

Review

The longitudinal relationship between financial hardship and mental health - A systematic review of the evidence

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ABSTRACT

Background: A compelling body of evidence has accumulated in recent years highlighting the association between various socioeconomic factors and a wide range of mental health outcomes. This includes financial hardship - described by Mack and Lansley (1985) as "an enforced lack of socially perceived necessities" - the experience of which has demonstrated a strong negative effect on mental health. To date however, no systematic review of the evidence assessing the longitudinal relationship between financial hardship and mental health has been undertaken.

Aims: The aim of this review is to better understand the longitudinal relationship between financial hardship and mental health, to critically appraise the quality of existing evidence, and to identify factors that may explain heterogeneity in this association.

Methods: Scopus, PsycINFO, MEDLINE, Embase, PubMed were searched from inception to July 2023 and yielded a total of 8672 records. Following de-duplication, abstract and full-text screening, 94 studies met inclusion criteria. Included studies were published between 1987 and 2023, and spanned 24 countries.

Results: The reviewed literature overwhelmingly demonstrated a positive longitudinal association between financial hardship experience and poorer mental health. Despite a diversity of locations, study designs, analytic techniques, modelled confounders, and measures of mental health and financial hardship, 101 of 116 multivariate assessments demonstrated a positive relationship between financial hardship and poorer mental health, particularly depression.

Conclusion: This body of evidence highlights a clear association between financial hardship and poorer mental health, reinforcing the necessity of intervention that can mitigate the experience of deprivation due to lack of financial resources, and in turn promote mental health.

1. Introduction

A compelling body of evidence has accumulated in recent years highlighting the association between various socioeconomic conditions and a wide range of health outcomes (Kirkbride et al., 2024). This work has complemented our existing understanding of health – as being a product of proximal individual factors such as genetics, biology, lifestyle, nutrition, and access to medical care – by incorporating insight into the additional, broad influence exerted by more distal social, economic, and political factors (Braveman and Gottlieb, 2014). While it is well established that diseases and illness commonly have biological causes, their distribution within and between populations can be

explained via various measures of an individual's socioeconomic status or position (Allen et al., 2014).

Social determinants of Health (SDH) models provide a comprehensive framework for understanding why and how these factors influence health (Barton and Grant, 2006; Dahlgren and Whitehead, 2021; Frieden, 2010; Huynen et al., 2005; Labonte and Torgerson, 2005; World Health Organization, 2010). SDH models describe how the broader social, economic and political policies of a nation, shape the conditions through which exposure to proximal risk factors, such as material deprivation, may occur. In turn, these models help to explain why certain individuals may have a higher risk of disease, poorer health outcomes, and greater life consequences following illness.

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A significant body of research has shown that the burden of mental ill health and illness is disproportionately carried by individuals with fewer financial resources, who tend to be of lower socioeconomic position (Allen et al., 2014; CSDH, 2008; Kessler and Cleary, 1980; Marmot et al., 2010). Reductions in mental health have been associated with various measures of material deprivation, including the experience of relative or absolute poverty (Lorant et al., 2007; Lund et al., 2010), low income (Enticott et al., 2016; Isaacs et al., 2018; Muntaner et al., 2004), low wealth (Ettman et al., 2020; Kendall et al., 2019), lower socioeconomic status (Lemstra et al., 2008), experiencing or worrying about debt (Drentea et al., 2021; Drentea and Reynolds, 2015; Jenkins et al., 2008; Reading and Reynolds, 2001; Turunen and Hiilamo, 2014), and financial hardship or household financial strain (Butterworth et al., 2012; Domènech-Abella et al., 2021; Foulds et al., 2014; French and Vigne, 2019; Kiely et al., 2015; Marshall et al., 2021, 2022; Selenko and Batinic, 2011; Yabroff et al., 2023). Additionally, factors related to labour market participation like unemployment (Bambra and Eikemo, 2008; Latif, 2015; Montgomery, 1999; Stuckler et al., 2009, 2011), job insecurity (Ferrie, 2002; Marmot et al., 2001), precarious or irregular employment (Benach and Muntaner, 2007), and involuntary job loss (Catalano et al., 2011), have also demonstrated robust associations with reduced mental health. Finally, more distal factors, such as poor neighbourhood conditions (Halpern, 1995), economic recessions (Schrecker and Bambra, 2015), and higher national-level economic inequality (Kawachi and Subramanian, 2014; Layte, 2012; Layte and Whelan, 2014; Patel et al., 2018; Pickett and Wilkinson, 2010; Pickett and Wilkinson, 2015) are all associated with poorer mental health outcomes.

Importantly, socioeconomic disadvantages tend to cluster within individuals. Those with lower levels of education are more likely to earn a lower income, experience periods of unemployment, face housing insecurity, and reside in less safe neighbourhoods. This clustering produces a 'cumulative' socioeconomic disadvantage that, in turn, may amplify degraded mental health (Neadley et al., 2021; Schiltz et al., 2022).

Evidence of the association between poorer mental health and socioeconomic disadvantage has been affirmed by an array of systematic reviews and meta-analyses conducted over the past three decades. Reviews have linked poorer mental health to unemployment, socioeconomic status and socioeconomic position (Feinstein, 1993; Fryers et al., 2003; Lorant, 2003; Muntaner et al., 2004; Paul and Moser, 2009), absolute and relative poverty (Iemmi et al., 2016; Lund et al., 2010), income (Thomson et al., 2022), debt (Fitch et al., 2011; Turunen and Hiilamo, 2014), housing disadvantage (Singh et al., 2019) and subjective financial satisfaction (Ngamaba et al., 2020). Several reviews have focused specifically on the relationship between socioeconomic factors and the mental health of children (LeMoult et al., 2020; Lemstra et al., 2008; Letourneau et al., 2013; Reiss, 2013; Russell et al., 2016). Additional reviews have also appraised the association between mental health and income inequality (Patel et al., 2018; Ribeiro et al., 2017; Tibber et al., 2022), and neighbourhood-level disadvantage (Barnett et al., 2018; R. Richardson et al., 2015; Silva et al., 2016). Finally, reviews have systematically assessed the evidence linking macro level factors, such as economic policy, welfare provision, and economic recessions to mental health (Frasquilho et al., 2015; McAllister et al., 2018; McCartney et al., 2019). The comprehensiveness of this literature, is also evidenced by multiple 'reviews of reviews' that have summarised and described the major social and economic determinants of mental health (Huggard et al., 2023; Lund et al., 2018).

1.1. The present review

Despite the abundance of systematic reviews and meta-analyses assessing the relationship between mental health and varying dimensions of socioeconomic position, a comprehensive and systematic evaluation of the direct impact of financial hardship on mental health

outcomes remains to be completed.

Financial hardship measures differ markedly from other indicators of socioeconomic status, as they directly evaluate whether an individual or household has forgone essential goods and services, or experienced standards of living understood as subminimal relative to the society in which they live, due to a lack of financial resources (Butterworth et al., 2012; Kiely et al., 2015; Whelan, 1993). The experience of financial hardship has been elegantly surmised by Mack and Lansley (1985) as "an enforced lack of socially perceived necessities". The inability to afford food, clothing, medical care, utility bills, and housing costs, or the seeking of financial aid from welfare organisations, friends or families, are commonly assessed domains within measures designed to detect the experience of hardship.

Assessing deprivation via direct inquiry provides several key empirical advantages over more commonly utilised measures of socioeconomic standing. Principally, income derived assessments of deprivation can be confounded by the moderating effects of wealth assets, the use of credit or debt to manage ebbs and flows in liquidity, the availability of non-cash benefits (such as resource sharing from family and friends), variations in taste and lifestyle decisions, and locational differences in living costs (Butterworth et al., 2012; Butterworth and Crosier, 2005). Similarly, proxy measures of socioeconomic status or position, such as occupational class, level of education attained, neighbourhood-level disadvantage, or employment status *infer* deprivation. Conversely, financial hardship measures encompass a direct, subjective assessment of privation stemming from insufficient financial resources. Consequently, hardship measures are less prone to over and under-estimating associations with health outcomes (Burns, 2015; Foulds et al., 2014; Lahelma et al., 2006). Several studies have demonstrated that comprehensive indices directly assessing the subjective presence or absence of financial hardship, provide a superior estimation of the association between socio-economic status and health outcomes, compared to objective measures of income, wealth, education, or employment (Butterworth et al., 2012; Carle et al., 2009; Foulds et al., 2014; C. Heflin, 2016; Lorant et al., 2007).

Similar reviews to the present research have been conducted, with each providing support for an association between the experience of deprivation and poorer mental health (Arenas et al., 2019; Frankham et al., 2020; Maynard et al., 2018; Shankar et al., 2017; Talamonti et al., 2023). However, a comprehensive synthesis of evidence assessing the direct longitudinal relationship between financial hardship and mental health outcomes remains absent in the current literature.

Moreover, while cross-sectional studies have highlighted strong associations between financial hardship and mental health, their ability to illuminate the temporal dynamics of this relationships is limited. Specifically, cross-sectional studies are unable to delineate reverse causal pathways (such as whether financial hardship precedes deteriorations in mental health, or vice versa), and capture how this relationship evolves over time. However, longitudinal approaches utilising repeated measures of the same individuals enable us to infer directionality, elucidate causality, and determine whether shifts in financial hardship correspond to immediate, lagged, or persistent changes in mental health.

1.2. Aim

The aim of this systematic review is to address this gap in the literature and synthesise existing evidence to better understand the relationship between financial hardship and common mental health conditions *using longitudinal data with repeated measures of the same individuals over time*. Given this, we examine the international literature to capture a broad non-clinical representation of individuals, across sexes, varying age groups and socioeconomic backgrounds, who report experiencing financial hardship.

In accord with the PI(E)CO(T) framework, this review seeks to answer the following:

Are individuals (P), who experience financial hardship (E) at greater

risk of experiencing worse mental health outcomes (O) compared to individuals who do not experience financial hardship (C) within studies using longitudinal data with repeated measures of the same individuals over time (T)?

We will answer this question by:

1. Identifying the constructs and terms that have been used to define and measure financial hardship.
2. Evaluating the overall longitudinal relationship between financial hardship and common mental health conditions.
3. Assessing how the relationship between financial hardship and common mental health conditions varies according to:
 - i. The measure of financial hardship used, and the specific domains of deprivation assessed.
 - ii. The measure of common mental health conditions used.
 - iii. The confounding factors assessed within analytical models.
 - iv. The geographical location of the study.
 - v. The study sample size.
 - vi. When the study was conducted.
 - vii. The duration of the study, the number of survey waves assessed, and the interval between them.
 - viii. The analytical techniques employed to test the relationship between financial hardship and common mental health conditions.
4. Identifying key participant characteristics that may modify the relationship between financial hardship and common mental health conditions, including:
 - i. Age
 - ii. Sex
5. Critically appraising the quality of existing evidence.

2. Methods

This systematic review was designed and conducted in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) (Page et al., 2021). The protocol was registered with PROSPERO (CRD42024501037).

2.1. Search strategy

A systematic literature search was conducted across five databases – Scopus, PsycINFO, MEDLINE, EMBASE and PubMed – between May to July of 2023, for studies that assessed the longitudinal relationship between financial hardship and common mental health conditions. Searches were restricted to peer-reviewed published articles in English.

The database search strategy was developed in consultation with a University of Sydney librarian. Search strings were composed of three key classes of terms, relating to financial hardship, mental health, and longitudinal study designs. Search terms were tested and refined to optimise sensitivity and specificity across each literature database. Key papers known to assess the longitudinal relationship between financial hardship and common mental health conditions were shortlisted, and search terms were validated against the presence of these key papers in search outputs. The finalised search strings, applied to extract relevant articles from each database, are detailed in [Appendix A](#).

2.2. Inclusion and exclusion criteria

Studies were included if they were an original, peer-reviewed research paper, published in English, using prospective longitudinal data with repeated measures of the same individuals over time, to examine the longitudinal relationship between financial hardship experience and mental health. Studies that used convenience sampling, that did not examine risk factor/outcome relationships longitudinally, or included solely objective measures of financial hardship (such as income or wealth-based measures of deprivation) were excluded. The

complete inclusion and exclusion criteria are available in [Appendix B](#).

With respect to sampling, studies were excluded if they made use of convenience sampling methods. This was defined as samples compiled using snowballing techniques, purposive sampling, quota sampling, accidental sampling, volunteer sampling, or any sample derived from an online advertisement via social media or a crowdsourcing data collection platform such as MTurk. The aim of this restriction was to minimise the inclusion of studies comprising samples at high risk of selection bias. Similarly, studies assessing clinical samples, selected on the basis of a pre-existing mental or physical health condition were also excluded. This exclusion was designed to reduce the impact of factors that may confound the association between financial hardship and mental health. For example, compared to healthy controls it is possible the experience of a mental or physical health condition may be more strongly associated with financial hardship.

In order to solely review research that assessed the focal relationship *longitudinally*, studies that used a single wave of data, comprised a retrospective longitudinal design, or analysed repeated cross-sections, were excluded. Moreover, studies were limited to those containing 1. a measure of mental health or common mental health conditions as an outcome, 2. a measure of financial hardship as a predictor, and 3. a test of the association, in this direction, between the two. Studies that did not conform to these requirements were excluded.

Importantly, within this review, a study was defined as longitudinal if it analysed data on the same individuals, at two or more time points. This includes studies that analyse the contemporaneous association between financial hardship and mental health at multiple time points (to ascertain whether the timing of the change in one's experience of hardship corresponded with a change in their mental health), or the time-lagged association between financial hardship and mental health. For studies using a lagged approach, the temporal ordering had to be maintained, such that the exposure (financial hardship) preceded the outcome (mental health).

