Measuring social exclusion in routine public health surveys

Bergen, A.P.L. van

Chapter 2

The association between social exclusion or inclusion and health in EU and OECD countries: a systematic review

Addi P. L. van Bergen
Judith R. L. M. Wolf
Mariam Badou
Kimriek de Wilde-Schutten
Wilhelmina IJzelenberg
Hanneke Schreurs †
Bouwine Carlier
Stella J. M. Hoff
Albert M. van Hemert

European Journal of Public Health 2019; 29 (3): 575–582

ABSTRACT

Background. Social exclusion (SE), or the inability to participate fully in society, is considered one of the driving forces of health inequalities. Systematic evidence on this subject is pertinent but scarce. This review aims to systematically summarise peer reviewed studies examining the association between the multidimensional concepts of SE and social inclusion (SI) and health among adults in EU and OECD countries.

Methods. The protocol was registered on Prospero (CRD42017052718). Three major medical databases were searched to identify studies published before January 2018, supplemented by reference and citation tracking. Articles were included if they investigated SE or SI as a multidimensional concept with at least two out of the four dimensions of SE/SI i.e. economic, social, political, and cultural. A qualitative synthesis was conducted.

Results. Twenty-two observational studies were included. In the general population, high SE/low SI was associated with adverse mental and general health. For physical health, the evidence was inconclusive. In groups at high risk of SE, support was found for the association between high SE/low SI and adverse mental health but no conclusions could be drawn for physical and general health.

Conclusions. This review found evidence for the association between high SE/low SI and adverse health outcomes, particularly mental health outcomes. The evidence is mainly based on cross-sectional studies using simple and often ad hoc indicators of SE/SI. The development and use of validated measures of SE/SI and more longitudinal research is needed to further substantiate the evidence base and gain better understanding of the causal pathways.

INTRODUCTION

According to the World Health Organization (WHO), social exclusion (SE) is one of the driving forces of health inequalities [1-3]. SE refers to the inability of people to participate fully in society [4], while its antipode, social inclusion (SI) refers to the situation in which individuals are fully involved in the society in which they reside, including the economic, social, cultural and political dimensions of that society [5]. The pathways linking SE (and lack of SI) to poor health are complex and diverse[1]. The situation of SE encompasses deprivations in areas such as social relations, material resources, access to health services and housing, which are in itself well known determinants of health [6, 7]. In addition, pathways leading to poor health may occur via direct and indirect causation as well as through reverse causation. The experience of exclusion, e.g. low social standing, feelings of alienation and lack of belongingness may directly impact health and well-being via psycho-neuroendocrine mechanisms or work indirectly through stress-related unhealthy behaviours [8-10]. SE may also give cause to other deprivations e.g. poor labour conditions or poor nutrition, which also contribute to ill-health [1]. Reverse causation occurs when poor health and disability generate and reinforce exclusionary processes [2].

Although SE and SI have considerable public health significance from a theoretical perspective, the empirical evidence-base on this topic is still sparse. Literature reviews on social exclusion or inclusion and health mostly discuss the concepts, operationalisations and instruments used to measure SE or SI [2, 11-13] or describe characteristics of the retrieved studies (research design, country, year of publication etc.) [14, 15]. One study systematically reviewed the impact of interventions on SI in adults with intellectual disability [16]. None of these reviews reported systematically on the relationship between SE/SI and health. The lack of clarity and diversity of meanings associated with SE/SI, the wide variety of SE/SI measures used, the focus on only one dimension of SE/SI and the complexity and sheer magnitude of the literature, severely limited the inferences that could be made from these studies [2, 11-16].

In this study, we conducted a systematic literature review that addressed one of the main obstacles encountered in previous reviews i.e. lack of clarity and diversity of meanings. SE/SI represents a broad concept that, by its nature, can be defined and operationalised in various ways. Multidimensionality is one of the agreed upon characteristics [17], but the number and nature of the dimensions vary. Burchardt, for example, used four dimensions: consumption, production, political engagement, and social interaction [18]; others distinguished six [19] or even seven [20] elements or dimensions of SE/SI. The WHO defines social exclusion as “dynamic multidimensional processes driven by unequal power relationships interacting across four main dimensions - economic, political, social, and cultural - and at different levels including individual, household, group, community, country, and global levels” [1]. These processes may lead to a state of SE characterised by a cumulation of deprivations in multiple dimensions [1, 10, 21]. We choose the WHO definition and classification into four societal domains as a template for our study. To further improve homogeneity we made a distinction

between often large general population studies and smaller studies in specific groups, mostly at high risk of SE.

