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## Reducing social isolation in older people: a systematic review protocol

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**Reducing social isolation in older people: a systematic review protocol**

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**Abstract**

**Introduction:** Social isolation and loneliness affect approximately one third to half of the elderly population and have a negative impact on their physical and mental health. Group-based interventions where facilitators are well trained and the elderly are actively engaged in their development seem to be more effective but conclusions have been limited by weak study designs. We aim to conduct a systematic review to assess the effectiveness of health promotion interventions on social isolation or loneliness in older people.

**Methods and analysis:** A systematic review was conducted in Medline, Embase, PsycINFO, Cinahl, ASSIA, LILACS, OpenGrey and The Cochrane Library on peer-reviewed studies and doctoral theses published between 1995 and 2016 evaluating the impact of health promotion interventions on social isolation and/or loneliness for individuals aged 60 and over. Two reviewers will independently assess each study for inclusion and disagreements will be resolved by a third reviewer. Data will be extracted using a pre-defined pro-forma following best practice. Study quality will be assessed with the Effective Public Health Practice Project quality assessment tool. A narrative synthesis of all studies will be presented by type of outcome (social isolation or loneliness) and type of intervention. If feasible, the effectiveness data will be synthesised using appropriate statistical techniques.

**Ethics and Dissemination:** This systematic review is exempt from ethics approval because the work is carried out on published documents. The findings of the review will be disseminated in a related peer-reviewed journal and presented at conferences. They will also contribute to a DPhil thesis.

**Trial registration number:** CRD42016039650

**Keywords:** social isolation, loneliness, intervention, systematic review, older, elderly

### Strengths of study

- This systematic review of interventions to alleviate social isolation or loneliness was based on a detailed search strategy including studies from any country published in any language.
- The review followed robust guidelines and the quality of the papers included was assessed using a validated tool.

### Limitations of study

- The heterogeneity of the interventions and of the tools used to measure social isolation or loneliness may not allow for direct comparisons between studies.

### Introduction

Worldwide, the population is ageing as a result of decreasing mortality and fertility (1). The global share of individuals aged 60 years or over represented 11.7% of the world population in 2013 and is expected to reach 21.1% by 2050 (2). Up to 50% of those aged over 60 are at risk of social isolation (3) and approximately one third of older people will experience some degree of loneliness later in life (4) (5).

Social isolation has detrimental effects on health (6) (7), having been identified as a risk factor for all-cause morbidity and mortality (8) with outcomes comparable to smoking, obesity, lack of exercise and high blood pressure (9). It has also been associated with decreased resistance to infection (10) (11), cognitive decline and mental health conditions such as depression and dementia (9) and with increased emergency admission to hospital (12), longer length of stay, and delayed discharges (13).

The literature identifies two main types of interventions aiming to reduce social isolation and loneliness: group based interventions (i.e. support groups (14) (15), reminiscence therapy (16) (17), video-conferencing (18), etc.), and one-to-one interventions (i.e. computer use training (19), animal companionship (20) (21), visitor volunteers (22), etc.). These types of interventions can be

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3 implemented in the community (i.e. in a centralised location, such as centres for adult education, or  
4 at the participant's home) or in a supported living facility (i.e. nursing or residential homes, warden  
5 controlled flats, etc.). These interventions can focus on: social skills training (i.e. educational course  
6 on friendship (23), strategies to develop social behaviours (24), etc.); enhanced social support (i.e.  
7 befriending volunteer program (22), support groups following bereavement (15), etc.); increased  
8 opportunity for social interaction (i.e. through the provision of services such as transport (25), home  
9 delivered meals (26) and use of technology such as internet and interactive games or activities (27)  
10 (28) (29) (30), etc.); and social cognitive training (i.e. self-management group sessions (31), etc.).  
11 Furthermore, these interventions can either be technology assisted or not.

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22 Previous reviews of health promotion interventions aimed at reducing social isolation in the elderly  
23 suggest that interventions with group-based formats and where individuals are required to actively  
24 participate were more effective than one-to-one interventions (32) (33). Also, involving the study  
25 participants in the planning, implementation and evaluation of policies (34), high quality training of  
26 facilitators (32) and interventions based on existing community resources seem to produce more  
27 successful outcomes (4) (34). The individuality of the experience of loneliness is an important issue  
28 which has also been highlighted in the literature, as this may cause difficulty in the delivery of  
29 standardised interventions: it has been suggested that programmes which are tailored to meet  
30 individual needs may be more appropriate and successful (4). But previous reviews were restricted  
31 to studies published in English language (33) (34) (35) (36) (37) (38) and up to 2013. Furthermore,  
32 statistical synthesis of effectiveness data has been largely lacking (33) (34) (36) (38) (39), as well as  
33 the assessment of the quality of the studies included using a validated tool (34) (35) (36) (39).  
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## Methods and analysis

### Protocol and registration

We followed the reporting guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Protocols 2015 (PRISMA-P) (40). The completed PRISMA-P checklist is provided in Additional file 1. The protocol is registered with the PROSPERO international prospective register of systematic reviews (registration number CRD42016039650). The final review will be reported following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement (41) (42) (43). Important amendments to this protocol will be reported and published with the results of the review.

### Study selection criteria

#### *Type of participants*

Studies will be included if the full or part of the study population is older persons. The agreed United Nations cut-off age of 60 years will define the older population (1).

#### *Type of studies*

This systematic review will include studies published in a peer-reviewed journal or doctoral thesis using a randomised control trial (RCT), non-randomised controlled trial (NRCT), controlled before-and-after (CBA) or uncontrolled before-and-after (BA) study design.

#### *Type of outcome measure*

The outcome of interest is social isolation or loneliness measured using appropriate instruments. Both validated (e.g. Lubben Social Network Scale (44) and Duke Social Support Index (45) (46) to measure social isolation and De Jong Gierveld Scale (47) and UCLA loneliness scale (48) to measure loneliness) and non-validated outcome instruments of social isolation or loneliness will be considered. To be included, studies must report a quantitative measure of the effect of the health promotion intervention on social isolation or loneliness.

#### *Type of intervention*

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2  
3 Studies will only be included if the health promotion intervention under analysis was designed  
4 specifically to alleviate or prevent social isolation or loneliness.  
5  
6

### 7 Search strategy

#### 8 *Electronic databases*

9  
10 The selection of electronic databases and the search strategy were developed in conjunction with an  
11 information specialist and were based on previous literature reviews' search strategies (33, 39, 49).  
12  
13 The following electronic databases were searched from 1995 until the end of 2015: Medline,  
14 Embase, PsycINFO, Cinahl, ASSIA, LILACS, OpenGrey and The Cochrane Library. No language or  
15  
16 geography restrictions were applied to the search. The exact search terms used in all databases are  
17  
18 described in Additional file 2.  
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#### 24 *Manual searches*

25  
26 The reference list of the studies included in this review, as well as those of previous literature  
27  
28 reviews on health promotion interventions to reduce social isolation or loneliness, will be searched  
29  
30 in order to identify additional potentially relevant studies.  
31  
32

#### 33 *Study selection*

34  
35 ENDNOTE X7, Thomson Reuters, will be used to manage the references. Duplicates will be removed  
36  
37 by one reviewer (FL). Two reviewers (FL and PB) will then independently assess each abstract to  
38  
39 determine whether full text review is needed. Any disagreement between the two reviewers will be  
40  
41 resolved by a third reviewer (JL). Full text of potentially eligible studies will be retrieved and  
42  
43 reviewed and assessed for final inclusion by two reviewers (FL and PB) again with a third reviewer  
44  
45 (JL) being consulted if necessary. Following PRISMA guidelines (41) a flow diagram will be created to  
46  
47 illustrate the selection process.  
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#### 50 *Data extraction*

