mental health, and injuries or absenteeism.	n=11 studies	Unclear	Employment and working conditions, n=1	
Fairbank et al., 2000 (50)	All types of breastfeeding promotion intervention	Initiation of breastfeeding; duration and exclusivity of breastfeeding	N=59 studies	Targeted. Studies recruiting population subgroups of women, such as women from low-income groups were eligible.	Social and human capital,	Some evidence to show that one-to-one health education can be effective at increasing initiation rates among women on low incomes.
Finnie et al., 2019 (51)	Year-round school calendars, including single track and multiple track	Academic achievement, cognition, social or emotional skills, or delinquent behaviors	n=3 studies	Targeted. Posited that programmes that are effective at improving academic outcomes will advance health equity. Programmes often targeted toward low-income and at-risk racial communities.	Social and human capital, n=3 studies on equity effects. (n.b. no health outcomes)	Mixed effects for single-track calendars. Potential harms with multi-track calendars.
Gardner et al., 2017; Gardner et al., 2019 (52, 53)	Parenting intervention (Incredible Years programme)	Behavioural outcome (Eyberg Child Behavior Inventory Intensity score)	n=15 studies	Data requested on a range of indicators of social disadvantage. Moderation effects were explored.	Social and human capital, N=15 trials on equity effects.	Significant overall effect of Incredible Years intervention on child conduct problems. Overall, no significant moderation effects by

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
						any social disadvantage indicator (neutral).
Gibson et al., 2017 (54)	Welfare-to-work interventions	Parent or child physical and mental health	n=12 studies	Targeted. Included studies of interventions aimed at adult lone parents exclusively or in combination with couple parents	Income security,	Lack of robust evidence from outside North America. Intervention did not have important effects on health.
Hahn et al., 2015 (55)	Programmes intended to increase high school completion	High school completion	N=1 meta-analysis of 167 studies	Included studies of interventions targeted towards high-risk populations, including low-income communities.	Social and human capital	Concluded that likely to narrow academic achievement gaps and advance health equity.
Harris et al., 2015 (56)	Community-based peer support	Health literacy outcomes	N=570 studies	Considered the 'equity context' to the delivery of the intervention and potential of the intervention to reduce health inequalities.	Health services	Peer-support programmes have the potential to improve health literacy and reduce health inequalities, but potential is dependent upon the surrounding equity context
Hunter et al., 2019 (58)	Urban green space interventions designed to affect environmental conditions, promote/encourage health and wellbeing, or tackle inequalities and involved physical change to green space.	Health, wellbeing, social or environmental outcomes	n=38 studies	Studies were classified based on how they analysed PROGRESS-Plus factors including differential intervention effects, subgroup analyses, interaction analyses and demographic descriptors.	Living conditions, 20 studies based in disadvantaged neighbourhoods.	No studies reported differential effects by SES. Results from studies in disadvantated neighbourhoods were relatively mixed in providing supporting evidence for intervention.
Ibanez et al., 2012 (59)	Programmes implemented by health care professionals to promote breastfeeding	Breastfeeding initiation and duration	N=10 studies	Targeted. Studies were included if the intervention was	Social and human capital	Educational programmes delivered in the context of ongoing personal contact with a health

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
				targeted towards low-income women		professional were effective in promoting breastfeeding in low-income women
Joyce et al., 2010 (60)	Flexible working conditions, including self-scheduling/flexible scheduling of shift work; flexitime; overtime; gradual/partial retirement; involuntary part time work and fixed-term contract.	Physical, mental and general health outcomes	n=10 studies	Contacted authors of included studies to determine whether unpublished data on differential outcomes by SES or demographic characteristics were available. Subgroup analyses planned but not undertaken.	Employment and working conditions	No studies reported differential effects by SES
Kim et al., 2016 (61)	Community-based health workers	Unclear, included changes in health behaviours	N=61 studies	Targeted. Included studies of interventions that targeted vulnerable populations including low income populations.	Health services	Interventions by CBHWs appear to be effective. Effects in low income patients not explored separately.
Ljungdahl & Bremberg, 2015 (63)	Extended compulsory or secondary level education	Health or health behaviours	N=22 studies	Targeted. Aim of the study was to examine if the health of people with the lowest level of education could be improved.	Social and human capital	Main health effects of education seem to be relative. Not clear if extended compulsory education has an impact on health in the least educated group.
Lucas et al., 2008 (64)	Interventions to increase the amount of money available to a family, including direct cash payments and positive taxation schemes.	Child physical and mental health, oral health	N=9 studies	Subgroup analyses were planned of the effects of socioeconomic position where sample included more than one socioeconomic group.	Income security and social protection	Absence of evidence on equity effects.
McGrath et al., 2021 (65)	Community interventions that seek to address acute financial stressors and their consequences	Mental health outcomes, including psychological distress, symptoms of common mental disorders,	n=15 studies	Aimed to evaluate the impact of interventions on health inequalities. Included interventions that adopted universal or	Income security and social protection, n= 7 studies (welfare and advice services co-located in healthcare	Some evidence that financial insecurity and associated mental health problems were amenable to change.

