Author’s response to reviews

Title: What is the impact on health and wellbeing of interventions that foster respect and social inclusion in community-residing older adults? A systematic review of quantitative and qualitative studies

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Author’s response to reviews:

Reviewers’ comments:

ASSOCIATE EDITOR:

Please respond comprehensively to the comments of the reviewers below. In particular, Reviewer 2 raises the important point that figures may overestimate the strength and reliability of the evidence included.

Response: We would like to thank the Associate Editor for the thoughtful and detailed feedback provided on our manuscript. We have found it very helpful in revising and improving the paper. We have addressed all the comments (see below for point-by-point answers), including Reviewer 1 and Reviewer 2. With regards to Reviewer 2’s concerns about potential over-estimation, we have included a clearer explanation of how we mapped quantitative and qualitative studies together into the diagrams (see lines 275-287, lines 1219-1224 and our comment under Reviewer 2).

How did you decide what the different types of interventions would be at the start of the logic model process? How did you generate these types after studies had been assessed for inclusion?
Response: First, we conducted scoping work (which involved looking at existing literature reviews, e.g. Lui et al., 2009, and key background literature, e.g. World Health Organization, 2007, on respect and social inclusion and age-friendly environments), to identify interventions and mediating factors that were mentioned in relation to promoting respect and social inclusion in older people. Two main types of interventions emerged: 1) intergenerational interventions, and 2) information and communication technology interventions. For these two intervention types, we developed logic models at the start of the review process, based on the pathways mentioned in the literature; we then went on to adapt them over the course of the review process, to incorporate the additional information we identified. To illustrate this process, we have presented in Figure 1 the logic model which we initially developed for intergenerational activities (pre-review), and in Figure 11 we present the final version of the model (post review). The quantitative evidence reviewed allowed us to add outcomes such as depression, while the qualitative evidence suggested additional mediating factors that could be involved in the process of improving health outcomes, such as increasing participants’ sense of ‘feeling valued’.

For interventions which were not identified from our scoping review, but which met our inclusion criteria (e.g. they qualified as interventions promoting respect and social inclusion, e.g. music and singing activities), we generated logic models after studies were assessed for inclusion. These models were based on the information reported in the included studies about mediating factors and pathways.

To clarify how we identified the interventions and how the logic models were developed over the course of the review, we have expanded the relevant sections in the manuscript (see lines 98-126 and lines 246-287).

I counted eight databases?

Response: Thank you for identifying this error. There were eight databases in total and this has been clarified in the text (see lines 130).

Please justify more specifically the choice of 1990 as a start date.

Response: We were interested in literature relevant to contemporary social and political contexts of ageing, and respect and social inclusion. The aim of our review was to identify evidence about interventions which could be implemented in the context of current efforts to promote age-friendly environments. We therefore chose the 1990 as the start date of our searches, to coincide with the emergence of debates about, and initiatives aimed at, designing optimum community environments for ageing populations (Phillipson, 2012: this reference has been added in the manuscript). The choice of the start date was decided through consultation during protocol
development by the review team. To add clarity, we have expanded this paragraph (see lines 150-157).

Exactly what did you extract from the qualitative studies in terms of ‘data’? Did you only extract results text? Or did you summarise this text before entry?

Response: From the qualitative studies, we extracted participants’ own narratives, and then summarised these ‘data’ in a concise message in data extraction and summary tables (see lines 219-223).

I noticed you included mentoring though you excluded telephone befriending. What is the practical difference between these interventions and why would one be included but another be excluded? It generally seems as if the distinction you have drawn here is tenuous.

Response: We thank the Associate Editor for this query. We only included mentoring interventions where the aim was to engage older people in social activities with others within a group setting. By contrast, befriending interventions focus on improving the level of social support and decreasing loneliness through one-to-one interaction (see Cattan et al. 2011). Because the latter is not a group or community-based activity, it did not meet our inclusion criteria. We have made it clearer in our manuscript why we included certain mentoring interventions and why we exclude befriending (see lines 168-172).

You use a summary score for both qualitative and quantitative studies. Has this summary score been validated in the original questionnaires, e.g. by factor analysis or other psychometric methods? Summary scores are rarely helpful for understanding study quality.