The purpose of this study is to systematically summarise the evidence on the association between multidimensional SE and health and to evaluate six hypotheses i.e. that high SE/low SI is associated with: 1) adverse mental health, 2) adverse physical health, and 3) adverse general health outcomes in a) the general population and b) populations at high risk of SE.

METHODS

We followed PRISMA guidelines for reporting this systematic review [22, 23]. The review protocol is registered on the PROSPERO database (registration number CRD42017052718) and is available at https://www.crd.york.ac.uk/PROSPERO.

Electronic search

We developed and executed, with the help of a qualified librarian, a search strategy to identify all studies that reported the association between SE/SI and health. The following three major electronic health databases were searched up to January 2018: PubMed, EMBASE, and CINAHL. Searches were conducted in March 2015 and January 2018. The terms 'social exclusion' and 'social inclusion' were searched in title and abstract. Search strategies can be found in Supplementary file 1.

Study selection

Two authors (AvB, plus MB or KS) independently screened all records identified by the electronic search on title and abstract using a sequentially applied algorithm previously introduced by Curran et al. [14] (Figure 2). First, records without an abstract and inconclusive title were moved to a separate database to be assessed on the basis of full text.

Next, language, study population, country and type of publication/study design were checked. Studies had to be written in English, Dutch, German, Spanish, or French; involve an adult population; and be set in EU-countries or OECD-countries [https://www.oecd.org/about/members-and-partners/], because of their relatively similar welfare regimes. Only research articles published in peer-reviewed journals describing quantitative studies were included. Articles had to test the relationship between SE/SI and a health measure and report statistical results. Next, we excluded studies not using a multidimensional construct of SE/SI (minimum two of four dimensions), studies in which health formed part of the SE/SI measure and studies using an ecological measure of SE/SI. We did not exclude studies on sample size criteria.

We retrieved full-texts of all articles considered potentially eligible by at least one reviewer. Two reviewers (AvB, plus MB, KS or BC) then independently assessed the full texts to ascertain that the inclusion criteria were met. In case of disagreement, one of the other reviewers was consulted to decide. To complement the electronic searches, we hand-searched the reference lists of included studies and other reviews. Citation tracking was performed using Web of Science (WoS) or Google Scholar if studies were unavailable in WoS. Studies identified through reference and citation tracking were screened and assessed by AvB. When uncertain, BC or HS were consulted.

Data extraction

For each included study, the following data were extracted: study design, country, study population, sample size, dimensions and measures of SE/SI, health measure(s), confounding variables, statistical analysis and key results. We classified the health outcomes into three groups: mental health related (MH), physical health related (PH), and general health related (GH). In this, we were guided by the lists of mental and physical adult health measures in the Patient-Reported Outcomes Measurement Information System (PROMIS http://www.healthmeasures.net/explore-measurement-systems/promis/intro-to-promis/list-of-adult-measures) and UK experience on general health measures [24]. Mental illness and its impacts, emotional distress and cognitive functioning were classified under MH, as were intravenous drug use and compulsory hospitalisation on grounds of health and safety risks due to mental illness. Physical functioning, impairments, and symptoms such as headache and sleeplessness, were classified under PH. Whereas physical health refers to the physiologic and physical status of the body, general health refers to overall health status. Typical general health measures are self-rated health, presence of chronic diseases (yes/no), and limitations due to health problems (yes/no) [24].

Indicators of SE/SI were classified into the four WHO dimensions of SE/SI: social (S), economic (E), political (P), and cultural (C) as operationalised by the Netherlands Institute for Social Research|SCP [3, 25, 26]. In the social dimension, we classified SE/SI indicators relating to social isolation, participation in formal and informal social networks, and social involvement. In the economic dimension, we classified SE/SI indicators relating to deficits that people experience as shown by debts and the absence of certain basic goods and services; in the political dimension we classified indicators on the ability to exercise the rights people normally have, such as adequate health care, sufficient education, proper housing, a safe living environment and access to public and commercial services; and finally, in the cultural domain, we categorised indicators referring to a lack of normative integration i.e. non-compliance with core values of society such as low work ethic, low training readiness, not voting, social security abuse or delinquent behaviour. Study populations were classified into two groups: 1) general population and 2) population groups at high risk of SE. Studies among adults in HIV treatment, problematic drug users and single mothers were classified in the latter category. We classified elderly as general population, viewing

them as a demographic group rather than a high-risk group. Data extraction was performed by one reviewer (AvB, MB or KS) and checked by a second (AvB, BC or HS).