In scope financial hardship measures were defined according to precise criteria. This was challenging given the vast array of definitions and modes of operationalising financial hardship. To avoid bias we did not impose a specific definition, but limited the scope to those studies in which the authors themselves explicitly identified a focus on financial hardship (see [Appendix A](#) for specific search terms). In turn, some studies examining constructs that may be considered an indicator of hardship (e.g., food insecurity) were not included, unless the authors themselves framed their study as having a focus on financial hardship. Secondly, included studies were required to contain a measure of financial hardship that assessed deprivation at the individual level (i.e., not at a community or household level). Third, only studies using a measure of financial hardship that assessed whether an individual has forgone specific goods or services *due to a lack of money* were included – this distinction is important, as deprivation can result from non-monetary factors such as political instability, civil unrest, conflict, geographical isolation, market disruptions, seasonal weather dynamics, or natural disasters. In practice, this excluded studies containing assessments of familial or neighbourhood level deprivation, studies that measured financial adversity using income alone (or income derived relative/absolute poverty lines) and studies that inferred hardship due to an objectively defined indicator (such as the lack of a vehicle, or according to housing tenure). Finally, studies were excluded if they only assessed an indirect association between hardship and mental health across generations, or between different individuals (such as where hardship is reported by parents, and mental health outcomes are reported by their children). The aim of this was to restrict our review to studies assessing the focal association within the same individuals.

2.3. Screening procedure

Studies underwent two-stage dual screening prior to inclusion. Screening was facilitated via a novel semi-automated software platform

(AutoLit, Nested Knowledge). Firstly, all records identified by database searching were title and abstract screened by one author (JT). Twenty five percent of all records were randomly allocated and second screened (CC, SO, and TS). Discrepancies were adjudicated by consensus (including PB). Using information gained from the preceding screening decisions made by human reviewers, the remaining 75 percent of records were secondary title and abstract screened using an automated AI screener built into the Nested Knowledge AutoLit review software. Discrepancies between the AI screener and the author (JT) were reassessed and adjudicated by JT.

Full-text screening was undertaken by two independent reviewers. JT completed full-text screening of all articles, while secondary full-text screening of all articles was completed by CC, SO, and TS – each of whom were randomly allocated one-third to review. Discrepancies on article inclusion were resolved by a third reviewer.

2.4. Data extraction

Data extraction was completed on all included studies by the author (JT). Instances where data extraction was ambiguous were resolved by consensus with all authors. Study authors were contacted via email for study clarification or where additional information was required.

Information extracted from each study included: the study origin country(s), region(s), and/or city(s); the study setting; whether the survey used was nationally representative; the survey unit of analysis; how the survey was undertaken (modality); the analytic sample size; n of males and females; n of observations; sample age range and mean; financial hardship measure used (including domains assessed, and the number of items contained within the measure); the measure of mental health used; the statistical technique(s) used; confounders assessed; and the statistical significance of all bivariate and multivariate tests assessing the relationship between financial hardship experience and mental health.

2.5. Risk of bias/quality assessment

Study quality was assessed using items 1 and 2 from the Joanna Briggs Institute Checklist for Cross-Sectional Studies, and 10 items from the Joanna Briggs Institute Checklist for Cohort Studies (Aromataris et al., 2024) (See Appendix Q).

All included studies were independently assessed by two reviewers. The author (JT) quality assessed all studies. Secondary quality assessment was shared by all co-authors (CC, PB, SO, and TS). The total number of items rated as ‘yes’ by both reviewers for each paper were summed and then divided by the maximum number of possible ‘yes’ ratings (i.e., 24) to produce a percentage score out of 100.

3. Results

3.1. Screening

3.1.1. Abstract screening

A total of 8672 records were identified via database searching. Following de-duplication 3238 studies were abstract screened. 196 records were advanced for full text review. Inter-rater reliability for title and abstract screening was high (94.4 %).

The most common reasons for exclusion at the abstract stage were studies not detailing evidence of an individual level financial hardship measure (1348 studies), not testing an association between financial hardship and mental health in any analysis (525 studies), not containing a mental health measure (466 studies), and mental health not being specified as an outcome measure in any analysis (309 studies) (see Fig. 1 below for PRISMA flow diagram).

3.1.2. Full text screening

A total of 196 records were full text screened. Ninety-four were

included in the review. As per title and abstract screening, inter-rater reliability remained high for full text screening (87.2 %).

The most common reasons for exclusion at the full text stage included, the paper not containing an individual level measure of financial hardship (34 studies), not containing a measure of mental health (15 studies), not utilising longitudinal analysis techniques (14 studies), or having drawn a sample via convenience or sub-sampling techniques (12 studies) (see Fig. 1 below for PRISMA flow diagram).

3.2. PRISMA flow diagram

3.3. Quality assessment - Joanna Briggs Institute Checklist for Cohort Studies

Overall, the quality of included studies was high, with an average quality rating of 80 percent. Additionally, 96.8 percent of included studies were rated with a score of at least 70 percent. Lower quality ratings were generally due to studies not reporting details of follow-up rates and reasons for loss to follow-up, or studies not utilising strategies to address incomplete follow up. Overall agreement between independent reviewers was high (91.8 percent). Full details of how each paper was assessed against are presented in Appendix Q.

3.4. Characteristics of included studies

3.4.1. Sample characteristics

Key aggregated sample characteristics of all included studies are summarised in Table 1 – detailed characteristics are presented in Appendix C. The 94 included studies represented a total sample of 497,001 persons. Fifteen studies utilised female only samples, however, the majority (54.7 %) comprised roughly equal males to females (see Table 1 below).

3.4.2. Study characteristics

Included studies spanned 26 countries including the USA (n = 29), Australia (n = 16) and the UK (n = 11). These three countries represented almost 60 percent of all included studies (Table 2). Moreover, almost 80 percent of countries included in this review were represented by only one 1 or 2 studies. Four studies utilised data from more than one country (Table 2) (Barthel et al., 2017; McCarthy et al., 2018; Porter et al., 2021, 2022).

A total of 63 unique surveys/datasets were used across the set of included studies (see Appendix D). Fifty-three studies utilised surveys conducted at the national level, of which 38 were nationally representative (Table 2). The most commonly utilised surveys/datasets were the Household, Income and Labour Dynamics in Australia (HILDA) survey (n = 4) and the Korea Welfare Panel Study (KOWEPS) of South Korea (n = 4) (Appendix D).

Included studies were published between 1987 and 2023. Over this period, the number of studies assessing the focal relationship increased with time. The majority of included studies were published since 2018, particularly in 2021 and 2022 (12 and 13 studies respectively).

Detailed descriptive analysis summarising further characteristics of included studies, such as publication year and survey setting, can be found in Appendix E.

Included studies most commonly spanned 0–1 years (n = 16), the majority (56 %) spanned 0–4 years, while the average study span was 5.4 years. One study was conducted over a period of 23–24 years.

The majority of included studies (62 %) analysed two or three waves of data. Fifteen studies analysed four waves of data. The maximum number of waves analysed was 20.

The measurement interval between survey waves varied widely. The shortest interval was one week (0.25 months), while the longest was nine years (108 months). Studies most commonly had a measurement

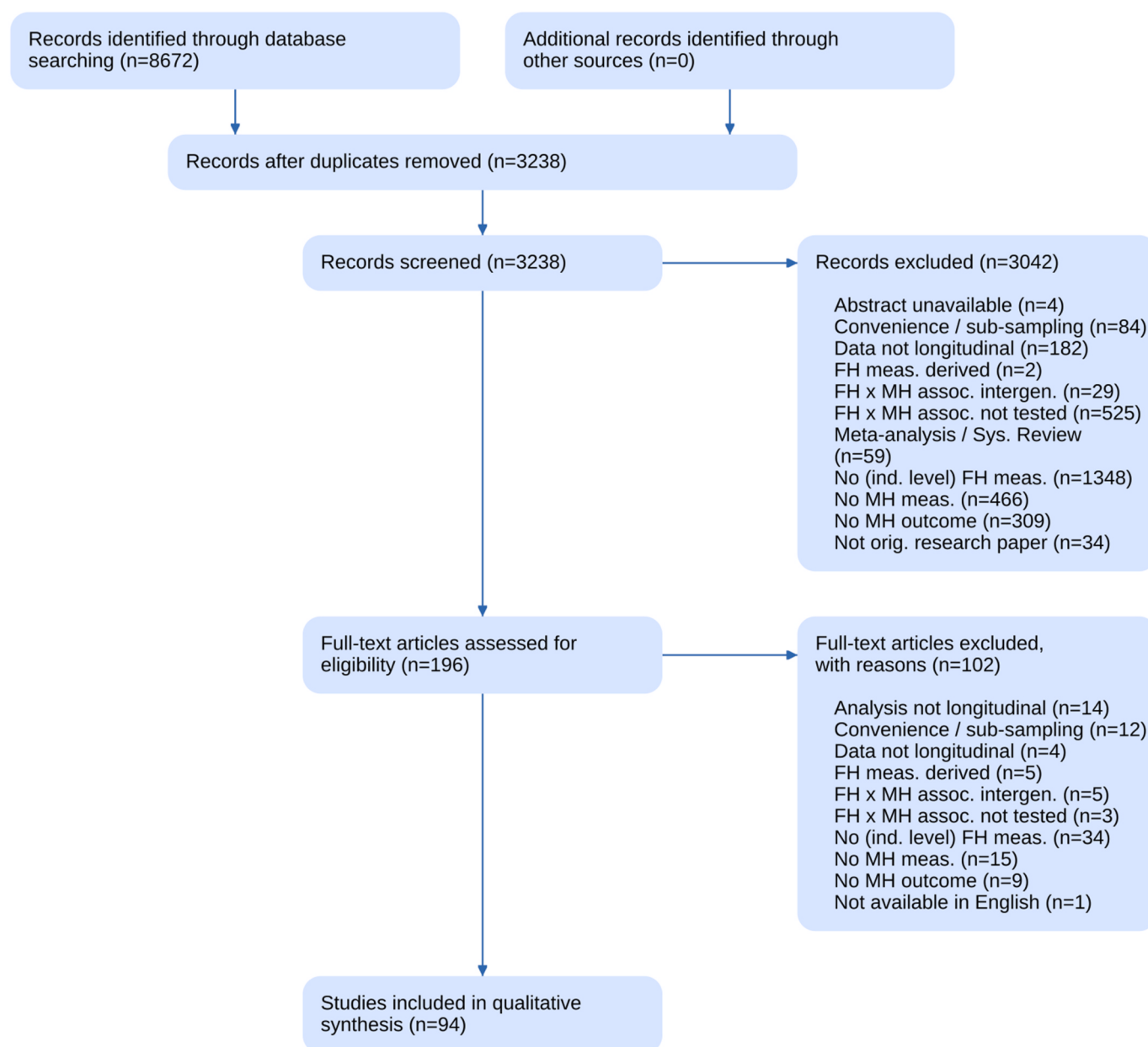


Fig. 1. Prisma flow diagram. FH = financial hardship; MH = mental health.

interval of one year (n = 27). Eighteen studies used an interval of at least two years, and 10 used an interval of at least three years.

The COVID-19 pandemic was a focus of 14 of the total included studies. Six of these were published in each of 2021 and 2022, and two were published in 2023.

3.4.3. Characteristics of financial hardship measures

Having identified 94 studies that reported assessing financial hardship – albeit using an array of varying methods – we categorised each measure according to two key criteria: 1. whether the measure assessed the experience of *specific* privations (e.g. ‘in the past 12 months have you gone without food, medication, or clothing due to a lack of money?’), or an individual’s *global perception* of their current financial situation (i.e. how they ‘feel’ about their current financial situation); and 2. ‘how’ the measure was implemented – i.e., was the measure implemented using *individual items* to assess discrete domains of privation, a *multi-item scale*, or a *general question* that inquired about an individual’s financial position (e.g. ‘how well would you say you are managing financially these

days – (1) living comfortably; (2) just about getting by; and (3) finding it difficult or very difficult?’).

With respect to the first criteria, 62 studies assessed the experience of *specific* privations, and 30 studies assessed an individual’s *global perception* of their current financial situation. Two studies did not provide enough information to make a determination and were assigned a status of ‘Not stated’. With respect to the second criteria (i.e., ‘how’ the hardship measure was implemented), 17 studies used individual items to assess the experience of financial hardship, 49 studies used a multi-item scale measure, and 25 studies used a ‘general’ question(s) to ascertain the overall quality of an individual’s financial situation. A further three studies did not provide enough information to identify how they operationalised financial hardship, and they were assigned as ‘Not stated’. Full details of the disaggregation of financial hardship measures according to these two criteria is provided in Appendix H.

Financial hardship measures were also characterised with respect to the number of items they contained and the number of hardship domains they assessed. This analysis was stratified according to whether

Table 1

Aggregated sample characteristics of included studies.

Sample Characteristics (Persons)	n	%	Papers
<i>Total Sample</i>			
Min	104		94
Max	41,909		94
Average	5287		94
Male	175,488	41.3 %	86
Female	249,546	58.7 %	86
Total	497,001	100.0 %	94
<i>Age Range Category</i>			
10-18 - Adolescence	4	5.0 %	80
10-39 - Adolescence to Young Adults	7	8.8 %	80
10-65 - Adolescence to 65	10	12.5 %	80
10-65+ - Adolescence to Old Age	24	30.0 %	80
19-39 - Young Adults	5	6.3 %	80
19-65 - Young Adults to 65	4	5.0 %	80
19-65+ - Young Adults to Old Age	9	11.3 %	80
40-65 - Midlife	2	2.5 %	80
40-65+ - Midlife to Old Age	15	18.8 %	80

Table 2

Countries represented within included studies and number of studies utilising nationally representative surveys.

Study Characteristic	n
<i>Country(s) Assessed</i>	
United States of America	29
Australia	16
United Kingdom	11
Canada	5
China	4
South Korea	4
Sweden	4
Taiwan	3
Ethiopia; India; Peru; Vietnam	2
Germany	2
Ghana	2
South Africa	2
Switzerland	2
Belgium	1
Canada; United States of America	1
Côte d'Ivoire; Ghana	1
Czech Republic	1
France	1
Ireland	1
Netherlands	1
New Zealand	1
Scotland	1
Singapore	1
Zambia	1
<i>Nationally Representative</i>	
Yes	38
No	15

financial hardship was assessed using multi-item or individual item measures. Details of this descriptive analysis can be found in Appendix I. A detailed summary of the financial hardship measures used within each study are provided in Appendix G.