Response: Thank you for highlighting this important point.

We agree with the Associate Editor that the utility of summary scores as a method to understand study quality is not optimal. However, we used a summary score for both quantitative and qualitative studies for descriptive purposes, to facilitate reporting of the data in the summary tables (now labelled as Additional file 4 and 5) and to give an indication of the potential risk of bias (RoB) among the different studies.

In the Results, for each intervention type, we have summarised the RoB and key methodological limitations of the studies, so the reader is aware of potential bias. As recommended by the literature (e.g. Katikireddi et al., 2015), we incorporated the RoB assessments into the findings, and into the Harvest plot (now labelled as Table 1).
We used the Liverpool Quality Assessment Tools (LQATs) to assess the RoB of quantitative studies. LQATs have been used in a number of previous systematic reviews (e.g. Pope et al., 2010; Puzzolo et al., 2016) and have been critically examined in relation to other quality appraisal tools (Voss & Rehfuess, 2012). Qualitative studies were appraised using established criteria related to reliability and validity of findings and the reflection of participant perspectives developed by Harden et al. (2009) and Mays & Pope (2000). However, we use an overall summary score that was not previously validated in appraisal of the original tools – this is clarified in the limitations (see lines 676-681).

How you mapped the quantitative and qualitative studies onto the logic models requires considerably more detail. Did you synthesise the qualitative studies separately? How did you read across and between them to develop the synthesis? Did you generate additional pathways?

Response: Thank you for this request for clarification. We synthesised qualitative studies separately, and then we brought these together with the quantitative studies in the logic models (Figures 1 and 11) and diagrams (Figures 4-10).

Explanation of Logic models development (Figures 1 and 11):

From the initial scoping work, we generated basic logic models highlighting the possible mechanisms through which interventions on social inclusion might produce effects on health outcomes. During scoping we identified some possible interventions and mediating factors that that were mentioned in relation to promoting respect and social inclusion in older people. Two main types of interventions emerged: 1) intergenerational interventions, and 2) information and communication technology interventions. The logic models were therefore initially developed for these two interventions, and were adapted throughout the review process. To illustrate this process, we have presented in Figure 1 the initial logic model for intergenerational activities (pre-review), and in Figure 11 the final version of the model (post review).

Figure 1 shows some possible outcomes and mediating factors for intergenerational interventions, based on our scoping work. At this stage we did not know the specific activities that were part of these interventions (e.g. reading books to children). Based on the evidence retrieved during the review process, we assessed whether the hypothesised mediating factors and outcomes that were depicted at the start of the review (Figure 1) were supported by the evidence (Figure 11). We also clarified the specific activities that were part of these interventions (e.g. reading books to children).

Figure 11 represents the enhanced logic model, which was revised over the course of the review. From the quantitative evidence, which looked at the impact of the interventions, we generated
some additional outcomes (e.g. depression). From the qualitative data, which provided information on how interventions might work according to older people’s narratives, we generated some additional mediating factors that could be involved in the process to improve health outcomes (e.g. feeling valued). We highlighted in bold the outcomes and mediating factors that emerged from the results of quantitative or qualitative studies, and we indicated in blue the additional outcomes and mediating factors of the logic model (please refer to Figure 11).

For interventions which were not identified from our scoping review, but which met our inclusion criteria (e.g. they qualified as interventions promoting respect and social inclusion, such as music and singing activities), we generated logic models after studies were assessed for inclusion. These models were based on the information reported in the included studies about mediating factors and pathways.

Explanation of Diagrams developed around identified outcomes (Figures 4-10):

Diagrams were developed during the narrative synthesis process. They represent a descriptive overview of the quantitative and qualitative evidence retrieved, for each intervention type. The mediating factors included in the diagrams came from the participants’ own narratives that emerged from the qualitative studies (on how older people reported the impact of the intervention). They offer some explanations about possible mechanisms through which interventions on respect and social inclusion may impact on older people’s health (e.g. feeling valued).

