

Social Psychiatry and Psychiatric Epidemiology

Mental health impact of social capital interventions: a systematic review

--Manuscript Draft--

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Funding Information:	Fogarty International Center (US) (2D43 TW007393-06)	Dr. Andres G. Lescano
Abstract:	<p>Purpose: Mental disorders are a major contributor to the global burden of disease and disability, and can be extremely costly at both individual and community level. Social capital. (SC) defined as an individual's social relationships and participation in community networks, may lower the risk of mental disorders while increasing resilience capacity, adaptation and recovery. SC interventions may be a cost-effective way of preventing and ameliorating these conditions. However, the impact of these SC interventions on mental health still needs research.</p> <p>Methods: We conducted a systematic review of SC-based interventions to investigate their effect on mental health outcomes from controlled, quasi-experimental studies or pilot trials. We searched twelve academic databases, three clinical trials registries, hand-searched references and contacted field experts. Studies' quality was assessed with the Cochrane Risk of Bias tools for randomized and non-randomized studies.</p> <p>Results: Seven studies were included in the review, published between 2006 and 2016. There was substantial heterogeneity in the definitions of both SC and mental disorders among the studies, preventing us from calculating pooled effect sizes. The interventions included community engagement and educative programs, cognitive processing therapy and sociotherapy for trauma survivors, and neighborhood projects.</p> <p>Conclusions: There are paucity of SC interventions investigating the effect on mental health outcomes. This study showed that both SC scores and mental health outcomes improved over time but there was little evidence of benefit compared to control groups in the long term. Further high-quality trials are needed, especially among adverse populations to assess sustainability of effect.</p>	

Ref.: Revision of Manuscript # SPPE-D-17-00515
Mental health impact of social capital interventions: a systematic review

POINT-BY-POINT RESPONSES TO REVIEWERS' COMMENTS

We would like to thank the reviewers for their useful comments and suggestions that have allowed us to improve the quality and clarity of our manuscript. We have implemented all the revisions suggested, and our point-by-point responses to the reviewers' comments are detailed in the following pages. The reviewers' comments are quoted verbatim in plain font, followed by our response in the indented text (bold font) and reference to the location of the changes made in the revised manuscript. We include a clean version of the manuscript for reference.

COMMENTS BY EDITOR:

In addition

- as the manuscript is already rather long, please answer reviewers' comments without lengthening it
- the references are not in the correct format, please check Instructions for authors

We thank the editor for these comments. We have edited the document carefully ensuring that the revised manuscript is still within the allowed word count. We have also updated the references format to the "Springer Basic Number" style provided in the Instructions for author's details.

COMMENTS BY REVIEWER #1:

Reviewer #1 – Comment 1:

I found this review to be extremely important and useful to my own research, and know that many others would find it quite interesting as well. I have some comments, but recommend that this research be published once some modifications are made.

We thank the reviewer for this comment.

Reviewer #1 – Comment 2:

Introduction:

Line 77: I'm not quite sure what the authors mean by "negative community". Perhaps they could clarify or use a different term?

We thank the reviewer for this clarification request. The phrase intended to mention the detrimental impact of a poor mental health context to the social ties and the community's economic means. We have edited the phrase and the text can now be read as follows:

“(…) social exclusion and negative economic impact (…)” [Page 03, Line 76-77]

Reviewer #1 – Comment 3:

Line 80: I think the authors should use the definition from the 6th edition of the dictionary of epidemiology, unless they have a good reason for not doing so (in which case they should justify why they use a certain definition, as there are so many out there). I think it's important that articles on social capital stick to one definition, to reduce heterogeneity in the literature.

We thank the reviewer for the opportunity to expand on this point. As the reviewer correctly highlighted, several researchers have complemented and added dimensions & factors to the earlier concepts of social capital. We decided to use the social capital approach closest to the definition worked by Robert Putnam (1995), as one of its principal theorists. This approach refers to it as the inherent capital in the nature and involvement of the public participation in informal networks and formal and civic institutions. For this review, we were interested to explore this concept's dimensions in experimental associations with mental health outcomes. We aimed to conceptualize social capital as an inherent attribute and useful resource for the members of the public as a measure of a community's health and associational existence across contexts. As we required that this concept be measured at both the individual and group level, and also to be able to classify the complex nature of this construct in two sets of main components (cognitive and structural), we decided to follow Putnam definition as the base concept. This was later complemented with the work of Grootaert et al., Kawachi I., Subramanian SV and De Silva, M., and endorsed by Henderson S and Whiteford H among other researchers. The epidemiology dictionary definition does not integrate the attributes at both the individual and group level, and for the aims of this review, it did not allow us to use this concept as base. A brief explanation on the decision to follow Putnam's conceptual approach has been added to the Introduction section to make this point clearer to the reader. [Page 03, Lines 79-80]

Reviewer #1 – Comment 4:

Lines 94-99: At first I didn't think that three lines on the social psychology of participation added much to the discussion on cognitive/ structural social capital. I was going to suggest removing these lines (or developing it further), but later I saw that the G4H intervention (Haslam) is cited as one of the exemplary social capital interventions in the discussion, and I know that this intervention stems from 'the social cure', which builds on social identity theory. I now think that the authors should develop this link further, so that it is clearer as to how social psychological theories like social identity/group membership and social capital are linked.

We thank the reviewer for the opportunity to provide additional information on this point. Effectively, due to word limit constraints we did not include a lengthier discussion on the social identity theory relationship with social capital dimensions. We have added the following paragraph to the Introduction section, as a brief explanation on that proposed link: “Although not every group membership will provide psychological resources to its affiliates, the ones with whom the individuals choose to identify and internalize as being psychologically influential for them, will become part of their social identity. This process will strongly influence the individuals to invest in the creation and management of social capital, effectively utilizing the beneficial psychological means that said membership provides”. [Page 03, Line 97, Page 04, Lines 98-101]

Reviewer #1 – Comment 5:

Line 115: The citations should be combined (77-79), not (77) (78,79)

We apologize for this omission. The mentioned citations are now combined.

Reviewer #1 – Comment 6:

Methods:

The methods seem fairly sound to me. I understand that it cannot have been easy to come up with inclusion/ exclusion criteria for social capital interventions, but given the complex nature of these interventions, I suggest that the selection criteria be discussed in the body of the text and not just in the Appendix.

We agree with the reviewer, thus we have added a brief paragraph with a summary on the social capital intervention selection criteria we established for this review. We have now specified that the interventions that we aimed to identify must have been targeted to ameliorate (either as a prevention or treatment measure) a mental health-related condition on the study participants, excluding any intervention administered solely on the basis of training or research purposes, or as add-ons of other treatment measures. Additionally, we have specified that mutual aid or support groups which were not delivered as an intervention, would also be excluded, as well as where the assessments were only based on retrospective self-report surveys. This has been included in the Methods section [See Page 07, Lines 190-193].

Reviewer #4 – Comment 7:

I also question why mutual aid/ support groups were excluded. Based on the definition given, mutual aid groups could very easily be a social capital intervention, as they increase group connections/ ties between members in a way that elicits feelings of trust/ reciprocity/ shared identity. I'm not at all convinced that the authors were justified in excluding this. Perhaps a better justification should be given?

We apologize for the involuntary confusion on this exclusion criteria. We decided not to include mutual aid or support groups that were led by the group participants in a voluntary fashion, where no facilitator or research staff would be able to oversee the conduction or the replicability of the intervention. This has been specified in the previous comment response and in the Methods section [See Page 07, Lines 190-193]

Reviewer #1 – Comment 8:

Results:

I found the structure a little difficult to follow. There is also lot of debate as to whether we should look at social capital at the individual or at the group/ecological level, so I'm not sure why the authors didn't differentiate between this in the results section. It would be nice to have sub-sections with each (individual structural, individual cognitive, ecological structural, ecological cognitive) to make things easier to follow. The effect on mental health could be added to each of these sections, so that we can see whether interventions targeting that type of SC are also linked to mental health.