Risk of bias assessment

As there is currently little consensus on the critical elements for assessing risk of bias in observational studies [27], we opted for a two-track approach. The general methodological quality of each study was evaluated independently by two reviewers (AvB and MB KS BC or HS) using the Critical Appraisal Skills Programme (CASP) tools for cross-sectional and cohort studies (Supplementary files 2-3). The respective CASP checklists consist of 10 and 11 questions (e.g. "Was the outcome accurately measured to minimise bias?" and "Was the cohort recruited in an acceptable way?"), that can be answered with: 'yes' (1 point), 'can't tell', or 'no' (0 points). The option to answer 'yes moderately' (0.5 points) was added by the reviewers. Disagreements were resolved through consensus and, if necessary, a third reviewer was consulted (BC). A commonly used cut-off point of 60% was used to distinguish between low and acceptable quality studies [28]. Only acceptable quality studies were included in the synthesis. As done by De Silva et al. [29], we assessed, in addition to the CASP, a number of specific methodological limitations with a high risk of bias for our research question. We examined whether the definition, operationalisation and measurement of SE/SI were adequately substantiated, whether testing of the association between SE/SI and health was a stated objective of the study and whether adjustment for confounding factors was performed. Details can be found in Supplementary file 4.

Data analysis

Given the variation in health measures and study designs, it was not possible to conduct a meta-analysis. Instead, we used the method of grouping results as originally described by Ramirez et al. [30]. To examine the six research hypotheses, we grouped the results for each hypothesis into four qualitative patterns. These were: 1) positive, when a significant ($p<0.05$) concordant relationship was found for all measured SE/SI dimensions (high-SE/low SI corresponds to low health outcome), 2) negative, when an inverse association was found, 3) no association, when the relationships between the SE/SI dimensions and health were not statistically significant, and 4) partly (+/0), when studies reported multiple associations. We classified the result as partly when 30-70% of the tested relations were positive and the remaining 70-30% not significant. If studies reported findings for multiple, non-overlapping, research groups, e.g. men and women, these were included separately in the data analysis and counted as separate instances. When both unadjusted and adjusted results were presented, only adjusted results were reported. Results were combined by counting the number of instances in each category and weighting by sample size.

RESULTS

Study selection

The digital search yielded 4,032 non-duplicated articles: 2,038 references in PubMed, 1,219 in EMBASE and 775 in CINAHL (Figure 1). On the basis of title and abstract screening, 3,847 articles were excluded (Figure 2). The most common reason for exclusion was publication type (editorials, posters etc.) and study design. Articles that were excluded on language were mostly written in Portuguese. In total 185 articles were selected for full-text screening of which 19 met the inclusion criteria. An important reason for exclusion in this stage was the use of the term SE or SI for a single dimension of SE/SI or for a different concept (e.g. exposure to forms of mistreatment, problems with daily activities or fear for SE). The interrater agreement for the selection of the publications was good (Cohen's $\kappa = 0.77$ [31]). Through reference and citation tracking 1,792 more papers were identified of which three met the inclusion criteria. Main reasons for exclusion in this stage were subject (58%) and publication type (22%).