The diagrams were subsequently revised by specifying the list of outcomes being studied by the qualitative and quantitative studies (including number of studies), and the effect for quantitative studies (please refer to Figures 4-10). The dashed arrows that go from the mediating factors to the outcomes indicate solely that according to some participants’ narratives, these factors may contribute to an improvement in health outcomes. For example, participants reported a perceived sense of wellbeing as a result of taking part in the study, as they met new people to interact with. In this example, the outcome is wellbeing, and the mediating factor is improved interactions. We have not included the assessed risk of bias (RoB) in these diagrams as the RoB is presented in the Harvest Plot (now Table 1).

We have included a clearer explanation of how we mapped quantitative and qualitative studies together into the logic models and diagrams (see lines 98-126, lines 246-287 and lines 600-618). We hope that is now clearer.

How did you decide what the ‘mediating factors’ were in the qualitative studies? This seems like you are ascribing an epidemiological/quantitative understanding onto qualitative research. This is
a recurring issue that requires some reflection - to understand exactly what the role of the qualitative findings is in contributing to your logic models.

Response: Thank you. In the logic models (Figures 1 and 11) and diagrams (Figure 4-10), the mediating factors emerged from the qualitative studies. As explained above, the role of qualitative findings is to provide information on ‘how’ intervention might work according to older people’s narratives. This information is captured in the mediating factors, which offer some explanation about possible mechanisms through which interventions on respect and social inclusion may impact on older people’s health (e.g. feeling valued).

We have now provided a better explanation of our synthesis approach in the revised version of the manuscript (see lines 98-126, lines 246-287 and lines 600-618).

How did you assess publication and other review-level biases?

Response: Due to the heterogeneity of the included studies, we used a narrative synthesis approach to summarise the findings of studies of this review. We were therefore unable to quantitatively assess publication bias by, for example, looking for funnel plot asymmetry. We have acknowledged this as a limitation (see lines 672-675).

We tried to minimise the potential for publication bias through a comprehensive appraisal of the literature (including the grey literature): eight electronic bibliographic databases were searched and grey literature sources included, for example, policy papers and reports from third sector organisations:


In addition, we checked the list of references of relevant papers included as full text and contacted topic experts to identify any additional data sources that were not available through electronic sources. Our inclusive and broad approach was aimed to capture the most relevant evidence to address the research question, including positive and negative effects, which we have summarised in the Harvest plot (now labelled as Table 1).

You need to acknowledge as a limitation that a majority of the work for this review was undertaken by one person.
Response: Thank you. Whilst the lead reviewer, and topic expert, did the majority of the review work, independent verification was built into each stage of the review with members of the wider review team. An independent reviewer carried out a 10% random sample of titles and abstracts, and 15% of full texts were screened by another reviewer, where there was uncertainty about the relevance for inclusion. Any discrepancies were resolved through discussion and decisions for exclusion were documented.

However, in the limitations, we have acknowledged that most of the work was conducted by one reviewer (see lines 681-683).

Reviewer #1:

For review of the article I used the 2009 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). My strategy is to follow the PRISMA items and make observations on aspects that have not been evaluated as satisfactory.

Response: We would like to thank the reviewer for the thoughtful and detailed feedback provided on our manuscript. We have found it very helpful in revising and improving the paper. Below are specific responses to each of the comments with details of alterations and additions made to the manuscript.

Here are the observations on each of the PRISMA items:

- In the title, there is the identification of which is a systematic Review;

- In the abstract are all the items that are needed: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number;

- Rationality is well written in the introduction and discusses the fundamental concepts;

- The purpose is clear in the Introduction, but a little more detail on the PICOS in the Introduction;

Response: We have added a sentence to give more details on the PICOS used to define the research question (see lines 85-86) before the review question and aims.

- Items 5 through 13 of the Method are excellent, however, item 14 (summary of results) can be better explained and made clear to readers.
Response: Thank you for highlighting this important point. Following the Associate Editor’s and Reviewer 2’s comments, we have now expanded the synthesis of the results (see lines 98-126 and lines 246-287). We hope to have made this section clearer to readers.