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
		wellbeing and mental health service utilisation		selective prevention strategies.	settings), n=3 studies (active labour market programmes) Living conditions, n=1 study (food insecurity)	
Molloy et al., 2021 (66); Beatson et al., 2021 (33)	Sustained nurse home visiting	Child physical health and psychosocial/psychomotor outcomes; parenting practices; parent psychosocial wellbeing; parent physical health; maternal self-sufficiency	n=30 studies	Targeted. Included studies of interventions that targeted disadvantaged families	Social and human capital	Targeted. Consistently effective for parenting outcomes and Nurse Family Partnership effective for higher risk subgroups.
Morrison et al., 2014 (67)	Parenting interventions delivered during early childhood in European countries	Child health and developmental domains and/or parenting outcomes	n=23 studies (11 interventions)	Unclear. Information extracted on whether the type of intervention was targeted or universal; majority of interventions identified were targeted at children living in deprived areas.	Social and human capital, 9/11 interventions targeted children and families living in deprived areas.	None of the included studies reported differential effects. Programmes offering intensive support, information and home visits using a psycho-educational approach and aimed at developing parent's and children's skills showed more favourable outcomes.
Mulvaney et al., 2015 (68)	Cycling infrastructure	Cycling injuries	n=21 studies	Secondary objective to evaluate the effects on reducing injuries by social group. Planned to undertake subgroup analyses on disadvantaged vs. non-disadvantaged groups.	Living conditions	No studies examined effects of social deprivation.
Nelson et al., 2020 (69)	Patient navigation services in increasing colorectal, breast, and cervical cancer screening rates	Cancer screening rates	N=37 studies	Included studies of interventions targeted towards patients in populations adversely affected by disparities,	Health services	Positive effect of navigation on screening. Effects in low income patients not explored separately.

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
				including low-income populations.		
O'Campo et al., 2015 (70)	Unemployment insurance policies	Mental wellbeing	N=33 studies	Explored relationships between unemployment insurance, poverty, and mental well-being	Income security and social protection	Generous unemployment insurance programmes can moderate harmful consequences of unemployment
O'Dwyer et al., 2007 (71)	Area-based interventions based on changing a locality or specific place	Health outcomes	N=24 studies	Reviewed interventions which aimed to reduce inequalities between groups	Living conditions	Some, but limited, evidence that area-based interventions reduce inequalities.
O'Mara-Eves et al., 2013; O'Mara-Eves et al., 2015 (72, 73)	Public health interventions that incorporate community engagement	Health and community outcomes	N=131 studies	Characterised study populations or reported differential impacts of social determinants of health according to the 'PROGRESS-Plus' framework.	Social and human capital	Positive impact on a range of health outcomes across various conditions. Unable to test the hypothesis that can reduce health inequalities due to insufficient data.
Olstad et al., 2017 (124)	Targeted obesity prevention policies, including laws, regulations, ordinances, programmes, guidelines and recommendations, whether voluntary or mandatory.	Anthropometric, dietary or physical activity outcomes	N=20 studies	Studies were included if they evaluated policies targeted at socioeconomically disadvantaged adults or children, or all individuals within a disadvantaged setting.	Living conditions, n=2 studies	Policies involving changes to built environments yielded nearly uniformly null findings in children and adults.
Pega et al., 2013 (75)	In-work tax credits for families	Mental and physical health outcomes	N=5 studies	Extracted data on key socio-demographic characteristics of participants at baseline and at the endpoint within and beyond the PROGRESS framework and incorporated the Cochrane Campbell	Income security and social protection, n=3 studies explored equity impact according to level of education	No evidence for an effect on health status.

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
				Methods Group Equity Checklist (Campbell & Cochrane Equity Methods Group 2011) into the data extraction form. Also extracted data on whether the intervention included strategies for supporting disadvantaged populations.		
Simpson et al., 2021 (76)	Social security policy reforms; included national or regional social security change (e.g. change in benefits level, change in entitlement and introduction or removal of a benefits policy)	Mental health outcomes	n=38 studies	Extracted data from studies that reported subgroup effects by SES (income, wealth, poverty, education level, employment or occupational status, area-level indicators).	Income security, n=14 studies assessed subgroup effects by SES.	Studies found that contractionary policies tend to increase inequalities, whereas expansionary policies have the opposite effect.
Smith et al., 2017 (77)	Built environment feature(s) or interventions (including public transport).	Physical activity and/or travel behaviours	n=28 studies	Studies were needed to report effect estimates stratified by ethnicity or SES or examined effect modification or interactions between the intervention or exposure variable and ethnicity or SES.	Living conditions, n=3 studies examined health inequalities.	Authors report that most analyses found no statistically significant differences in intervention effect by SES (2 income).
Stormacq et al., 2020 (78)	Targeted health literacy using a clinical approach and/or public health approach; delivered at the individual/intrapersonal level; delivered by any healthcare or social work professional from within or outside the healthcare system	Outcomes related to the capacity to apply health information, including health-related quality of life and health-related outcomes, health behaviours, and access and use of healthcare services,	n=21 studies	Included studies of intervention that targeted socially or socioeconomically disadvantaged adults in the community	Health services	N=13 studies showed intervention was effective. More likely to be successful if theory-based and multi-faceted.

Reference	Intervention(s)	Outcome(s)	(total included studies)	Equity approach	Determinant categories Number of studies reporting on health inequalities	Summary of findings
Thomson et al., 2013 (165)	Housing interventions, including rehousing and any physical change to housing infrastructure	Health, illness, and well-being related outcomes	n=39 studies	Investigated equity effects and differential impacts across population subgroups. Where available, data for specific population subgroups were extracted and reported separately.	Living conditions	None of the included studies reported differential impacts by SES.