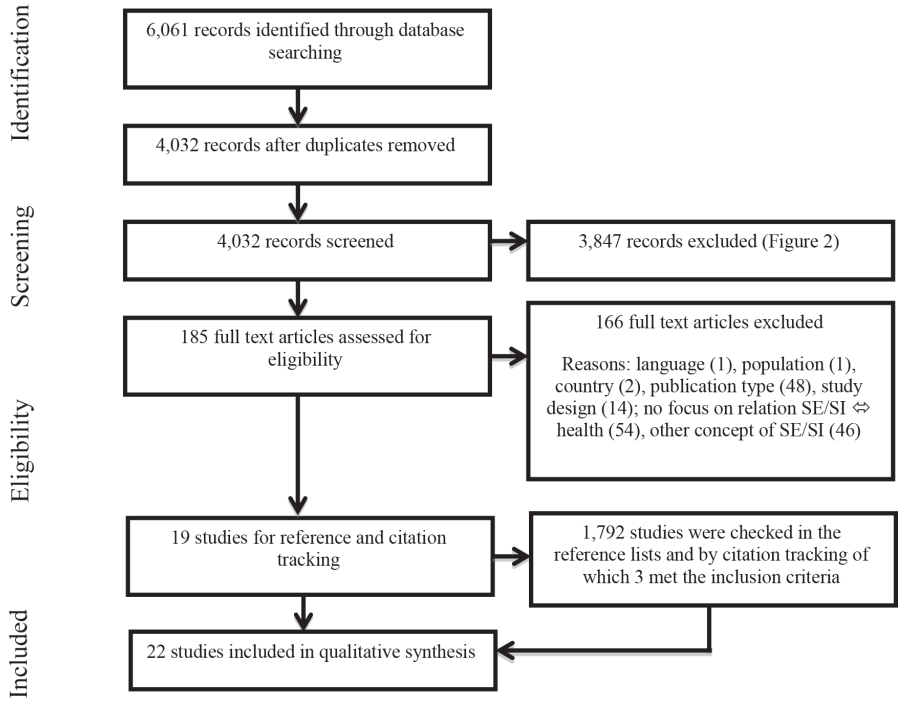

Figure 1. Flowchart of study selection.

Description of studies

The studies included five cohort studies, four case control studies and thirteen studies with a cross-sectional design. The majority of the studies were conducted in Europe (15), mostly in England (6). Eleven studies were conducted in the general population and eleven investigated SE/SI in groups at high risk of SE. The sample sizes ranged from 67 to 25,498 participants. Sixteen papers addressed mental health (MH), six physical health (PH) and six general health (GH). Five papers addressed more than one type of health outcome. The studies are presented in Supplementary file 5 Table S1a-b for MH, Tables S2a-b for PH and Tables S3a-b for GH.

Risk of bias assessment

The methodological quality of each study is summarised in Supplementary file 5. Details on the measurement of SE/SI and confounding variables can be found there as well. All studies had CASP scores of 6 or more, indicating acceptable quality. Figure 3 shows that the most frequent methodological limitations were incomplete measurement of SE/SI (< 4 dimensions) and lack of an existing SE/SI measurement instrument.

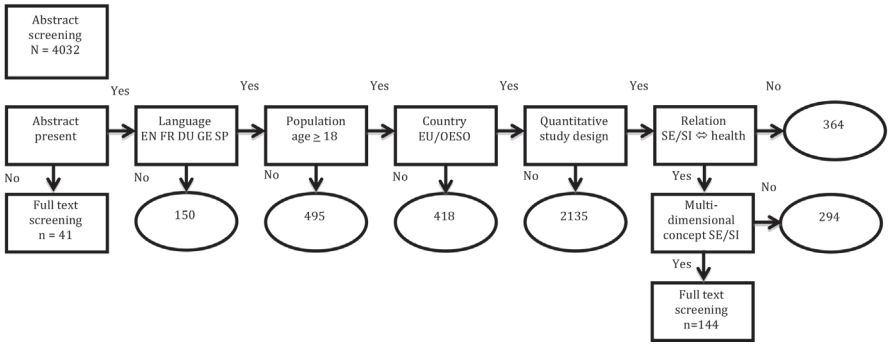

Figure 2. Exclusion algorithm title and abstract screening.

Most studies used self-chosen indicators without testing the psychometric properties. Only two studies used an existing instrument for SE/SI, that is, the Social Inclusion Questionnaire User Experience (SInQUE) [32, 33] and Social exclusion index [34, 35]. Three studies used existing scales to measure dimensions of SE/SI [36-38]. In two studies an index of social exclusion was constructed and partly validated [39, 40]. The majority of studies did not use a composite measure for SE/SI, and those that did, mostly calculated simple sum scores [39, 41-46]. In ten studies, the data were not originally designed to measure SE/SI (e.g. case files, registration or monitoring data). One in three studies lacked a theoretical underpinning of SE/SI. Control for confounding factors was missing or incomplete in 7 of the 22 studies.

Key: ◆ Limitation not present; ◖ Limitation partly present; ● Limitation present

Figure 3. Summary of study specific limitations with a high risk of bias.