3.4.4. Domains of financial hardship assessed

The 62 studies that assessed the direct experience of hardship used 110 different measures of deprivation (via either multi-item scales or individual items). Given the similarities across these items, they were collapsed into 19 distinct groupings, each pertaining to a different domain of deprivation. Within the subset of 30 studies that used a measure assessing an individual's *global perception* of their current financial situation, items fell into two of the 19 distinct domain categories – *General Financial Hardship/Financial situation* (assessed within 18 studies) or *Perceived Hardship* (assessed within nine studies). These distinct domains (and details of the number of studies that include each

measure) are shown in Table 3.

Food-related deprivation was the most commonly assessed hardship domain, appearing in 42 studies. This was followed by difficulty paying utility bills (assessed within 24 studies), difficulty heating or cooling one's home (17 studies), difficulties meeting mortgage/rent payments (16 studies), and inability to pay medication, doctors and other health related costs (15 studies). Less commonly assessed domains included pawning or selling personal items to make ends meet (12 studies), experiencing cashflow problems (11 studies), and receiving financial assistance from community organisations or government income support payments (11 studies).

Of note, there were instances where multi-item scales contained items assessing whether an individual was currently unemployed, or had recently experienced unemployment. Whilst unemployment does not necessarily align with the definition of financial hardship this review is concerned with, the majority of items in these scales did and were therefore included in our analysis. The specific domain categories listed in Table 3 are limited to those consistent with assessments of material privation.

3.4.5. Measures of mental health utilised

Of the 94 studies included in this review, 55 included a measure of depression, 20 included a measure of anxiety, four included a measure of stress, and 42 included a measure of general mental health/distress. Measures of stress were assessed based on perceptions (Perceived Stress Scale), and experience of specific 'stress' symptoms as asked in the Depression, Anxiety and Stress Scale (DASS). Additionally, 16 studies utilised a diagnostic measure of mental health. A detailed distribution of mental health measures used across all included studies is shown below in Fig. 2. Note, use of the ICD-10 criteria for depression and anxiety relate to survey questions based on the ICD-10 diagnostic criteria (Amegbor et al., 2021), and clinical diagnoses retrieved from registry data (Bialowolski et al., 2021).

3.4.6. Statistical/analytical approach

In total, 55 different analytical approaches were employed across the 94 included studies. A comprehensive list of all strategies is detailed in Appendix J. Given the diversity of approaches employed, analytic techniques belonging to distinct statistical families were collapsed into four groups. Approaches involving various regression models were the most common ($n = 72$). The use of growth curve (and trajectory) modelling approaches ($n = 10$), increased in frequency in more recent publications, whereas SEM approaches ($n = 12$) tended to be more common in earlier publications. One paper made use of correlational analysis as its primary statistical approach.

While the vast majority of studies made use of regression approaches, there was variation in how this was applied to examine the relationship between financial hardship experience and mental health. For example, several studies made use of random-effects or generalised estimating equation approaches to examine the focal relationship using longitudinal data, but didn't differentiate between-person changes from within-person changes (Austin et al., 2018; Manuel et al., 2012; Whitsett et al., 2019). Studies with two waves of data used regression models to examine whether hardship measured at the second time point was associated with changes mental health from the first to second time point (Dickerson et al., 2022; Mendes de Leon et al., 1994). Similarly, some studies employed regression models that stratified participants according to their mental health status at wave 1, in order to examine the effect of hardship on the onset or continuity of poorer mental health over time (Butterworth et al., 2009; Roberts et al., 1997; Skapinakis et al., 2006). Additionally, papers that made use of a larger number of study waves, commonly employed fixed effects, mixed effects, or Mundlak models, to focus directly on the within-person association of hardship experience and mental health, and assess how changes in the experience of hardship was associated with changes in mental health over time (Bentley et al., 2023; C. M. Heflin et al., 2005; Kiely et al.,

Table 3
No. of studies that assessed each hardship domain.

Hardship Domain	Description	Specific Deprivations	Perceived Deprivations	Total
		n	n	n
<i>Cashflow</i>	Difficulties with income/cashflow.	11	0	11
<i>Clothing</i>	Experiencing an inability to purchase new clothing, or continuing to wear clothing/shoes in a state of disrepair.	7	0	7
<i>Debt</i>	Difficulties with debt.	5	0	5
<i>Difficulty Supporting Family/Children</i>	Experiencing an inability to pay for essential items for one's family/children.	3	0	3
<i>Emergency Funds</i>	Not being able to raise money in the event of an emergency.	3	0	3
<i>Financial Support</i>	Having received financial assistance from community organisations government income support payments.	11	0	11
<i>Food</i>	Food deprivation (in terms of quantity, quality, and or variety) due to a lack of money.	42	0	42
<i>General FH/Financial Sit.</i>	Perceiving ones general financial situation to be difficult.	3	18	21
<i>Heating/Cooling</i>	Experiencing an inability to adequately heat one's home in winter, or cool ones home in summer.	17	0	17
<i>Help from Friends/Family</i>	Having received financial assistance from friends or family.	6	0	6
<i>Household Repair/Maintenance</i>	Experiencing a lack of money to complete necessary repair, replacement or maintenance of essential household items.	3	0	3
<i>Medication/Doctors/Health</i>	Experiencing an inability to pay for, or foregoing, medication, doctors' appointments, and/or necessary health related activities.	15	0	15
<i>Mortgage/Rent</i>	Experiencing difficulties meeting payments related to housing costs.	16	0	16
<i>Not Stated</i>		2	3	5
<i>Pawned/Sold</i>	Pawning or selling of personal items to make ends meet.	12	0	12
<i>Perceived Hardship</i>		1	9	10
<i>Social/Leisure</i>	Not having enough money to participate in social/leisure activities.	4	0	4

Table 3 (continued)

Hardship Domain	Description	Specific Deprivations	Perceived Deprivations	Total
		n	n	n
<i>Transport</i>	Not having enough money to pay transport costs.	2	0	2
<i>Utilities</i>	Experiencing an inability to pay for utilities, such as electricity, gas, oil, telephone, or water bills.	24	0	24

2015; McCarthy et al., 2018). In some cases multilevel models were employed to consider an individual's social setting in the relationship between hardship and mental health (Cole and Tembo, 2011). With respect to other approaches, it was common for SEM and cross-lagged dynamic panel models to examine the concurrent effects of hardship on subsequent mental health, and of mental health on subsequent hardship. Latent class modelling approaches were used to identify profiles of mental health over time and the extent to which financial hardship was associated with these (Batterham et al., 2018; Moulton et al., 2023). A table summarising analytic approaches is presented in Appendix K.

3.4.7. Confounders assessed

A total of 373 unique constructs were used as covariates within the included studies. A comprehensive list, along with frequencies, is detailed in Appendix L. Similarities between items enabled them to be collapsed into twenty distinct groups, as detailed below in Table 4. Most studies included in this review ($n = 75$) controlled for aspects of participant demography (such as age, sex, sexuality, ethnicity, country/state/region of residence). Similarly, 57 studies also controlled for relationship status/relationship factors (such as marital/relationship status, marital stress, partners mental health, relationship satisfaction/quality, and whether cohabiting/living with partner or alone) and 54 controlled for educational factors (such as years of education, or highest level achieved). A total of 27 studies controlled for prior mental health (such as a prior diagnoses, self-rated mental health, or baseline levels of psychological distress). A total of 79 studies contained at least one measure of a respondent's socioeconomic status (i.e., 'SES – Any' in Table 4) in addition to measuring hardship (such as income, wealth, employment status, level of education, housing tenure, and area-level disadvantage).

Additionally, 24 studies controlled for at least one aspect of participant demography and pre-existing mental health; while 21 studies controlled for at least one aspect of participant demography, pre-existing mental health, and socioeconomic status (Table 4).

3.5. Relationship between financial hardship and mental health

3.5.1. Bivariate and multivariate outcomes

The studies included within this review varied extensively, particularly with respect to the analytic approaches they employed, and their operationalisation of financial hardship and mental health. Given this, our analysis focuses on whether the studies demonstrated a significant association between hardship and mental health, irrespective of the study approach.

Across the 94 studies included in this review, 23 bivariate assessments and 116 multivariate assessments evaluated the association between financial hardship and mental health. All 23 bivariate analyses demonstrated that the experience of financial hardship was significantly associated with poorer mental health. Of the 116 multivariate analyses, 101 (87.1 %) demonstrated a significant association between financial hardship experience and poorer mental health (Table 6).

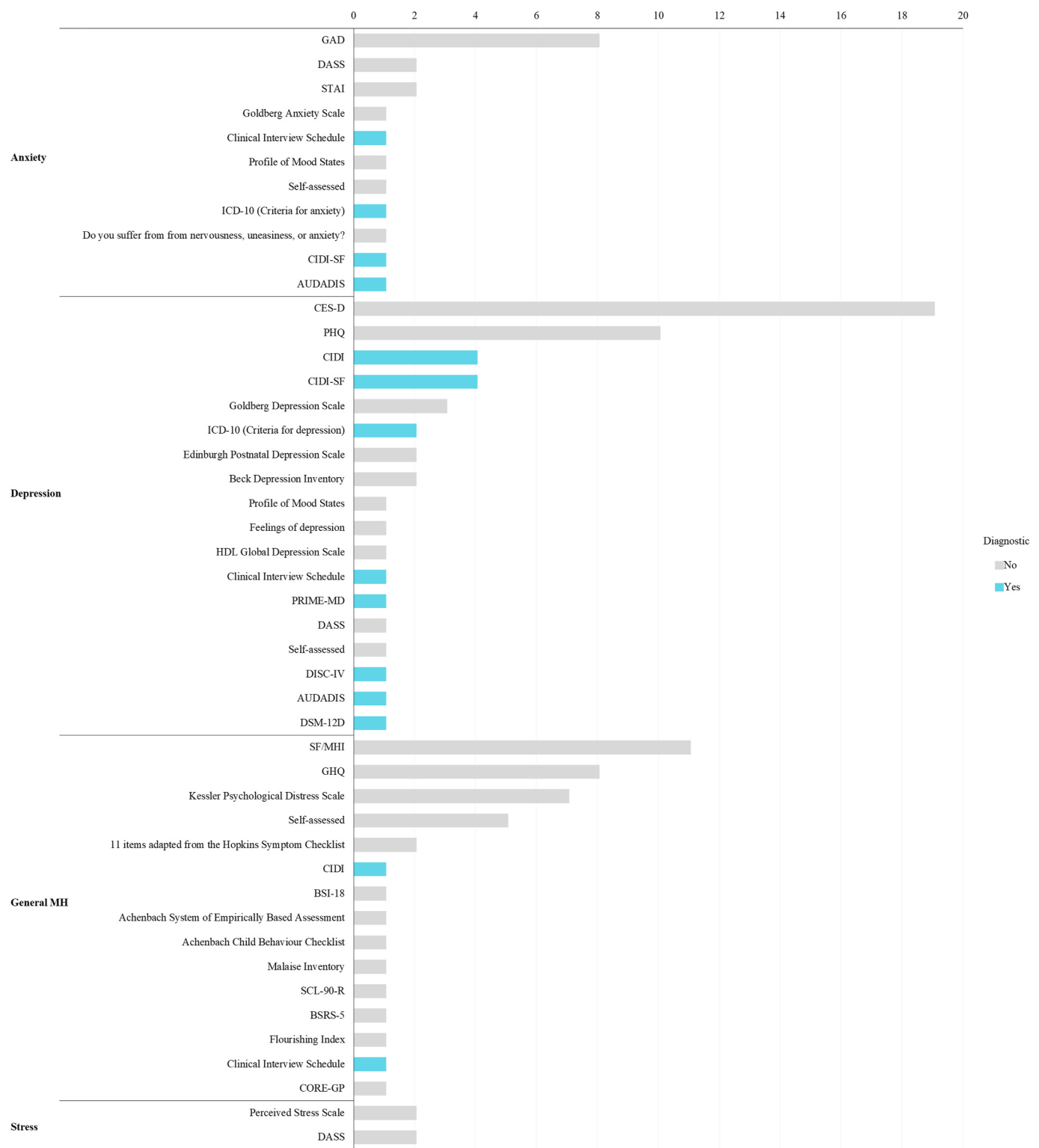


Fig. 2. Measures used to assess mental health.

Given all of the assessed bivariate analyses found a significant association between financial hardship experience and poorer mental health, the next section focuses solely on exploring sources of heterogeneity in the studies that used multivariate analyses.

3.5.2. Key characteristics of studies that did not demonstrate a multivariate association between financial hardship and reduced mental health

3.5.2.1. Sample characteristics. Of the 15 multivariate null findings (i.e. the assessments that did not demonstrate an association between financial hardship experience and reduced mental health), 14 (93.3 %) came from studies that used samples of less than 3000 participants. The absence of an association in these studies did not appear to be related to

Table 4

Number of studies that contained a control in each grouping. * SES – Any refers to the number of studies that contained at least one measure of any SES factor.

Control Group	n
Demographics	75
Relationship	57
Physical Health	41
Other	33
Family factors	31
Mental Health	27
Adversities	16
Neighbourhood factors	15
Study Methodology/Factors	14
Alcohol/Smoking/Drug use	10
Mastery/Locus of Control	8
COVID-19	7
Personality	5
SES - Education	54
SES - Employment & Labour Market Characteristics	48
SES - Income/Wealth	41
SES - Housing	14
SES - General	10
SES - Hardship	5
SES - Childhood	2
* SES - Any	79
Demographics + Mental Health	24
Demographics + Mental Health + SES	21

Table 5

Multivariate outcomes by study sample size, proportion of males in sample, and age range of sample. (Note, sample size data provided in all 94 studies; Age range data only provided in 80 studies).