Table 8. Summary data tables for review-level evidence: behavioural determinants of health

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Anselma et al., 2020 (87)	Interventions targeting physical activity, sedentary behaviour and/or dietary behaviour among 9–12 year old children	Physical activity, sedentary behaviour, and dietary behaviour	N=24 studies	Targeted. Studies were included if interventions were targeted toward children from low socioeconomic environments.	Service provision	Inconclusive evidence
Attwood et al., 2016 (88)	Primary-care-based individual-level interventions targeting physical activity, fitness or sedentary behaviour	Physical activity, fitness and sedentary behaviour	n=200 studies	Where reported, differential intervention effects using interaction or subgroup analyses for at least one PROGRESS-Plus factor were extracted. Included both subgroup and interaction analyses.	Service provision (secondary prevention), n=6 studies reported differential effects by relevant PROGRESS-Plus factors (3 education, 3 SES)	The results of equity analyses suggested no differences in effect.
Baker et al., 2015 (141)	Community wide, multi-strategic interventions for increasing physical activity	Physical activity	n=33 studies	Sought to identify studies which has conducted analyses of outcome measures by SES subgroups	Service provision, n=2 studies reported SES subgroups (income and education).	No conclusions drawn.
Beauchamp et al., 2010 (91)	Prevention and treatment of CVD including smoking reduction strategies	Smoking prevalence or consumption; predictive performance or changes in the proportion of people assessed at being at high risk of CVD; changes in mortality rates, further CVD events or hospital readmissions, changes in cardiovascular risk factors, or behavioural modification.	n=49 studies	Studies included if they reported quantitative outcomes among groups or individuals according to SES. Studies were also examined for any description or exploration of barriers to uptake or effectiveness among lower SES groups or individuals.	Fiscal Service provision n=28 studies were related to smoking reduction strategies.	Evidence showed varying effects of increasing tobacco taxes among lower socioeconomic groups. Available evidence suggests that subsidized NRT is effective among lower SES groups in the short term.
Beauchamp et al., 2014 (142)	Obesity prevention interventions	Anthropometric outcomes	N=14 studies	Studies needed to report changes in anthropometric outcomes stratified by SEP or report an interaction	Service provision	6 studies showed a beneficial effect among lower SEP groups. Studies that were shown to be

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
				term. Aimed to include primary prevention strategies.		effective in lower SEP participants primarily included community-based strategies or policies aimed at structural changes to the environment.
Behbod et al., 2018 (143)	Interventions designed to reduce exposure of children to environmental tobacco smoke	Children's exposure to tobacco smoke, child illness and health service utilisation, smoking behaviours of children's parents and carers.	n=78 studies	Where possible, outcomes were examined by gender, age, and SES	Regulation and legislation	No studies reported differential effects.
Black et al., 2017 (92)	Family-based and school or preschool nutrition programmes	Dietary intake and health status	N=39 studies	Targeted. Reviewed the impact of programmes on social inequalities. Socio-economic disadvantage was defined as families from areas described as disadvantaged, of low SES, and disadvantaged minorities.	Service provision, n=7 studies were targeted at disadvantaged populations	No evidence that targeted programmes were more (or less) effective in disadvantaged populations compared to the overall assessment
Boland et al., 2018 (93)	Behavioural smoking cessation interventions delivered through a technology-based platform	Smoking abstinence	N=13 studies	Targeted. Studies were included if the intervention targeted disadvantaged smokers	Service provision	Lack of evidence
Brown et al., 2014a (94)	European individual-level smoking cessation interventions to reduce smoking in adults	Smoking abstinence	N=29 studies	Studies needed to report differential outcomes for at least two socioeconomic groups.	Communication/ marketing Service provision	Overall equity effects were 10 neutral interventions, 18 negative and 1 unclear. Most of the interventions associated with a neutral equity effect equally benefitted all SES groups. Untargeted smoking cessation interventions in Europe are likely to have

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
						increased inequalities in smoking.
Brown et al., 2014b (95)	Interventions and policies to reduce smoking among young people	Any smoking-related outcome	N=38 studies	Studies needed to report differential outcomes for at least two socioeconomic groups.	Fiscal Regulation and legislation Communication/ marketing Service provision	Overall equity effects were 7 positive, 16 neutral, 12 negative, 4 mixed and 1 unclear. Only consistent effect was for price/tax interventions/policies.
Brown et al., 2014c (96)	Population-level interventions and policies to reduce smoking in adults	Any smoking-related outcome	N=117 studies	Studies needed to report differential outcomes for at least two socioeconomic groups.	Fiscal Regulation and legislation Communication/ marketing Service provision	Overall equity effects were: 33 positive, 36 neutral, 38 negative, 6 mixed and 17 unclear. Fiscal policies (price/tax increases) had the most consistent positive equity impact.
Brown et al., 2016 (97)	Community pharmacy-delivered interventions for alcohol reduction, smoking cessation or weight loss.	Behavioural outcomes, including smoking quit rates, change in alcohol intake and anthropometric outcomes	N=24 studies	Secondary outcomes were any differential effects of the interventions by age, ethnicity, sex, or SES or interventions that were targeted at disadvantaged groups.	Service provision (secondary prevention)	No studies assessed the differential effects of any measure of SES
Brown et al., 2019 (144)	Interventions designed to prevent obesity in children	Anthropometric outcomes	n=153 studies	Sought to identify studies that reported sociodemographic characteristics based on the PROGRESS checklist	Service provision, n=11 RCTs reported on the effect of interventions by SES.	Authors reported that the interventions did not appear to increase health inequalities.
Bryant et al., 2011 (98)	Behavioural smoking cessation interventions	Smoking abstinence	N=32 studies	Targeted. Studies were included of the intervention targeted any one of six disadvantaged groups; homeless, prisoners, indigenous populations, at-risk youth, individuals with low socio-economic status and individuals with a mental illness.	Service provision	Evidence for some socially disadvantaged groups appears promising, but overall findings were inconsistent