51  
52 Data extraction will be conducted independently by two authors (FL and PB) and disagreements will  
53  
54 be solved as described above. The following information will be extracted using a data extraction  
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3 form based on “The Cochrane Group Data collection form for intervention reviews” (50). Data  
4  
5 extracted will cover the following points (see Additional file 3):  
6

- 7 ➤ Study details: title, author, publication details, location, language (if not English);
- 8
- 9 ➤ Study design: type of study, duration, outcomes measured;
- 10
- 11 ➤ Participant demographics: setting, inclusion and exclusion criteria, population size and
- 12 demographics;
- 13
- 14 ➤ Intervention Characteristics: duration, type and mode of intervention;
- 15
- 16 ➤ Outcomes: Measure of outcome used, any other outcomes analysed;
- 17
- 18 ➤ Results: Raw data and effect size for social isolation or loneliness as main outcome as well as
- 19 secondary outcomes;
- 20
- 21 ➤ Conclusions: Author and reviewer conclusions.
- 22
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#### 27 *Risk of bias (quality) assessment*

28 Two reviewers (FL and PB) will perform a quality appraisal of each study independently using the  
29 Effective Public Health Practice Project “Quality assessment tool for quantitative studies” (51)  
30 recommended by the Cochrane Public Health Group as it is applicable to both experimental and  
31 quasi-experimental study designs (52).  
32

#### 33 *Description of studies and measurements of effect size*

34 We expect to find a diverse range of study designs and heterogeneous interventions aimed at social  
35 isolation or loneliness. Hence, data will be divided by type of outcome: impact of interventions on  
36 social isolation and impact of interventions on loneliness. Social isolation and loneliness are  
37 intricately related but distinct concepts which are frequently used interchangeably (4). Social  
38 isolation is defined as a scarcity of contacts or social encounters of adequate quality or quantity, and  
39 is regarded as an objective measure of social interaction (6) (53) (54) (39) whereas loneliness is  
40 described as the subjective counterpart of social isolation, where an individual’s perceived level of  
41 interaction with others does not fulfil their expectations, often resulting in an unpleasant emotional  
42 experience (6) (4) (55) (56). Given that these two concepts have been used interchangeably and  
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3 inconsistently in the literature, we will consider both collectively for search purposes but separately  
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5 in terms of analysis. Similarities and differences found in the literature will be compared and  
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7 discussed.  
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10 We will further divide the studies by type of study design (e.g. RCT, NRCT, CBA and BA) and sub-  
11  
12 divide them by type of intervention (e.g. group, one-to-one and other designs). A narrative synthesis  
13  
14 of all relevant studies will be provided by type outcome, divided in terms of study design and sub-  
15  
16 divided by type of intervention, describing study and participants' characteristics, interventions,  
17  
18 outcomes, results and author's conclusions.  
19

20  
21 The effectiveness of the health promotion interventions on alleviation or prevention of social  
22  
23 isolation or loneliness, will be presented in terms of mean effect size (e.g. standardised mean  
24  
25 difference) and respective confidence interval. The rationale for these summary statistics is the  
26  
27 expected variation in the instruments used to assess the same outcome. The effect size will be  
28  
29 calculated using Hedges' (adjusted)  $g$ , as it provides a superior estimate of the standardised mean  
30  
31 difference (SMD) in studies with small samples(57).  
32

33  
34 The primary effect size for each study will be calculated from the first available post-intervention  
35  
36 measurement time point. If a study has more than one intervention, the primary effect size will be  
37  
38 calculated for the main intervention group targeting social isolation or loneliness, or the group with  
39  
40 the most robust design (e.g. the intervention which yields the largest difference from the control  
41  
42 group) (35). If a study has more than one control group, the primary effect size will be calculated  
43  
44 using the group which theoretically is expected to generate the greatest difference from the  
45  
46 intervention group (35). In cases where there are more than two groups, we will firstly conduct  
47  
48 pairwise comparisons and also explore more complex analysis, if appropriate, as suggested by  
49  
50 Cochrane (58).  
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52  
53 The authors of the studies included in this review will be contacted with the aim to retrieve any  
54  
55 missing data necessary for our analysis. We will attempt to calculate any missing SMDs for  
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3 continuous measures from the reported statistics (e.g. confidence intervals and standard errors) in  
4  
5 the relevant paper.  
6

7 If sufficient data are available, subgroup analysis (i.e. type of intervention) will be conducted to  
8  
9 account for heterogeneity. If there are sufficient numbers of comparisons for the same outcome and  
10  
11 intervention across studies, the between-study heterogeneity will be quantified by calculating the  $\chi^2$   
12  
13 test for heterogeneity (significance level  $p < 0.1$ ) and the  $I^2$  statistic. We will report the sum of the  
14  
15 studies using both a fixed-effect and random-effects meta-analysis by type of study design and  
16  
17 intervention.  
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19

### 20 Ethics and dissemination

21  
22 This systematic review is exempt from ethics approval because the work is carried out on published  
23  
24 documents. The systematic review will be disseminated in a related peer-reviewed journal. The  
25  
26 findings of the review will be presented at conferences and will contribute to a DPhil thesis.  
27  
28  
29

### 30 **Discussion**

31  
32 This systematic review will be performed to compare the effectiveness of health promotion  
33  
34 interventions in alleviating social isolation or loneliness in older persons. By grouping interventions  
35  
36 we will be able to determine which type of intervention is more likely to be effective and we will also  
37  
38 assess the role technology plays in promoting social contacts. We will use a validated tool to assess  
39  
40 the quality of evidence since previous reviews refer they were limited by the weak methodology of  
41  
42 studies analysed and we will synthesise the data using appropriate statistical methods, if feasible.  
43  
44 Furthermore, we will include studies conducted in the last 20 years without any languages or any  
45  
46 geographic restrictions. Previous reviews were restricted to studies published in English language  
47  
48 and up to 2013.  
49  
50

51  
52 Our review aims to address an increasingly relevant problem not only in terms of the impact it has  
53  
54 on older people's health but also on health and social care systems worldwide. This review will  
55  
56 therefore provide policy makers with a better insight on how to tackle social isolation and loneliness  
57  
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3 by identifying the type of interventions that alleviate or prevent social isolation or loneliness and  
4  
5 under which circumstances.  
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13  
14 Universidade de Lisboa.  
15  
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### 18 **Competing interests**

19  
20 The authors declare that they have no competing interests.  
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26

### 27 **Contributors**

28 FL conceived the initial idea for the study and is the guarantor of the review. FL and PB wrote the  
29  
30 protocol. AMG and JL critically appraised the protocol and also contributed to its development by  
31  
32 revising different version. All authors read and approved the final version of the manuscript.  
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41  
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Reducing social isolation in older people: a systematic review protocol

Additional files

Additional file 1: PRISMA-P checklist ..... 2

Additional file 2: Search strategy ..... 4

Additional file 3: Pro-forma for Data Extraction ..... 9

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## Additional file 1: PRISMA-P checklist

Table A.1: PRISMA-P 2015 checklist

Section and topic	Item No.	Checklist Item	Reported on page #
<b>A) Administrative Information</b>			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Identify protocol as an update of a previous systematic review if applicable	n/a
Registration	2	Name of registry and registration number	2
<b>B) Authors</b>			
Contact		Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions		Describe contributions of protocol authors and identify the guarantor of the review	1 + 6 + 7
Amendments		If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
- Sources	5a	Indicate Sources of financial or other support for the review	10
- Sponsor	5b	Provide name for the review funder and/or sponsor	9
- Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s) and/or institution(s), if any, in developing the protocol	n/a
<b>C) Introduction</b>			
Rationale	6	Describe the rationale for the review in the context of what is already known	3 + 4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	3 + 4
<b>D) Methods</b>			
Eligibility Criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information Sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5 + 6
Search Strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	5 + Additional file 2
<b>E) Study Records</b>			
Data Management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection Process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	5 - 7
Data Collection Process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	6 + 8 + Additional file 3
Data Items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	6
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	6
Risk of bias in	14	Describe anticipated methods for assessing risk of bias of individual	7



individual studies		studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	
Data Synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	7 + 8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency	7 + 8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	7 + 8
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	7 + 8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	7
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed	7

