Reviewer's report

Title: Process and effect evaluation of a two-year complex intervention to reduce loneliness in non-institutionalised elderly Dutch people

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Reviewer: Nardi Steverink

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Review of manuscript

“Process and effect evaluation of a two-year complex intervention to reduce loneliness in non-institutionalised elderly Dutch people”.

This is an interesting paper, covering the topic of a loneliness intervention in older people, by an integrated community approach. As such, it is an important topic.

The paper has several positive aspects, but I believe the paper also has some important weak points. I will summarize my comments below in major and minor points.

Major points:

1. Overall, I found the paper rather hard to read, which primarily may be due to the fact that the text contains no, or very few, paragraphs within each section. It may also be due to the rather abstract style of writing. For example, it takes quite some time to get some understanding of what is meant by “loneliness literacy”. I also found it hard to understand early in the manuscript what kind of intervention the study is about (a community intervention, referred to as a “complex” intervention). The manuscript would gain a lot if the authors would explain the concepts used in more detail, as well as the intervention, and how the study exactly has been executed (in which consecutive steps). As another example: I found it very hard to understand the study from reading the abstract, because it is formulated in very abstract terms, or terms that are not being explained, such as “Healthy Aging”, “loneliness literacy”, “satellite studies”, “subjective norm”, “intensity”, etc. One needs to read the whole manuscript to be able to understand the abstract. I think the abstract should be such that it can be understood as it is.

2. Overall, I found that there is too little argumentation and grounding of crucial parts of the study, in particular a) the research problem, b) the theoretical elaboration of the logic model, c) the choice of the components of the intervention, and d) the concept of loneliness literacy. I will specify each of these aspects in the following.

a) The problem definition does not contain mentioning of facts that show how much loneliness actually exists among older people, or among which specific subgroups of older people. Existing studies (for example of Pearl Dykstra, which
is cited by the authors) indicate that loneliness is not more prevalent among older people than among younger people (except for the very old). I also think that the authors do not do enough right to the state of the art with regard to the existence of loneliness interventions. It is simply stated that hardly any interventions exist, or have been evaluated, but this is not what, for example, the review and meta-analysis of Masi et al. (2011) show.

b) I also missed a rationale for the logic model, or, in other words: what is the theory behind this model? What is the place of loneliness literacy here? Why would the aspects of the model be connected? And why would the intervention have an impact on these components? I think all these questions need to be addressed to build a rationale for the choice of the logic model, and thus also for the choice of the components of the intervention.

c) Regarding the components of the intervention I also missed the argumentation on the choice of the components. This point relates closely to point (b). As I understand it, the components were chosen on the basis of experiences of the local project team, but these experiences remain unspecified in the text. What were these experiences exactly, and why would they be useful as the basis for the intervention? Have no insights been used from robust theoretical and empirical former studies from the loneliness literature? A reference to one of the most important authors on loneliness in aging: John Cacioppo, is lacking. I think that much more argumentation is needed here, because now the choice of the components seems rather vague and even ad hoc, and also strange in case of the group course, because this was an intervention aimed at reduction of depression. And why was the intervention called “Healthy Aging”, when it was about reducing loneliness? This is confusing. Was there a specific reason to use this name for the intervention?

d) I also missed a rationale for the choice of the initial outcome loneliness literacy, and a clear explanation of the concept. What exactly is loneliness literacy? The description of the scale and its subscales is not clear enough to fully understand the concept and its place in the whole study. The subscales seem to refer to aspects of the theory of planned behavior, or a related theory, but there is no mentioning of this theory. It would improve the manuscript importantly when the concept of loneliness literacy would be explained much more clearly, including the assumptions on how this concept relates to loneliness and why and how it is assumed that loneliness literacy can be improved by interventions.

3. A difficult issue in the whole study is that loneliness literacy was not measured at baseline, while it is the only outcome that seems to indicate that the intervention was effective. The authors reflect in detail on this in the discussion, but I still think it is a serious problem. It would be of utmost importance if the authors could find a way to convince the reader that the intervention and the control group did not differ at baseline. Furthermore, they could show quantitative evidence (e.g. correlations) for the arguments they offer in discussing criteria 2 and 3 (explaining the observed effects in the discussion).
Minor essential points:

1. Why is the goal set at 10% reduction in loneliness in two years? Is this a big reduction or a modest reduction? Please explain.
2. The research aim is formulated as “to present the results…..”, which is a bit odd. It would be more appropriate to state the aim in terms of testing the effectiveness…..etc.

Is it also part of the aim to evaluate the process (see title)? I doubt whether this has been done.

3. What is meant by “reach” (as the focus of the current study)?
4. It is described in the methods section that groups at high risk of loneliness were identified, but it is not clear what has been done with these groups.
5. Why were people 75 and older oversampled? Please explain.
6. What are the satellite studies?
7. What is meant by coverage?
8. Where is the 6% referring to (in the paragraph on output – reach)?
9. What do the results on loneliness literacy, and its subscales exactly mean? I find it very hard to understand what the implications of these results are. I would advice to phrase the discussion, and especially the results, in a language that tells what the results concretely mean. So, avoid using the phrasing “scores on the loneliness literacy subscales”, which remain very abstract to the reader.
10. The first sentence of the section “secondary long-outcome – social support” is strange, especially the part on esteem support.
11. The part on the measurements (SSL-12 etc) in the Discussion would better fit in the Methods section.
12. The claim that the Healthy Aging intervention is not yet mature (and needs more time to show its effects) needs more reflection, including the possible explanation that the intervention does not improve social support or loneliness. This would be possible, because the components of the intervention might not focus directly enough on the improvement of social support or loneliness, nor directly enough on the right target groups.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
'I declare that I have no competing interests'