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Bull et al., 2014; Bull et al., 2018 (99, 164)	Health promotion interventions aiming to change healthy eating, physical activity and/or smoking behaviour in any combination	Behavioural outcomes relevant to smoking cessation, healthy eating and physical activity	N=35 studies	Targeted. Studies were included if interventions were targeted towards healthy adults described as 'low-income'.	Service provision	Small positive effects on healthy eating, physical activity and smoking. Found that including certain behaviour change techniques or delivery/context, individually or in combination were linked to increased and reduced effectiveness of healthy eating and physical activity interventions.
Cairns et al., 2015b (100)	Workplace interventions to reduce obesity	Obesity-related outcomes, including proxies for body fat (weight and height; BMI; waist measurement/waist-to-hip ratio; percentage of fat content; skin fold thickness).	N=18 studies	Interventions were classified in as universal or targeted. Measures and proxy measures of SES were income, education, occupation or area level disadvantage.	Service provision, n=9 studies of universal interventions and n=9 studies of targeted interventions.	Most studies (n=12) found no effects on inequalities in obesity; 3 studies found increases (3 universal) and 3 studies found reductions (2 targeted; 1 universal).
Carr et al., 2011 (101)	Health-related lifestyle advisor interventions	Health outcomes, including physiological and other measures of general health; health behaviour; health care beliefs and knowledge; heath care use; cost-effectiveness; adverse outcomes (e.g., complaints)	N=26 studies	Unclear, planned to extract data on outcomes which took socioeconomic profile into account	Service provision (secondary prevention)	No data on health inequalities
Chamberlain et al., 2017 (145)	Individual psychosocial interventions to motivate and support women to stop smoking in pregnancy, or prevent smoking relapse	Smoking abstinence in late pregnancy	N=102 studies	Included a focus on equity and PROGRESS Plus criteria used to assess differential impacts on equity.	Service provision, n=13 studies reported sensitivity analysis according to SES	8 studies reported lower abstinence rates or a negative association with quitting among women with lower SES; 3 reported no difference; and 2

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
						reported high/higher rates of intervention success. Overall neutral equity effect shown.
Crocker-Buque et al., 2017 (146)	Interventions delivered at primary/community care level, with the aim of increasing vaccine uptake in a specific population	Vaccine uptake	N=41 studies	Studies needed to be of interventions aimed at a specific population or the overall population, with outcomes reported for specific subgroups	Service provision. Most interventions were targeted. No studies reported differential effects by SES.	Multicomponent locally designed interventions demonstrated the best evidence among targeted populations of children and adolescents.
De Bourdeaudhuij et al., 2011 (147)	Physical activity interventions	Physical activity	n=3 studies	Authors of relevant reviews contacted for data for SES stratified analyses	Service provision, n=3 studies had data for SES stratified analyses	Lack of evidence to draw conclusions on impacts on inequalities.
De Sa & Lock, 2008 (148)	Interventions to promote fruit and/or vegetable consumption in schools	Fruit and vegetable intake	N=30 studies	Unclear	Service provision, n=1 study reported differences in outcome by SES groups.	No conclusions drawn.
De Silva et al., 2016 (149)	Population-level oral health promotion interventions for children	Oral health including dental caries and periodontal disease	N=38 studies	Secondary objective to identify interventions that reduced inequality in oral health outcomes. Data extracted for PROGRESS categories related to equity measures and reporting of outcomes assessed against the Prognosis Research Strategy (PROGRESS) framework to determine the effectiveness of the intervention in reducing inequality.	Service provision, n=7 studies analysed results by PROGRESS factors (including gender, place of residence and SES) and n=10 studies were of targeted interventions.	Outcomes unclear.
Dowswell & Towner, 2002 (102)	Health promotion interventions for the prevention of unintentional injuries	Accidents and injuries	N=32 studies	Targeted. Included studies of interventions that targeted socially deprived groups	Service provision. No evidence on differential effects.	Some interventions have produced positive results.

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Frazer et al., 2016 (150)	Legislative smoking bans, including comprehensive and partial bans	Health outcomes including any measure of morbidity or mortality	N=77 studies	Where possible, smoking behavioural outcomes were stratified by age, gender and SES.	Regulation and legislation, n=5 studies	No conclusions drawn on outcomes stratified by SES.
Gardner et al., 2013 (103)	Interventions to increase mammography use	Mammography uptake	N=21 studies	Targeted. Studies needed to be targeted towards asymptomatic low-income populations	Service provision	Interventions can effectively increase the uptake of mammography in low income populations
Gates et al., 2021 (104)	Interventions aimed at reducing health inequities related to vaccination or increasing vaccine access	Hospitalisation and death due to a vaccine preventable disease	N=2 studies	Mapped the evidence for factors associated with health inequities related to vaccination according to PROGRESS Plus. Studies needed to report on the outcome of health inequities, defined by the authors as 'unequal levels of illness and death'.	Service provision	Insufficient evidence
Harbers et al., 2020 (105)	Nudges in food purchasing environments	Food purchases, energy intake/content of purchases, and food choice	n=75 studies	Secondary aim to investigate the potentially moderating role of SEP.	Environmental/social planning, n=6 studies evaluated effects across levels of SEP.	Found that effects may be moderated by SEP, showing larger effects among low SEP individuals.
Hardman et al., 2020 (106)	Chronic disease self-management support interventions	Clinical, behavioural, psychosocial outcomes	n=19 studies	Studies needed to provide a comparison between a less and more 'advantaged group', based on income, education or socioeconomic area.	Service provision, n=7 studies assessed outcomes following intervention (some SES tailored) and examined effects by SES (education).	Limited evidence to suggest that SES does affect outcomes following SMS interventions
Hendry et al., 2015 (151)	Legislative initiatives to reduce levels of artificial trans-fatty acids in food	Mortality, morbidity, obesity, food purchasing practices, consumption of specific foods, and overall diet	N=14 studies	Extracted data on SES of study participants and any subgroup analyses by SES	Regulation and legislation, n=1 study examined SES differences, but unclear which study.	No conclusions drawn.
Hill et al., 2014 (107)	Tobacco control interventions: price increases; smokefree	Smoking-related behaviours	N=84 articles (7 reviews, 77 studies).	Studies needed to include data on SES impact; either the differential impact of	Fiscal Regulation and legislation Communication/marketing	Strong evidence that increases in tobacco price have a pro-equity effect on