## Additional file 2: Search strategy

Table A.2.1: Ovid MEDLINE and Embase- search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp Social Support/
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	exp Policy/
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-26
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract

Table A.2.2: PsycINFO - search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp Social Support/
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	exp Policy Making/ or exp Health Care Policy/ or exp Government Policy Making/
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-26
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract

Table A.2.3: Cinahl - search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp "Support, Psychosocial+"/
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	(MH "Public Policy+") OR (MH "Policy Making") OR (MH "Policy Studies+") OR (MH "Health Policy Studies") OR (MH "Health Policy+") OR (MH "Policy and Procedure Manuals") OR (MH "Organizational Policies+") OR (MH "Hospital Policies+")
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-27
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract

**Table A.2.4: ASSIA - search date 20/01/16**

Search Terms
((SU.EXACT.EXPLODE("Terminally ill elderly people") OR SU.EXACT.EXPLODE("Disabled elderly women") OR SU.EXACT.EXPLODE("Low income elderly people") OR SU.EXACT.EXPLODE("Visually impaired elderly women") OR SU.EXACT.EXPLODE("Visually impaired elderly people") OR SU.EXACT.EXPLODE("Terminally ill elderly women") OR SU.EXACT.EXPLODE("Widowed elderly men") OR SU.EXACT.EXPLODE("Married elderly men") OR SU.EXACT.EXPLODE("Terminally ill elderly men") OR SU.EXACT.EXPLODE("Language disordered elderly people") OR SU.EXACT.EXPLODE("Elderly widows") OR SU.EXACT.EXPLODE("Mentally ill elderly women") OR SU.EXACT.EXPLODE("Elderly husbands") OR SU.EXACT.EXPLODE("Remarried elderly people") OR SU.EXACT.EXPLODE("Elderly fathers") OR SU.EXACT.EXPLODE("Sick elderly people") OR SU.EXACT.EXPLODE("Learning disabled elderly people") OR SU.EXACT.EXPLODE("Mentally ill elderly men") OR SU.EXACT.EXPLODE("Divorced elderly people") OR SU.EXACT.EXPLODE("Sick elderly women") OR SU.EXACT.EXPLODE("Emotionally disturbed elderly people") OR SU.EXACT.EXPLODE("Disabled elderly people") OR SU.EXACT.EXPLODE("Elderly married couples") OR SU.EXACT.EXPLODE("Elderly mothers") OR SU.EXACT.EXPLODE("Mentally ill elderly people") OR SU.EXACT.EXPLODE("Disabled elderly men" OR "Elderly men" OR "Married elderly men" OR "Mentally ill elderly men" OR "Terminally ill elderly men" OR "Widowed elderly men") OR SU.EXACT.EXPLODE("Single elderly people") OR SU.EXACT.EXPLODE("Elderly relatives") OR SU.EXACT.EXPLODE("Disabled elderly men") OR SU.EXACT.EXPLODE("Brain damaged elderly people" OR "Centenarians" OR "Disabled elderly people" OR "Divorced elderly people" OR "Elderly people" OR "Emotionally disturbed elderly people" OR "Gifted elderly people" OR "Hearing impaired elderly people" OR "Homeless elderly people" OR "Housebound elderly people" OR "Language disordered elderly people" OR "Learning disabled elderly people" OR "Low income elderly people" OR "Mentally ill elderly people" OR "Remarried elderly people" OR "Retired people" OR "Sick elderly people" OR "Single elderly people" OR "Terminally ill elderly people" OR "Visually impaired elderly people") OR SU.EXACT.EXPLODE("Blind-Deaf elderly women" OR "Disabled elderly women" OR "Elderly women" OR "Married elderly women" OR "Mentally ill elderly women" OR "Sick elderly women" OR "Single elderly women" OR "Terminally ill elderly women" OR "Visually impaired elderly women") OR SU.EXACT.EXPLODE("Homeless elderly people") OR SU.EXACT.EXPLODE("Married elderly women") OR SU.EXACT("Hearing impaired elderly people") OR SU.EXACT.EXPLODE("Housebound elderly people") OR SU.EXACT.EXPLODE("Elderly housing assistance programmes") OR SU.EXACT.EXPLODE("Elderly parents")) OR (ab(older* OR elder* OR senior* OR geriatric OR aged) OR ti(older* OR elder* OR senior* OR geriatric OR aged))) AND (SU.EXACT.EXPLODE("Isolation" OR "Purdah" OR "Seclusion") OR SU.EXACT.EXPLODE("Loneliness") OR (ti(isolation OR loneliness OR (social* NEAR/3 isolat*) OR (emotion* NEAR/3 isolat*)) OR ab(isolation OR loneliness OR (social* NEAR/3 isolat*) OR (emotion* NEAR/3 isolat*)))) AND ((SU.EXACT.EXPLODE("Computer based social support" OR "Perceived social support" OR "Social support") OR SU.EXACT.EXPLODE("Perceived social support")) OR SU.EXACT.EXPLODE("Selfcare") OR SU.EXACT.EXPLODE("Agricultural policy" OR "Colonial policy" OR "Constitutional policy" OR "Criminal justice policy" OR "Criminal policy" OR "Economic policy" OR "Energy policy" OR "Environmental policy" OR "Fiscal equalization" OR "Fiscal policy" OR "Foreign policy" OR "Health policy" OR "Housing policy" OR "Incomes policy" OR "Industrial policy" OR "Mental health policy" OR "Monetary policy" OR "Organizational policy" OR "Penal policy" OR "Policy" OR "Public health policy" OR "Public policy" OR "Regional policy" OR "Science policy" OR "Social housing policy" OR "Social policy" OR "Technological policy" OR "Transport policy" OR "Urban policy" OR "Welfare policy") OR (ab("social support*") OR ti("social support*")) OR (ab(loss) OR ti(loss)) OR (ab(access) OR ti(access)) OR (ab((social* NEAR/3 activ*) OR "social network*" OR "social intervention*") OR ti((social* NEAR/3 activ*) OR "social network*" OR "social intervention*")) OR (ab(promot* OR prevent* OR support* OR self-help OR "self help" OR educat*) OR ti(promot* OR prevent* OR support* OR self-help OR "self help" OR educat*)) OR (ab(policy OR program*) OR ti(policy OR program*))

**Table A.2.5: LILACS - search date 21/01/16**

Search Terms
(aged OR older* OR elder* OR senior* OR geriatric) AND (isolat* OR loneliness) AND ("social support*" OR loss OR access OR "social* activ*" OR "social network*" OR "social intervention*" OR promot* OR prevent* OR support* OR self-help OR "self help" OR educat* OR policy OR program*))

**Table A.2.6: OpenGrey - search date 21/01/16**

Search Terms
(aged OR older* OR elder* OR senior* OR geriatric) AND (isolat* OR loneliness) AND ("social support*" OR loss OR access OR "social* activ*" OR "social network*" OR "social intervention*" OR promot* OR prevent* OR support* OR self-help OR "self help" OR educat* OR policy OR program*))