Sample Characteristics	No		Yes	
	n	%	n	%
<i>Sample Size</i>				
100–249	1	25.0 %	3	75.0 %
250–499	3	16.7 %	15	83.3 %
500–999	3	18.8 %	13	81.3 %
1000–1999	4	19.0 %	17	81.0 %
2000–2999	3	17.6 %	14	82.4 %
3000–4999			12	100.0 %
5000–9999	1	11.1 %	8	88.9 %
10,000–19,999			12	100.0 %
20,000–45,000			7	100.0 %
<i>Age Range Category</i>				
10–18 - Adolescence			4	100.0 %
10–39 - Adolescence to Young Adults	1	14.3 %	6	85.7 %
10–65 - Adolescence to 65	4	28.6 %	10	71.4 %
10–65+ - Adolescence to Old Age	4	12.1 %	29	87.9 %
19–39 - Young Adults	1	20.0 %	4	80.0 %
19–65 - Young Adults to 65	1	20.0 %	4	80.0 %
19–65+ - Young Adults to Old Age	1	7.7 %	12	92.3 %
40–65 - Midlife			4	100.0 %
40–65+ - Midlife to Old Age	3	18.8 %	13	81.3 %

the sample analysed (Table 5). Of note, while all 94 studies included in the review provided data on sample size, only 80 studies provided information on age range. Multivariate outcomes according to the proportion of males in study samples were also analysed – details of this are presented in Appendix M.

3.5.2.2. Study characteristics. With respect to country, of the 15 multivariate null findings, eight were analysed on samples from the United Kingdom, two on samples from Australia, and one apiece on samples from China, France, The Netherlands, South Africa, and the United States of America (Table 6).

Moreover, of the 15 assessments that did not demonstrate a multivariate association between hardship experience and poorer mental health, two came from studies using the 2000 Psychiatric Morbidity

Table 6

Multivariate outcomes by assessment, country of study, and whether the sample used was nationally representative.

Study Characteristic	No		Yes	
	n	%	n	%
<i>Assessment</i>				
Bivariate			23	100.0 %
Multivariate	15	12.9 %	101	87.1 %
<i>Country</i>				
Australia	2	9.5 %	19	90.5 %
Belgium			6	100.0 %
Canada			2	100.0 %
Canada; United States of America	1	20.0 %	4	80.0 %
China			1	100.0 %
Côte d'Ivoire; Ghana			1	100.0 %
Czech Republic			1	100.0 %
Ethiopia; India; Peru; Vietnam	1	100.0 %	2	100.0 %
France			2	100.0 %
Germany			1	100.0 %
Ghana			1	100.0 %
Ireland	1	100.0 %	2	100.0 %
Netherlands			1	100.0 %
New Zealand			1	100.0 %
Scotland			1	100.0 %
Singapore			1	100.0 %
South Africa	1	50.0 %	1	50.0 %
South Korea			4	100.0 %
Sweden			5	100.0 %
Switzerland			4	100.0 %
Taiwan			3	100.0 %
United Kingdom	8	44.4 %	10	55.6 %
United States of America	1	3.2 %	30	96.8 %
Zambia			1	100.0 %
<i>Nationally Representative</i>				
Yes	2	4.5 %	42	95.5 %
No	13	18.1 %	59	81.9 %

Survey (UK), two from the Whitehall II Survey (UK), two from the Personality and Total Health (PATH) Through Life study (AU), one from the Southampton Women's Survey (UK), one from the Netherlands Study of Depression and Anxiety (The Netherlands), one from the Trends and Implications of Poverty and Social Disadvantages in Hong Kong survey (China), one from the Well-being Survey (USA), and one from the Trajectoires Epide'Miologiques en POPulation (TEMPO) COVID-19 survey (France). Four assessments that did not show a positive association were based on samples from unnamed surveys/datasets. Full details of multivariate outcomes with respect to the survey/dataset used are presented in Appendix N.

Further analysis of multivariate outcomes with respect to characteristics of included studies, such as study setting, study duration, survey waves utilised, and survey wave measurement interval is presented in Appendix O.

3.5.3. Financial hardship measures

3.5.3.1. Specific vs perceived deprivation. Of the 116 multivariate findings, 37 the relationship between financial hardship and mental health using a measure of an individual's global *perception* of their current financial situation (i.e., Perceived deprivation/general finances), and 77 used a measure of hardship that assessed the experience of specific deprivations. It was unclear what 'type' of financial hardship measure was used for two assessments. These were categorised as 'Not stated'. Overall, 34 out of 37 (91.9 %) assessments using 'perceived' measures of hardship demonstrated a multivariate association between financial hardship experience and poorer mental health. Whereas 65 out of 77 (84.4 %) assessments that used a 'specific' measure of hardship demonstrated a multivariate association between financial hardship experience and subsequent poorer mental health (Table 7).

Table 7

Multivariate outcomes by characteristics of financial hardship measures, mental health measures, and included controls.

Outcome	No		Yes		Total	
	n	%	n	%	n	%
1. Financial Hardship						
<i>FH Measure - Type</i>						
Not stated			2	100.0 %	2	100.0 %
Perceived deprivation/ general finances	3	8.1 %	34	91.9 %	37	100.0 %
Specific deprivations experienced	12	15.6 %	65	84.4 %	77	100.0 %
<i>FH Measure - Implementation</i>						
Not stated			3	100.0 %	3	100.0 %
(Multi-item) Scale	12	19.4 %	50	80.6 %	62	100.0 %
General financial question(s)	3	9.4 %	29	90.6 %	32	100.0 %
(Individual) Item(s)			19	100.0 %	19	100.0 %
<i>FH - Construct Groups</i>						
Cashflow	2	11.8 %	15	88.2 %	17	100.0 %
Clothing	3	33.3 %	6	66.7 %	9	100.0 %
Debt	2	25.0 %	6	75.0 %	8	100.0 %
Difficulty Supporting Family/Children			3	100.0 %	3	100.0 %
Emergency Funds	3	50.0 %	3	50.0 %	6	100.0 %
Financial Support	5	31.3 %	11	68.8 %	16	100.0 %
Food	10	19.6 %	41	80.4 %	51	100.0 %
General FH/Financial Sit.	3	12.0 %	22	88.0 %	25	100.0 %
Heating/Cooling	5	22.7 %	17	77.3 %	22	100.0 %
Help from Friends/Family	3	33.3 %	6	66.7 %	9	100.0 %
Household Repair/ Maintenance	3	60.0 %	2	40.0 %	5	100.0 %
Medication/Doctors/Health	2	11.8 %	15	88.2 %	17	100.0 %
Mortgage/Rent	5	25.0 %	15	75.0 %	20	100.0 %
Not Stated			7	100.0 %	7	100.0 %
Pawned/Sold	5	29.4 %	12	70.6 %	17	100.0 %
Perceived Hardship			14	100.0 %	14	100.0 %
Social/Leisure	3	50.0 %	3	50.0 %	6	100.0 %
Transport			3	100.0 %	3	100.0 %
Utilities	8	25.0 %	24	75.0 %	32	100.0 %
2. Mental Health						
Depression	4	7.8 %	47	92.2 %	51	100.0 %
General MH	6	14.0 %	37	86.0 %	43	100.0 %
Anxiety	3	16.7 %	15	83.3 %	18	100.0 %
Stress	2	50.0 %	2	50.0 %	4	100.0 %
<i>Diagnostic Measure of MH</i>						
Yes	4	20.0 %	16	80.0 %	20	100.0 %
No	11	11.5 %	85	88.5 %	96	100.0 %
3. Controls						
<i>Demographics</i>						
Yes	14	14.6 %	82	85.4 %	96	100.0 %
No	1	5.0 %	19	95.0 %	20	100.0 %
<i>Mental Health</i>						
Yes	7	20.0 %	28	80.0 %	35	100.0 %
No	8	9.9 %	73	90.1 %	81	100.0 %
<i>SES</i>						
Yes	15	15.3 %	83	84.7 %	98	100.0 %
No			18	100.0 %	18	100.0 %
<i>Demographics + MH</i>						
Yes	6	18.8 %	26	81.3 %	32	100.0 %
No	9	10.7 %	75	89.3 %	84	100.0 %
<i>Demographics + MH + SES</i>						
Yes	6	21.4 %	22	78.6 %	28	100.0 %
No	9	10.2 %	79	89.8 %	88	100.0 %

3.5.3.2. Measure implementation. With respect to 'how' financial hardship measures were implemented, of the 116 multivariate findings, 32 evaluated the relationship between financial hardship and mental health using a general financial question, 62 used a multi-item scale, and 19 used individual items. It was unclear how the measure of financial hardship was implemented within three estimates, and these are categorised as 'Not stated'. All three of these estimates demonstrated a

significant association with mental health. Of the 32 that operationalised financial hardship using a general financial question, 29 (90.6 %) demonstrated an association between financial hardship experience and poorer mental health. Similarly, of the 62 made using a multi-item scale, 50 (80.6 %) found a multivariate relationship between financial hardship experience and poorer mental health. Finally, all 19 (100 %) of the assessments that utilised an individual item to measure financial hardship demonstrated a significant association (Table 7).

Additional analyses were conducted to assess multivariate outcomes with respect to the number of total items, and the total number of distinct domains of hardship, assessed within multi-item and individual item measures of financial hardship. Details of this analysis are presented within Appendix P.

3.5.3.3. Specific constructs assessed. Finally, the 116 multivariate estimates assessed in this review were disaggregated according to the specific hardship construct assessed. The number of times each specific hardship construct was evaluated, and the proportion demonstrating significant and non-significant associations with mental health, are detailed in Table 7.

The majority of assessed hardship constructs consistently demonstrated a multivariate association with mental health. It is worth noting that hardship constructs demonstrating the lowest proportion of multivariate associations with mental health, such as clothing, emergency funds, household repair/maintenance, and social/leisure, were evaluated in fewer than 10 assessments. Thus, this lower proportion of significant associations may simply be an artefact of their smaller sample size.

3.5.4. Mental health

Of the 116 multivariate findings, 51 evaluated the relationship between financial hardship experience and a measure of depression, 43 with a measure of general mental health, 18 with a measure of anxiety, and four with a measure of stress.

Of the 51 estimates that assessed the relationship between financial hardship experience and a measure of depression, 47 (92.2 %) demonstrated a significant multivariate relationship. Similarly, 37 out of 43 (86 %) estimates assessing general mental health, 15 out of 18 (83.3 %) estimates assessing anxiety, and two out of four (50 %) estimates assessing stress found a significant association between financial hardship experience and poorer mental health (Table 7).

3.5.5. Confounders assessed

A total of 75 studies controlled for at least one aspect of participant demography. Within these studies, 96 multivariate assessments of the relationship between financial hardship and mental health were conducted. Of these 96 assessments that adjusted for participant demography, 82 (85.4 %), demonstrated a significant association between financial hardship experience and mental health. Similarly, a total of 27 studies controlled for pre-existing mental health. These studies contained 35 multivariate assessments, of which 28 (80.0 %) remained statistically significant after control. Finally, 79 studies controlled for at least one aspect of socioeconomic status. These 79 studies contained 98 multivariate assessments of the relationship between financial hardship and mental health, of which 83 (84.7 %) remained statistically significant following adjustment (Table 7).

Further, an analysis of outcomes with respect to combinations of controls was also undertaken. A total of 24 studies controlled for demography and pre-existing mental health. These studies contained 32 multivariate assessments of the focal relationship, of which 26 (81.3 %) remained statistically significant after adjustment. Similarly, 21 studies controlled for demography, pre-existing mental health and socioeconomic status. These studies contained 28 assessments of the relationship between financial hardship and mental health, of which 22 (78.6 %) remained statistically significant after adjustment (Table 7).

Taken together, these results demonstrate that the association between financial hardship experience and poorer mental health was robust to a wide array of controls included in multivariate models that 1. have previously been associated with reduced mental health, and 2. reflect items commonly included within social determinants of health (SDH) models assessing related constructs of socioeconomic status and position (such as level of education, and income). Notably, the most compelling finding from this analysis is that the relationship between financial hardship experience and poorer mental health remained statistically significant in the majority of assessments that controlled for participant demography, pre-existing mental health and associated socioeconomic factors. This result highlights the strength of the relationship between financial hardship experience and poorer mental health.

4. Discussion

4.1. General findings

The broad aim of this review was to systematically curate, quantify and evaluate the nature of the current evidence examining the association between financial hardship and mental health, within studies employing a longitudinal design. Additionally, this review aimed to assess sources of heterogeneity within this relationship, associated with sample, design, and the methodological characteristics of included studies. Restricting this review to assessments using longitudinal data and longitudinal analytic techniques was important, to enable a greater understanding of the temporal dynamics between financial hardship experience and mental health, and to move beyond more commonly assessed cross-sectional associations.

Preceding a detailed discussion of specific study findings, two broad, and interrelated, themes emerged. Firstly, as anticipated this review identified extensive heterogeneity between all included studies. This diversity was most evident in the analytic approaches employed, the ways in which financial hardship was operationalised and assessed, the measures used to assess mental health, and the types of research questions that were evaluated. Secondly, despite this variation, the experience of financial hardship was overwhelmingly, and consistently associated with poorer mental health. All bivariate assessments, and 87.1 % of multivariate assessments demonstrated a significant association between the experience of financial hardship and reduced mental health. This relationship was robust to variations in publication year, country of origin, survey/dataset analysed, sample features, methodological characteristics, analytic approach, financial hardship measure, mental health measure, and confounders controlled for in assessed models. While the diversity of approaches somewhat limited study synthesis, the independence of the relationship from methodological factors provides compelling evidence attesting to the potent impact of hardship experience on mental health.

4.2. Detailed findings

4.2.1. Study outcomes

A total of 116 multivariate assessments of the relationship between financial hardship and mental health were conducted across the 94 included studies. Of these, 101 assessments (87.1 %) demonstrated a significant association.