We agree with the reviewer and apologize for this involuntary confusion on the Results section structure. Although we acknowledge that it would be more informative to summarize and differentiate the results obtained following the reviewer's suggested sub-sections, this was not possible to achieve with the scarce studies obtained. Not all of the studies measured more than one of these social capital components, and the lack of comparability in these sub sections would not

allow us to critically assess results disaggregated this way: i.e. only one of the seven included studies evaluated social capital in an ecological level. Also, one of the studies only evaluated structural social capital and did not consider cognitive social capital. In addition, as the measures and scores used in each study were also different, we could not adopt a more analytical summary for the intervention's effectivity grouped that way. Therefore, the available outcomes were specified in the table for each study for simplicity in interpretation.

Reviewer #1 – Comment 9:

Discussion:

One general remark I have is that the authors should be more specific as to which type of SC they are referring to throughout the discussion.

We apologize for this omission. We have added some minor changes (See pages 10 and 11) so that it will be clearer to the reader that we are referring to both structural and cognitive components of social capital.

Reviewer #1 – Comment 10:

Line 338: Fix citations (13 should be combined with the rest).

We apologize for this omission. The mentioned citations are now combined.

Reviewer #1 – Comment 11:

Line 341: Maybe the authors could recommend some standardized instruments to use? It's not necessary but I think it could be useful to some readers.

This is an excellent observation raised by the reviewer. Although still the research community has not reached a standardized consensus for the social capital measurement tool, it is undeniable that it is needed. However, the authors believe that a strong recommendation towards one set of tools that properly assess all involved dimensions would require an additional review that exceeds the scope of this systematic review. However, we agree with the reviewer that this should be highlighted. This information has been added to the Discussion section. [Page 11, Lines 332-335]

COMMENTS BY REVIEWER #2:

Reviewer #2 – Comment 1:

Comments to the authors:

The authors systematically reviewed intervention studies for social capital and mental health. I have only two requests.

1. What is your contribution to previous studies? Please clearly explain it in the discussion.

We thank the reviewer for this comment, which allow us to expand on this point. As it has been stressed in the manuscript, our main interest conducting this review

was to identify and explicitly assess the nature and effectivity of interventions based in SC to ameliorate mental health conditions in adults across contexts. Although based on our results, we cannot issue strong recommendations for policy, we believe that our study highlights: 1. the need of having standardized measures and tools for social capital, comprising the main evaluated components and dimensions related to mental health. Also, 2. the need to confirm the positive results in both SC and mental health outcomes with robust interventions that rely on bigger sample sizes, blinded methods (when possible), longer evaluation periods and finally, 3. that, despite the scarce evidence available to support this recommendation, we believe that a good design for future interventions in this topic, may consider both an individual and ecological level approach. Due to the word count constraints we have briefly added the contributions that have not been mentioned in the Discussion section. [Page 11, Lines 332-335]

Reviewer #2 – Comment 2:

Please check the number of excluded people in the participant flow. For example, the total of 14: Study design, 16: No SC outcomes, 10: No mental health outcomes, and 1: Full text not available should be 41, but you described 23.

We apologize for this involuntary confusion. The numbers that refer to the studies that were excluded do not add up because the reviewers found more than one exclusion criteria in some of the studies. This method helped to reach a consensus in the team of reviewers in the discussion for the final selection of papers. A brief note on this has been added below the flowchart image, for clarification.

1 **Mental health impact of social capital interventions: a systematic review**

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20 **Word count: Abstract (247), Main text (3561), 2 Tables (1564), 3 Figures (124), 2 Appendices (electronic
21 supplementary material)**

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24 **Running title:** Mental health impact of social capital interventions: a systematic review

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38 **Acknowledgments:**

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38 **ABSTRACT**

1
2 39 **Purpose:** Mental disorders are a major contributor to the global burden of disease and disability, and can be
3
4 40 extremely costly at both individual and community level. Social capital, (SC) defined as an individual's social
5
6 41 relationships and participation in community networks, may lower the risk of mental disorders while increasing
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8 42 resilience capacity, adaptation and recovery. SC interventions may be a cost-effective way of preventing and
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10 43 ameliorating these conditions. However, the impact of these SC interventions on mental health still needs research.

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12 44 **Methods:** We conducted a systematic review of SC-based interventions to investigate their effect on mental health
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14 45 outcomes from controlled, quasi-experimental studies or pilot trials. We searched twelve academic databases,
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16 46 three clinical trials registries, hand-searched references and contacted field experts. Studies' quality was assessed
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18 47 with the Cochrane Risk of Bias tools for randomized and non-randomized studies.

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20 48 **Results:** Seven studies were included in the review, published between 2006 and 2016. There was substantial
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22 49 heterogeneity in the definitions of both SC and mental disorders among the studies, preventing us from calculating
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24 50 pooled effect sizes. The interventions included community engagement and educative programs, cognitive
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26 51 processing therapy and sociotherapy for trauma survivors, and neighborhood projects.

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28 52 **Conclusions:** There are paucity of SC interventions investigating the effect on mental health outcomes. This study
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30 53 showed that both SC scores and mental health outcomes improved over time but there was little evidence of
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32 54 benefit compared to control groups in the long term. Further high-quality trials are needed, especially among
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34 55 adverse populations to assess sustainability of effect.

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40 58 **Keywords:** social capital; psycho-social intervention; mental health; well-being; systematic review
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68 INTRODUCTION

69 Common mental disorders, comprising depression, anxiety and substance use disorders are one of the main causes
70 of the global burden of disease [1]. They cause significant disability globally, directly accounting to 7.4% of
71 disability-adjusted life years and 22.9% of all years lived with disability, in high, middle- and low-income
72 countries [2] and can be extremely costly to the individual, their families, their communities and health systems
73 [3]. They often have a chronic-recurrent course despite accessing treatment [4]. Even with the existing cost-
74 effective interventions in mental health, there is limited implementation and a lack of human resources to
75 effectively reach most deprived areas, where services for prevention and recovery are still required [2].
76 Poor mental health is associated with poorer physical health [5], social exclusion and negative economic impact
77 [6], can lead to impaired economic development [7] and decreased Social Capital (SC) [8].
78 SC is a complex construct with distinct components, and can be understood as an inherent cohesive force that
79 enables collective action within populations [9,10]. For the purpose of this review we followed the definition of
80 SC used by Robert Putnam, which highlights SC as an invaluable resource for the public as it “represents the
81 characteristics of social organization, networks, rules, and trust that facilitate coordination and cooperation for
82 mutual benefit” [9]. The nature of this construct was classified in sets of components: “SC is multifaceted and has
83 two main components. The structural component which “reflects the nature and intensity of an individual's
84 participation in community networks; and the cognitive component which refers to the perceived quality of an
85 individual's social relationships” [11]. For measurement purposes, its components have been classified in
86 attributes that can be assessed with quantitative tools [12]. “Structural (participatory) SC refers to relationships,
87 networks, membership, organizations, associations and institutions that may link groups or individuals together.
88 Cognitive (perceived) SC refers to values, norms, attitudes, beliefs, civic responsibility, altruism and reciprocity
89 within a community” [13]. There is still no universal measurement for SC due to its multidimensional composition
90 and collective factors. It can be measured both at the individual and ecological level [14].