Limitations: 1, no theoretical motivation of the concept SE/SI; 2, data set not originally designed to measure SE/SI; 3, not all dimensions of SE/SI measured; 4, no composite measure SE/SI; 5. no existing SE/SI measure; 6, testing of association SE/SI - health was not a stated objective; 7, no adjustment for demographic and other potential confounding factors.

Abbreviations: MH = Mental Health; PH = Physical Health; GH = General Health; high risk = high risk groups.

Note: Studies may appear more than once if they relate to more than one health category.

Mental health in the general population

Figure 4 shows evidence in favour of our hypothesis that high SE/low SI is associated with adverse health outcomes for MH in the general population. Our hypothesis is supported by 92% of the combined sample (27,881 persons, 6 instances, 5 studies) [37, 38, 46-48] and partly supported by 8% of the sample (2,493 persons; 1 instance) [34]. All but one study were cross-sectional in design. A retrospective cohort study showed an association between high psychological distress in elderly persons and later SE. High levels of SE, in turn, were found to be predictive of high psychological distress[46]. Three cross-sectional studies found positive associations between a large number of SE indicators and self-reported anxiety and anguish [47], common mental illness and severe mental illness [48]; depressive symptoms and psychotic experiences [38].

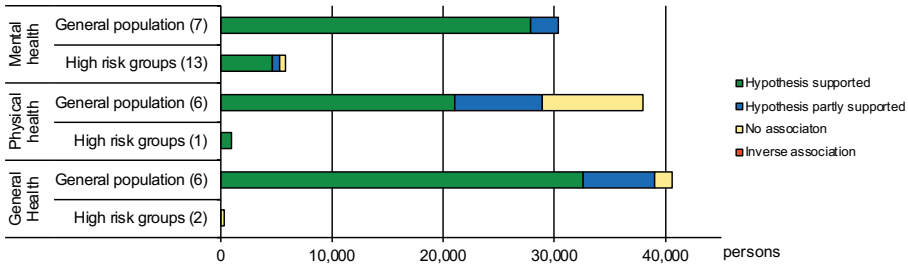

Figure 4. Significance and direction of the relationship between SE/SI and health: total sample size (X-axis) and number of instances (between brackets).

Another supportive study [37] found that the relationship between disability and MH was moderated by the social and economic dimensions of SE (operationalised as low social support and financial hardship respectively); and that the combination of the two dimensions strengthened the effect. The study with partial evidence [34] found a significant relation between low MH and the social dimension of SE but not with the cultural and economic dimension. Within the political dimension one indicator (adequate housing and safe neighbourhood) showed a concordant relation with MH whereas the other did not (access to institutions).

Mental health in high-risk groups

Figure 4 shows that the association between SE/SI and MH was tested in 13 high-risk study populations. Due to the typically small samples, the total sample size is modest compared to the general population sample (Figure 4; Tables S1a-b). This does not indicate less evidence per se. Our hypothesis was supported by 80% of the combined sample (4,646 persons; 8 out of 13 instances) and partly supported by 12% of the sample (692 persons; 3 instances). Supporting evidence was derived from two

case control studies [42, 49] and five cross-sectional studies [36, 40, 45, 50, 51]. The case control studies showed an elevated prevalence of DSM III personality features associated with SE in men with AIDS and/or drug addiction [42]; and an elevated prevalence of substance use disorders in clients of mental health services with SE characteristics [49]. The cross-sectional studies found significant associations between SE/SI and, respectively, perceived stress in patients in substance abuse treatment [36]; elevated intravenous drug use in drug users in public places [50]; symptoms of depression [45] and mental symptoms and impairments in HIV patients [51] and higher levels of complex post-traumatic symptoms in torture survivors [40].

Partial evidence was found in a study among patients of Assertive Outreach teams [52]. In this population, alcohol abuse and dependency was associated with the social and cultural dimensions of SE, but not with the political dimension. Drug abuse and dependency was associated with the political and part of the cultural dimension of SE and not with the social dimension. Partial evidence was also found by Killaspy et al. [33]. Patients interviewed after developing a psychotic illness showed a significant deterioration in two of the four SI dimensions measured i.e. the social and economic dimensions. Older age at onset of illness and longer duration of illness were associated with greater changes in the economic dimension. Higher current quality of life was associated with less decline in the social dimension.