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
	environments; educational media campaigns; advertising bans; health warnings; smoking cessation support; community-based programmes.			tobacco control measures by SES or their impact in low-SES groups.		the SES gradient in smoking. Evidence on the impact of other interventions is mixed.
Hillier-Brown et al., 2017 (152)	Interventions to promote healthier ready-to-eat meals	Consumer outcomes including dietary outcomes, purchasing behaviour and attitudes towards healthier menu choice and preferences; food outlet outcomes including changes in retail practices, process outcomes and profit.	n=30 studies	Differential effects by PROGRESS factors were extracted	Environmental/social planning, n=3 studies reported on differential effects by SES.	Found no consistent differential effects of mandatory calorie labelling in terms of food purchase by SES.
Hillier-Brown et al., 2014a (108) (Bambra et al., 2015 (89))	Interventions that aimed to prevent obesity, treat obesity, or improve obesity-related behaviours (diet and/or physical activity) among children	Obesity-related outcomes	N=23 studies	Considered interventions targeted at low SES children, and the effectiveness of universal interventions for low SES children vs. high SES children	Service provision, n=9 universal and n=14 targeted.	Found limited effectiveness of interventions with the potential to reduce SES inequalities in obesity. Provides some support for the hypothesis that obesity treatment interventions in children can be effective and that for interventions targeted at low SES children they have reduced obesity-related outcomes; for universal interventions they have reduced the SES gradient in obesity-related outcomes.
Hillier-Brown et al., 2014b (109)	Interventions (individual, community and societal) to reduce adult obesity	Obesity-related outcomes	N= 20 studies	Interventions classified in terms of whether they took a gradient approach or a targeted approach.	Service provision, n=4 universal and n=16 targeted.	Evidence of a reduction in inequalities found for tailored weight loss programmes targeted at

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
(Bambra et al., 2015 (89))						low-income groups, community-based behavioural weight loss interventions and community diet clubs. Benefits were short term.
Hollands et al., 2015 (153)	Portion, package or tableware size	Unregulated consumption or selection (with or without purchasing) of food, alcohol or tobacco products	N=72 studies	Examined extent to which intervention effect may be modified by participant characteristics including SES.	Environmental/social planning	Unclear how many studies reported effects by SES. No conclusions drawn.
Iheozor-Ejiofor et al., 2015 (154)	Water fluoridation for the prevention of dental caries	Dental caries	n=155 studies	Data were extracted on SES and subgroup analyses were planned.	Regulation and legislation, n=3 studies reported on effects across social class.	Unable to draw robust conclusions about the effects of water fluoridation on disparities in caries across social class.
Jackson et al., 2010 (160)	Alcohol price controls or taxation	Alcohol-related behaviours including alcohol consumption, alcohol-related harms and social problems	2 reviews and 15 studies	Relevant inequalities data (e.g., relating to age, sec, disability, and ethnicity) were extracted.	Fiscal, n=1 study reported effects by SES	Large reduction in price of alcohol resulted in significant increases in alcohol-related mortality with increase largest among individuals with low SES
Kader et al., 2015 (155)	Universal parental support interventions	Dietary habits, physical activity, sedentary behaviour, weight status	n=35 studies	Unclear	Service provision, n=1 study reported moderating effects for SEP; 5 studies were conducted among groups with low SEP or minority groups.	Lack of evidence on which to draw conclusions.
Kavanagh et al., 2009 (110)	School-based mental health interventions based on cognitive behavioural therapy	Mental health outcomes including depression, anxiety and suicidality	n=17 studies	Applied the 'Progress-Plus' framework and conducted subgroup analyses to assess the impact of interventions on health inequalities.	Service provision	No studies reported subgroup analyses based on SES

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Kendrick et al., 2008 (111)	Education and safety equipment for poisoning prevention	Storage of medicines and cleaning products; possession of syrup of ipecac; poisoning control centre numbers accessible	n=18 studies	Examined the effect of interventions by gender, ethnic group, single parenthood, and parental unemployment	Service provision. Unclear how many studies reported effects by social factors	
Kendrick et al., 2012 (156)	Home safety education	Injury, possession and use of home safety equipment and safety practices	n=98 studies	Meta-regression was undertaken to examine the effect of interventions by social group	Service provision. Unclear which studies report effects by social group.	Authors suggest findings confirm that interventions are not less effective in higher risk groups.
Kock et al., 2019 (112)	Individual-level smoking cessation interventions for disadvantaged groups	Smoking cessation	n=42 studies	Studies excluded if they did not report differential effects by SEP.	Service provision (smoking cessation), n=12 studies of non-SEP-tailored interventions enabled comparison between high and low SEP participants.	No differences between the estimates of smoking cessation according to the SEP of participants. There were no large moderating effects of tailoring.
Kornet-van der Aa et al., 2017 (163)	Obesity prevention and treatment programmes for adolescents	Body mass index	N=14 studies	Targeted. Studies were included if they targeted adolescents from socio-economically disadvantaged backgrounds (i.e., living in low-income communities or attending schools situated in low-income areas)	Service provision	Inconclusive evidence
Lehne & Bolte, 2017 (113)	Physical activity interventions for older adults (≥50 years)	Physical activity	n=11 studies	PROGRESS-Plus framework used to describe dimensions of social inequalities. Studies considering effects on social inequalities were identified if authors reported differential effect analyses by at least 1 PROGRESS-Plus factor.	Service provision, n=3 studies reported differential effects by education.	No indications for differential intervention effects were found.