92 Social Capital and Mental Health

93 The “social psychology of participation” has been established [15] as the process involved in the functioning of
94 community participation, with three factors: SC, social identity and social representation. There is strong evidence
95 that shows how social relationships, group memberships and social identities provide a beneficial impact, by
96 protecting population' mental health while having an impact on psychological well-being [16-19]. Although not
97 every group membership will provide psychological resources to its affiliates, the ones with whom the individuals

98 choose to identify and internalize as being psychologically influential for them, will become part of their social
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2 99 identity. This process will strongly influence the individuals to invest in the creation and management of social
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4 100 capital, effectively utilizing the beneficial psychological means that said membership provides. [20,21] Still, the
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6 101 complex association of SC, well-being, health determinants [22] and contextual factors remain under investigation
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8 102 by researchers [23-26]. The main obstacle to determining a causal relationship between SC and mental health has
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10 103 been the lack of controlled, prospective studies [27,28]. A high level of SC within a community has been shown
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12 104 to be a beneficial, supportive attribute for its members in the majority of cases [10,12,14,28-30]. However, only
13
14 105 a small number of experimental studies have successfully shown that strengthening of SC leads to improvement
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16 106 in health outcomes [31-33]. A few studies obtained preliminary results that cannot be readily extrapolated to the
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18 107 general adult population or larger communities [34,35]. In addition to these examples, the available experimental
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20 108 studies of SC manipulation with associated mental health outcomes is even scarcer, despite the evidence of
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22 109 beneficial protective results obtained through longitudinal and cross-sectional studies [36-38]. Particularly in low-
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24 110 and middle-income countries, where between 76 and 85% of mental disorders remain untreated [39] there is a
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26 111 need of interventions to prevent mental disorders and to build resilience that can be administered at the community
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28 112 level. A recent systematic review recommended the development of interventions aimed at improving SC and
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30 113 considered it as a cost-effective way of preventing common mental disorders, and indicated that initiatives
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32 114 focusing on increasing the cognitive component of SC can act as a protective factor against the development of
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34 115 mental disorders in the long term [13]. This is especially important in the context of poverty, [8,40] structural
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36 116 conflict, humanitarian crisis [41] or disasters [42-45]. SC may have a significant influence on the capacity of local
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38 117 communities to adapt to sudden environmental events such as flooding, drought, the ongoing climate change
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40 118 effects [46-48] or other environmental disasters [49-51]. SC can strengthen the trust between communities and
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42 119 local authorities, enabling better coordination of preventive and reconstructive efforts [52,53] with social support
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44 120 measures [54]. Challenging contexts need replicable and community-based interventions that boost SC and which
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46 121 can be adapted and implemented in different settings to reinforce good mental health and improve recovery,
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48 122 resilience capacity and community well-being.

50 123 However, there are currently few longitudinal, controlled studies of high-quality SC interventions. Some of the
51
52 124 existing studies have heterogeneous designs and outcomes, and some obtained conflicting results [55] [56].
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54 125 Previous systematic reviews on SC and mental health outcomes in the general population applied heterogeneous
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56 126 SC measures. In addition, the evidence, which was obtained, was mainly from high-income countries and many
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58 127 types of study designs were considered. One recent systematic review, published in 2015 by Ehsan and De Silva
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128 [13] focused its search on quantitative studies examining the direct association between SC and common mental
1 disorders in adults, and included 31 cross-sectional and 8 cohort studies. They found conclusive evidence of the
2 129 direction of the association between the different SC types and common mental disorders. However, their focus
3 130 was not on controlled designs in SC interventions, and the search dates (up to July 2014) justify a more up-to-date
4 131 review. Another previous systematic review, (Nyqvist, et al, 2013) [57] searched for quantitative studies of SC
5 132 and mental well-being in older adults specifically, and included 11 studies. All of them were cross-sectional, and
6 133 no mental health outcomes were considered. A more recent systematic review, published in July 2017 by Coll-
7 134 Planas et al, [58] searched for the impact of SC interventions on health outcomes in older populations. Although
8 135 it did not focus only on mental health assessments and the included population were older than 65 years old, their
9 136 results support the positive potential of SC interventions on population's mental health. These results highlight
10 137 the need for additional research, as despite the positive findings obtained so far, they do not allow us to unravel
11 138 the complex associations between SC and mental health, as the included studies in these reviews were not
12 139 exclusively prospective, or experimental. Most of the published literature currently available on this topic consists
13 140 of cross-sectional studies, which do not allow us to establish causality. Based on current recommendations, there
14 141 is enough evidence to support the use of SC interventions related to mental health protection, but most of it will
15 142 be based in observational studies. This will be the first systematic review to explicitly evaluate the impact of SC-
16 143 based interventions on mental health outcomes among the adult general population. In this context, we conducted
17 144 a systematic review of the literature of controlled, quasi-experimental or pilot studies that attempted to build or
18 145 strengthen SC components with an intervention that will also improve mental health outcomes in adults, in order
19 146 to review and assess their nature and effectivity. This information will be useful for the design or adaptation of
20 147 future SC interventions aimed at preventing and ameliorating mental disorders.
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158 **METHODS**

1
2 159 This review was written in accordance with the PRISMA guidelines [59]. The aim of this review was to identify
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4 160 controlled studies, including quasi-experimental and pilot trials, which assessed the effects of a SC intervention
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6 161 on mental health outcomes in an adult population in any setting. With the support of a librarian and a Cochrane
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8 162 collaborator, a comprehensive search strategy (Appendix A of the electronic supplementary material) was
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10 163 developed with search terms tailored to 12 academic databases: CENTRAL (from 1966 onwards The Cochrane
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12 164 Library July 2017), MEDLINE (1946 to July Week- 1 2017), EMBASE (1980 to 11 Jul 2017), PsycInfo (1806 to
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14 165 July 2017 Week-1), Global Health (1910 to 2017 Week-26), Social Science Citation Index (1970 to July 2017),
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16 166 Sociofile (from 1974 onwards 19 July 2017), World Bank e-library (1978 - 2017), LILACS (1981 - 2017), Health
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18 167 Management Information Consortium (1979 – 2017), IBSS – PROQUEST (1987 – 2017) and CAB Abstracts
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20 168 (1910 – 2017). Additionally, the WHO International Clinical Trials Registry Platform, The EU Clinical Trials
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22 169 Registry and the US Clinical Trials Register were searched. Reference lists of all relevant retrieved articles were
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24 170 hand-searched, including study protocols, meta-analyses and systematic reviews. Finally, corresponding authors
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26 171 from other systematic reviews were contacted to obtain suggestions for additional articles. No language
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28 172 restrictions were applied for this search.

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30 173 Taking into account different definitions used to describe SC and its multi-dimensional nature, we employed a
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32 174 wide range of terms to ensure the inclusion of all relevant studies, such as “social organization”, “social cohesion”,
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34 175 “community (or neighborhood) participation” or “social networks”. As per the inclusion and exclusion criteria
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36 176 (Appendix B of the electronic supplementary material) papers were also included which classified Mental and
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38 177 behavioral disorders as defined in ICD-10 (F-cat) [60] or DSM-V [61] respectively, and had to be measured using
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40 178 a validated tool.