Of the 15 assessments that did not demonstrate a multivariate association between financial hardship experience and poorer mental health, the majority came from studies comprising samples of less than 3000 participants, and with a smaller proportion of males to females. However, variation in the outcome of multivariate analyses demonstrated little dependence on sample age range, publication year, survey/dataset used, and survey setting. Furthermore, the outcome of multivariate analyses was also largely independent of the country where assessment took place. Though, an exception to this broad trend was found for studies conducted within the United Kingdom. Eight of the 18

assessments conducted in the United Kingdom did not demonstrate hardship experience to be associated with significantly reduced mental health. This result proved the only exception to a broad trend of results demonstrating little dependence on study characteristics. Nonetheless, these eight assessments represent over half (53.3 %) of the 15 multivariate assessments that did not find a significant relationship between experiencing financial hardship and mental health. Closer inspection reveals that they came from four studies (Dunn et al., 2008; Richardson et al., 2017; Skapinakis et al., 2006; Steptoe et al., 2020) – one of which contained three assessments alone (Richardson et al., 2017) – analysing data from 2000 to 2014, and ranging in sample size from 454 to 2761 participants. Two of the assessments utilised the 2000 Psychiatric Morbidity Survey, two used the Whitehall II survey, one used the Southampton Women's Survey (SWS), and three assessments (all in the Richardson et al., 2017 paper) came from an unnamed dataset. A common feature of these studies was their examination of baseline hardship on subsequent mental health outcomes. In the study by Steptoe and colleagues (2020), baseline hardship was associated with later mental health in models that did not include baseline mental health. However, this effect did not remain significant in models that adjusted for baseline mental health. Similarly, the study by Skapinakis and colleagues (2006) assessed baseline levels of financial hardship experience and stratified models according to baseline mental health status. Amongst individuals who did not have a mental health disorder at baseline, financial hardship experience was associated with disorder at follow-up. However, amongst individuals who had a mental health disorder at baseline, financial hardship experience was not associated with disorder at follow-up. This aligns with existing evidence assessing within-person changes in financial hardship and mental health over time, that has demonstrated the experience of hardship to have an immediate detrimental effect on mental health (Butterworth et al., 2009, 2012; Kiely et al., 2015; Lahelma et al., 2006; Lorient et al., 2007; Mirowsky and Ross, 2001). This may explain why the effect of hardship is not as strong in studies using prospective modelling, or controlling for baseline levels of mental health.

A greater proportion of studies that made use of nationally representative surveys demonstrated a significant association between financial hardship experience and reduced mental health, than studies that did not. As noted above, the majority of assessments that did not demonstrate a significant multivariate association between financial hardship experience and mental health came from studies comprising samples of less than 3000 participants. Thus, this finding may simply reflect the fact that larger samples afford additional statistical power to detect significant associations. Additionally, studies using nationally representative surveys generally assessed financial hardship and mental health at the same time, as opposed to prospectively. Thus, these studies would have been better equipped to detect the, aforementioned, immediate detrimental impacts of hardship on mental health.

4.2.2. Characteristics of financial hardship measures

The measures used to assess the experience of financial hardship varied extensively. This may reflect longstanding idiosyncrasies associated with assessing socioeconomic disadvantage via material privation, as opposed to more tightly defined income-based measures (such as relative and absolute poverty), or discrete indirect assessments of socioeconomic position such as educational attainment or occupational class. As highlighted by Butterworth & Crosier in 2005, there is no universally agreed upon definition of what constitutes financial hardship, no agreement on how to measure it, nor which domains of privation to include, nor whether to use individual items or multi-item/multi-dimensional scales. In the case of multi-item/multi-domain scales, there also remains no consensus on whether items should be simply summed, or differentially weighted to reflect the seriousness of their impact. The numerous ways in which financial hardship was measured across studies within this review attests to this; highlighting that two decades on, a unified definition and measurement approach remains elusive.

This review considered five different aspects of measures used to assess financial hardship: 1. Whether the measure assessed an individual's global 'perception' of having experienced hardship, or whether it inquired about the experience of 'specific' privations; 2. Whether the measure was operationalised using individual items to assess specific privations, a multi-item scale, or a question that inquired about an individual's general financial position; 3. The total number of hardship items a study/measure included; 4. The total number of distinct hardship domains a study/measure included; and 5. The specific hardship domains (or constructs) assessed within each study/measure. The majority of studies in this review ($n = 62$) used a financial hardship measure that assessed the experience of specific deprivations – such as “in the last 12 months, I could not pay electricity, gas or telephone bills on time” or “in the last 12 months I went without meals” (Crowe et al., 2016). Additionally, the majority of studies ($n = 49$) made use of a multi-item scale to assess hardship. Studies that assessed individual items of hardship most commonly only used one item and only assessed one distinct domain of hardship. The majority of multi-item scale measures of hardship comprised two to seven items, and assessed one to four distinct domains of hardship. Finally, food-based insecurity or deprivation (with respect to quantity, quality or variety) due to a lack of money was the most frequently assessed domain of hardship across the 94 included studies ($n = 42$), followed by difficulty paying utility bills ($n = 24$), and an inability to adequately heat or cool one's home ($n = 17$).

4.2.3. Outcomes with respect to financial hardship measures

Variation in the outcome of multivariate analyses was stable across several dimensions of the measures used to assess financial hardship. A slightly smaller proportion of assessments made using measures that assessed the experience of *specific* privations demonstrated a significant association between financial hardship experience and reduced mental health, than studies that used measures assessing *perceived* deprivation. This may reflect the increased precision of measures that directly inquire about whether a particular privation has occurred or not, as opposed to measures that inquire about the general state of one's finances. It is possible that a greater proportion of respondents may affirm a question inquiring about whether their general financial situation has been 'difficult', compared to a similar question inquiring about whether they have experienced specific privations. Principally, the threshold for affirming whether general difficulties have been experienced is intuitively lower than that for the experience of discrete privations. Moreover, what constitutes general financial difficulties can also be interpreted much more broadly than experiencing deprivation of a specific good. Given this, it is possible that measures based on perceptions of hardship or reports of general financial position inflate the association with mental health due to being more prone to bias. For example, individuals experiencing negative affect may be inclined to report their financial situation as being worse than individuals of a more positive disposition. Additionally, this may also reflect perceived deprivation as being more salient and impactful upon mental health than actual deprivation, particularly in cases where a particular item of privation may not have a significantly detrimental impact upon mental health. This finding would align with an extensive literature highlighting the association between subjective social status and health (Euteneuer, 2014). This work draws on evidence from both experimental animal studies and human research, emphasising the pernicious effects on health of perceiving oneself to be of 'low' relative social status in comparison to peers or other reference groups (Mishra and Carleton, 2015; Sakurai et al., 2010; Singh-Manoux et al., 2005; Theodossiou and Angelidis, 2009).

Potential heterogeneity was also assessed with respect to whether financial hardship was measured using a multi-item scale, individual item measures, or using a general financial question. Study outcomes were largely independent of this delineation. However, a slightly smaller proportion of assessments demonstrated a significant association

between financial hardship experience and poorer mental health where a multi-item scale was used, compared to a question inquiring about one's general financial situation. All assessments made using an individual item measure of financial hardship demonstrated a significant association between hardship experience and poorer mental health. It is possible this result is due to unmeasured idiosyncratic factors that do not have anything to do with how the financial hardship measure was implemented. Nonetheless, it is curious that a smaller proportion of assessments using multi-item scales demonstrated the expected association than assessments using questions inquiring about an individual's financial situation or individual hardship items. The key benefits of using multi-item hardship scales over individual items, are 1. to account for the array of privations people may experience, and 2. to reduce confounding associated with personal preferences or lifestyle choices. By using multiple indicators of hardship, a multi-item scale, encompassing various domains of hardship, isolates elements of deprivation from individual taste, differences in resource allocation, and perceived significance or need of particular goods (Butterworth and Crosier, 2005). Moreover, the key benefit of using a multi-item scale over questions inquiring about one's 'general' financial situation, is the direct assessment of whether a particular range of basic necessities have been forgone or not due to a lack of resources. Given this, it is surprising that the expected association occurred in a smaller proportion of assessments comprising multi-item scale hardship measures, than individual item, and general financial question modalities. Given the lack of agreement surrounding what defines hardship, and therefore which items of privation multi-item hardship scales comprise, it is possible that some scales contain items that do not necessarily impact upon mental health. Moreover, the broader classification of hardship encompassed within multi-item scales, may include individuals with relatively modest financial difficulties (along with those experiencing severe financial problems), which in turn would reduce the overall observed association with mental health.

Finally, multivariate outcomes were assessed with respect to the individual constructs comprising multi and individual item measures of hardship. Again, multivariate outcomes did not differ markedly according to this dimension. However, a larger proportion of measures containing the constructs of 'emergency funds' (related to an individual's ability to raise a specific amount of money in the case of an emergency), 'household repair/maintenance' (insufficient money to complete necessary repair, replacement or maintenance of essential household items) and 'social/leisure' (insufficient money to participate in social/leisure activities) did not demonstrate a significant multivariate association with poorer mental health, than other assessed constructs. It is noteworthy that while these constructs appeared in several financial hardship measures, they do not necessarily represent absolute elemental necessities, particularly compared to food, housing, clothes or medication/healthcare access.

4.2.4. Outcomes with respect to assessed confounders

Outcomes of multivariate analyses were also largely independent of modelled controls. While assessments that controlled for confounding were slightly less likely to demonstrate an association between financial hardship and poorer mental health, than assessments that did not, the vast majority of multivariate models remained statistically significant. Specifically, 85.4 % of assessments that controlled for demography, 80.0 % of assessments that controlled for pre-existing mental health, and 84.7 % of assessments that controlled for socioeconomic factors demonstrated a statistically significant association between financial hardship and poorer mental health. Moreover, 81.3 % of assessments that controlled for demography and pre-existing mental health, and 78.6 % of assessments that controlled for demography, pre-existing mental health and socioeconomic factors demonstrated a statistically significant association. Again, this finding attests to the strength of the assessed relationship, particularly given that it remains significant after adjustment for socioeconomic and demographic factors associated with

reductions in mental health.

4.3. Limitations

There were several limitations to this review. Importantly, there are myriad ways in which deprivation can be experienced. Consequently, this review did not conduct an exhaustive search of every specific form of hardship and its association with mental health. We included studies where authors identified a construct of financial hardship as the conceptual focus of their research. Given this, we must caveat our findings by stressing that this is not a definitive review assessing the longitudinal relationship between individual indicators of hardship (such as food insecurity, or the ability to heat/cool one's home) and mental health. For example, specific reviews assessing the relationship between food insecurity and mental health have been completed by Pourmotabbed et al. (2020), Smith et al. (2024), and Trudell et al. (2021). Additionally, we note the potential impact of publication bias – the propensity of studies containing positive findings, compared to null findings, being published (Dwan et al., 2013) – leading to an overestimation of the strength and consistency of the association between financial hardship and mental health. Additionally, this review only included papers published in English. This was reflected in the preponderance of studies utilising samples from the UK, USA, and Australia, or from other high income developed countries. Given this, important studies published in languages other than English would not have been included. In turn, this may preclude an understanding of the focal relationship in both lower and middle income countries, limiting the generalisability of the review findings. Furthermore, this review excluded studies that assessed clinical populations. While this may limit the generalisability of our findings to broader and more vulnerable populations, our primary aim was to provide a controlled assessment of the focal relationship. This review was also limited to peer reviewed published studies and did not include an assessment of grey literature, increasing the chance of publication bias. Finally, article searches were only undertaken within five databases (PubMed, Scopus, Medline, Embase, and PsycINFO). Whilst this is not an exhaustive list, it does contain some of the most commonly searched health based literature databases. Overall, the quality of included studies was high, though punctuated by substantial heterogeneity, particularly with respect to sample composition, study design, methodology, and measures used to assess financial hardship. In part, this heterogeneity was an artefact of the broad search and inclusion criteria applied at the early stages of the review. This decision was made with the aim of reviewing as comprehensive a body of relevant research as possible. However, the trade-off was that this limited study comparability. A range of studies in this review used Generalised Linear Mixed Model (GLMM) (Cooper et al., 2019; Handley et al., 2019) or Generalised Estimating Equations (GEE) approaches (Austin et al., 2018; Choi et al., 2023; Hecker et al., 2022; Kang et al., 2021; Lee et al., 2021; Manuel et al., 2012; Marshall et al., 2022; Whitsett et al., 2019). While these approaches met our inclusion criteria by using longitudinal data with repeated measures of the same individuals over time, they did not maximise the temporal conclusions that could be drawn from the data – such as by assessing more dynamic transitions in the experience of hardship and mental health. Three studies received a quality score of less than 70 percent. This was largely driven by the absence of identifiable strategies to deal with confounders, follow-up being incomplete and/or no reasons given for loss to follow-up, no identifiable strategies used to address incomplete follow-up, failure to use an appropriate statistical analysis, or the study subjects and/or setting not being described in sufficient detail.

4.4. Future research

This systematic review focused specifically on research that assessed the *longitudinal* relationship between financial hardship experience and mental health. However, the majority of included studies only used up to

four waves of data, and only spanned up to five years in length. Additional research using more waves, across a wider time frame, would provide greater insight into the long term impact of financial hardship experience on mental health. More specifically, this would aid in determining whether hardship experience has broad, long term impacts on mental health, whether its impact is more immediate and temporally constrained, or whether the severity of its impact varies across the life course. Similarly, research that captures a wider view of the life course would enable a nuanced understanding of the long term mental health of individuals who experience differing hardship trajectories, such as those who have recently experienced hardship, those who experience 'one-off' moments of hardship, and those whose life course is punctuated by the experience of recurrent or chronic deprivation. Additionally, further research that leverages long term longitudinal datasets could assess whether the risk associated with experiencing financial hardship, or specific aspects of hardship, has changed over time. Taking this a step further, future work could also assess whether the risks associated with hardship experience have significantly changed over time for specific age, sex, or other sociodemographic groups.