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Love et al., 2019 (114, 115)	School-based physical activity interventions	Accelerometery-assessed physical activity	n=17 studies	Study authors contacted to obtain further information on the main intervention effect, stratified by gender and SEP.	Service provision, n=17 interventions.	The pooled main effect for daily minutes of accelerometer-assessed moderate-to-vigorous physical activity was non-existent and nonsignificant. There was no evidence of differential intervention effects by SEP.
Machado et al., 2021 (116)	Interventions to increase routine childhood immunization uptake	Uptake of routine childhood immunizations	N=40 studies	Targeted. Studies were included if interventions targeted parents of children five years old or younger, either of low SES or living in a low SES area.	Service provision	Comprehensive multi-component interventions were effective for addressing health inequalities in immunization coverage amongst low SES populations.
McGill et al., 2015 (117)	Healthy eating interventions	Dietary intake, clinical/physiological indicators related to non-communicable diseases, behaviours associated with a healthy diet	n=36 studies	Studies needed to report a quantitative comparison of differential effects of policy interventions to improve healthy eating by at least one measure of SEP.	Fiscal ("Price") Regulation and legislation Communication/marketing Service provision ("Person")	Interventions showed differential effects on healthy eating outcomes by SEP. "Upstream" interventions categorised as "Price" decreased inequalities, and "downstream" "Person" interventions, especially dietary counselling increased inequalities.
McLaren et al., 2016 (118); Barberio et al., 2017 (90)	Population-level interventions for dietary sodium reduction	Dietary sodium consumption	N=25 studies	Planned to examine differential impacts based on PROGRESS indicators	Regulation and legislation	Data only permitted differential analysis by sex.
Michie et al., 2009 (119)	Interventions to reduce smoking or increase physical activity and/or healthy eating	Behavioural outcomes relevant to smoking, unhealthy eating or physical activity	N=13 studies	Targeted. Studies were included if they targeted general population adults (18+ years) from low-income groups	Service provision	Evidence that behaviour change interventions can be effective in low-income groups. More focused interventions involving a small set of techniques

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
						may be more effective than interventions combining many different techniques.
Moodie et al., 2012 (162)	Plain tobacco packaging	Appeal/attractiveness and perceived behavioural effects (e.g., motivation to quit, deterring uptake)	N=37 studies	Unclear, impact on subgroups was explored (including age, gender, SES and ethnicity).	Regulation and legislation	Unclear which studies examined SES subgroups. No conclusions drawn.
Moore et al., 2015 (120)	Universal school-based health behaviour interventions	Diet, physical activity (including measures of physical fitness), smoking or alcohol	N=20 studies	Subgroup (or interaction) effects were extracted which reported effectiveness by SES.	Service provision (school-/community-based health promotion)	All studies with a negative gradient in effect included educational components alone or in combination with environmental change or family involvement. All studies with positive gradients in effects included environmental change components, alone or combined with education. Effects of multi-level interventions on inequality were inconsistent.
Murray et al., 2009 (121)	Interventions that aimed to find and support adult smokers	Unclear, outcomes of interest included service-related outcomes (e.g., reach) and smoking-related outcomes	N=48 studies	Targeted. Studies needed to examine interventions with disadvantaged groups to be included. These groups included indicators of SES including people on a low income, lone parents, poor families and people on benefits and living in public housing.	Service provision	Limited evidence on effective strategies to increase access to cessation services for disadvantaged smokers.
Nanninga et al., 2019 (122)	Public smoking bans	Children's second hand smoke exposure at home	n=8 studies	PROGRESS-Plus framework used as guide for analysing social inequalities. Studies needed to report at least	Regulation and legislation, n=8 studies.	Most of the studies found that children's SHS exposure at home slightly declined regardless of family SEP. 3 reported no

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
				one PROGRESS-Plus factor		impact; 4 reported a positive impact and 1 a negative impact.
Niederdeppe et al., 2008 (157)	Media campaigns to promote adult smoking cessation	Smoking abstinence	n=29 articles on 18 general population campaigns	Studies needed to compare the effectiveness of general population media campaigns between lower and higher SES populations, or assess the overall effectiveness of media campaigns targeted specifically to low SES populations	Communication/marketing, n=21 articles on targeted campaigns.	9 general population campaigns were less effective among low relative to high SES smokers; 6 were equally effective; and 3 were more effective among low SES smokers.
Oldroyd et al., 2008 (123)	Nutrition interventions including any strategy from screening to health policy aimed at increasing the consumption of a healthy diet	Dietary outcomes, including frequency and portions of food consumed, fruit and vegetable consumption, fat intake, fat-related dietary habits, dietary knowledge, behaviours and preferences for healthy foods	N=6 studies	Studies needed to be of interventions delivered to low socioeconomic groups or report data disaggregated by SES or ethnicity.	Service provision, n=3 studies reported effects by SES	Showed that nutrition interventions have differential effects by SES but provided only limited evidence for widening of inequalities.
Olstad et al., 2016 (74)	Universal obesity prevention policies including government policies (laws, regulations, ordinances, programmes, guidelines and recommendations, whether voluntary or mandatory) or non-government policies (e.g. school nutrition policies)	Obesity, dietary and physical activity related outcomes	n=36 studies	Studies were included if they assessed the impact of policies directed at the entire population (universal approach) and examined differential effects by SEP for at least two socioeconomic groups.	Fiscal Communication/marketing Environmental/social planning Service provision	7 policy types had a positive impact on socioeconomic inequalities; 10 had a negative impact; and 33 a neutral impact. Fiscal measures had consistently neutral or positive impacts on inequities.
Olstad et al., 2017 (124)	Targeted obesity prevention policies, including laws,	Anthropometric, dietary or physical activity outcome	N=20 studies	Targeted. Studies were included if they evaluated policies targeted at	Service provision, n=16 studies	Positive intervention impacts were found for disadvantaged children but