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44 180 **Study selection**

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46 181 The first author (ECF) screened the titles and abstracts of all retrieved articles and those from additional sources,
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48 182 and initially assessed them against the outlined inclusion and exclusion criteria of this review. Additionally, 20%
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50 183 of the studies were independently double-screened by a second reviewer (AMB). Both reviewers selected and
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52 184 agreed on the articles to be assessed in full text. Any disagreements on the selection after full-text review were
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54 185 solved by a third reviewer (ALG). All selected studies had to include a SC-based intervention that complies with
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56 186 the components and dimensions of the following definition: “Any intervention which seeks to either create or
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58 187 increase group connection, and/or cooperation within and between community members, with the intention of
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188 strengthening the social connection that elicits mutual feelings of trust, reciprocity, and recognition of shared
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2 189 identity and/or increases access to shared information and resources within and between its members for mutual
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4 190 benefits". We included interventions which intended to improve mental health outcomes of study participants and
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6 191 excluded interventions which were administered solely on the basis of training or as supplementary interventions
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8 192 to other treatment programs... Mutual aid or support groups which were not delivered as an intervention were
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10 193 excluded as well as studies were the assessments only relied on retrospective self-report surveys. The quality of
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12 194 the selected studies was evaluated by using the Cochrane Collaboration's tools for assessing risk of bias in
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14 195 randomized and non-randomized studies [62,63]. Risk of bias for other study designs was assessed both at the
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16 196 design (e.g. allocation concealment) and outcome assessment level (e.g. loss of follow-up of participants). The
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18 197 studies were too heterogeneous to enable a meta-analysis, therefore a narrative synthesis is presented here.
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218 **RESULTS**

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2 219 Figure 1 presents a flow chart of the eligibility process for this review. Ultimately, 7 studies were included in the
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4 220 review. All the studies measured SC components in adults and followed them up to see whether their initial
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6 221 assessment changed over time, in addition to mental health, well-being and additional health outcomes. The
7
8 222 shortest follow-up period was 2 months and the longest was 42 months, with an average of 12.5 months. Six
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10 223 studies assessed individual SC, while only one quasi-experimental study assessed it at the ecologic level.
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14 225 **Intervention effect on cognitive and structural social capital**

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16 226 Five studies measured the cognitive components of SC or proxies at the individual level, with mixed results: one
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18 227 quasi-experimental study [64] found no statistically significant change in cognitive SC at the end of the
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20 228 intervention (after 3 months) and at follow-up (at 8 months). A cluster-randomized controlled trial [65] found a
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22 229 statistically significant difference and improvement in the collective efficacy proxy at the end of its follow-up
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24 230 period (after 42 months). A non-randomized pilot study [66] did not find a sustainable effect of increase of
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26 231 cognitive SC proxies' measurements at the 6 month follow-up. A small randomized control trial [67] found a
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28 232 significant positive effect on the assessed proxy at the 6-month follow-up. And finally, a quasi-experimental study,
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30 233 conducted in a specific aboriginal population found significant differences in cognitive SC proxies, which
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32 234 persisted at the 18 month follow-up assessment [68].
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34 235 Regarding the structural component of SC, six studies that measured SC or associated proxies at individual level
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36 236 also found mixed results. A randomized controlled trial [69] which only assessed structural SC in women
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38 237 survivors of sexual violence found a significant difference in SC scores measured between the two allocation arms
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40 238 at 6 months follow-up. The small randomized trial [67] with the same follow-up period, found significant
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42 239 differences in some of their measured indicators, but did not obtain significant differences in other related
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44 240 indicators (as social network scores) at follow-up. From the other studies, a non-randomized pilot [66] and a large
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46 241 cluster-randomized trial [65] did not find significant differences in their assessed structural SC proxies at follow-
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48 242 up. Finally, one quasi-experimental study, conducted in post-conflict population, found a significant positive
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50 243 effect in its structural SC proxy assessment at 8 month follow-up.
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52 244 An ecological SC intervention [70] which had the shortest follow-up period among the included studies, found a
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54 245 significant positive effect for both components of SC at 2 months follow-up.
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248 **Effect on mental health outcomes**

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2 249 Mental health outcomes and measurement tools reported in the included studies were also heterogeneous: two
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4 250 studies [66,69] measured depression and anxiety symptoms among other outcomes, three assessed mental well-
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6 251 being [65,67,70] another measured mental health risks and well-being as well as resilience, and one study
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8 252 evaluated self-reported mental health scores. Six of the seven included studies obtained positive mental health
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10 253 results post-intervention and at the follow-up assessment. Only one study [65] did not find significantly different
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12 254 improvement in mental health outcomes among participants in the intervention group (Table 2).

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16 256 **Quality Assessment of Included studies**

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18 257 Generally, studies were of high to moderate quality, presenting a high risk of bias in at least one domain in the
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20 258 Cochrane Risk of Bias Assessment tool (Figure 2, Figure 3). All seven studies failed to specify whether outcome
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22 259 assessment occurred under blinded circumstances, and five did not report whether the participants or staff related
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24 260 to the intervention were blind to the group allocation. Due to ethical reasons and community decision, there was
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26 261 self-allocation in one of the quasi-experimental studies [68]. In five studies, it was unclear whether the method
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28 262 used to conceal the allocation to treatment groups prevented either participants or investigators from seeing the
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30 263 allocation in advance, and two studies had a high risk of bias in the same category. Finally, for three studies an
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32 264 uncertain risk of bias was assigned due to incomplete outcome data and the unknown impact of high attrition rates
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34 265 reported by the authors.