Building on this, it would be germane to assess the extent to which differing hardship trajectories are characterised by the clustering of related social determinants, such as low education, low income, unemployment, or poorer neighbourhood conditions. Furthermore, research across a wider time frame would provide insight into how the psychological impacts of deprivation manifest from childhood to adolescence and later life, and whether exposure to hardship at different ages is associated with varying mental health risk profiles. For example, research by Almeida and colleagues (2011) demonstrated that early-life disadvantage can shape mental health outcomes throughout the entire life course. Related research has suggested that the impact to mental health of early-life disadvantage may not fully manifest until later life (Barr et al., 2012; Power et al., 2002), and that the benefits of higher socioeconomic status in later life may not compensate for the risks associated with being born into disadvantage (Präg and Richards, 2019).

On the notion of time, prevailing research has demonstrated that the link between financial hardship and mental health is highly contemporaneous (Butterworth et al., 2009, 2012; Kiely et al., 2015). This raises the possibility that the common 12-month interval used in many longitudinal panel studies may be too long to capture the temporal nature of the causal relationship. Given this, studies using finer-grained data – such as monthly or even weekly measures – may better detect rapid changes in mental health following hardship experience, and in turn provide greater insight into the nuanced temporal dynamics of this relationship. Given the vast majority of included studies demonstrated a very clear and consistent longitudinal relationship between hardship experience and poorer mental health it seems pertinent for future research to move beyond oft replicated associative analyses between health and commonly used markers of socioeconomic status (such as education, income, or wealth), and instead focus on eliciting the precise mechanistic pathways explaining *why* financial hardship and lower socioeconomic status has such a strong relationship with poorer mental health. A range of studies have demonstrated that financial hardship provides a superior estimation of the association between socioeconomic status and mental health compared to measures of educational outcomes, employment status, income, wealth, and area-level disadvantage (Butterworth et al., 2012; Foulds et al., 2014; Lorant et al., 2007). These studies locate hardship as a proximal determinant of broader socioeconomic constructs, suggesting that it may play a critical role in mediating much of the association between other aspects of class and social position. Thus, future longitudinal research should systematically examine the extent to which financial hardship is mediating or moderating the relationship between mental health and more commonly assessed measures of socioeconomic position.

As noted already, there is no universal agreement on how to best measure financial hardship. In part, this may be a difficult undertaking, given cultural differences in what is deemed deprivation, and societal

disparities in wealth, and socioeconomic development. Nonetheless, it is apparent that further work could pursue the development of validated financial hardship measures applicable across different societal and cultural contexts.

5. Conclusion

The current review has shown financial hardship to be a potent risk factor for mental health. Furthermore, the evidence from this review confirms findings from individual studies that have shown financial hardship to be a stronger correlate of mental health than other, more commonly assessed, markers of socioeconomic position such as income, unemployment, and area-level disadvantage (Butterworth et al., 2012; Kiely et al., 2015).

These results suggest that identifying and addressing the material disadvantage experienced by the most vulnerable members of a society may substantially improve population mental health. However, continuing to improve our understanding of the distinct mechanisms and pathways through which financial hardship and socioeconomic disadvantage impacts mental health will have important implications for intervention and policy choices. Identifying key factors that lead to the onset, and continuity, of hardship will be instrumental in designing initiatives that can reduce a populations exposure to material deprivation, and mitigating its impact where it occurs. For example, if improving educational outcomes is identified as the most efficacious mechanism for interrupting the onset of hardship, and in turn, improving long term mental health outcomes, then investment in public education may be crucial. Conversely, if hardship experienced in the early-life environment is a key driver of poorer mental health across the entire life course, then investment that enables reduced familial exposure to deprivation may be most incisive policy to action.

Finally, it is also important to recognise that hardship occurs in a broader social, economic and political context. By focusing on measures of financial hardship, this review has highlighted the critical importance of proximal adverse material circumstances. However, these conditions are a reflection of the broader socioeconomic milieu. Reducing the impact of hardship on mental health will require action at both individual and societal levels – particularly to ensure that improvements to population mental health are enduring. This means finding ways to reduce the direct impact of hardship on mental health, while advancing thoughtful policy solutions that address the broader socioeconomic conditions in which hardship, and other proximal risk factors, occur.

CRediT authorship contribution statement

Joel Tibbetts: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Cath Chapman:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Siobhan O'Dean:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Peter Butterworth:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Tim Slade:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmmh.2025.100481>.

References

- Allen, J., Balfour, R., Bell, R., Marmot, M.G., 2014. Social determinants of mental health. *Int. Rev. Psychiatr.* 26 (4), 392–407. <https://doi.org/10.3109/09540261.2014.928270>.
- Almeida, O.P., Alfonso, H., Pirkis, J., Kerse, N., Sim, M., Flicker, L., Snowdon, J., Draper, B., Byrne, G., Goldney, R., Lautenschlager, N.T., Stocks, N., Scazufca, M., Huisman, M., Araya, R., Pfaff, J., 2011. A practical approach to assess depression risk and to guide risk reduction strategies in later life. *Int. Psychogeriatr.* 23 (2), 280–291. <https://doi.org/10.1017/S1041610210001870>.
- Amegbor, P.M., Kuuire, V.Z., Yawson, A.E., Rosenberg, M.W., Sabel, C.E., 2021. Social frailty and depression among older adults in Ghana: insights from the WHO SAGE surveys. *Res. Aging* 43 (2), 85–95. <https://doi.org/10.1177/0164027520946447>.
- Arenas, D.J., Thomas, A., Wang, J., DeLisser, H.M., 2019. A systematic review and meta-analysis of depression, anxiety, and sleep disorders in US adults with food insecurity. *J. Gen. Intern. Med.* 34 (12), 2874–2882. <https://doi.org/10.1007/s11606-019-05202-4>.
- Aromataris, E., Lockwood, C., Porritt, K., Pilla, B., Jordan, Z. (Eds.), 2024. JBI Manual for Evidence Synthesis. JBI. <https://doi.org/10.46658/JBIMES-24-01>. <https://synthesismanual.jbi.global>.
- Austin, E.K., Handley, T., Kiem, A.S., Rich, J.L., Lewin, T.J., Askland, H.H., Askarimarnani, S.S., Perkins, D.A., Kelly, B.J., 2018. Drought-related stress among farmers: findings from the Australian rural mental health study. *Med. J. Aust.* 209 (4), 159–165. <https://doi.org/10.5694/mja17.01200>.
- Bambra, C., Eikemo, T.A., 2008. Welfare state regimes, unemployment and health: a comparative study of the relationship between unemployment and self-reported health in 23 European countries. *J. Epidemiol. Community Health* 63 (2), 92–98. <https://doi.org/10.1136/jech.2008.077354>.
- Barnett, A., Zhang, C.J.P., Johnston, J.M., Cerin, E., 2018. Relationships between the neighborhood environment and depression in older adults: a systematic review and meta-analysis. *Int. Psychogeriatr.* 30 (8), 1153–1176. <https://doi.org/10.1017/S104161021700271X>.
- Barr, B., Taylor-Robinson, D., Scott-Samuel, A., McKee, M., Stuckler, D., 2012. Suicides associated with the 2008–10 economic recession in England: time trend analysis. *Br. Med. J.* 345 (aug13 2). <https://doi.org/10.1136/bmj.e5142> e5142–e5142.
- Barthel, D., Kriston, L., Fordjour, D., Mohammed, Y., Kra-Yao, E.D., Bony Kotchi, C.E., Koffi Armel, E.J., Eberhardt, K.A., Feldt, T., Hinz, R., Mathurin, K., Schoppen, S., Bindt, C., Ehrhardt, S., on behalf of the International CDS Study Group, 2017. Trajectories of maternal ante- and postpartum depressive symptoms and their association with child- and mother-related characteristics in a West African birth cohort study. *PLoS One* 12 (11), e0187267. <https://doi.org/10.1371/journal.pone.0187267>.
- Barton, H., Grant, M., 2006. A health map for the local human habitat. *J. Roy. Soc. Promot. Health* 126 (6), 252–253. <https://doi.org/10.1177/1466424006070466>.
- Batterham, P.J., Sunderland, M., Slade, T., Calear, A.L., Carragher, N., 2018. Assessing distress in the community: psychometric properties and crosswalk comparison of eight measures of psychological distress. *Psychol. Med.* 48 (8), 1316–1324. <https://doi.org/10.1017/S0033291717002835>.
- Benach, J., Muntaner, C., 2007. Precarious employment and health: developing a research agenda. *J. Epidemiol. Community Health* 61 (4), 276–277. <https://doi.org/10.1136/jech.2005.045237>.
- Bentley, R., Daniel, L., Li, Y., Baker, E., Li, A., 2023. The effect of energy poverty on mental health, cardiovascular disease and respiratory health: a longitudinal analysis. *Lancet Regional Health - Western Pacific* 35, 100734. <https://doi.org/10.1016/j.lanwpc.2023.100734>.
- Białowolski, P., Weziak-Białowolska, D., Lee, M.T., Chen, Y., VanderWeele, T.J., McNeely, E., 2021. The role of financial conditions for physical and mental health. Evidence from a longitudinal survey and insurance claims data. *Soc. Sci. Med.* 281, 114041. <https://doi.org/10.1016/j.socscimed.2021.114041>.
- Braveman, P., Gottlieb, L., 2014. The social determinants of health: it's time to consider the causes of the causes. *Publ. Health Rep.* 129 (1 Suppl. 2), 19–31. <https://doi.org/10.1177/00333549141291S206>.
- Burns, J.K., 2015. Poverty, inequality and a political economy of mental health. *Epidemiol. Psychiatr. Sci.* 24 (2), 107–113. <https://doi.org/10.1017/S2045796015000086>.
- Butterworth, P., Crosier, T., 2005. Deriving a measure of financial hardship from the HILDA survey. *Aus. Soc. Pol.* 2005, 1–12.
- Butterworth, P., Olesen, S.C., Leach, L.S., 2012. The role of hardship in the association between socio-economic position and depression. *Aust. N. Z. J. Psychiatr.* 46 (4), 364–373. <https://doi.org/10.1177/0004867411433215>.
- Butterworth, P., Rodgers, B., Windsor, T.D., 2009. Financial hardship, socio-economic position and depression: results from the PATH through Life Survey. *Soc. Sci. Med.* 69 (2), 229–237. <https://doi.org/10.1016/j.socscimed.2009.05.008>.
- Carle, A.C., Bauman, K.J., Short, K., 2009. Assessing the measurement and structure of material hardship in the United States. *Soc. Indic. Res.* 92 (1), 35–51. <https://doi.org/10.1007/s11205-008-9287-7>.
- Catalano, R., Goldman-Mellor, S., Saxton, K., Margerison-Zilko, C., Subbaraman, M., LeWinn, K., Anderson, E., 2011. The health effects of economic decline. *Annu. Rev. Publ. Health* 32 (1), 431–450. <https://doi.org/10.1146/annurev-publhealth-031210-101146>.
- Choi, M., Lee, E.H., Sempungu, J.K., Lee, Y.H., 2023. Financial hardship, depression, and self-esteem: temporal analysis using a Korean panel study. *Psychiat. Invest.* 20 (1), 35–42. <https://doi.org/10.30773/pi.2022.0157>.
- Cole, S.M., Tembo, G., 2011. The effect of food insecurity on mental health: panel evidence from rural Zambia. *Soc. Sci. Med.* 73 (7), 1071–1079. <https://doi.org/10.1016/j.socscimed.2011.07.012>.