- Items 15 and 16 of Method are excellent;

- Items 17 through 22 of the Results are excellent, however, item 23 can be improved and more detailed for a better understanding of the readers;

Response: Thank you for pointing this out. By addressing this comment (also raised by the Associate Editor’s and Reviewer 2), we have revised this section to frame the results more clearly (see lines 98-126 and lines 246-287). As explained in the paper (see lines 246-248), the broad focus of interventions fostering respect and social inclusion, and the heterogeneity across study designs and outcomes, precluded quantitative synthesis using meta-analysis (including sensitivity analysis, sub-group analysis, etc.). We therefore conducted a narrative synthesis of all evidence (including the quantitative and qualitative studies (reported in the PRISMA 2009 Checklist under item 21).

Our analysis comprised grouping and tabulating studies according to the type of intervention (see Additional file 4 and 5). We produced a narrative summary of findings for each intervention category, including risk of bias (RoB), which is presented in the Results section. We used Harvest plots to graphically represent the overall summary of the quantity, direction, and strength of the quantitative evidence for the various health outcomes (now Table 1).

Figures 4-10 present descriptive overviews of the quantitative and qualitative evidence retrieved, for each intervention type. The mediating factors included in the diagrams come from the participants’ own narratives that emerged from the findings of qualitative studies (on how older people reported the impact of the intervention). They offer some explanations about possible mechanisms through which interventions on respect and social inclusion may impact on older people’s health (e.g. feeling valued). The diagrams also present the list of outcomes that were studied by the qualitative and quantitative studies (including number of studies), and the effect for quantitative studies.

Please refer to comments by the Associate Editor where we have described in details how we developed the logic models and diagrams (p.3-4).

- The Discussion and Funding items are clear and excellent.

Response: Thank you for these positive comments (and the other feedback in relation to the PRISMA checklist).
Reviewer #2:

An interesting study, which offers an overview of aspects have been studied as positive outcomes for interventions that promote social inclusion and respect among older people. The conclusions of the abstract seem more consistent with the results presented than the conclusions of the main text. The heterogeneity of the studies, the risk of bias, variable follow-up time of the elderly and the fact that studies always include volunteers make difficult to say how each intervention affects the health of the elderly. What has been demonstrated were the potential benefits studied by the authors of the primary studies, which is useful for other researchers to plan new studies more assertively and policy makers be aware of which initiatives may be better at promoting the social inclusion of older people. Authors should clarify the exploratory character of the study and its results.

Response: We would like to thank the reviewer for the thoughtful feedback provided on our manuscript. We have found it very helpful in revising and improving the paper. Below are specific responses to each of the comments with details of alterations and additions made to the manuscript.

We have clarified the exploratory character of the study and its results (see lines 85-86). We have also revised the conclusions, and made these more consistent with the abstract (see lines 744-755).

Introduction

Line 37 - The reference to sentence "According to the World Health Organisation (WHO), the world's population aged 60 years and older is expected to increase to more than two billion by 2050; one in five people will be 60 years or older" should be: World population ageing 2013. New York: United Nations Department of Economic and Social Affairs, Population Division; 2013 (http://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeingReport2013.pdf).

Response: Apologies for the confusion. We found a more updated version of the United Nations World Ageing report (dated 2015), and we have now replaced the reference accordingly (see line 38).

Line 44 - The reference to sentence 'In the 'Global Strategy and Action Plan on Ageing and Health', published in 2016, the WHO advocated the development of physical and social settings that support older people to live independently and in good health for longer, but also optimise
health and wellbeing for the wider community [6,7]." seems wrong. It should be the document Global Strategy and Action Plan on Ageing and Health, published by WHO in 2016.

Response: Apologies for the confusion. We were referring to the ‘Global strategy and action plan on ageing and health 2016-2020’ by WHO, available at: http://who.int/ageing/GSAP-Summary-EN.pdf. Alterations have been made accordingly (see lines 45-46).

Line 52 - "One of these domains, reported as being of fundamental importance to older people in qualitative work [6,10-13] and in national and international policy [3,5,14-16], is respect and social inclusion". This sentence should be reviewed, it is confusing. Qualitative work is qualitative research?

Response: Thank you for pointing this out. We used qualitative work to refer to qualitative research. We have now replaced the term with ‘qualitative research’ and improved the sentence (see lines 53-55).