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278 **DISCUSSION**

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2 279 This review cannot provide enough evidence that SC interventions for adult populations should be recommended
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4 280 as a preventive measure for mental disorders at the individual or ecological level, despite promising results
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6 281 obtained in most of the included studies. In addition, in cases where the intervention was delivered as a stand-
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8 282 alone procedure, there is not enough evidence that the positive effects on mental health outcomes are sustained in
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10 283 the medium or long term [70] Unfortunately, the lack of suitable comparable studies restricted a more detailed
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12 284 comparability across studies. Despite these findings, four studies [69,66,68,67] obtained statistically significant
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14 285 results for both SC and mental health outcomes measured at individual level, which were sustained at the follow-
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16 286 up period. Recommendations should be cautious regarding their external validity, as other studies obtained
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18 287 conflicting results [65,64]. These interventions, if replicated in larger controlled randomized trials with allocation
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20 288 blinding for participants or research staff may provide stronger evidence for public health policies.
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22 289 Two studies conducted in Africa included special populations [64,69] (survivors of sexual violence and post-
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24 290 conflict survivors) and their interventions were locally and culturally adapted. Similarly, these interventions may
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26 291 not be readily generalizable to other settings without proper validation and adaption. Another study in Australia
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28 292 [66] was targeted at socially isolated and affectively disturbed adults in an urban setting, which will also limit its
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30 293 generalizability for other population groups.
31
32 294 Referring to the available literature, we cannot assume that all interventions that strengthen or build SC
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34 295 components in different settings will automatically translate into improved community well-being and better
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36 296 health outcomes [71] The influence of additional contextual factors should be taken into account as they may
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38 297 negatively influence the expected effect of SC in different communities. This is especially important when
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40 298 developing new interventions. Some studies in low- and middle-income countries found that, SC components
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42 299 have a marginal role in the explanatory mechanisms for poor mental health compared to other contextual factors
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44 300 like violence or poverty [72,73]. Also, in the study conducted by Wolf et al [74] the expected positive effect in
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46 301 adaptation readiness to an environmental hazard of SC in the affected community was not found, therefore,
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48 302 additional explanatory factors should be taken into account for future research undertaken in similar settings.
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50 303 SC is a complex construct and made up of multiple dimensions and components, therefore, its measurement tool
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52 304 must be culturally adapted to be appropriate for different settings and populations. The interdependence of the
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54 305 social components between and within communities will assign a different weight, influence and importance to
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56 306 each component, comparing their assessments in different regions or cultural settings.
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307 Two of the included studies of this review, should be highlighted for their interesting designs, and some of their
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2 308 design components should be considered for future research. The first was a quasi-experimental study in the USA
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4 309 [70] with an ecological intervention to build SC components, which emphasized community participation in the
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6 310 decision to build selected elements that the residents desired or needed in their neighborhoods, while providing
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8 311 opportunities for participant's discussion and expert's consultancy, coupled with volunteer work. Secondly, a pilot
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10 312 trial in Australia [66] aimed to develop a social identity map for self-reported socially isolated participants. It was
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12 313 a short but intensive program, which successfully promoted cognitive components of SC in a small group of
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14 314 participants. Both studies showed positive change in SC components and improved mental health scores. These
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16 315 studies are good examples on the feasible delivery of SC-based interventions at both the individual and ecological
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18 316 level. Taking into complex and changing environments, especially in deprived communities, we believe that a
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20 317 successful approach to building or strengthening SC and ameliorating negative mental health outcomes would
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22 318 require two separate approaches at two different levels: Firstly, the participants will need to reach self-awareness
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24 319 of their own social mapping and assess their own useful resources and secondly should aim for improvement of
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26 320 their social ties and tangible changes in an ecological setting. A past systematic review has also highlighted the
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28 321 need to have evidence from mixed-methods studies in order to obtain more information of the temporal and spatial
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30 322 meanings assigned to key terms of SC [75]. Consensus needs to be reached among researchers on the standardized
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32 323 outcomes and tools that will be used to assess SC components and dimensions across contexts to ensure external
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34 324 validity of results. Our study has several limitations that should be taken into account when evaluating its findings.
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36 325 Five out of seven studies were conducted in high income countries, so their results may not be generalizable to
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38 326 other low and middle income settings. Studies were not comparable in their outcome measurements and used
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40 327 different scales or tools for mental health and SC, which prevented us from calculating a pooled effect size. Also,
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42 328 the first author single-screened all identified studies and double screening occurred in 20% of the originally
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44 329 identified references only and we cannot exclude the possibility that our search strategies missed eligible trials.
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46 330 Despite these limitations, this review is the first to identify SC-based controlled interventions, which have both
47
48 331 an effect on mental health outcomes and in the building or strengthening of SC components. Our review
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50 332 highlights the need to reach consensus on standardized measures and tools which are applicable across contexts.
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52 333 Ideally interventions should employ SC approaches at both ecological and the individual level, drawing on the
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54 334 different dimensions and components of SC that have proven to ameliorate mental health problems. We believe
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56 335 this topic is important and has promising evidence to be considered as an add-on component in a complex
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58 336 intervention that provides mental health support as well as fostering community engagement. There is dearth of
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337 evidence; therefore, this review highlights the need to develop SC based interventions, which have an effect on
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2 338 mental health outcomes in controlled, high quality studies. This would especially benefit communities which
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4 339 require the building or re-building of local assets, re-organization and strengthening of partnerships in locations
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6 340 affected by adversity such as environmental disasters.
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8 341 SC-based interventions show promising beneficial results on mental health [13,14,58,76]. Its potential still needs
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10 342 to be confirmed by robust trial designs with appropriate allocation concealment, double blinding of participants
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12 343 to ensure generalization of these results. It would also be desirable to standardize the SC definitions and
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14 344 measurements, to allow better outcome evaluations and comparisons in the mental health research field. Finally,
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16 345 taking into account implementation and delivery of complex SC interventions, future studies need to consider
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18 346 additional measures to motivate participants' adherence to the study and follow-up assessments, to prevent high
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20 347 attrition rates and loss to follow-up reported in some studies.
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24 349 **Conflict of interest statement:**

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26 350 On behalf of all authors, the corresponding author states that there is no conflict of interest.
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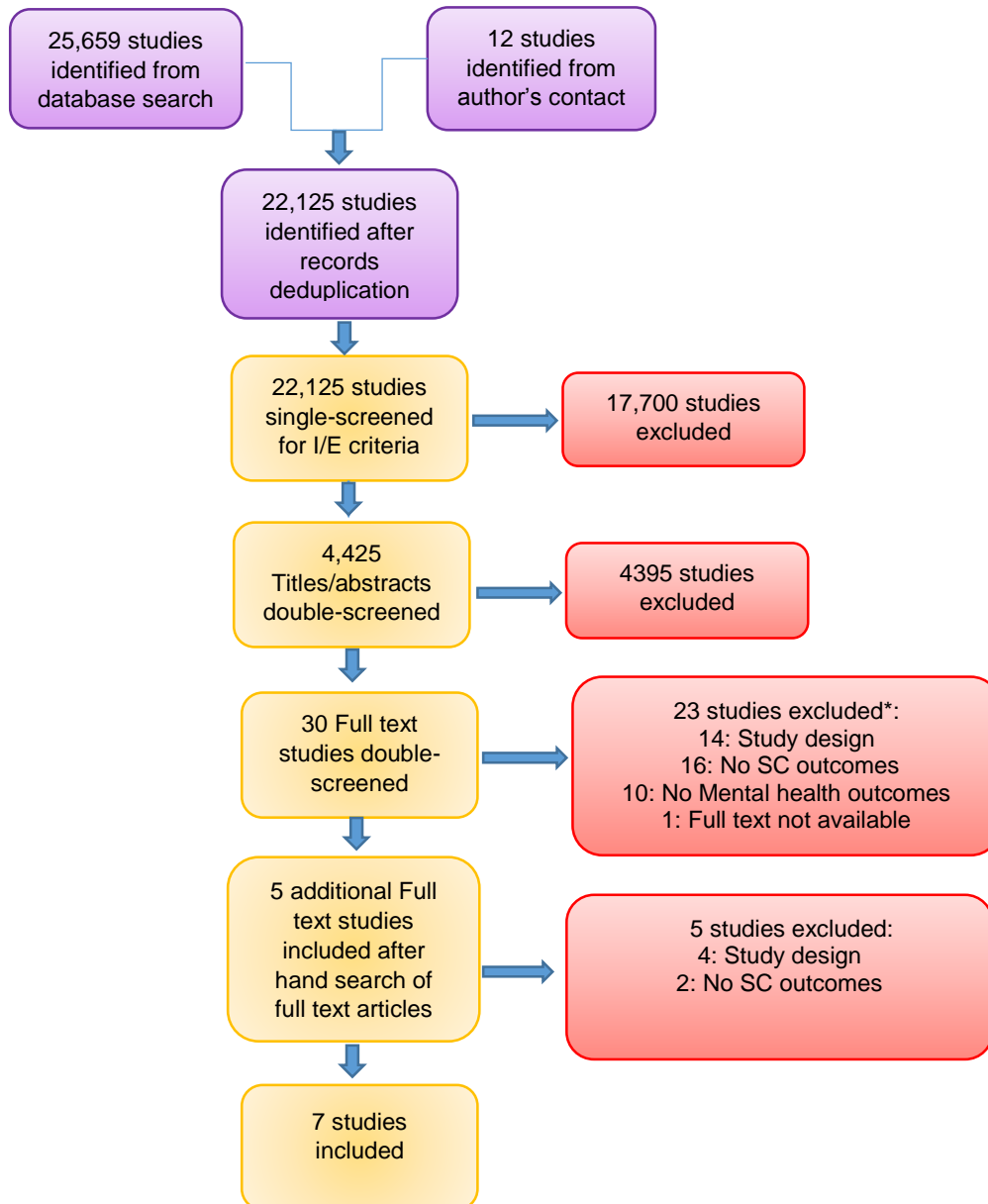
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FIGURES