- Cooper, S., Enticott, J.C., Shawyer, F., Meadows, G., 2019. Determinants of mental illness among humanitarian migrants: longitudinal analysis of findings from the first three waves of a large cohort study. *Front. Psychiatr.* 10, 545. <https://doi.org/10.3389/fpsyt.2019.00545>.
- Crowe, L., Butterworth, P., Leach, L., 2016. Financial hardship, mastery and social support: explaining poor mental health amongst the inadequately employed using data from the HILDA survey. *SSM - Population Health* 2, 407–415. <https://doi.org/10.1016/j.ssmph.2016.05.002>.
- CSDH, 2008. Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health: Final Report of the Commission on Social Determinants of Health. World Health Organisation, Geneva.
- Dahlgren, G., Whitehead, M., 2021. The Dahlgren-Whitehead model of health determinants: 30 years on and still chasing rainbows. *Public Health* 199, 20–24. <https://doi.org/10.1016/j.puhe.2021.08.009>.
- Dickerson, J., Kelly, B., Lockyer, B., Bridges, S., Cartwright, C., Willan, K., Shire, K., Crossley, K., Bryant, M., Siddiqi, N., Sheldon, T.A., Lawlor, D.A., Wright, J., McEachan, R.R., Pickett, K.E., 2022. 'When will this end? Will it end?' The impact of the March–June 2020 UK COVID-19 lockdown response on mental health: a longitudinal survey of mothers in the Born in Bradford study. *BMJ Open* 12 (1), e047748. <https://doi.org/10.1136/bmjopen-2020-047748>.
- Domènech-Abella, J., Mundó, J., Miret, M., Ayuso-Mateos, J.L., Sánchez-Niubo, A., Abduljabbar, A.S., Haro, J.M., Olaya, B., 2021. From childhood financial hardship to late-life depression: socioeconomic pathways. *Aging Ment. Health* 25 (1), 86–93. <https://doi.org/10.1080/13607863.2019.1671313>.
- Drentea, P., Reynolds, J.R., 2015. Where does debt fit in the stress process model? *Soc. Ment. Health* 5 (1), 16–32. <https://doi.org/10.1177/2156869314554486>.
- Drentea, P., Zhu, A., Guo, L., 2021. Relative deprivation, conspicuous consumption, and medical financial hardship: potential reasons for debt and mental health. *Soc. Focus* 54 (3), 239–252. <https://doi.org/10.1080/00380237.2021.1924904>.
- Dunn, N., Inskip, H., Kendrick, T., Oestmann, A., Barnett, J., Godfrey, K., Cooper, C., 2008. Does perceived financial strain predict depression among young women? Longitudinal findings from the Southampton Women's Survey. *Ment. Health Fam. Med.* 5 (1), 15–21.
- Dwan, K., Gamble, C., Williamson, P.R., Kirkham, J.J., the Reporting Bias Group, 2013. Systematic review of the empirical evidence of study publication bias and outcome reporting bias—an updated review. *PLoS One* 8 (7), e66844. <https://doi.org/10.1371/journal.pone.0066844>.
- Enticott, J.C., Meadows, G.N., Shawyer, F., Inder, B., Patten, S., 2016. Mental disorders and distress: associations with demographics, remoteness and socioeconomic deprivation of area of residence across Australia. *Aust. N. Z. J. Psychiatr.* 50 (12), 1169–1179. <https://doi.org/10.1177/0004867415615948>.
- Ettman, C.K., Cohen, G.H., Galea, S., 2020. Is wealth associated with depressive symptoms in the United States? *Ann. Epidemiol.* 43, 25–31.e1. <https://doi.org/10.1016/j.annepidem.2020.02.001>.
- Euteneuer, F., 2014. Subjective social status and health. *Curr. Opin. Psychiatr.* 27 (5), 337–343. <https://doi.org/10.1097/YCO.0000000000000083>.
- Feinstein, J.S., 1993. The relationship between socioeconomic status and health: a review of the literature. *Milbank Q.* 71 (2), 279. <https://doi.org/10.2307/3350401>.
- Ferrie, J.E., 2002. Effects of chronic job insecurity and change in job security on self reported health, minor psychiatric morbidity, physiological measures, and health related behaviours in British civil servants: the Whitehall II study. *J. Epidemiol. Community Health* 56 (6), 450–454. <https://doi.org/10.1136/jech.56.6.450>.
- Fitch, C., Hamilton, S., Bassett, P., Davey, R., 2011. The relationship between personal debt and mental health: a systematic review. *Ment. Health Rev.* 16 (4), 153–166. <https://doi.org/10.1108/13619321111202313>.
- Foulds, J., Wells, J.E., Mulder, R., 2014. The association between material living standard and psychological distress: results from a New Zealand population survey. *Int. J. Soc. Psychiatr.* 60 (8), 766–771. <https://doi.org/10.1177/0020764014521394>.
- Frankham, C., Richardson, T., Maguire, N., 2020. Psychological factors associated with financial hardship and mental health: a systematic review. *Clin. Psychol. Rev.* 77, 101832. <https://doi.org/10.1016/j.cpr.2020.101832>.
- Frasquilho, D., Matos, M.G., Salonna, F., Guerreiro, D., Storti, C.C., Gaspar, T., Caldas-de-Almeida, J.M., 2015. Mental health outcomes in times of economic recession: a systematic literature review. *BMC Public Health* 16 (1), 115. <https://doi.org/10.1186/s12889-016-2720-y>.
- French, D., Vigne, S., 2019. The causes and consequences of household financial strain: a systematic review. *Int. Rev. Financ. Anal.* 62, 150–156. <https://doi.org/10.1016/j.irfa.2018.09.008>.
- Frieden, T.R., 2010. A framework for public health action: the health impact pyramid. *Am. J. Publ. Health* 100 (4), 590–595. <https://doi.org/10.2105/AJPH.2009.185652>.
- Fryers, T., Melzer, D., Jenkins, R., 2003. Social inequalities and the common mental disorders. *Soc. Psychiatr. Psychiatr. Epidemiol.* 38 (5), 229–237. <https://doi.org/10.1007/s00127-003-0627-2>.
- Halpern, D., 1995. *Mental Health and the Built Environment: More than Bricks and Mortar?* (Pp. Xi, 240). Taylor & Francis.
- Handley, T.E., Rich, J., Lewin, T.J., Kelly, B.J., 2019. The predictors of depression in a longitudinal cohort of community dwelling rural adults in Australia. *Soc. Psychiatr. Psychiatr. Epidemiol.* 54 (2), 171–180. <https://doi.org/10.1007/s00127-018-1591-1>.
- Hecker, I., El Arbaoui, T., Wallez, S., Andersen, A.J., Ayuso-Mateos, J.L., Bryant, R., Corrao, G., McDaid, D., Mediavilla, R., Mittendorfer-Rutz, E., Compagnoni, M.M., Park, A.-L., Riepenhausen, A., Rigotti, T., Seiber, K., Sijbrandij, M., Smith, P., Tüscher, O., Walter, H., et al., 2022. Impact of work arrangements during the COVID-19 pandemic on mental health in France. *SSM - Population Health* 20, 101285. <https://doi.org/10.1016/j.ssmph.2022.101285>.
- Heflin, C., 2016. Family instability and material hardship: results from the 2008 survey of income and program participation. *J. Fam. Econ. Issues* 37 (3), 359–372. <https://doi.org/10.1007/s10834-016-9503-6>.
- Heflin, C.M., Siefert, K., Williams, D.R., 2005. Food insufficiency and women's mental health: findings from a 3-year panel of welfare recipients. *Soc. Sci. Med.* 61 (9), 1971–1982. <https://doi.org/10.1016/j.socscimed.2005.04.014>.
- Huggard, L., Murphy, R., O'Connor, C., Nearchou, F., 2023. The social determinants of mental illness: a rapid review of systematic reviews. *Issues Ment. Health Nurs.* 44 (4), 302–312. <https://doi.org/10.1080/01612840.2023.2186124>.
- Huynen, M.M., Martens, P., Hilderink, H.B., 2005. The health impacts of globalisation: a conceptual framework. *Glob. Health* 1 (1), 14. <https://doi.org/10.1186/1744-8603-1-14>.
- Iemmi, V., Bantjes, J., Coast, E., Channer, K., Leone, T., McDaid, D., Palfreyman, A., Stephens, B., Lund, C., 2016. Suicide and poverty in low-income and middle-income countries: a systematic review. *Lancet Psychiatry* 3 (8), 774–783. [https://doi.org/10.1016/S2215-0366\(16\)30066-9](https://doi.org/10.1016/S2215-0366(16)30066-9).
- Isaacs, A.N., Enticott, J., Meadows, G., Inder, B., 2018. Lower income levels in Australia are strongly associated with elevated psychological distress: implications for healthcare and other policy areas. *Front. Psychiatr.* 9, 536. <https://doi.org/10.3389/fpsyt.2018.00536>.
- Jenkins, R., Bhugra, D., Bebbington, P., Brugha, T., Farrell, M., Coid, J., Fryers, T., Welch, S., Singleton, N., Meltzer, H., 2008. Debt, income and mental disorder in the general population. *Psychol. Med.* 38 (10), 1485–1493. <https://doi.org/10.1017/S0033291707002516>.
- Kang, S.H., Kim, S., Park, E.-C., Jang, S.-I., 2021. Effects of material hardship on depression among adults in South Korea: insights from by the Korea welfare panel study 2008–2017. *Int. J. Equity Health* 20 (1), 202. <https://doi.org/10.1186/s12939-021-01531-1>.
- Kawachi, I., Subramanian, S.V., 2014. Income inequality. In: Berkman, L.F., Kawachi, I., Glymour, M.M. (Eds.), *Social Epidemiology*. Oxford University Press, p. 1. <https://doi.org/10.1093/med/9780195377903.003.0004>.
- Kendall, G.E., Nguyen, H., Ong, R., 2019. The association between income, wealth, economic security perception, and health: a longitudinal Australian study. *Health Sociol. Rev.* 28 (1), 20–38. <https://doi.org/10.1080/14461242.2018.1530574>.
- Kessler, R.C., Cleary, P.D., 1980. Social class and psychological distress. *Am. Sociol. Rev.* 45 (3), 463. <https://doi.org/10.2307/2095178>.
- Kiely, K.M., Leach, L.S., Olesen, S.C., Butterworth, P., 2015. How financial hardship is associated with the onset of mental health problems over time. *Soc. Psychiatr. Psychiatr. Epidemiol.* 50 (6), 909–918. <https://doi.org/10.1007/s00127-015-1027-0>.
- Kirkbride, J.B., Anglin, D.M., Colman, I., Dykxhoorn, J., Jones, P.B., Patalay, P., Pitman, A., Soneson, E., Steare, T., Wright, T., Griffiths, S.L., 2024. The social determinants of mental health and disorder: evidence, prevention and recommendations. *World Psychiatry* 23 (1), 58–90. <https://doi.org/10.1002/wps.21160>.
- Labonte, R., Torgeron, R., 2005. Interrogating globalization, health and development: towards a comprehensive framework for research, policy and political action. *Crit. Public Health* 15 (2), 157–179. <https://doi.org/10.1080/09581590500186117>.
- Lahelma, E., Laaksonen, M., Martikainen, P., Rahkonen, O., Sarlio-Lähteenkorva, S., 2006. Multiple measures of socioeconomic circumstances and common mental disorders. *Soc. Sci. Med.* 63 (5), 1383–1399. <https://doi.org/10.1016/j.socscimed.2006.03.027>.
- Latif, E., 2015. The impact of economic downturn on mental health in Canada. *Int. J. Soc. Econ.* 42 (1), 33–46. <https://doi.org/10.1108/IJSE-05-2013-0111>.
- Layte, R., 2012. The association between income inequality and mental health: testing status anxiety, social capital, and neo-materialist explanations. *Eur. Socio Rev.* 28 (4), 498–511. <https://doi.org/10.1093/esr/jcr012>.
- Layte, R., Whelan, C.T., 2014. Who feels inferior? A test of the status anxiety hypothesis of social inequalities in health. *Eur. Socio Rev.* 30 (4), 525–535. <https://doi.org/10.1093/esr/jcu057>.
- Lee, T.-H., Kuo, J.-H., Liu, C.-Y., Yu, Y.-F., Strong, C., Lin, C.-Y., Lee, C.-T., Tsai, M.-C., 2021. Trajectory of food insecurity and its association with longitudinal mental health and sleep outcomes in adolescents from economically disadvantaged families. *Nutrients* 13 (5), 1696. <https://doi.org/10.3390/nu13051696>.
- LeMoult, J., Humphreys, K.L., Tracy, A., Hoffmeister, J.-A., Ip, E., Gotlib, I.H., 2020. Meta-analysis: exposure to early life stress and risk for depression in childhood and adolescence. *J. Am. Acad. Child Adolesc. Psychiatr.* 59 (7), 842–855. <https://doi.org/10.1016/j.jaac.2019.10.011>.
- Lemstra, M., Neudorf, C., D'Arcy, C., Kunst, A., Warren, L.M., Bennett, N.R., 2008. A systematic review of depressed mood and anxiety by SES in youth aged 10–15 years. *Can. J. Public Health* 99 (2), 125–129. <https://doi.org/10.1007/BF03405459>.
- Letourneau, N.L., Duffett-Leger, L., Levac, L., Watson, B., Young-Morris, C., 2013. Socioeconomic status and child development: a meta-analysis. *J. Emot. Behav. Disord.* 21 (3), 211–224. <https://doi.org/10.1177/1063426611421007>.
- Lorant, V., 2003. Socioeconomic inequalities in depression: a meta-analysis. *Am. J. Epidemiol.* 157 (2), 98–112. <https://doi.org/10.1093/aje/kwf182>.
- Lorant, V., Croux, C., Welch, S., Deliege, D., Mackenbach, J., Anseau, M., 2007. Depression and socio-economic risk factors: 7-year longitudinal population study. *Br. J. Psychiatry* 190 (4), 293–298. <https://doi.org/10.1192/bjp.bp.105.020040>.
- Lund, C., Breen, A., Flisher, A.J., Kakuma, R., Corrigall, J., Joska, J.A., Swartz, L., Patel, V., 2010. Poverty and common mental disorders in low and middle income countries: a systematic review. *Soc. Sci. Med.* 71 (3), 517–528. <https://doi.org/10.1016/j.socscimed.2010.04.027>.
- Lund, C., Brooke-Sumner, C., Baingana, F., Baron, E.C., Breuer, E., Chandra, P., Haushofer, J., Herrman, H., Jordans, M., Kieling, C., Medina-Mora, M.E., Morgan, E., Omigbodun, O., Tol, W., Patel, V., Saxena, S., 2018. Social determinants of mental

