

1 **Protocol**

2 **Search strategy**

3 We will search the following electronic databases to identify relevant studies:

- 4 • Medline (Ovid 1946 to current)
- 5 • EMBASE (Ovid 1974 to current)
- 6 • PsycINFO (Ovid 1806 to current)
- 7 • Scopus (Elsevier)
- 8 • Cochrane Database of Systematic Reviews
- 9 • Google Scholar

10
11 We will not limit our searches by language or year of publication.

12
13 *Primary studies*

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15 In the search strategy for primary studies, we will use search filters to identify case-control, cross-sectional and cohort studies.

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17
18 *Systematic reviews*

19 Relevant systematic reviews will be identified, and we will ensure that any relevant primary studies
20 included in these reviews are retrieved and considered for inclusion. The systematic reviews search will
21 be limited to Ovid Medline, Embase, and Cochrane Database of Systematic Reviews.

22
23
24 **Search for primary studies:**

25
26
27 **Ovid Medline**

- 28
- 29 1. loneliness/ or social isolation/ or social deprivation/ or social alienation/ or psychosocial
30 deprivation/
 - 31 2. (loneliness or lonely or social isolation or socially isolated or social alienation or psychosocial
32 deprivation or social deprivation).ti,ab,kw
 - 33 3. exp social support/ or social participation/ or social environment/ or social capital/ or family
34 relations/ or friends/ or interpersonal relations/ or social distance/
 - 35 4. (social support or social network or social networks or social participation or social relationship*
36 or social capital or social interaction* or friends or friendship* or family relation* or
37 interpersonal relation* or social distance or (social and disconnect*) or living alone).ti
 - 38 5. (risk factor or risk factors or associat* or impact* or affect* or influenc* or related).ti
 - 39 6. 1 or 2 or ((3 or 4) and 5)

- 40 7. (Animal Experimentation/ or exp Animals/ or exp Models, Animal/) not Humans/
- 41 8. ((veterinary or animal or animals or rabbit or rabbits or rodent or rodents or rat or rats or mouse
- 42 or mice or pig or pigs or dog or dogs or cat or cats) not (patient or patients or human or
- 43 humans)).ti.
- 44 9. 6 not (7 or 8)
- 45 10. Epidemiologic studies/
- 46 11. Exp case control studies/
- 47 12. Exp cohort studies/
- 48 13. Case control.tw.
- 49 14. (cohort adj (study or studies)).tw.
- 50 15. Cohort analy\$.tw.
- 51 16. (Follow up adj (study or studies)).tw.
- 52 17. (observational adj (study or studies)).tw.
- 53 18. Longitudinal.tw.
- 54 19. Retrospective.tw.
- 55 20. Cross sectional.tw.
- 56 21. Cross-sectional studies/
- 57 22. Or/10-21
- 58 23. 9 and 22
- 59

60 In Ovid Medline, we use a search filter for identifying observational studies, as described in:
 61 http://resourcecenter.ovid.com/site/resources/expert_search/healthexp.html#OvidFilters

62
 63 **Embase**

- 64 1. loneliness/ or social isolation/ or social alienation/
- 65 2. (loneliness or lonely or social isolation or socially isolated or social alienation or psychosocial
- 66 deprivation or social deprivation).ti,ab,kw
- 67 3. exp social support/ or social participation/ or social environment/ or social capital/ or family
- 68 relation/ or friend/ or social interaction/
- 69 4. (social support or social network or social networks or social participation or social relationship*
- 70 or social capital or social interaction* or friends or friendship* or family relation* or
- 71 interpersonal relation* or social distance or (social and disconnect*) or living alone).ti
- 72 5. (risk factor or risk factors or associat* or impact* or affect* or influenc* or related).ti
- 73 6. 1 or 2 or ((3 or 4) and 5)
- 74 7. (exp animal/ or exp animal model/ or nonhuman/) not exp human/
- 75 8. ((veterinary or animal or animals or rabbit or rabbits or rodent or rodents or rat or rats or mouse
- 76 or mice or pig or pigs or dog or dogs or cat or cats) not (patient or patients or human or
- 77 humans)).ti.
- 78 9. 6 not (7 or 8)
- 79