Figure 1. Study Selection

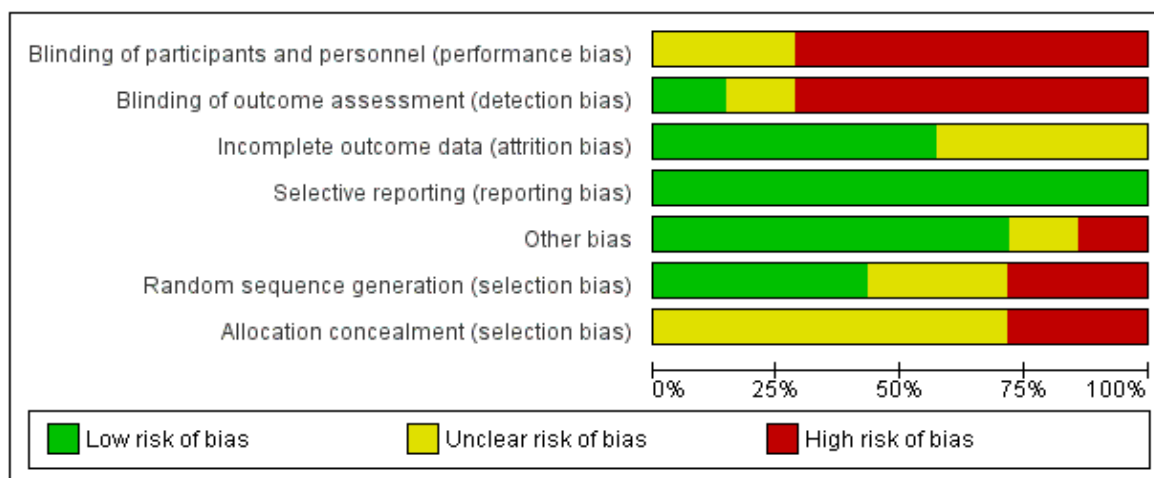


* More than one exclusion criteria was considered for some of the studies

Figure 2. Risk of Bias - summary of included studies

	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias	Random sequence generation (selection bias)	Allocation concealment (selection bias)
Hall 2014	?	-	+	+	+	?	?
Haslam 2016	-	-	?	+	+	-	-
Phillips 2014	-	-	?	+	+	+	?
Saito 2012	?	+	+	+	-	+	-
Semenza 2006	-	-	+	+	+	?	?
Sun 2016	-	?	+	+	?	-	?
Verduin 2014	-	-	?	+	+	+	?

Figure 3. Risk of Bias - graph percentages across included studies



TABLES

Table 1. General characteristics of studies included in the review (n=7)

Author, date, country	Design	Population (Age), Sample	Intervention	Control group
Hall, J. 2014, DRC	RCT	Survivors of sexual violence. Women (≥ 18), N=405	Locally adapted Cognitive Processing Therapy (CPT) delivered by trained psychosocial assistants: 1-hour individual session and 11 weekly 2-hour group sessions (6-8 people).	Individual support services
Haslam, C. 2016, Australia	Non-Randomized pilot	Socially isolated and affective disturbed persons. Adults (≥ 18), N=158	G4H program: Manualized 5-module-pilot (60-75min each, 5-8 people) delivered: 4 weekly (Schooling, Scoping, Sourcing, Scaffolding) booster session after 1 month (Sustaining).	TAU
Phillips, G. 2014, UK	Cluster RT	Deprived urban communities. Adults (≥ 16), N=3986	Well London program: multicomponent, community engagement program for improving mental well-being and health-related behaviours. Phase 1: 14 interlinked projects developed and delivered in 20 deprived neighbourhoods (coproduction approach). Projects focussed on: health and social outcomes, ecological improvement of local environment, cultural activities, and improvement of employment / training opportunities.	TAU
Saito, T. 2012, Japan	RCT	Relocated within last 2 years in the study city. Older Adults (66-84), N=63	Group-based educational, cognitive and social support program designed to prevent social isolation by improving community knowledge and networking. Four 2-h sessions, bi-weekly at a public facility, involving social acquaintance of participants and staff, focus group discussions, awareness of own needs and interests, individual meetings with community gatekeepers, and a city sightseeing tour of city's public facilities and historical places.	Waiting list

Semenza, J. 2006, USA	Quasi- experimental	Low and middle income urban communities. Adults (≥ 21), N=409	Community development strategy, followed by social activities to promote bonding and SC. Subsequently, development of community-design 3 neighbourhood group projects, through workshops with oversight & support of related professionals, municipality and organizations.	No control group
Sun, J. 2016, Australia	Quasi experimental	Aboriginal & Islander people with a mental health condition or chronic risk factor. Adults (≥ 18), N=235	"Voices United for Harmony", community-based singing activity intervention conducted and coordinated through local aboriginal Community Controlled Health Services (CCHSs) representatives. Weekly group rehearsal sessions for 2h with 15-min break for social interaction and encouragement to individually rehearse at home.	Waiting list
Verduin, F. 2014, Rwanda	Quasi- experimental	Post-conflict survivors. Adults (≥ 16) N=200	Sociotherapy programme aiming to promote SC. Forty-five simultaneously run, mixed working groups guided by trained community leaders. Meetings followed six phases of sociotherapy: Safety, Trust, Care, Respect, Rules and Memories. Intervention employed debates, exchange of experiences and coping strategies among participants, exercises, games and mutual practical support. Trauma symptoms were addressed through psycho-education and advice. Fifteen weekly meetings, 3 hours each.	TAU

Note: SC = Social Capital; TAU = Treatment as usual

Table 2. Social Capital (SC) and Mental Health (MH) (n=7)

Author	Indicator of SC & scale(s) used	MH outcomes & scale(s) used	Statistical analysis / Key findings	Implications & remarks
Hall, J. 2014	Structural SC (social inclusion, group memberships & participation, group engagement degree, financial & instrumental support network size, emotional support seeking) measured through selected items from the “Integrated Questionnaire for the Measurement of SC”.	Depression, anxiety & PTSD symptoms. Tools: Hopkins Symptom Checklist-25 and 16-item Harvard trauma questionnaire	Multilinear regression models / Small to medium effect size differences for 2 study outcomes: CPT intervention increased group membership and participation at 6-month FU (B = 1.11 (p<.05; d = 0.22) and emotional support seeking after the intervention compared to control (B=0.31 (p<.05; d = 0.37)	Increased involvement in community groups and greater support seeking are potentially important improvements in the lives of sexual violence survivors. Intervention may work by changing negative thoughts and avoidance behaviours, providing a safe space that encourages the survivors to open up to each other, and providing a foundation from which social networks for survivors can be expanded. Assessment of SC structural component.
Haslam, C. 2016	Cognitive SC proxies: social connectedness, group identification; structural SC proxy: Group memberships. Assessed with: Roberts UCLA Loneliness Scale (RULS-8); Social Adjustment Scale; Four-Item measure of Social Identification (FISI)	Depression, anxiety, stress, life satisfaction, self-esteem. Tools: Depression, Anxiety and Stress Scale-21 (DASS-21); Social Phobia Inventory (mini-SPIN); Satisfaction with life scale; Single-item measure of self-esteem.	Paired t tests (Cohen's d) for repeated measures / Between T1 (start) and T2 (completion, at 2 months): average depression score reduced from “moderate” to “mild” (p<.05), and average anxiety & stress scores from “severe” to “moderate” (both p<.001). Improvements: Social anxiety, life satisfaction, self-esteem, social functioning, and loneliness (effect sizes 0.29–0.86). Between T3 and T2 (6 month FU): sustained improvement from T1 for depression, anxiety, stress, and self-esteem (p<.01). Outcomes sustained at 6 month FU	Pilot psychological intervention to address major health problems in social isolation. The intervention may help to overcome these challenges by building social identifications. Delivered either as a stand-alone program or as an adjunct to other forms of psychotherapy. Additionally, the program can potentially address wider social problems that often exacerbate clinical presentations.