**Table A.2.7: The Cochrane Library – search date 21/01/16**

Searches	Search Terms
1	MeSH descriptor: [Aged] explode all trees
2	older* or aged or elder* or senior* or geriatric.ti,ab.
3	#1 or #2
4	MeSH descriptor: [Social Isolation] explode all trees
5	isolation.ti,ab.
6	loneliness.ti,ab.
7	(social* near/3 isolat*) .ti,ab.
8	(emotional* near/3 isolat*) .ti,ab.
9	#4 or #5 or #6 or #7 or #8
10	MeSH descriptor: [Social Support] explode all trees
11	"social support*" .ti,ab.
12	loss.ti,ab.
13	access.ti,ab.
14	(social* near/3 activ*) .ti,ab.
15	"social network*" .ti,ab.
16	"social intervention*" .ti,ab.
17	(promot* or prevent* or support* or self-help or "self help" or educat*) .ti,ab.
18	MeSH descriptor: [Self Care] explode all trees
19	MeSH descriptor: [Policy] explode all trees
20	policy.ti,ab.
21	program*.ti,ab.
22	#10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21
23	<b>#3 and #9 and #22</b>
	<b>Limit by date: 1995 to present</b>

ti: title; ab: abstract

**Additional file 3: Pro-forma for Data Extraction**

Reviewer	
Date form completed	

**Study Details**

Title	
Author	
Year Published	
Journal	
Location (country/city)	
Language (if not English)	

		Location in text (page/figure/table/other)
Type of study	Randomised controlled trial <input type="checkbox"/> Non-randomised controlled trial <input type="checkbox"/> Controlled before and after study <input type="checkbox"/> Uncontrolled before and after study <input type="checkbox"/>	
A. Start Date B. End Date	A. B.	
Outcomes Measured (aims)		

**Participants**

		Location in text (page/figure/table/other)
Setting	Large population in unspecified setting <input type="checkbox"/> Community: ..... <input type="checkbox"/> Supported living <input type="checkbox"/> Other: .....	
Type of Participants		
Enrolment Eligibility A. Inclusion Criteria B. Exclusion Criteria	A. B.	
Recruitment process (e.g. phone, mail, clinic)		
Total number randomised (or total population for non-RCT)		
Age range (mean age)		
Gender (% female)		
Ethnicity		
Sample size		
Any other relevant sociodemographic information		
Any subgroups		

established	
Notes	

**Intervention**

		Location in text (page/figure/table/other)
Intervention	Description	
	Duration of each intervention episode	
	Duration of intervention studied (total study duration)	
	Frequency (daily/weekly etc.)	
	Provider (i.e. no., profession, training)	
	Economic information (cost, resource requirements)	
Type of intervention	Group Intervention	Community based: At home <input type="checkbox"/> Centralised location <input type="checkbox"/> Supported Living* <input type="checkbox"/>
	One-to-one Intervention	Community based: At home <input type="checkbox"/> Centralised location <input type="checkbox"/> Supported Living* <input type="checkbox"/>
	Focus of intervention	Social skills training <input type="checkbox"/> Enhanced social support <input type="checkbox"/> Increased opportunity for social interaction <input type="checkbox"/> Social cognitive training <input type="checkbox"/> Provision of services** Other.....
Intervention Mode	Technology assisted <input type="checkbox"/> Non-technology assisted <input type="checkbox"/>	
Compliance		
Notes		

**Outcomes**

	Description as stated in paper/report	Location in text (page/figure/table/other)
Measure of social isolation/loneliness		
Outcome tool validated	Yes <input type="checkbox"/> No <input type="checkbox"/> Unclear <input type="checkbox"/>	



Any outcomes other than social isolation/loneliness measured?	Yes <input type="checkbox"/>	Details .....
	No <input type="checkbox"/>	

**Results: effect of the intervention on social isolation or loneliness**

								Location in text (page/figure/table/other)
Comparison								
Outcome								
Subgroup								
Time point (from start or end of intervention)								
Results	Intervention			Comparison				
	Mean	SD (or other variance, specify)	No participants	Mean	SD (or other variance, specify)	No participants		
Effect size	Effect size: _____ Standard error: _____ Inverse variance: _____ 95% confidence interval: _____							
Any other results reported (e.g. Odds ratio)								
Statistical method used								
Notes								

**Results: effects of the intervention on other outcome continuous variables**

								Location in text (page/figure/table/other)
Comparison								
Outcome								
Subgroup								
Time point (from start or end of intervention)								
Results	Intervention			Comparison				
	Mean	SD (or other variance, specify)	No participants	Mean	SD (or other variance, specify)	No participants		
Effect size	Effect size: _____ Standard error: _____ Inverse variance: _____							

	95% confidence interval: _____	
Any other results reported (e.g. Odds ratio)		
Statistical Method used		
Notes		

### Results: effect of the intervention on other outcome categorical variables

					Location in text (page/figure/table/other)
Comparison					
Outcome					
Subgroup					
Time point (from start or end of intervention)					
Results	Intervention		Comparison		
	No. with event	No. in group	No. with event	No. in group	
Effect size (95% CI)					
Any other results reported (e.g. Odds ratio)					
Statistical method used					
Notes					

### Other Information

		Location in text (page/figure/table/other)
Author's conclusions		
References to other relevant studies		
Reviewer's conclusions		
Notes		

\*Residential or nursing care

\*\*Provision of services such as transport, medical services, etc.

## PRISMA-P checklist

Table A.1: PRISMA-P 2015 checklist

Section and topic	Item No.	Checklist Item	Reported on page #
<b>A) Administrative Information</b>			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Identify protocol as an update of a previous systematic review if applicable	n/a
Registration	2	Name of registry and registration number	2
<b>B) Authors</b>			
Contact		Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions		Describe contributions of protocol authors and identify the guarantor of the review	1 + 6 + 7
Amendments		If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
- Sources	5a	Indicate Sources of financial or other support for the review	10
- Sponsor	5b	Provide name for the review funder and/or sponsor	9
- Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s) and/or institution(s), if any, in developing the protocol	n/a
<b>C) Introduction</b>			
Rationale	6	Describe the rationale for the review in the context of what is already known	3 + 4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	3 + 4
<b>D) Methods</b>			
Eligibility Criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information Sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5 + 6
Search Strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	5 + Additional file 2
<b>E) Study Records</b>			
Data Management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection Process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	5 - 7
Data Collection Process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	6 + 8 + Additional file 3
Data Items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	6
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	6
Risk of bias in	14	Describe anticipated methods for assessing risk of bias of individual	7

individual studies		studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	
Data Synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	7 + 8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency	7 + 8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	7 + 8
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	7 + 8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	7
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed	7

# BMJ Open

## Reducing social isolation and loneliness in older people: a systematic review protocol

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-013778.R1
Article Type:	Protocol
Date Submitted by the Author:	24-Oct-2016
Complete List of Authors:	Landeiro, Filipa; University of Oxford, Nuffield Department of Population Health Barrows, Paige; University of Oxford, Nuffield Department of Population Health Nuttall Musson, Ellen; University of Oxford, Nuffield Department of Population Health Gray, Alastair; University of Oxford, Nuffield Department of Population Health Leal, Jose; University of Oxford, UK, Nuffield Department of Population Health
<b>Primary Subject Heading</b>:	Public health
Secondary Subject Heading:	Health policy
Keywords:	social isolation, loneliness, intervention, systematic review, older, elderly

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Manuscripts

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**Reducing social isolation and loneliness in older people: a systematic review protocol**

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**Abstract**

**Introduction:** Social isolation and loneliness affect approximately one third to half of the elderly population and have a negative impact on their physical and mental health. Group-based interventions where facilitators are well trained and the elderly are actively engaged in their development seem to be more effective but conclusions have been limited by weak study designs. We aim to conduct a systematic review to assess the effectiveness of health promotion interventions on social isolation or loneliness in older people.

**Methods and analysis:** A systematic review was conducted in Medline, Embase, PsycINFO, Cinahl, ASSIA, LILACS, OpenGrey and The Cochrane Library on peer-reviewed studies and doctoral theses published between 1995 and 2016 evaluating the impact of health promotion interventions on social isolation and/or loneliness for individuals aged 60 and over. Two reviewers will independently assess each study for inclusion and disagreements will be resolved by a third reviewer. Data will be extracted using a pre-defined pro-forma following best practice. Study quality will be assessed with the Effective Public Health Practice Project quality assessment tool. A narrative synthesis of all studies will be presented by type of outcome (social isolation or loneliness) and type of intervention. If feasible, the effectiveness data will be synthesised using appropriate statistical techniques.