Our hypothesis was not supported by two case control studies (490 persons, 2 instances) [39, 49]. One study found that in clients with substance use disorder, the co-occurrence of mental health problems was not associated with higher levels of SE [49]. The authors suggest that the association between substance abuse and SE is stronger than between mental health and SE. The second study [39] showed that SE increased the likelihood of compulsory admission among people assessed under the Mental Health Act, but, when other factors such as diagnosis, life-threatening self-neglect and physical aggression towards others, were taken into account, the association became non-significant. It is plausible that these factors might act as mediators in the relation between SE and compulsory admission.

Physical health in the general population

Figure 4 shows a more mixed picture for PH in the general population. Two studies support the hypothesis that high SE is associated with adverse PH (56% of the combined sample, 21,058 persons), two studies partly support the hypothesis (33%, 7,879 persons) and two studies do not (21%, 9,001 persons). Findings from a prospective cohort study [43] showed that elderly Japanese women who were excluded both in the social and in the economic dimension were 1.7 times more likely to die prematurely than those who were not socially excluded. In elderly men, the association between SE and mortality was not significant. The results were adjusted for age, marital status, education, municipality, disease and impairment. Supporting evidence was also found from cross-sectional studies on severe obstetric complications in general, on severe

pre-eclamptic conditions and severe haemorrhage specifically [44], on headache and sleeplessness [47] and severe physical illness or disability [48]. No significant associations were found with severe haemorrhage and uterine rupture [44], with obesity [47], and with the PH domain of the WHOQOL-BREF [34]. This domain covers among others pain, physical problems, sleep and energy.

General health in the general population

Evidence was found for the association between high SE/ low SI and adverse GH in the general population. Our hypothesis was supported by 80% of the combined sample (32,537 persons, 3 out of 6 instances) [46, 53, 54], partly supported by 16% of the sample (6,481 persons; 2 instances) [41, 47] and not supported by 4% of the sample (1,604 persons; 1 instance) [41]. The results were heavily influenced by one large cross-sectional study in 25,498 adults in Spain which found significant relationships between SE factors and socioeconomic inequalities in self-assessed health, presence of any chronic disease and limitations in daily activity due to health problems [54]. Two cohort studies showed positive associations between SE and disability onset and persistent disability [46, 53], and onset and persistence of low self-assessed health. A third cohort study showed partial evidence [41]. In women, long-term sickness absence adjusted for age and previous SE increased the risk of the combination of economic and social exclusion, but not of the combination of economic and cultural exclusion. In men, no significant associations were found between dimensions of SE and long-term sickness [41]. Partial evidence was also found in a cross-sectional study among 4,941 adults demonstrating a positive association between the presence of any chronic disease and the social, economic and part of the political dimensions of SE/SI, but not with the cultural dimension [47].

Physical health and general health in high-risk groups

The literature did provide little evidence on the association between SE/SI and PH or GH in high-risk groups. The number of studies was low, with one study on PH [51] and one study (2 instances) on GH [55]. In HIV patients, physical symptoms and impairments and difficulties in day-to-day activities due to illness were associated with low SI [51]. In single mothers, self- assessed health was not associated with SE. This was true for both single mothers on social assistance as for single mothers without social assistance [55].

DISCUSSION

We set out to systematically summarise existing evidence on the association between SE/SI and health and evaluate the hypotheses that high SE/low SI is associated with adverse MH, PH, and GH outcomes, in the general population and in groups at high risk of SE. The evidence base is currently strongest for the association between SE/SI

and MH. The hypotheses that high SE/low SI is associated with adverse MH outcomes are supported by studies with various designs, sample sizes and settings, in both the general population and high-risk groups. Conflicting evidence was only found in two studies [39, 49], in which the relation between SE/SI and MH appeared to be mediated by other factors.

This review also found support for the association between SE/SI and GH in the general population. The outcomes included some that are widely used in public health monitoring such as self-assessed health, presence of any chronic disease, and limitations due to health problems. Two aspects deserve closer attention. First, the results are confined to the social and economic dimensions of SE/SI. The cultural and social rights dimensions were not well presented and little or no significant relations with these dimensions were found. Second, none of the studies used a composite measure for SE/SI, and only one study provided insight into the cumulative impact of the underlying dimensions [41].