- disorders and the Sustainable Development Goals: a systematic review of reviews. *Lancet Psychiatry* 5 (4), 357–369. [https://doi.org/10.1016/S2215-0366\(18\)30060-9](https://doi.org/10.1016/S2215-0366(18)30060-9).
- Mack, J., Lansley, S., 1985. *Poor Britain*. G. Allen & Unwin, London.
- Manuel, J.I., Martinson, M.L., Bledsoe-Mansori, S.E., Bellamy, J.L., 2012. The influence of stress and social support on depressive symptoms in mothers with young children. *Soc. Sci. Med.* 75 (11), 2013–2020. <https://doi.org/10.1016/j.socscimed.2012.07.034>.
- Marmot, M., Allen, J., Goldblatt, P., Boyce, T., McNeish, D., Grady, M., Geddes, I., 2010. Fair society, healthy lives: the Marmot review (strategic review of health inequalities in England post-2010). UCL Institute of Health Equity. United Kingdom; Policy Commons. <https://policycommons.net/artifacts/1618576/fair-society-healthy-live-s-full-report-pdf/>.
- Marmot, M.G., Ferrie, J., Newman, K., Stansfeld, S., 2001. *The Contribution of Job Insecurity to Socio-Economic Inequalities*.
- Marshall, G.L., Ingraham, B., Major, J., Kahana, E., Stansbury, K., 2022. Modeling the impact of financial hardship and age on self-rated health and depressive symptoms pre/post the great recession. *SSM - Population Health* 18, 101102. <https://doi.org/10.1016/j.ssmph.2022.101102>.
- Marshall, G.L., Kahana, E., Gallo, W.T., Stansbury, K.L., Thielke, S., 2021. The price of mental well-being in later life: the role of financial hardship and debt. *Aging Ment. Health* 25 (7), 1338–1344. <https://doi.org/10.1080/13607863.2020.1758902>.
- Maynard, M., Andrade, L., Packull-McCormick, S., Perlman, C., Leos-Toro, C., Kirkpatrick, S., 2018. Food insecurity and mental health among females in high-income countries. *Int. J. Environ. Res. Publ. Health* 15 (7), 1424. <https://doi.org/10.3390/ijerph15071424>.
- McAllister, A., Fritzell, S., Almroth, M., Harber-Aschan, L., Larsson, S., Burström, B., 2018. How do macro-level structural determinants affect inequalities in mental health? – a systematic review of the literature. *Int. J. Equity Health* 17 (1), 180. <https://doi.org/10.1186/s12939-018-0879-9>.
- McCarthy, B., Carter, A., Jansson, M., Benoit, C., Finnigan, R., 2018. Poverty, material hardship, and mental health among workers in three front-line service occupations. *J. Poverty* 22 (4), 334–354. <https://doi.org/10.1080/10875549.2017.1419532>.
- McCartney, G., Hearty, W., Arnot, J., Popham, F., Cumbers, A., McMaster, R., 2019. Impact of political economy on population health: a systematic review of reviews. *Am. J. Publ. Health* 109 (6), e1–e12. <https://doi.org/10.2105/AJPH.2019.305001>.
- Mendes de Leon, C.F., Rapp, S.S., Kasl, S.V., 1994. Financial strain and symptoms of depression in a community sample of elderly men and women: a longitudinal study. *J. Aging Health* 6 (4), 448–468. <https://doi.org/10.1177/089826439400600402>.
- Mirowsky, J., Ross, C.E., 2001. Age and the effect of economic hardship on depression. *J. Health Soc. Behav.* 42 (2), 132. <https://doi.org/10.2307/3090174>.
- Mishra, S., Carleton, R.N., 2015. Subjective relative deprivation is associated with poorer physical and mental health. *Soc. Sci. Med.* 147, 144–149. <https://doi.org/10.1016/j.socscimed.2015.10.030>.
- Montgomery, S., 1999. Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *Int. J. Epidemiol.* 28 (1), 95–100. <https://doi.org/10.1093/ije/28.1.95>.
- Moulton, V., Sullivan, A., Goodman, A., Parsons, S., Ploubidis, G.B., 2023. Adult life-course trajectories of psychological distress and economic outcomes in midlife during the COVID-19 pandemic: evidence from the 1958 and 1970 British birth cohorts. *Soc. Psychiatr. Psychiatr. Epidemiol.* 58 (5), 779–794. <https://doi.org/10.1007/s00127-022-02377-w>.
- Muntaner, C., Eaton, W., Miech, R., O'Campo, P., 2004. Socioeconomic position and major mental disorders. *Epidemiol. Rev.* 26 (1), 53–62. <https://doi.org/10.1093/epirev/mxh001>.
- Neadley, K., McMichael, G., Freeman, T., Browne-Yung, K., Baum, F., Pretorius, E., Taylor, K., Boyd, M., 2021. Capturing the social determinants of health at the individual level: a pilot study. *Public Health Research & Practice* 31 (2). <https://doi.org/10.17061/phrp30232008>.
- Ngamaba, K.H., Armitage, C., Panagioti, M., Hodkinson, A., 2020. How closely related are financial satisfaction and subjective well-being? Systematic review and meta-analysis. *J. Behav. Exp. Econ.* 85, 101522. <https://doi.org/10.1016/j.socscimed.2020.101522>.
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E., Chou, R., Glanville, J., Grimshaw, J.M., Hróbjartsson, A., Lala, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., McDonald, S., et al., 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Br. Med. J.* n71. <https://doi.org/10.1136/bmj.n71>.
- Patel, V., Burns, J.K., Dhillon, M., Tarver, L., Kohrt, B.A., Lund, C., 2018. Income inequality and depression: a systematic review and meta-analysis of the association and a scoping review of mechanisms. *World Psychiatry* 17 (1), 76–89. <https://doi.org/10.1002/wps.20492>.
- Paul, K.I., Moser, K., 2009. Unemployment impairs mental health: meta-analyses. *J. Vocat. Behav.* 74 (3), 264–282. <https://doi.org/10.1016/j.jvb.2009.01.001>.
- Pickett, K.E., Wilkinson, R.G., 2010. Inequality: an underacknowledged source of mental illness and distress. *Br. J. Psychiatry* 197 (6), 426–428. <https://doi.org/10.1192/bjp.bp.109.072066>.
- Pickett, K.E., Wilkinson, R.G., 2015. Income inequality and health: a causal review. *Soc. Sci. Med.* 128, 316–326. <https://doi.org/10.1016/j.socscimed.2014.12.031>.
- Porter, C., Favara, M., Hittmeyer, A., Scott, D., Sánchez Jiménez, A., Ellanki, R., Woldehanna, T., Duc, L.T., Craske, M.G., Stein, A., 2021. Impact of the COVID-19 pandemic on anxiety and depression symptoms of young people in the global south: evidence from a four-country cohort study. *BMJ Open* 11 (4), e049653. <https://doi.org/10.1136/bmjopen-2021-049653>.
- Porter, C., Hittmeyer, A., Favara, M., Scott, D., Sánchez, A., 2022. The evolution of young people's mental health during COVID-19 and the role of food insecurity: evidence from a four low-and-middle-income-country cohort study. *Public Health in Practice* 3, 100232. <https://doi.org/10.1016/j.puhip.2022.100232>.
- Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M.E., Miraghajani, M., 2020. Food insecurity and mental health: a systematic review and meta-analysis. *Public Health Nutr.* 23 (10), 1778–1790. <https://doi.org/10.1017/S136898001900435X>.
- Power, C., Stansfeld, S.A., Matthews, S., Manor, O., Hope, S., 2002. Childhood and adulthood risk factors for socio-economic differentials in psychological distress: evidence from the 1958 British birth cohort. *Soc. Sci. Med.* 55 (11), 1989–2004. [https://doi.org/10.1016/S0277-9536\(01\)00325-2](https://doi.org/10.1016/S0277-9536(01)00325-2).
- Präg, P., Richards, L., 2019. Intergenerational social mobility and allostatic load in Great Britain. *J. Epidemiol. Community Health* 73 (2), 100–105. <https://doi.org/10.1136/jech-2017-210171>.
- Reading, R., Reynolds, S., 2001. Debt, social disadvantage and maternal depression. *Soc. Sci. Med.* 53 (4), 441–453. [https://doi.org/10.1016/S0277-9536\(00\)00347-6](https://doi.org/10.1016/S0277-9536(00)00347-6).
- Reiss, F., 2013. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Soc. Sci. Med.* 90, 24–31. <https://doi.org/10.1016/j.socscimed.2013.04.026>.
- Ribeiro, W.S., Bauer, A., Andrade, M.C.R., York-Smith, M., Pan, P.M., Pingani, L., Knapp, M., Coutinho, E.S.F., Evans-Lacko, S., 2017. Income inequality and mental illness-related morbidity and resilience: a systematic review and meta-analysis. *Lancet Psychiatry* 4 (7), 554–562. [https://doi.org/10.1016/S2215-0366\(17\)30159-1](https://doi.org/10.1016/S2215-0366(17)30159-1).
- Richardson, R., Westley, T., Gariépy, G., Austin, N., Nandi, A., 2015. Neighborhood socioeconomic conditions and depression: a systematic review and meta-analysis. *Soc. Psychiatr. Psychiatr. Epidemiol.* 50 (11), 1641–1656. <https://doi.org/10.1007/s00127-015-1092-4>.
- Richardson, T., Elliott, P., Roberts, R., Jansen, M., 2017. A longitudinal study of financial difficulties and mental health in a national sample of British undergraduate students. *Community Ment. Health J.* 53 (3), 344–352. <https://doi.org/10.1007/s10597-016-0052-0>.
- Roberts, R.E., Kaplan, G.A., Shema, S.J., Strawbridge, W.J., 1997. Does growing old increase the risk for depression? *Am. J. Psychiatr.* 154 (10), 1384–1390. <https://doi.org/10.1176/ajp.154.10.1384>.
- Russell, A.E., Ford, T., Williams, R., Russell, G., 2016. The association between socioeconomic disadvantage and attention deficit/hyperactivity disorder (adhd): a systematic review. *Child Psychiatr. Hum. Dev.* 47 (3), 440–458. <https://doi.org/10.1007/s10578-015-0578-3>.
- Sakurai, K., Kawakami, N., Yamaoka, K., Ishikawa, H., Hashimoto, H., 2010. The impact of subjective and objective social status on psychological distress among men and women in Japan. *Soc. Sci. Med.* 70 (11), 1832–1839. <https://doi.org/10.1016/j.socscimed.2010.01.019>.
- Schiltz, N.K., Chagin, K., Sehgal, A.R., 2022. Clustering of social determinants of health among patients. *J. Prim. Care Community Health* 13. <https://doi.org/10.1177/2150131922113543>, 2150131922113543.
- Schrecker, T., Bamba, C., 2015. *How Politics Makes Us Sick*. Palgrave Macmillan UK. <https://doi.org/10.1057/9781137463074>.
- Selenko, E., Batinic, B., 2011. Beyond debt. A moderator analysis of the relationship between perceived financial strain and mental health. *Soc. Sci. Med.* 73 (12), 1725–1732. <https://doi.org/10.1016/j.socscimed.2011.09.022>.
- Shankar, P., Chung, R., Frank, D.A., 2017. Association of food insecurity with children's behavioral, emotional, and academic outcomes: a systematic review. *J. Dev. Behav. Pediatr.* 38 (2), 135–150. <https://doi.org/10.1097/DBP.0000000000000383>.
- Silva, M., Loureiro, A., Cardoso, G., 2016. Social determinants of mental health: a review of the evidence. *Eur. J. Psychiatr.* 30 (4), 259–292.
- Singh, A., Daniel, L., Baker, E., Bentley, R., 2019. Housing disadvantage and poor mental health: a systematic review. *Am. J. Prev. Med.* 57 (2), 262–272. <https://doi.org/10.1016/j.amepre.2019.03.018>.
- Singh-Manoux, A., Marmot, M.G., Adler, N.E., 2005. Does subjective social status predict health and change in health status better than objective status? *Psychosom. Med.* 67 (6), 855–861. <https://doi.org/10.1097/01.psy.0000188434.52941.a0>.
- Skapinakis, P., Welch, S., Lewis, G., Singleton, N., Araya, R., 2006. Socio-economic position and common mental disorders: longitudinal study in the general population in the UK. *Br. J. Psychiatry* 189 (2), 109–117. <https://doi.org/10.1192/bjp.bp.105.014449>.
- Smith, J., Stevens, H., Lake, A.A., Teasdale, S., Giles, E.L., 2024. Food insecurity in adults with severe mental illness: a systematic review with meta-analysis. *J. Psychiatr. Ment. Health Nurs.* 31 (2), 133–151. <https://doi.org/10.1111/jpm.12969>.
- Stephoe, A., Emch, S., Hamer, M., 2020. Associations between financial strain and emotional well-being with physiological responses to acute mental stress. *Psychosom. Med.* 82 (9), 830–837. <https://doi.org/10.1097/PSY.0000000000000867>.
- Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., McKee, M., 2009. The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis. *Lancet* 374 (9686), 315–323. [https://doi.org/10.1016/S0140-6736\(09\)61124-7](https://doi.org/10.1016/S0140-6736(09)61124-7).
- Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., McKee, M., 2011. Effects of the 2008 recession on health: a first look at European data. *Lancet* 378 (9786), 124–125. [https://doi.org/10.1016/S0140-6736\(11\)61079-9](https://doi.org/10.1016/S0140-6736(11)61079-9).
- Talamonti, D., Schneider, J., Gibson, B., Forshaw, M., 2023. The impact of national and international financial crises on mental health and well-being: a systematic review. *J. Ment. Health* 1–38. <https://doi.org/10.1080/09638237.2023.2278104>.
- Theodossiou, I., Zangelidis, A., 2009. The social gradient in health: the effect of absolute income and subjective social status assessment on the individual's health in Europe. *Econ. Hum. Biol.* 7 (2), 229–237. <https://doi.org/10.1016/j.ehb.2009.05.001>.
- Thomson, R.M., Igelström, E., Purba, A.K., Shimonovich, M., Thomson, H., McCartney, G., Reeves, A., Leyland, A., Pearce, A., Katikireddi, S.V., 2022. How do

- income changes impact on mental health and wellbeing for working-age adults? A systematic review and meta-analysis. *Lancet Public Health* 7 (6), e515–e528. [https://doi.org/10.1016/S2468-2667\(22\)00058-5](https://doi.org/10.1016/S2468-2667(22)00058-5).
- Tibber, M.S., Walji, F., Kirkbride, J.B., Huddy, V., 2022. The association between income inequality and adult mental health at the subnational level—a systematic review. *Soc. Psychiatr. Psychiatr. Epidemiol.* 57 (1), 1–24. <https://doi.org/10.1007/s00127-021-02159-w>.
- Trudell, J.P., Burnet, M.L., Ziegler, B.R., Luginaah, I., 2021. The impact of food insecurity on mental health in Africa: a systematic review. *Soc. Sci. Med.* 278, 113953. <https://doi.org/10.1016/j.socscimed.2021.113953>.
- Turunen, E., Hiilamo, H., 2014. Health effects of indebtedness: a systematic review. *BMC Public Health* 14 (1), 489. <https://doi.org/10.1186/1471-2458-14-489>.
- Whelan, C., 1993. The role of social support in mediating the psychological consequences of economic stress. *Sociol. Health Illness* 15 (1), 86–101. <https://doi.org/10.1111/1467-9566.ep11343797>.
- Whitsett, D., Sherman, M.F., Kotchick, B.A., 2019. Household food insecurity in early adolescence and risk of subsequent behavior problems: does a connection persist over time? *J. Pediatr. Psychol.* 44 (4), 478–489. <https://doi.org/10.1093/jpepsy/jsy088>.
- World Health Organization, 2010. *A Conceptual Framework for Action on the Social Determinants of Health*, vol. 76.
- Yabroff, K.R., Zhao, J., Chen, M.H., Hoque, J., Arias, G., Han, X., Zheng, Z., 2023. Financial hardship and psychosocial well-being and quality of life among prostate cancer survivors in the United States. *Urol. Oncol.: Seminars and Original Investigations* 41 (9), 380–386. <https://doi.org/10.1016/j.urolonc.2023.03.004>.