**Ethics and Dissemination:** This systematic review is exempt from ethics approval because the work is carried out on published documents. The findings of the review will be disseminated in a related peer-reviewed journal and presented at conferences. They will also contribute to a DPhil thesis.

**Trial registration number:** CRD42016039650

**Keywords:** social isolation, loneliness, intervention, systematic review, older, elderly

### Strengths of study

- This systematic review of interventions to alleviate social isolation or loneliness was based on a detailed search strategy including studies from any country published in any language.
- The review followed robust guidelines and the quality of the papers included was assessed using a validated tool.

### Limitations of study

- The heterogeneity of the interventions and of the tools used to measure social isolation or loneliness may not allow for direct comparisons between studies.

### Introduction

Worldwide, the population is ageing as a result of decreasing mortality and fertility (1). The global share of individuals aged 60 years or over represented 11.7% of the world population in 2013 and is expected to reach 21.1% by 2050 (2). Up to 50% of those aged over 60 are at risk of social isolation (3) and approximately one third of older people will experience some degree of loneliness later in life (4) (5).

Social isolation has detrimental effects on health (6) (7), having been identified as a risk factor for all-cause morbidity and mortality (8) with outcomes comparable to smoking, obesity, lack of exercise and high blood pressure (9). It has also been associated with decreased resistance to infection (10) (11), cognitive decline and mental health conditions such as depression and dementia (9) and with increased emergency admission to hospital (12), longer length of stay, and delayed discharges (13).

The literature identifies two main types of interventions aiming to reduce social isolation and loneliness: group based interventions (i.e. support groups (14) (15), reminiscence therapy (16) (17), video-conferencing (18), etc.), and one-to-one interventions (i.e. computer use training (19), animal companionship (20) (21), visitor volunteers (22), etc.). These types of interventions can be



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3 implemented in the community (i.e. in a centralised location, such as centres for adult education, or  
4 at the participant's home) or in a supported living facility (i.e. nursing or residential homes, warden  
5 controlled flats, etc.). These interventions can focus on: social skills training (i.e. educational course  
6 on friendship (23), strategies to develop social behaviours (24), etc.); enhanced social support (i.e.  
7 befriending volunteer program (22), support groups following bereavement (15), etc.); increased  
8 opportunity for social interaction (i.e. through the provision of services such as transport (25), home  
9 delivered meals (26) and use of technology such as internet and interactive games or activities (27)  
10 (28) (29) (30), etc.); and social cognitive training (i.e. self-management group sessions (31), etc.).  
11 Furthermore, these interventions can either be technology assisted or not.

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22 Previous reviews of health promotion interventions aimed at reducing social isolation in the elderly  
23 suggest that interventions with group-based formats and where individuals are required to actively  
24 participate were more effective than one-to-one interventions (32) (33). Also, involving the study  
25 participants in the planning, implementation and evaluation of policies (34), high quality training of  
26 facilitators (32) and interventions based on existing community resources seem to produce more  
27 successful outcomes (4) (34). The individuality of the experience of loneliness is an important issue  
28 which has also been highlighted in the literature, as this may cause difficulty in the delivery of  
29 standardised interventions: it has been suggested that programmes which are tailored to meet  
30 individual needs may be more appropriate and successful (4). But previous reviews were restricted  
31 to studies published in English language (33) (34) (35) (36) (37) (38) and up to 2013. Furthermore,  
32 statistical synthesis of effectiveness data has been largely lacking (33) (34) (36) (38) (39), as well as  
33 the assessment of the quality of the studies included using a validated tool (34) (35) (36) (39).  
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## Methods and analysis

### Protocol and registration

We followed the reporting guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Protocols 2015 (PRISMA-P) (40). The completed PRISMA-P checklist is provided in supplementary file 1 (see on-line supplementary file 1). The protocol is registered with the PROSPERO international prospective register of systematic reviews (registration number CRD42016039650). The final review will be reported following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement (41) (42) (43). Important amendments to this protocol will be reported and published with the results of the review.

### Study selection criteria

#### *Type of participants*

Studies will be included if the full or part of the study population is older persons. The agreed United Nations cut-off age of 60 years will define the older population (1).

#### *Type of studies*

This systematic review will include studies published in a peer-reviewed journal or doctoral thesis using a randomised control trial (RCT), non-randomised controlled trial (NRCT), controlled before-and-after (CBA) or uncontrolled before-and-after (BA) study design.

#### *Type of outcome measure*

The outcome of interest is social isolation or loneliness measured using appropriate instruments. Both validated (e.g. Lubben Social Network Scale (44) and Duke Social Support Index (45) (46) to measure social isolation and De Jong Gierveld Scale (47) and UCLA loneliness scale (48) to measure loneliness) and non-validated outcome instruments of social isolation or loneliness will be considered. To be included, studies must report a quantitative measure of the effect of the health promotion intervention on social isolation or loneliness.

#### *Type of intervention*

1  
2  
3 Studies will only be included if the health promotion intervention under analysis was designed  
4 specifically to alleviate or prevent social isolation or loneliness.  
5  
6

### 7 Search strategy

#### 8 *Electronic databases*

9  
10 The selection of electronic databases and the search strategy were developed in conjunction with an  
11 information specialist and were based on previous literature reviews' search strategies (33, 39, 49).  
12  
13 The following electronic databases were searched from 1995 until the end of 2015: Medline,  
14 Embase, PsycINFO, Cinahl, ASSIA, LILACS, OpenGrey and The Cochrane Library. No language or  
15  
16 geography restrictions were applied to the search. The exact search terms used in all databases are  
17  
18 described in supplementary file 2 (see on-line supplementary file 2).  
19  
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23

#### 24 *Manual searches*

25  
26 The reference list of the studies included in this review, as well as those of previous literature  
27  
28 reviews on health promotion interventions to reduce social isolation or loneliness, will be searched  
29  
30 in order to identify additional potentially relevant studies.  
31  
32

#### 33 *Study selection*

34  
35 ENDNOTE X7, Thomson Reuters, will be used to manage the references. Duplicates will be removed  
36  
37 by one reviewer (FL). Two reviewers (FL and PB) will then independently assess each abstract to  
38  
39 determine whether full text review is needed. Any disagreement between the two reviewers will be  
40  
41 resolved by a third reviewer (JL). Full text of potentially eligible studies will be retrieved and  
42  
43 reviewed and assessed for final inclusion by two reviewers (FL and PB) again with a third reviewer  
44  
45 (JL) being consulted if necessary. Following PRISMA guidelines (41) a flow diagram will be created to  
46  
47 illustrate the selection process.  
48  
49

#### 50 *Data extraction*

51  
52 Data extraction will be conducted independently by two authors (FL and PB) and disagreements will  
53  
54 be solved as described above. Non-English references will be reviewed by two native or fluent  
55  
56 speakers. The following information will be extracted using a data extraction form based on "The  
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1  
2  
3 Cochrane Group Data collection form for intervention reviews” (50). Data extracted will cover the  
4  
5 following points (see on-line supplementary file 3):  
6

- 7 ➤ Study details: title, author, publication details, location, language (if not English);
- 8
- 9 ➤ Study design: type of study, duration, outcomes measured;
- 10
- 11 ➤ Participant demographics: setting, inclusion and exclusion criteria, population size and
- 12 demographics;
- 13
- 14 ➤ Intervention Characteristics: duration, type and mode of intervention;
- 15
- 16 ➤ Outcomes: Measure of outcome used, any other outcomes analysed;
- 17
- 18 ➤ Results: Raw data and effect size for social isolation or loneliness as main outcome as well as
- 19 secondary outcomes;
- 20
- 21 ➤ Conclusions: Author and reviewer conclusions.  
22  
23  
24  
25