- 80 10. Clinical study/
- 81 11. Case control study/
- 82 12. Family study/
- 83 13. Longitudinal study/
- 84 14. Retrospective study/
- 85 15. Prospective study/
- 86 16. Randomized controlled trials/
- 87 17. 15 not 16
- 88 18. Cohort analysis/
- 89 19. (Cohort adj (study or studies)).mp.
- 90 20. (Case control adj (study or studies)).tw.
- 91 21. (follow up adj (study or studies)).tw.
- 92 22. (observational adj (study or studies)).tw.
- 93 23. (epidemiologic\$ adj (study or studies)).tw.
- 94 24. (cross sectional adj (study or studies)).tw
- 95 25. or/10-14, 17-24
- 96 26. 9 and 25
- 97

98 In Embase, we use a search filter for identifying observational studies, as described in:
 99 http://resourcecenter.ovid.com/site/resources/expert_search/healthexp.html#OvidFilters

100

101 **PsycINFO**

102

- 103 1. loneliness/ or social isolation/ or social deprivation/
- 104 2. (loneliness or lonely or social isolation or socially isolated or social alienation or psychosocial
- 105 deprivation or social deprivation).tw
- 106 3. ((social support or social network or social networks or social participation or social
- 107 relationship* or social capital or social interaction* or friends or friendship* or family relation*
- 108 or interpersonal relation* or social distance or (social and disconnect*) or living alone) and (risk
- 109 factor or risk factors or associat* or impact* or affect* or influenc* or related)).ti
- 110 4. (1 or 2 or 3)
- 111 5. ((veterinary or animal or animals or rabbit or rabbits or rodent or rodents or rat or rats or mouse
- 112 or mice or pig or pigs or dog or dogs or cat or cats) not (patient or patients or human or
- 113 humans)).ti.
- 114 6. 4 not 5
- 115 7. (cohort study or cohort studies or cohort analysis or cohort analyses or longitudinal or
- 116 prospective or retrospective or case control or follow up study or follow up studies or
- 117 observational study or observational studies or cross sectional).tw
- 118 8. 6 and 7

119

120 **Scopus**

121 Advanced:

122

123 (TITLE-ABS-KEY (loneliness OR lonely OR "social isolation" OR "socially isolated" OR "social alienation"
124 OR "psychosocial deprivation" OR "social deprivation") OR TITLE (("social support" OR "social network"
125 OR "social networks" OR "social participation" OR "social relationship" OR "social relationships" OR
126 friends OR friendship* OR "family relation" OR "family relations" OR "family relationship" OR "family
127 relationships" OR "interpersonal relation" OR "interpersonal relations" OR "interpersonal relationship"
128 OR "interpersonal relationships" OR "social distance" OR (social AND disconnect*) OR "living alone")
129 AND ("risk factor" OR "risk factors" OR associat* OR impact* OR affect* OR influenc* OR related))) AND
130 TITLE-ABS-KEY ("cohort study" OR "cohort studies" OR "cohort analysis" OR "cohort analyses" OR
131 longitudinal OR prospective OR retrospective OR "case control" OR "follow up study" OR "follow up
132 studies" OR "observational study" OR "observational studies" OR "cross sectional") AND NOT (TITLE
133 (veterinary OR animal OR animals OR rodent OR rodents OR rat OR rats OR mouse OR mice OR dog OR
134 dogs OR cat OR cats) AND NOT TITLE (patient OR patients OR human OR humans))

135

136 **Google Scholar**

137

138

139 allintitle: (loneliness|lonely|"social isolation"|"socially isolated"|"social alienation"|"psychosocial
140 deprivation"|"social deprivation") AND (cohort|"case control"|longitudinal|retrospective|"cross
141 sectional")