Phillips, G. 2014	Social integration, collective efficacy, social networks, social support. Tools: questions from the office for national statistics' SC harmonised question set. Additional questions on help / support (practical, financial, emotional) from the SHARP study (Scotland's housing and regeneration project)	Mental well-being. Tools: GHQ-12 score; Warwick Edinburgh mental well-being scale and HOPE scale	Multilinear regression models / Primary outcomes were not significantly different in Intervention neighbourhoods compared to controls. A secondary social outcome ("proportion of residents thinking that people living in their neighbourhood pulled together") showed statistically significant difference compared to controls: higher in intervention neighbourhoods (RR: 1.92; 95% CI 1.12 to 3.29).	Findings do not provide evidence supporting that the intervention improved health behaviours, well-being and social outcomes. Low participation rates and population attrition rates likely compromised any impact of the intervention, as well as a potential influence of imprecise estimation of outcomes and sampling bias. Authors recommend: better feasibility strategies before future implementations; new methods to understand longitudinally the different pathways residents take through such interventions and their outcomes, and new theories of change that apply to each pathway.
Saito, J. 2012	Social support (emotional and instrumental support), social networks, frequency of participation in group activities (neighbourhood or commercial organizations, hobbies or religious groups, etc.). Familiarity with city-provided formal services	Subjective well-being, affective dimension of depressive status in elderly and loneliness. Tools: LSI-A scale; GDS and AOK loneliness scale.	Linear Mixed Models / The intervention had a significant positive effect on subjective well-being ($p = 0.039$), social support ($p = 0.013$), and familiarity with services scores ($p = 0.008$), and had a significant negative effect in loneliness ($p = 0.011$) until 6 months FU.	Results suggest that programs aimed at preventing social isolation may be effective when they are tailored to the specific needs of the individual, utilize existing community resources and target people with shared similar experiences.
Semenza, J. 2006	Sense of community, social interaction, perceived control and neighbourhood participation. Tool: SC assessment tool (Krishna et al)	Depression and well-being. Tool: CESD-11 and SF-36	Multivariate analysis of variance / Improvements in: sense of community ($F = 3.97$; $p = 0.01$); SC ($F = 1.71$; $p = 0.04$) and depression ($F = 1.95$; $p = 0.03$)	Results showed evidence that participants in the intervention improved their social interaction building, SC, neighbourhood capacity and health outcomes. It also empowered them to design and create the development of public places within their own community.

Sun, J. 2016	Social connectedness: measured by a 10-question scale (Lee, RM. et al.) and social support, measured by 8 items related to the perception of quality and quantity of friendship networks & feelings of trust for local community (McCubbin HI, et al.)	MH and emotional well-being; resilience and physical and psychological benefits of intervention participation. Tools: MH and psychological distress scale (Schlesinger, CM. et al), brief resilience scale (Smith, BW. et al) and singing-related QoL scale (Clift S, et al)	Generalized linear model and structural equation model / At 18-month FU: reduction from 54.8% at baseline vs. 38.3% at FU in the proportion of adults in the intervention group classified as depressed ($p < 0.02$). Improvements in the singing-related QoL scores (OR 0.85, ($p = 0.02$), singing-related social & emotional well-being (OR 0.78, $p = 0.03$), and resilience (OR 0.71, $p < .001$) were negatively related to psychological distress in the intervention group.	Aboriginal and Torres strait islander participants significantly improved their perceptions about the health benefits of singing and improved their resilience scores, reflecting an increase in their perceived ability to cope with stressful events and better manage MH conditions. There was a subsequent significant reduction in the proportion of people who experienced psychological distress.
Verduin, F. 2014	Cognitive SC, social support and civic participation. Tool: short version of the Adapted SC assessment tool, (Short A-SCAT)	Screening of CMDs. Tool: validated version of the self-reporting questionnaire (WHO) and SRQ-20	Factorial analysis and latent growth models / Significant effect of sociotherapy on both linear change in MH (-0.38, $p < 0.05$) & civic participation (-0.41, $p < 0.05$). Although MH and CP were correlated at baseline (-0.26, $p < 0.05$), linear changes over time were not significantly correlated (0.21).	The study hints at the possibility to foster one element of SC: civic participation, and to simultaneously impact MH. Identification of pathways of influence may contribute to the designing of psychosocial interventions that effectively promote recovery in war-affected populations.

Note: SC = Social Capital; MH = Mental Health; CPT = Cognitive Perception Therapy; FU = Follow-up; PTSD = Post Traumatic Stress Disorder; QoL = Quality of Life

Inclusion/exclusion criteria of studies

	Included	Excluded
Study design	Any controlled evaluations Quasi-experimental evaluations Pilot evaluations	All other study designs Systematic reviews
Population	General adult population	Interventions directed at children and adolescents. Upper cut-off point for population group = 18 years.
	HIC and LAMIC	None
Definition of social capital	The definition to be considered in the systematic review is: "Social capital represents the characteristics of social organization, networks, rules, and trust that facilitate coordination and cooperation for mutual benefit" (Krishna and Shrader 2000) and (Putnam 1995). And, "Social capital is multifaceted and has two main components: a structural component that reflects the nature and intensity of an individual's participation in community networks; and a cognitive component, which refers to the perceived quality of an individual's social relationships (Grootaert, Narayan et al. 2004). Referring to this definition, studies will be included in which social capital is measured both at the individual and at ecological level, comprising at least these two main components and all related dimensions.	-On the objectives of this study, all other definitions of social capital that do not consider the defined components of this sociological construct will excluded. -Other sociological definitions that do not fully address social capital definition and components (i.e. social networks).
Definition of mental illness	Mental and behavioural disorders classified in ICD-10 (F-cat) or DSM-V respectively, measured using a validated tool in adult general population.	
Intervention	Interventions in social capital will be considered for inclusion in this systematic review if they comply with the following definitions: "Any intervention which seeks to either create or increase the group connection and/or cooperation within and between community members, with the intention of strengthening the social connection	-Any social capital intervention that does not state that at least one of its purposes is linked to prevention or treatment of any mental distress or mental disorders among their participants.

	<p>that elicits mutual feelings of trust, reciprocity, and recognition of shared identity and/or increases access to shared information and resources within and between its members for mutual benefits”.</p> <p>Also, it should be clearly stated in the research report that at least one of the social capital intervention aims is associated or linked to any mental health outcome, either to prevent or treat this outcome and that is measured either at the individual or ecological level.</p>	<p>-Interventions in which the objectives limit to provide training and research (e.g. interviewing people) only.</p> <p>-Mutual aid or support groups in which members are encouraged to discuss their problems with each other only (i.e. no intervention is conducted). Mutual support is a process by which persons voluntarily come together to help each other address common problems or shared concerns (Davidson, 2006).</p> <p>-Studies are excluded if social capital interventions are studied as “add-ons” only (i.e. add-ons to other treatment).</p> <p>-Studies are excluded if results only rely in retrospective self-reported survey measures without proper bias acknowledge (i.e. social desirability bias) or triangulation with results from other sources. (Avdeenko A and Gilligan M 2014)</p>
<p>Outcome</p>	<p>Primary outcomes:</p> <ul style="list-style-type: none"> - Change in Social capital levels (i.e. change in social capital scores or change in the proportion of those assessed as having high or low social capital in both) measured with validated tools <p>Secondary outcomes:</p> <ul style="list-style-type: none"> -Change in mental health outcomes, severity (i.e. change in e.g. depression scores or change in proportion diagnosed with a mental disorder), assessed using a validated tool. -Change in social functioning skills (e.g. improved coping skills, social functioning, self-esteem) in service users -Change in pro-social behaviours, social density networks or social cohesion programs aiming for community mutual beneficial in service users - Any other secondary outcomes like quality of life, or hope 	

	→Studies will be included if the primary outcome or any secondary outcomes are included.	
Control Group	Any comparison group including treatment as usual and observational data collection.	