Our review failed to confirm or refute a direct association between high SE/low SI and adverse PH in the general population. The wider literature provides ample evidence for associations between aspects of SE/SI and PH outcomes, for example, between social relations and mortality [6] and between neighbourhood characteristics and cardiovascular health [7]. We expected that a cumulation of these aspects would also be associated with adverse PH outcomes. One reason for the absence of association may be the much broader spectrum of PH outcomes included in this study, ranging from headache and obesity to severe obstetric complications. Another reason may be that these studies use other terms such as deprivation or precariousness and did not get included in this review.
Lastly, as our review identified only a few studies focusing on the relation between SE/SI and PH or GH in high-risk populations, no conclusions can be drawn about the hypotheses on PH and GH in high-risk groups.

Causality and directionality

The studies we found employ different assumptions about the relationship between SE/SI and health. Some authors consider SE as a cause of adverse health [42-44] while others regard SE as a consequence of adverse health [33, 51, 53] or as a mediator [37]. The observational design of these studies does, however, preclude firm causal inference. The few longitudinal studies give us some insight in directionality. One longitudinal study showed that SE preceded negative health outcomes i.e. mortality in Japanese elderly women [43]. A second longitudinal study [41] points to a reverse directionality; long-term sickness absence was associated with a deterioration of the economic and social dimensions of SE in women, independent of their earlier situation. A reciprocal relation was found in two longitudinal studies [46, 53]. Further longitudinal studies may contribute to unravel the dynamic relation between SE/SI and health.

Risk of bias within studies

In line with previous reviews we found almost no study using a valid measure for SE/SI. Most studies used self-chosen indicators and in nearly half of the studies the data were not originally designed to measure SE/SI. The lack of valid measures for SE/SI prevents very firm conclusions being drawn from this review. We agree with previous reviews that the development and use of validated multidimensional measures [12, 13, 16, 56] is warranted in future research. As SE is a multi-interpretable concept that can be operationalised in various ways depending on one's theoretical perspective, political position and purpose, it is not obvious that one agreed upon measure for SE/SI will surface. This need not be problematic as long as choices are explicated and substantiated.
Finally, seven of the 22 studies did not adjust for demographic and other potential confounding factors. As confounding may affect the results of our review through over-estimation, the evidence was also analysed without these seven studies and the inferences remained unchanged. It is important to note that in all observational studies, residual confounding may account for part of the associations observed.

Strengths and limitations of this review

The principal strengths of this review are its systematic approach, tactical search strategy, and clear conceptual framework. These made it possible, despite the great diversity of studies, to take a step further than previous reviews, which did not report on the relationship between SE/SI and health, or did not do this systematically, but merely as exemplary descriptions [2, 12-16]. Another strong points is the inclusion of papers in languages other than English.

There are limitations too. The method we used to summarise the evidence is based on p-values. P-values give an indication of the compatibility of the data with the null-hypothesis of each paper, and not of the effect size or the importance of the results [57]. To enable interpretation of the results we reported for each paper effect sizes and/or other statistics in the tables and provided some qualitative context in the main text. Another limitation arises from the classification of health outcomes, which was not always straightforward. In a number of studies no clear distinction could be made between MH and PH components, for instance, when researchers considered other, non-congruent, classes of diseases. As these results were classified as GH, this category may have become somewhat ambiguous. Yet another limitation is that our review is not exhaustive. The downside of applying strict selection criteria is that e.g. studies not using a multidimensional construct of SE/SI were left out. As a previous review using a comprehensive search strategy yielded unmanageable amounts of 100,000 plus titles [14], we choose a narrow search strategy to identify papers that focus specifically on SE/SI and not on related subjects such as income, housing, social cohesion etc. This way we may have missed relevant papers not using the specific terms SE or SI in title or abstract, but we do not expect there to be many, for two reasons. First, studies on only one dimension of SE/SI or on a constituent element,

such as social isolation, housing or access to health care, are beyond the scope of this review as our focus was solely on papers employing a multidimensional interpretation of the concept SE/SI. Second, more comprehensive concepts such as social cohesion, social capital, citizenship or (multiple) poverty, were deliberately kept out of the study too, because of the general consensus in the literature that these concepts, although appearing similar to SE/SI, differ in important ways [2, 10-12, 20, 26]. Studies on socio-economic position or ethnicity and health are also out of the scope of this review as occupation, education and ethnic background are regarded as risk factors for SE and not as constituent parts [21]. Nevertheless, bias to the use of key words cannot be ruled out and a more extensive search strategy could be considered in future reviews.