142

143

144 **Search for systematic reviews:**

145

146 **Ovid Medline**

- 147 1. loneliness/ or social isolation/ or social deprivation/ or social alienation/ or psychosocial
148 deprivation/
149 2. (loneliness or lonely or social isolation or socially isolated or social alienation or psychosocial
150 deprivation or social deprivation).ti,ab,kw
151 3. exp social support/ or social participation/ or social environment/ or social capital/ or family
152 relations/ or friends/ or interpersonal relations/ or social distance/
153 4. (social support or social network or social networks or social participation or social relationship*
154 or social capital or social interaction* or friends or friendship* or family relation* or
155 interpersonal relation* or social distance or (social and disconnect*) or living alone).ti
156 5. (risk factor or risk factors or associat* or impact* or affect* or influenc* or related).ti
157 6. 1 or 2 or ((3 or 4) and 5)

- 158 7. (Animal Experimentation/ or exp Animals/ or exp Models, Animal/) not Humans/
159 8. ((veterinary or animal or animals or rabbit or rabbits or rodent or rodents or rat or rats or mouse
160 or mice or pig or pigs or dog or dogs or cat or cats) not (patient or patients or human or
161 humans)).ti.
162 9. 6 not (7 or 8)
163 10. Limit 9 to "systematic review"
164 11. (systematic review or meta-analys* or metaanalys*).ti
165 12. 9 and 11
166 13. 10 or 12

167 **Embase**

- 168
169 1. loneliness/ or social isolation/ or social alienation/
170 2. (loneliness or lonely or social isolation or socially isolated or social alienation or psychosocial
171 deprivation or social deprivation).ti,ab,kw
172 3. exp social support/ or social participation/ or social environment/ or social capital/ or family
173 relation/ or friend/ or social interaction/
174 4. (social support or social network or social networks or social participation or social relationship*
175 or social capital or social interaction* or friends or friendship* or family relation* or
176 interpersonal relation* or social distance or (social and disconnect*) or living alone).ti
177 5. (risk factor or risk factors or associat* or impact* or affect* or influenc* or related).ti
178 6. 1 or 2 or ((3 or 4) and 5)
179 7. (exp animal/ or exp animal model/ or nonhuman/) not exp human/
180 8. ((veterinary or animal or animals or rabbit or rabbits or rodent or rodents or rat or rats or mouse
181 or mice or pig or pigs or dog or dogs or cat or cats) not (patient or patients or human or
182 humans)).ti.
183 9. 6 not (7 or 8)
184 10. meta analysis/ or "systematic review"/
185 11. (systematic review or meta-analys* or metaanalys*).ti
186 12. 10 or 11
187 13. 9 and 12

188

189 **Cochrane Database of Systematic Reviews**

190

- 191 #1 MeSH descriptor: [Social Isolation] explode all trees
192 #2 MeSH descriptor: [Loneliness] explode all trees
193 #3 MeSH descriptor: [Social Alienation] explode all trees
194 #4 MeSH descriptor: [Psychosocial Deprivation] explode all trees
195 #5 (loneliness OR lonely OR "social isolation" OR "socially isolated" OR "social alienation" OR
196 "psychosocial deprivation" OR "social deprivation"): ti,ab,kw

197 #6 #1 OR #2 OR #3 OR #4 OR #5
198 #7 MeSH descriptor: [Social Support] explode all trees
199 #8 MeSH descriptor: [Social Participation] explode all trees
200 #9 MeSH descriptor: [Social Environment] explode all trees
201 #10 MeSH descriptor: [Family Relations] this term only
202 #11MeSH descriptor: [Friends] explode all trees
203 #12 MeSH descriptor: [Interpersonal Relations] this term only
204 #13 MeSH descriptor: [Social Distance] explode all trees
205 #14 ((social AND (support OR network* OR participation OR relationship* OR capital OR interaction*))
206 OR friends OR friendship* OR ((family OR interpersonal) AND relation*) OR "social distance" OR (social
207 AND disconnect*) OR "living alone"): ti
208 #15 #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14
209 #16 ((risk AND factor*) OR associat* OR impact* OR affect* OR influenc* OR related): ti
210 #17 #15 AND #16
211 #18 #6 OR #17
212