#### 26 *Risk of bias (quality) assessment*

27  
28 Two reviewers (FL and PB) will perform a quality appraisal of each study independently using the  
29 Effective Public Health Practice Project “Quality assessment tool for quantitative studies” (51)  
30 recommended by the Cochrane Public Health Group as it is applicable to both experimental and  
31 quasi-experimental study designs (52). Non-English references will be reviewed by two native or  
32 fluent speakers for the quality assessment.  
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#### 39 *Description of studies and measurements of effect size*

40  
41 We expect to find a diverse range of study designs and heterogeneous interventions aimed at social  
42 isolation or loneliness. Hence, data will be divided by type of outcome: impact of interventions on  
43 social isolation and impact of interventions on loneliness. Social isolation and loneliness are  
44 intricately related but distinct concepts which are frequently used interchangeably (4). Social  
45 isolation is defined as a scarcity of contacts or social encounters of adequate quality or quantity, and  
46 is regarded as an objective measure of social interaction (6) (53) (54) (39) whereas loneliness is  
47 described as the subjective counterpart of social isolation, where an individual’s perceived level of  
48 interaction with others does not fulfil their expectations, often resulting in an unpleasant emotional  
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3 experience (6) (4) (55) (56). Given that these two concepts have been used interchangeably and  
4  
5 inconsistently in the literature, we will consider both collectively for search purposes but separately  
6  
7 in terms of analysis. Similarities and differences found in the literature will be compared and  
8  
9 discussed.  
10

11 We will further divide the studies by type of study design (e.g. RCT, NRCT, CBA and BA) and sub-  
12  
13 divide them by type of intervention (e.g. group, one-to-one and other designs). A narrative synthesis  
14  
15 of all relevant studies will be provided by type outcome, divided in terms of study design and sub-  
16  
17 divided by type of intervention, describing study and participants' characteristics, interventions,  
18  
19 outcomes, results and author's conclusions.  
20

21  
22 The effectiveness of the health promotion interventions on alleviation or prevention of social  
23  
24 isolation or loneliness, will be presented in terms of mean effect size (e.g. standardised mean  
25  
26 difference) and respective confidence interval. The rationale for these summary statistics is the  
27  
28 expected variation in the instruments used to assess the same outcome. The effect size will be  
29  
30 calculated using Hedges' (adjusted)  $g$ , as it provides a superior estimate of the standardised mean  
31  
32 difference (SMD) in studies with small samples(57).  
33

34  
35 The primary effect size for each study will be calculated from the first available post-intervention  
36  
37 measurement time point. If a study has more than one intervention, the primary effect size will be  
38  
39 calculated for the main intervention group targeting social isolation or loneliness, or the group with  
40  
41 the most robust design (e.g. the intervention which yields the largest difference from the control  
42  
43 group) (35). If a study has more than one control group, the primary effect size will be calculated  
44  
45 using the group which theoretically is expected to generate the greatest difference from the  
46  
47 intervention group (35). In cases where there are more than two groups, we will firstly conduct  
48  
49 pairwise comparisons and also explore more complex analysis, if appropriate, as suggested by  
50  
51 Cochrane (58).  
52  
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54  
55 The authors of the studies included in this review will be contacted with the aim to retrieve any  
56  
57 missing data necessary for our analysis. We will attempt to calculate any missing SMDs for  
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3 continuous measures from the reported statistics (e.g. confidence intervals and standard errors) in  
4  
5 the relevant paper.  
6

7 If sufficient data are available, subgroup analysis (i.e. type of intervention) will be conducted to  
8  
9 account for heterogeneity. If there are sufficient numbers of comparisons for the same outcome and  
10  
11 intervention across studies, the between-study heterogeneity will be quantified by calculating the  $\chi^2$   
12  
13 test for heterogeneity (significance level  $p < 0.1$ ) and the  $I^2$  statistic. We will report the sum of the  
14  
15 studies using both a fixed-effect and random-effects meta-analysis by type of study design and  
16  
17 intervention.  
18  
19

### 20 Ethics and dissemination

21  
22 This systematic review is exempt from ethics approval because the work is carried out on published  
23  
24 documents. The included studies will be reviewed to see if ethical considerations were taken into  
25  
26 account. The systematic review will be disseminated in a related peer-reviewed journal. The findings  
27  
28 of the review will be presented at conferences and will contribute to a DPhil thesis.  
29  
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### 33 **Discussion**

34  
35 This systematic review will be performed to compare the effectiveness of health promotion  
36  
37 interventions in alleviating social isolation or loneliness in older persons. By grouping interventions  
38  
39 we will be able to determine which type of intervention is more likely to be effective and we will also  
40  
41 assess the role technology plays in promoting social contacts. We will use a validated tool to assess  
42  
43 the quality of evidence since previous reviews refer they were limited by the weak methodology of  
44  
45 studies analysed and we will synthesise the data using appropriate statistical methods, if feasible.  
46  
47 Furthermore, we will include studies conducted in the last 20 years without any languages or any  
48  
49 geographic restrictions. Previous reviews were restricted to studies published in English language  
50  
51 and up to 2013.  
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54  
55 Our review aims to address an increasingly relevant problem not only in terms of the impact it has  
56  
57 on older people's health but also on health and social care systems worldwide. This review will  
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1  
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3 therefore provide policy makers with a better insight on how to tackle social isolation and loneliness  
4  
5 by identifying the type of interventions that alleviate or prevent social isolation or loneliness and  
6  
7 under which circumstances.  
8  
9

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16  
17 Universidade de Lisboa.  
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### 20 21 **Competing interests**

22  
23 The authors declare that they have no competing interests.  
24  
25  
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27

### 28 29 **Contributors**

30  
31 FL conceived the initial idea for the study and is the guarantor of the review. FL and PB wrote the  
32  
33 protocol. ENM, AMG and JL critically appraised the protocol and also contributed to its development  
34  
35 by revising different versions. All authors read and approved the final version of the manuscript.  
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46  
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48  
49

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Reducing social isolation in older people: a systematic review protocol

Supplementary files

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For peer review only

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## Supplementary file 1: PRISMA-P checklist

Table A.1: PRISMA-P 2015 checklist

Section and topic	Item No.	Checklist Item	Reported on page #
<b>A) Administrative Information</b>			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Identify protocol as an update of a previous systematic review if applicable	n/a
Registration	2	Name of registry and registration number	2
<b>B) Authors</b>			
Contact		Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions		Describe contributions of protocol authors and identify the guarantor of the review	1 + 6 + 7
Amendments		If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
- Sources	5a	Indicate Sources of financial or other support for the review	10
- Sponsor	5b	Provide name for the review funder and/or sponsor	9
- Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s) and/or institution(s), if any, in developing the protocol	n/a
<b>C) Introduction</b>			
Rationale	6	Describe the rationale for the review in the context of what is already known	3 + 4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	3 + 4
<b>D) Methods</b>			
Eligibility Criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information Sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5 + 6
Search Strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	5 + Additional file 2
<b>E) Study Records</b>			
Data Management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection Process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	5 - 7
Data Collection Process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	6 + 8 + Additional file 3
Data Items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	6
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	6

Section and topic	Item No.	Checklist Item	Reported on page #
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	7
Data Synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	7 + 8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency	7 + 8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	7 + 8
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	7 + 8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	7
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed	7

## Supplementary file 2: Search strategy

Table A.2.1: Ovid MEDLINE and Embase- search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp Social Support/
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	exp Policy/
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-26
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract

Table A.2.2: PsycINFO - search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp Social Support/
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	exp Policy Making/ or exp Health Care Policy/ or exp Government Policy Making/
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-26
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract

Table A.2.3: Cinahl - search date 15/01/16

Searches	Search Terms
1	exp "Aged, 80 and over"/ or exp Aged/
2	older*.ti,ab.
3	elder*.ti,ab.
4	senior*.ti,ab.
5	geriatric.ti,ab.
6	aged.ti,ab.
7	OR/1-6
8	Social Isolation/
9	Loneliness/
10	isolation.ti,ab.
11	loneliness.ti,ab.
12	(social* adj3 isolat*).ti,ab.
13	(emotional* adj3 isolat*).ti,ab.
14	OR/ 8-13
15	exp "Support, Psychosocial+/"
16	"social support*".ti,ab.
17	loss.ti,ab.
18	access.ti,ab.
19	(social* adj3 activ*).ti,ab.
20	"social network*".ti,ab.
21	"social intervention*".ti,ab.
22	(promot* or prevent* or support* or self-help or "self help" or educat*).ti,ab.
23	Self Care/
24	(MH "Public Policy+") OR (MH "Policy Making") OR (MH "Policy Studies+") OR (MH "Health Policy Studies") OR (MH "Health Policy+") OR (MH "Policy and Procedure Manuals") OR (MH "Organizational Policies+") OR (MH "Hospital Policies+")
25	policy.ti,ab.
26	program*.ti,ab
27	OR/ 15-27
28	7 AND 14 AND 27
29	limit 28 to yr="1995 -Current"

ti: title; ab: abstract



**Table A.2.4: ASSIA - search date 20/01/16****Search Terms**

((SU.EXACT.EXPLODE("Terminally ill elderly people") OR SU.EXACT.EXPLODE("Disabled elderly women") OR SU.EXACT.EXPLODE("Low income elderly people") OR SU.EXACT.EXPLODE("Visually impaired elderly women") OR SU.EXACT.EXPLODE("Visually impaired elderly people") OR SU.EXACT.EXPLODE("Terminally ill elderly women") OR SU.EXACT.EXPLODE("Widowed elderly men") OR SU.EXACT.EXPLODE("Married elderly men") OR SU.EXACT.EXPLODE("Terminally ill elderly men") OR SU.EXACT.EXPLODE("Language disordered elderly people") OR SU.EXACT.EXPLODE("Elderly widows") OR SU.EXACT.EXPLODE("Mentally ill elderly women") OR SU.EXACT.EXPLODE("Elderly husbands") OR SU.EXACT.EXPLODE("Remarried elderly people") OR SU.EXACT.EXPLODE("Elderly fathers") OR SU.EXACT.EXPLODE("Sick elderly people") OR SU.EXACT.EXPLODE("Learning disabled elderly people") OR SU.EXACT.EXPLODE("Mentally ill elderly men") OR SU.EXACT.EXPLODE("Divorced elderly people") OR SU.EXACT.EXPLODE("Sick elderly women") OR SU.EXACT.EXPLODE("Emotionally disturbed elderly people") OR SU.EXACT.EXPLODE("Disabled elderly people") OR SU.EXACT.EXPLODE("Elderly married couples") OR SU.EXACT.EXPLODE("Elderly mothers") OR SU.EXACT.EXPLODE("Mentally ill elderly people") OR SU.EXACT.EXPLODE("Disabled elderly men" OR "Elderly men" OR "Married elderly men" OR "Mentally ill elderly men" OR "Terminally ill elderly men" OR "Widowed elderly men") OR SU.EXACT.EXPLODE("Single elderly people") OR SU.EXACT.EXPLODE("Elderly relatives") OR SU.EXACT.EXPLODE("Disabled elderly men") OR SU.EXACT.EXPLODE("Brain damaged elderly people" OR "Centenarians" OR "Disabled elderly people" OR "Divorced elderly people" OR "Elderly people" OR "Emotionally disturbed elderly people" OR "Gifted elderly people" OR "Hearing impaired elderly people" OR "Homeless elderly people" OR "Housebound elderly people" OR "Language disordered elderly people" OR "Learning disabled elderly people" OR "Low income elderly people" OR "Mentally ill elderly people" OR "Remarried elderly people" OR "Retired people" OR "Sick elderly people" OR "Single elderly people" OR "Terminally ill elderly people" OR "Visually impaired elderly people") OR SU.EXACT.EXPLODE("Blind-Deaf elderly women" OR "Disabled elderly women" OR "Elderly women" OR "Married elderly women" OR "Mentally ill elderly women" OR "Sick elderly women" OR "Single elderly women" OR "Terminally ill elderly women" OR "Visually impaired elderly women") OR SU.EXACT.EXPLODE("Homeless elderly people") OR SU.EXACT.EXPLODE("Married elderly women") OR SU.EXACT.EXPLODE("Hearing impaired elderly people") OR SU.EXACT.EXPLODE("Housebound elderly people") OR SU.EXACT.EXPLODE("Elderly housing assistance programmes") OR SU.EXACT.EXPLODE("Elderly parents")) OR (ab(older\* OR elder\* OR senior\* OR geriatric OR aged) OR ti(older\* OR elder\* OR senior\* OR geriatric OR aged))) AND (SU.EXACT.EXPLODE("Isolation" OR "Purdah" OR "Seclusion") OR SU.EXACT.EXPLODE("Loneliness") OR (ti(isolation OR loneliness OR (social\* NEAR/3 isolat\*) OR (emotion\* NEAR/3 isolat\*)) OR ab(isolation OR loneliness OR (social\* NEAR/3 isolat\*) OR (emotion\* NEAR/3 isolat\*))) AND ((SU.EXACT.EXPLODE("Computer based social support" OR "Perceived social support" OR "Social support") OR SU.EXACT.EXPLODE("Perceived social support")) OR SU.EXACT.EXPLODE("Selfcare") OR SU.EXACT.EXPLODE("Agricultural policy" OR "Colonial policy" OR "Constitutional policy" OR "Criminal justice policy" OR "Criminal policy" OR "Economic policy" OR "Energy policy" OR "Environmental policy" OR "Fiscal equalization" OR "Fiscal policy" OR "Foreign policy" OR "Health policy" OR "Housing policy" OR "Incomes policy" OR "Industrial policy" OR "Mental health policy" OR "Monetary policy" OR "Organizational policy" OR "Penal policy" OR "Policy" OR "Public health policy" OR "Public policy" OR "Regional policy" OR "Science policy" OR "Social housing policy" OR "Social policy" OR "Technological policy" OR "Transport policy" OR "Urban policy" OR "Welfare policy") OR (ab("social support\*") OR ti("social support\*")) OR (ab(loss) OR ti(loss)) OR (ab(access) OR ti(access)) OR (ab((social\* NEAR/3 activ\*) OR "social network\*" OR "social intervention\*") OR ti((social\* NEAR/3 activ\*) OR "social network\*" OR "social intervention\*")) OR (ab(promot\* OR prevent\* OR support\* OR self-help OR "self help" OR educat\*) OR ti(promot\* OR prevent\* OR support\* OR self-help OR "self help" OR educat\*)) OR (ab(policy OR program\*) OR ti(policy OR program\*)))

**Table A.2.5: LILACS - search date 21/01/16****Search Terms**

(aged OR older\* OR elder\* OR senior\* OR geriatric) AND (isolat\* OR loneliness) AND ("social support\*" OR loss OR access OR "social\* activ\*" OR "social network\*" OR "social intervention\*" OR promot\* OR prevent\* OR support\* OR self-help OR "self help" OR educat\* OR policy OR program\*)

**Table A.2.6: OpenGrey - search date 21/01/16****Search Terms**

(aged OR older\* OR elder\* OR senior\* OR geriatric) AND (isolat\* OR loneliness) AND ("social support\*" OR loss OR access OR "social\* activ\*" OR "social network\*" OR "social intervention\*" OR promot\* OR prevent\* OR support\* OR self-help OR "self help" OR educat\* OR policy OR program\*))