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
	regulations, ordinances, programmes, guidelines and recommendations, whether voluntary or mandatory.			socioeconomically disadvantaged adults or children, or all individuals within a disadvantaged setting.		none of the government policies targeting disadvantaged adults proved effective.
Pastor & Tur, 2020 (125)	Healthy eating interventions aimed at children and adolescents at risk of poverty	Change in eating habits	N=14 studies	Targeted. Studies were included if they were of interventions targeted at low-income populations, including based on place of residence or school located in a low-income area, belonging to a minority ethnic group identified as suffering from income inequality, or enrolled in a financial support programme.	Service provision	Studies showed mixed effects, but the overall direction of effect was towards a positive benefit on eating behaviour.
Pearson et al., 2012 (126)	Information, advice, or education about the prevention of unintentional injuries to children during outdoor play and leisure	Unclear, behaviour, knowledge and attitude outcomes included	N=23 studies	Targeted. Had a particular focus on studies that targeted children and families living in disadvantaged circumstances	Service provision	Lack of evidence that would inform decision making about the impact of outdoor injury prevention programs on health inequalities.
Raison & Harris, 2019 (127)	Interventions targeted at the individual, community or macro-level that aimed to influence the dental service utilisation behaviour of adults	Dental service use	n=6 studies	Examined interventions focused on addressing socio-economic differences in dental service use. SES measures could be based on individual characteristics or contextual measures.	Service provision	Evidence is limited and results are mixed.
Rice et al., 2009 (161)	Cigarette prices	Smoking-related behaviour	n=45 studies	Differential impact of price by subgroup was explored. Groups defined by the PROGRESS criteria.	Fiscal	13 studies assessed differential effects but only in relation to age, gender and ethnicity.

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Saad et al., 2021 (128)	Mobile interventions targeting common mental disorders among pregnant and postpartum women	Common mental health disorders; psychological wellbeing and distress; utilisation of pregnancy related and mental healthcare services	n=18 studies	Defined "equity evidence" as any effect estimate that could be linked to a PROGRESS-Plus characteristic, and "equity impact" as any gradient in effect estimates when adjusting for a PROGRESS-Plus characteristic. Primary equity analysis focused on ethnicity and race; age; SES; social capital; and experience of intimate partner violence.	Service provision, n=14 studies included in equity focused analysis	Evidence on the association of SES (income) was limited. Evidence linked to education showed mixed associations.
Schuz et al., 2021 (129)	Dietary nudging interventions	Observable indicator of food selection or consumption	n=19 studies	Studies had to report effect sizes stratified by a PROGRESS-Plus factor.	Environmental/social planning, n=13 studies reported effects by income, occupation, education, or area level deprivation	Studies showed mixed equity effects but either had no equity effects or negative effects.
Secker-Walker et al., 2002 (158)	Community-based interventions to reduce smoking	Self-reported smoking status and cigarette consumption	N=37 studies	Where possible, smoking behavioural outcomes were examined by sex, age and SES	Service provision	Outcomes were not reported/explored by SES
Shen et al., 2021 (130)	Interventions to reduce dental caries, including any form of clinical intervention or oral health education/oral health promotion activity for children and adolescents	Dental caries	n=13 studies	Studies needed to assess or report inequalities in dental caries.	Regulation and legislation Service provision	2 studies of oral health promotion showed negative effects on inequalities, 9 studies showed positive effects (2 oral health promotion, 3 topical fluoridates, 3 water fluoridation) and 2 showed neutral effects (1 oral health promotion, 1 topical fluoridates)

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Smith et al., 2020 (131)	Population tobacco control interventions. Updated Brown et al., 2014c.	Smoking-related outcome measures	N=68 studies	Studies had to compare a smoking-related outcome across two or more SES groups.	Fiscal Regulation and legislation Communication/marketing Service provision	Overall equity effects were: 17 positive, 1 neutral, 16 negative and 48 mixed/unclear. Findings for price increases and targeted cessation support suggest an equity-positive impact.
Spadea et al., 2010 (132)	Interventions to improve attendance in female cancer screening	Participation in screening	N=29 studies	Targeted. Study grouped as: (1) studies evaluating organized population programmes; (2) studies of different strategies of enhancing attendance within organized programs; and (3) studies evaluating interventions at the local level, specifically aimed at promoting screening uptake among underserved groups of women (low-income areas, ethnic minorities).	Service provision, n=12 studies of organised population-based screening programmes.	Did not support hypothesis that they would be effective in reducing socioeconomic inequalities in screening uptake.
Sumar & McClaren, 2011 (159)	Population folate intake interventions	Unclear, folate intake, reported knowledge or use	N=19 studies	Studies needed to assess the impact on 1 or more axes of inequality; income, education, or race/ethnicity.	Regulation and legislation Communication/marketing n=15 studies of 4 interventions reported impact by income or education.	Found some evidence to support that mandatory fortification policy was less likely than information campaigns to lead to worsening in SES inequalities in health.
Thomas et al., 2008 (134)	Population tobacco control interventions	Changes in smoking behaviour, indirect measures of tobacco consumption, exposure to ETS, changes in knowledge or attitudes, process and	n=84 studies	Studies had to report quantitative outcomes for individuals or groups with different demographic or socioeconomic characteristics (income,	Fiscal Regulation and legislation Communication/marketing Service provision N=11 studies reported outcomes by income or education.	No strong evidence of differential effects was found for smoking restrictions in workplaces and public places. Mixed evidence on increasing