Appendix B. SYSTEMATIC SEARCH STRATEGY

Database	Query
Embase	<ol style="list-style-type: none"> 1. exp social capital 2. (social adj (capital or cohes* or organis* or organiz*)).mp. [mp=ab,ti,hw,ot,sh] 3. (community adj3 (cohes* or participa*)).mp. [mp=ab,ti,hw,ot,sh] 4. ((neighbourhood or neighborhood) adj cohes*).mp. [mp=ab,ti,hw,ot,sh] 5. or/1-4 6. exp mental health/ 7. exp mental disorders/ 8. mental health.mp. [mp=ab,ti,hw,ot,sh] 9. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).mp. [mp=ab,ti,hw,ot,sh] 10. (wellbeing or well-being).mp. [mp=ab,ti,hw,ot,sh] 11. (psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental) adj3 disorder*.ab,ti. 12. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 13. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 14. or/6-13 15. 5 AND 14 16. adults.mp. [mp=ab,ti,hw,ot,sh] 17. 15 AND 16
Global Health	<ol style="list-style-type: none"> 1. social capital.mp 2. (social adj (capital or cohes* or organis* or organiz*)).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes] 3. (community adj3 (cohes* or participa*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 4. ((neighbourhood or neighborhood) adj cohes*).mp. 5. or/1-4 6. exp mental health/ 7. exp mental disorders/ 8. mental health.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 9. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 10. (wellbeing or well-being).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 11. (psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental) adj3 disorder*.ab,ti. 12. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 13. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 14. or/6-13 15. 5 AND 14 16. adults/ 17. 15 AND 16
Medline	<ol style="list-style-type: none"> 1. social capital.mp 2. (social adj (capital or cohes* or organis* or organiz*)).mp. 3. (community adj3 (cohes* or participa*)).mp. 4. ((neighbourhood or neighborhood) adj cohes*).mp. 5. or/1-4 6. mental health.mp. 7. mental disorders.mp. 8. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).mp. 9. (wellbeing or well-being).mp. 10. (psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental) adj3 disorder*.ab,ti. 11. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 12. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 13. or/6-12 14. 5 AND 13 15. adults/ 16. 14 AND 15

<p>PsycINFO</p>	<ol style="list-style-type: none"> 1. social capital.mp 2. (social adj (capital or cohes* or organis* or organiz*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 3. (community adj3 (cohes* or participa*)).mp. 4. ((neighbourhood or neighborhood) adj cohes*).mp. 5. or/1-4 6. mental health.mp 7. exp mental disorders/ 8. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 9. (wellbeing or well-being).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 10. ((psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental) adj3 disorder*.ab,ti. 11. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 12. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 13. or/6-12 14. 5 AND 13 15. adults/ 16. 14 AND 15
<p>Cochrane (CDSR, DARE, CENTRAL)</p>	<ol style="list-style-type: none"> 1. MeSH descriptor Social Capital explode all trees 2. social near cohesion 3. social near networks 4. social near organization 5. social near community 6. social near community participation 7. social near neighborhood 8. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 9. MeSH descriptor Mental health explode all trees 10. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).ab,ti. 11. (wellbeing or well-being).ab,ti. 12. (psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental disorder* adj6).ab,ti. 13. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 14. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 15. #9 OR #10 OR #11 OR #12 OR #13 OR #14 16. #8 AND #15
<p>Social Sciences Citation Index</p>	<ol style="list-style-type: none"> 1. TS=(social capital) 2. TS=(social cohesion or social networks or social organization or social organisation or community cohesion or community participation or neighborhood cohesion) 3. or 1-2 4. TS=mental health 5. TS=mental disorders 6. TS=(mental health or mental* ill* or mental distress or disorder or disability or well-being) 7. or 4-6 8. 3 AND 7 9. TS=adults 10. 8 AND 9
<p>Sociofile (Worldcat)</p>	<p>kw:("social capital" OR "social cohesion" OR "social networks" OR "social organization" OR "social organisation" OR "community cohesion" OR "community participation" OR "neighbourhood cohesion" OR "neighborhood cohesion") AND ("mental health" OR "mental* ill*" OR "mental distress" OR "disorder" OR "disability" OR "well-being" OR "well-being")</p>
<p>World Bank elibrary</p>	
<p>LILACS</p>	
<p>IBSS - PROQUEST</p>	
<p>Cab Abstracts</p>	

<p>Health Management Information Consortium</p>	<ol style="list-style-type: none"> 1. social capital.mp 2. (social adj (capital or cohes* or organis* or organiz*)).mp. 3. (community adj3 (cohes* or participa*)).mp. 4. ((neighbourhood or neighborhood) adj cohes*).mp. 5. or/1-4 6. mental health.mp. 7. mental disorders.mp. 8. (mental* adj (health or ill* or disord* or disab* or handicap* or distress*)).mp. 9. (wellbeing or well-being).mp. 10. (psychotic or mood or bipolar or affective or obsessive?compulsive or panic or stress or common mental) adj3 disorder*.ab,ti. 11. (psychiatric or psychiatry or neuropsych* or psycholog* or neurotic or neurosis or neuroses or depress* or anxiet* or anxious or schizophreni* or schizotyp* or psychos* or mania or manic or delusion* or OCD or phobia* or phobic or somatic or somatoform or suicid* or dement* or amnes* or eating or anorex* or bulimi* or personalit*).ab,ti. 12. ((substance or drug* or alcohol or opioid* or prescribed opioid* or cannab* or cocaine or hallucinog* or inhalant* or sedative* or ATS) adj3 (dependence or misuse or abus*)).ab,ti. 13. or/6-12 14. 5 AND 13 15. adults/ 16. 14 AND 15
<p>ClinicalTrials.gov Search criteria: Completed Studies Interventional Studies Mental Health Disorder OR Mental health OR ill* OR distress* OR disab* OR handicap* Social capital OR community OR neighborhood Adult, Senior</p>	
<p>EU Clinical Trials Register Search criteria: Mental Health Disorder OR Mental health OR ill* OR distress* OR disab* OR handicap* AND Social capital OR community OR neighborhood</p>	
<p>WHO International Clinical Trials Registry Platform (ICTRP) Search criteria: Mental Health Disorder OR Mental health OR ill* OR distress* OR disab* OR handicap* AND Social capital OR community OR neighborhood</p>	
<p>Keywords: ((social adj (capital or cohes* or organis* or organiz*))) OR TOPIC: ((community adj3 (cohes* or participa*))) OR TOPIC: (((neighbourhood or neighborhood) adj cohes*)) AND TOPIC: ((mental* adj (health or ill* or disord* or disab* or handicap* or distress*))) OR TOPIC: ((wellbeing or well-being))</p>	

The literature search in electronic databases resulted in the identification of the following potentially relevant papers: EMBASE (n=1,475), Global health (n=136), Medline (n=1,813), PsycInfo (n=1,913), Cochrane Library (n=131), Science and Social Science Citation Index (Web of Science) (n=13,361), Sociofile (World Cat) (n=1,194), IBSS (n=2,260), HMIC (n=35), LILACS (n=528) World Bank Social Capital document library (n=1,758), CAB Abstracts (n=583), US Clinical Trials register (n=294), EU Clinical trials Register (n=0), WHO International Clinical Trials Registry Platform (n=178), plus additional studies from authors' suggestions.