**Table A.2.7: The Cochrane Library – search date 21/01/16****Searches****Search Terms**

1	MeSH descriptor: [Aged] explode all trees
2	older* or aged or elder* or senior* or geriatric.ti,ab.
3	#1 or #2
4	MeSH descriptor: [Social Isolation] explode all trees
5	isolation.ti,ab.
6	loneliness.ti,ab.
7	(social* near/3 isolat*) .ti,ab.
8	(emotional* near/3 isolat*) .ti,ab.
9	#4 or #5 or #6 or #7 or #8
10	MeSH descriptor: [Social Support] explode all trees
11	"social support*" .ti,ab.
12	loss.ti,ab.
13	access.ti,ab.
14	(social* near/3 activ*) .ti,ab.
15	"social network*" .ti,ab.
16	"social intervention*" .ti,ab.
17	(promot* or prevent* or support* or self-help or "self help" or educat*) .ti,ab.
18	MeSH descriptor: [Self Care] explode all trees
19	MeSH descriptor: [Policy] explode all trees
20	policy.ti,ab.
21	program*.ti,ab.
22	#10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21
23	<b>#3 and #9 and #22</b>
	<b>Limit by date: 1995 to present</b>

ti: title; ab: abstract

Supplementary file 3: Pro-forma for Data Extraction

Reviewer	
Date form completed	

Study Details

Title	
Author	
Year Published	
Journal	
Location (country/city)	
Language (if not English)	

		Location in text (page/figure/table/other)
<b>Type of study</b>	Randomised controlled trial	<input type="checkbox"/>
	Non-randomised controlled trial	<input type="checkbox"/>
	Controlled before and after study	<input type="checkbox"/>
	Uncontrolled before and after study	<input type="checkbox"/>
<b>A. Start Date</b>	A.	
<b>B. End Date</b>	B.	
<b>Outcomes Measured (aims)</b>		

Participants

		Location in text (page/figure/table/other)
<b>Setting</b>	Large population in unspecified setting	<input type="checkbox"/>
	Community: .....	<input type="checkbox"/>
	Supported living	<input type="checkbox"/>
	Other: .....	
<b>Type of Participants</b>		
<b>Enrolment Eligibility</b>		
<b>A. Inclusion Criteria</b>	A.	
<b>B. Exclusion Criteria</b>	B.	
<b>Recruitment process (e.g. phone, mail, clinic)</b>		
<b>Total number randomised (or total population for non-RCT)</b>		
<b>Age range (mean age)</b>		
<b>Gender (% female)</b>		
<b>Ethnicity</b>		
<b>Sample size</b>		
<b>Any other relevant sociodemographic information</b>		
<b>Any subgroups established</b>		
<b>Notes</b>		

**Intervention**

		Location in text (page/figure/table/other)
<b>Intervention</b>	Description	
	Duration of each intervention episode	
	Duration of intervention studied (total study duration)	
	Frequency (daily/weekly etc.)	
	Provider (i.e. no., profession, training)	
	Economic information (cost, resource requirements)	
<b>Type of intervention</b>	Group Intervention	Community based: At home <input type="checkbox"/> Centralised location <input type="checkbox"/> Supported Living* <input type="checkbox"/>
	One-to-one Intervention	Community based: At home <input type="checkbox"/> Centralised location <input type="checkbox"/> Supported Living* <input type="checkbox"/>
	Focus of intervention	Social skills training <input type="checkbox"/> Enhanced social support <input type="checkbox"/> Increased opportunity for social interaction <input type="checkbox"/> Social cognitive training <input type="checkbox"/> Provision of services** <input type="checkbox"/> Other..... <input type="checkbox"/>
<b>Intervention Mode</b>	Technology assisted <input type="checkbox"/>	
	Non-technology assisted <input type="checkbox"/>	
<b>Compliance</b>		
<b>Notes</b>		

**Outcomes**

	Description as stated in paper/report	Location in text (page/figure/table/other)
<b>Measure of social isolation/loneliness</b>		
<b>Outcome tool validated</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> Unclear <input type="checkbox"/>	
<b>Any outcomes other than social isolation/loneliness measured?</b>	Yes <input type="checkbox"/> Details .....	
	No <input type="checkbox"/>	

**Results: effect of the intervention on social isolation or loneliness**

							Location in text (page/figure/ table/other)
<b>Comparison</b>							
<b>Outcome</b>							
<b>Subgroup</b>							
<b>Time point (from start or end of intervention)</b>							
<b>Results</b>	Intervention			Comparison			
	Mean	SD (or other variance, specify)	No participants	Mean	SD (or other variance, specify)	No participants	
<b>Effect size</b>	Effect size: _____ Standard error: _____ Inverse variance: _____ 95% confidence interval: _____						
<b>Any other results reported (e.g. Odds ratio)</b>							
<b>Statistical method used</b>							
<b>Notes</b>							

**Results: effects of the intervention on other outcome continuous variables**

							Location in text (page/figure/ table/other)
<b>Comparison</b>							
<b>Outcome</b>							
<b>Subgroup</b>							
<b>Time point (from start or end of intervention)</b>							
<b>Results</b>	Intervention			Comparison			
	Mean	SD (or other variance, specify)	No participants	Mean	SD (or other variance, specify)	No participants	
<b>Effect size</b>	Effect size: _____ Standard error: _____ Inverse variance: _____ 95% confidence interval: _____						
<b>Any other results reported (e.g. Odds ratio)</b>							
<b>Statistical Method used</b>							
<b>Notes</b>							

## Results: effect of the intervention on other outcome categorical variables

					Location in text (page/figure/table/other)
<b>Comparison</b>					
<b>Outcome</b>					
<b>Subgroup</b>					
<b>Time point (from start or end of intervention)</b>					
<b>Results</b>	Intervention		Comparison		
	No. with event	No. in group	No. with event	No. in group	
<b>Effect size (95% CI)</b>					
<b>Any other results reported (e.g. Odds ratio)</b>					
<b>Statistical method used</b>					
<b>Notes</b>					

## Other Information

					Location in text (page/figure/table/other)
<b>Author's conclusions</b>					
<b>References to other relevant studies</b>					
<b>Reviewer's conclusions</b>					
<b>Notes</b>					

\*Residential or nursing care

\*\*Provision of services such as transport, medical services, etc.

## PRISMA-P checklist

Table A.1: PRISMA-P 2015 checklist

Section and topic	Item No.	Checklist Item	Reported on page #
<b>A) Administrative Information</b>			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	Identify protocol as an update of a previous systematic review if applicable	n/a
Registration	2	Name of registry and registration number	2
<b>B) Authors</b>			
Contact		Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions		Describe contributions of protocol authors and identify the guarantor of the review	1 + 6 + 7
Amendments		If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
- Sources	5a	Indicate Sources of financial or other support for the review	10
- Sponsor	5b	Provide name for the review funder and/or sponsor	9
- Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s) and/or institution(s), if any, in developing the protocol	n/a
<b>C) Introduction</b>			
Rationale	6	Describe the rationale for the review in the context of what is already known	3 + 4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	3 + 4
<b>D) Methods</b>			
Eligibility Criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	5
Information Sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5 + 6
Search Strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	5 + Additional file 2
<b>E) Study Records</b>			
Data Management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection Process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	5 - 7
Data Collection Process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	6 + 8 + Additional file 3
Data Items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	6
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	6
Risk of bias in	14	Describe anticipated methods for assessing risk of bias of individual	7

individual studies		studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	
Data Synthesis	15a	Describe criteria under which study data will be quantitatively synthesised	7 + 8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency	7 + 8
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	7 + 8
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	7 + 8
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	7
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed	7