Line 59 - regarding risk of cardiovascular events due exposure to negative stereotypes of ageing, the cited publication mentioned in conclusions "study suggests that age stereotypes internalized earlier in life can have a far-reaching effect on health. In turn, this finding suggests that programs aimed at reducing the negative age stereotypes of younger individuals could benefit their cardiovascular health when they become older individuals."


The sentence needs to be reviewed.

Response: We agree with the reviewer that in the present form, this sentence may look confusing. We have now revised it (see lines 60-64).

Methods

Line 81 - Authors cite PRISMA but the reference 29 is the PRISMA-P.

Response: Apologies for the confusion. Corrections have been made accordingly (see line 96).

Lines 87 to 92 - Authors should consider taking this paragraph for introduction. It is not method.
Response: We agree with the reviewer, and we have integrated this paragraph in the Introduction (see lines 75-83).

Line 102 - figure 13?
Response: Apologies for the confusion caused here. We were referring to the revised and final version of the logic model (now Figure 11) that we developed over the course of the review. We have now signposted this to the reader more clearly (see lines 115-126).

Lines 177 to 185 and Lines 190 to 202 - With such broad and specific eligibility criteria, a major limitation of this study is the screening of the studies (by title and abstract and then by reading the full text) has been carried out by only one reviewer. Another reviewer had analyzed randomized samples, but there is no way to guarantee that there were no losses in the screening process. This problem is even more serious considering that more than 27,000 texts were initially identified. The same limitation is even more worrying in relation to the steps of data extraction and risk assessment of bias.

Response: Thank you for highlighting this important point. We are aware of the importance of having two independent reviewers as to minimize the risk of errors in the study selection and data extraction process. Whilst the lead reviewer (SR), and topic expert, did the majority of the review work, we did follow good practice including a number of steps and checks to ensure the process was as consistent as possible with the selection criteria.

A second experienced reviewer (NKV) independently screened a 10% random sample of titles and abstracts, and the level of agreement was checked using EPPI-REVIEWER 4 software. This produced a reconciliation report showing that there was less than 2% disagreement out of 2736 papers independently coded by the two reviewers (SR & NKV). One reviewer (SR) screened full text papers for eligibility with 15% of papers screened by another reviewer (LO/DP/NB), where there was uncertainty about the relevance for inclusion. Any discrepancies were resolved through discussion and decisions for exclusion were documented. A single reviewer (SR) conducted data extraction for included studies, and one reviewer (DP/LO/NB) checked 15% of data extraction tables for accuracy (see lines 201-216).

Moreover, the search strategy was carefully constructed in the protocol development phase (which also included a scoping review to help shape the search strategy and search terms).

In the limitations, however, we have acknowledged that most of the work was conducted by one reviewer (see lines 681-683).
Line 185 - Figure 2 is a result, this shouldn't be in the Methods section.

Response: Thank you for pointing this out. We have now moved Figure 2 (PRISMA flow diagram of the study selection process) in the Results section (see lines 295-296).

Search strategy:

What is the search strategy: 9 and 16 and 21 OR (9 or 16) AND 21? Please explain why restrict the search using AND in this case?

Response: Thank you for pointing this out. Our search strategy was developed using an inclusive approach to capture all relevant evidence and was refined after the scoping/piloting phase. It comprised a combination of relevant subject terms selected from the controlled vocabulary or thesaurus for the relevant databases (e.g. MEDLINE) with a wide range of free-text terms. We used the PICO structure (in this case, the outcomes, intervention, and population) comprising strategy 1 (terms related to the “outcomes”), strategy 2 (terms related to the “intervention”) and strategy 3 (terms related to the “population”). To combine terms relating to the PICO, we used OR for the different terms representing each construct of the PICO (please refer to table below). As it is recommended practice, to increase the specificity of the search to the research question we combined strategies 1, 2, and 3 with AND.

Strategy 1 (outcomes) Search terms (outcomes)

e.g. “health*” or “disease*” ….