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
		implementation measures and other health outcomes		occupation, education, gender, ethnicity, age).		the price of tobacco products.
Thomas et al., 2018 (133)	Mass media campaigns targeting physical activity among adult	Campaign awareness, recall of campaign messages, physical activity-related knowledge or attitudes, self-efficacy for physical activity, intention to be physically active or stage of change for physical activity, physical activity behaviour	N=23 studies of 17 campaigns	Studies needed to include at least one commonly used SES measure	Communication/marketing, n=12 studies reported SES differences in PA behaviours for 9 campaigns.	5 showed no difference between lowest and highest SES groups, 1 showed a better outcome for the lowest SES group and 2 showed a mixed outcome for the lowest SES group. Concluded that physical activity mass media campaigns have mostly equitable or better impacts for low SES groups.
Tinner et al., 2018 (135)	Universal interventions targeting multiple risk behaviours in adolescence	Alcohol use, smoking, drug use, unsafe sex, overweight/obesity, sedentarism, peer violence and dating violence	n=49 studies	Studies were screened to determine if they reported having conducted a subgroup analysis by SES.	Service provision, n=4 studies reported subgroup analyses by SES	Studies were pooled. No evidence of subgroup difference for any outcomes analysed.
Turnbull et al., 2020 (136)	Web- and smartphone-based self-care interventions	Health, behaviour, knowledge and psychosocial outcomes	n=18 studies	Studies were included if they explored whether social or cultural groups had modified intervention effectiveness and whether the independent contribution of the group on the outcome could be determined.	Service provision, n=6 studies reported SES effects (education or employment status).	Mixed evidence on differential effects. Evidence came from a small number of 'low-quality' studies.
Van De Ven et al., 2020 (137)	Workplace health promotion programmes targeting health behaviours including smoking, nutrition, alcohol	Smoking cessation, healthy nutrition, reduction in alcohol intake, increase in physical activity, reduction in body weight or BMI	n=13 studies	Studies needed to evaluate differences in effectiveness between socioeconomic groups.	Service provision	10 studies reported in qualitative terms on differential programme effectiveness and majority reported equal effectiveness across

Reference	Intervention(s)	Outcome(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
	intake, physical activity, body weight or BMI					socioeconomic groups. 6 studies provided quantitative information; programmes were more effective for workers in low socioeconomic position.
Western et al., 2021 (140)	Interventions deploying digital technologies to increase physical activity	Physical activity	N=19 studies	Analysed data according to SES to examine if effective when comparing (i) intervention and control groups amongst low SES participants; and (ii) intervention versus control group in high SES vs low SES participants. Also examined if number or type of behaviour change techniques was associated with the study outcome in low and high SES groups. Studies were also excluded if there was no index of SES status.	Service provision	Digital behaviour change interventions aimed at increasing physical activity were effective for people of high SES but not people of low SES.

Table 9. Summary data tables for review-level evidence: scoping reviews

Reference	Intervention(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
Ballesteros-Arjona et al., 2022 (29)	Interventions related to exposure to energy poverty (including inadequate indoor temps; dampness, mould or related; etc.); energy efficiency improvements, health improvements.	N=15 intervention studies	Reviewed whether studies considered inequalities including social class and income. Differentiated between studies that provided disaggregated data by social group on the distribution of energy poverty and/or its effects on health, and studies that targeted social groups particularly vulnerable to suffering from energy poverty.	Living conditions, no studies reported differential effects by SES, n=10 targeted	Few studies analysed EP and its effects on health according to the axes of inequality.
Carter et al., 2018 (42)	System navigation in primary care	N=34 articles	No specific approach reported. Targeted populations.	Health services, mostly identified descriptive papers	High degree of variance in the literature.
Hosford et al., 2021 (57)	Road pricing policy including facility-based, area-based and network-wide.	N=15 studies	Studies needed to present data on differing effects across socio-demographic or geographic strata.	Living conditions, n=9 studies assessed impacts by income or SES.	The evidence was not consistent across geographic areas (i.e., cities), but authors conclude that overall findings suggest that congestion pricing is more disruptive to people with lower incomes.
Klingbaum et al., 2021 (62)	Light rail transit development	N=29 studies	Examined literature on the neighbourhood-level impacts related to the social determinants of health. Extracted data on the category of impact and related key findings.	Living environment	Evidence that transit development can influence the living conditions and resource availability of surrounding areas. Light rail transit development therefore conceptualized as a driver of health inequities.
Love et al., 2017 (115)	Children's physical activity interventions	N=125 studies	Equity data and analyses were examined across PROGRESS-Plus categories. Differential effects were considered across all factors applicable to children outlined by the PROGRESS-Plus framework: gender, SES, ethnicity, place of residence, and religion.	Service provision, n=7 studies reported SES data.	Most controlled trials of physical activity interventions in children do not report analyses of differences in intervention effect across relevant equity characteristics including SES.
Parry et al., 2021 (81)	Primary care setting interventions to address poverty	N=214	No specific approach reported. Targeted populations.	Income security and social protection	Interventions that aim to address patients' financial needs operate at all levels.

Reference	Intervention(s)	Number of studies	Equity approach	Determinant categories Number of reviews reporting on health inequalities	Summary of findings
					Measuring success has proven challenging.
Venturelli et al., 2019 (138)	Universal overweight and obesity prevention interventions for children and adolescents	N=58 studies (51 interventions)	Studies needed to evaluate differences in intervention effectiveness by SES or the interaction between socioeconomic variables	Service provision, n=58 studies of 51 interventions for which impact on inequalities was assessed	Concluded that complex interventions acting on multiple targets, settings, and risk factors had a lower risk of increasing inequalities.
Welsh et al., 2015 (139)	Any programme, policy, intervention, or service related to the promotion of equity in mental wellbeing or mental illness prevention in children and young people	[N>1,000 studies]	Unclear, aimed to identify interventions specifically designed to address inequities or evaluated for differential impact.	Service provision	Included interventions delivered and evaluated in disadvantaged or high-risk groups. Differential effects not reported.

Public Health Institute
Faculty of Health
Liverpool John Moores University
Exchange Station
Liverpool L2 2QP