Implications for future research

Our paper revealed a great number of weaknesses in research methodology and provides ideas and directions for future research. A research agenda required to have a better understanding of potential mechanisms and putative pathways should include longitudinal studies, studies into mediating and modifying factors such as gender and previous disadvantage; and into the accumulation and interaction of SE/SI dimensions. Equally important for enhancing the knowledge base on SE/SI and health, is a more systematic and standardised terminology of SE/SI domains and the development and validation of composite measures of SE/SI. The WHO/SCP model used in this paper may serve here as a useful template [3, 25, 26].

Policy implications

The association between high SE and poor MH came most clearly to the fore in people with severe mental illness and substance use disorder. Through the implementation of recovery-orientated services, the mental health sector can contribute to the SI of their clients [58], but more may be needed. As several studies in our review show an association between the economic and political dimensions of SE/SI and MH, e.g. with income, economic deprivation, employment, education and housing, we expect that there may be little chance of improving the situation of those with mental health problems without attention being given to these other problems. These need to be addressed by social and economic policies [58], involving not just the health sector but a range of sectors and services such as housing, employment, education, income support, debt counselling, and community building [59-62]. The evidence on the association between SE/SI and poor mental and general health in the general population also calls for more macro level policies and interventions, targeting the general population and not only those at highest risk.

CONCLUSIONS

To our knowledge, this is the first paper that succeeded in systematically synthesizing evidence on the association between the multidimensional concept of SE/SI and health. Preliminary evidence was promising. Most studies confirmed the expected relationship between high SE/low SI and adverse health outcomes, particularly for mental health. We recommend a greater focus on the valid measurement of SE/SI in future research.

KEY POINTS

- Social exclusion is generally regarded as an important social determinant of health, yet, its evidence base is still weak.
- In this systematic review we operationalised social exclusion as the cumulation of deprivations in four dimensions i.e. social, economic, political and cultural and social inclusion as full involvement in these dimensions.
- Evidence was found for the interconnectedness of social exclusion and inclusion and health. Available evidence is stronger for mental and general health than for physical health.
- There is need for the development and use of validated multidimensional, and preferably composite, measures for social exclusion and inclusion.

FUNDING

No funding was received for this work.

SUPPLEMENTARY MATERIALS

Supplementary file 1: Literature search strategy details
Supplementary file 2: CASP risk of bias tool for cross-sectional studies
Supplementary file 3: CASP risk of bias tool for cohort studies
Supplementary file 4: Details about the specific methodological limitations
Supplementary file 5: Tables S1a-S3b Description of observational studies: mental health, physical health and general health in the general population (a) and in high risk groups (b)

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Emine's verhaal

Emine is 46 jaar en woont in Den Haag. Zij heeft drie kinderen, twee zoons en een dochter. Haar dochter is helaas 1,5 jaar geleden verongelukt. Dit is voor Emine een groot verlies, waar zij zeer emotioneel over vertelt: *'Ik heb haar het graf in moeten dragen. Ze was mijn alles, mijn mama, mijn anne (Turks voor moeder), mijn zielsverwant, mijn leven, mijn vriendin, mijn man.'*

Emine is iemand die graag voor anderen klaar staat, zij omschrijft zichzelf als: *'Ik ben iemand die houdt van mensen, die weet hoe een goede buur te zijn, die geeft om haar omgeving en de mensen om haar heen, iemand die helemaal niet van zichzelf houdt. Iemand die heel erg op zijn familie en kinderen is gericht.'*

In het gezin zijn er veel financiële problemen, die tot kopzorgen leiden. Ook al werkt haar man hard, ze hebben niet genoeg geld om alle rekeningen te betalen. Emine heeft ook het gevoel dat dit komt doordat zij als Turken een achterstand hebben in de maatschappij.

Onderzoeker: *'Je hoort tegenwoordig vaak dat iedereen moet meedoen en moet participeren in de maatschappij (...) Wat vindt u daarvan?'* Mevrouw: *'Ik ben het ermee eens, maar was het maar toegankelijk voor iedereen. Werd iedereen maar toegelaten. Ik word eruit gehaald ik word buitengesloten, mijn kinderen worden buitengesloten wij worden er als buitenlanders steeds uitgepakt en ten onrechte wordt ons van alles verwijt.'*

Uit Sociaal Uitgesloten in de grote stad, van Bergen et al. 2014.