Strategy 2 (intervention) Search terms (intervention)

e.g. “social inclusion” or “social cohesion” …

Strategy 3 (population) Search terms (population)

e.g. “old*” or “senior*” …

Results

I suggest removing figure 4 because it repeats what is already described in the harvest plot. The harvest plot is much more complete and already offers the information correlating to the direction of the effect and risk of bias.

Response: We agree with the reviewer that Figure 4 repeats what is presented in the Harvest plot. We have now removed it.
If the authors summarize the contents of tables 1 and 2 in the text, they could consider putting them as supplementary material to make text more readable.

Response: We agree with the reviewer that Tables 1 and 2 may distract from the paper, as they are lengthy. We have now presented these as Additional File 4 and Additional File 5.

Improve sentence on lines 325 to 327.

Response: Thank you for pointing this out. We have now improved the sentences (see lines 378-385).

There seems to be something missing in the sentence between lines 331 and 332.

Response: We have now revised the sentence (see lines 386-387).

I think figures 5-10 need to be revised to make it clearer. The figures seem to overestimate the findings rather than making it clear that they demonstrate the aspects assessed in the primary studies.

For example, legend says:

Red line represents results supported by quantitative evidence - the results were supported or evaluated? Results are reliable? Risk of bias were low? Legend state "this notation is not meant to signify the strength or direction of any effect", but colors like red and green are usually related to negative and positive. In addition, this information only appears in the legend, and may confuse the reader.

Response: We agree with the reviewer that in the present form, Figures 5-10 could be seen as tendering to overestimate the findings (this was also noted by the Associate Editor). However, the purpose of these diagrams was to provide a descriptive overview of the quantitative and qualitative evidence retrieved, for each intervention type.

We generated the diagrams during the narrative synthesis process. They represent a descriptive overview of the quantitative and qualitative evidence retrieved, for each intervention type. The mediating factors included in the diagrams come from the participants’ narratives that emerged from the qualitative studies (on how older people reported the impact of the intervention). They offer some explanations about possible mechanisms through which interventions on respect and
social inclusion may impact on older people’s health (e.g. feeling valued) (see lines 275-287 and lines 1219-1224).

We have now revised the diagrams by specifying the list of outcomes being studied by the qualitative and quantitative studies (including number of studies), and the effect for quantitative studies (please refer to Figures 4-10). The dashed arrows that go from the mediating factors to the outcomes indicate solely that according to some participants’ narratives, these factors may contribute to an improvement in health outcomes. For example, participants reported a perceived sense of wellbeing as a result of taking part in the study, as they met new people to interact with. In this example, the outcome is wellbeing, and the mediating factor is improved interactions. We have not included the RoB in these diagrams as the RoB is presented in the Harvest Plot (now Table 1) (see lines 261-263).

We have included a clearer explanation of how we mapped quantitative and qualitative studies together into the diagrams (see lines 275-287 and lines 1219-1224). We hope that is now clearer.

In the summaries of the evidence according to each intervention, the design of the study and the risk of bias are discussed separately from results. It is difficult for reader to relate observed result to the characteristics of the studies that produce it (for example 357 to 362).

Response: We agree with the reviewer that this separation of the risk of bias (RoB) assessment and the result may not be ideal in some respects for the reader. We have retained this approach, however, due to the large number of studies for most of the intervention types, and the wish to present the findings in a concise and consistent way. In addition, the Harvest Plot (now labelled as Table 1) provides the reader with a brief overview of the strength of the quantitative evidence and the RoB of the studies. The summary tables (now labelled as Additional file 4 and 5) provide a more detailed explanation of the findings and RoB for each study. At the start of the Results section, we have signposted the reader to the Harvest Plot and Summary tables more clearly (see lines 362-367) so that s/he can relate RoB assessment to the results.

I have some doubts about how some primary studies were interpreted. For example, on lines 327 to 329, clearly the effect described is related to the Hawtorne effect, as this study was reported in the Harvest plot?

Response: Thank you for pointing this out. We have improved the sentence (see lines 378-381). We agree with the reviewer of the importance to consider the Hawthorne effect (e.g. McCambridge, Witton and Elbourne, 2014) when interpreting the results of this review and have acknowledged this as a potential limitation of the evidence base (see lines 733-736).