Author's response to reviews

Title: Predictors of self-rated health. A 12-month prospective study of IT and media workers.

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Version: 4 Date: 3 February 2006

Author's response to reviews: see over
Dear Population Health Metrics Editorial Team,

We are very grateful for your response and all valuable and kind comment from Referees. The manuscript has undergone major and minor modification accordingly with their suggestions. All the comment/changes relating to reviewer comment are presented below.

One major revision of the manuscript is that we have changed the dependent variable from a change variable, i.e. SRH\textsubscript{12 month} - SRH\textsubscript{baseline}, to SRH at 12 months. Thereafter, the analyses have been rerun and the possible occurrence of regression to the mean is thereby no longer present. Consequently the discussion section has been shortened and the new results are presented.

Reviewer comment and actions

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Referee #1 Peter Bath
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Major revisions

1. On page 12 the authors report that “baseline levels of SRH was (sic) a major predictor of trends in SRH”. However, baseline SRH is not independent of change in SRH and it is questionable whether this should be included in the regression models: i.e., change in SRH is calculated from baseline SRH and follow-up SRH. Put another way, if someone reports their health as “excellent” at t1 on the 5-point Likert scale, then they cannot improve and someone who reports their health as “poor” cannot decline. Although the authors used the VAS, it is possible that respondents marked the “very poor” or “very good” extreme, and could not have declined or improved respectively.

Answer: We agree with this statement. Therefore one major change has been done to the manuscript. SRH at 12-months is now used as the dependent variable in the regression analyses and the new results are presented. Consequently, there is a slight shift in focus of the revised manuscript.

2. Similarly, on page 11 (paragraph 2 of the Results section) the authors report the results of the unpaired samples and Mann-Whitney tests and that participants worsening their SRH had a higher baseline mean or rank compared to those maintaining improving their SRH. Again, this is not surprising, as the two variables are not independent and people at the “very poor” or “very good” extremes could not have declined or improved respectively.

Answer: Please see the above answer.

3. The authors need to justify their use of baseline SRH in the regression model when it is not truly independent of the dependent variable.

Answer: Please see the above answer.

Minor revisions

4. Two papers from the same study are cited in the text [13 and 29]. However, neither of these is published, or has been accepted for publication, although the wording suggest that they might be. It would be helpful if the authors could consider re-wording the references, by describing the present study as part of a larger study to examine the possible benefits of the described intervention.

Answer: These studies are now published and the full references are presented in the reference list.

5. The final paragraph on page 4 is somewhat confusing and could be re-written to improve clarity, e.g., the overall aim could be re-written to indicate that it was to identify predictors of change in SRH. The following sentence “The specific hypothesis…self-ratings.” is also
confusing and ambiguous. Rather than state hypotheses, the authors should consider re-writing these as research questions, e.g., does socioeconomic status predict change in self-rated health without reference to worsening/improvement and lower/higher. Similarly, the “specific hypothesis” stated on page 10 (final paragraph) could be re-worded as should the final sentence which is rather awkward to read.

Answer: We agree with this comment and have accordingly with the new focus of the article changed the the words “change” and “trend” to predictors of future SRH (referring to SRH at the 12-month follow-up). We agree that the hypotheses might be confusing and have therefore omitted them.

6. In the methods section the authors might usefully indicate how many employees in total were asked to participate, and from this provide a response rate.

Answer: Unfortunately we missed to add these sentences, which are now added in the Methods Partipants First sentences of the second paragraph. Regrettably, there is no information on the exact number of employees that were asked to participate in the study. An exception was one of the media companies where 95 out of 100 possible participants chose to participate. In general there was also a great interest from the other departments and similar participation rates is therefore estimated.

7. On page 6, the authors state that “only the participants who continuously maintained/improved or declined in SRH between baseline and long-term follow-up”: the authors should indicate how many of the 303 participants that this included, and how many improved then declined and how many declined then improved, etc. The authors could also make it clear here that they are referring to baseline, follow-up after 6- and 12-months. The phrase “12-month follow-up” should be used instead of “long-term”, which is subjective and questionable.

Answer: We agree with this comment and have now added information in the text as well as applicable tables about the number of included participants. Furthermore, the phrase “12-month follow-up” is now consequently used throughout the manuscript.

8. It would be helpful if the authors could provide a reference to support the statement that “It has been proposed that repeated measures of variables, such as SRH, should be measured using a VAS”. This statement implies that someone has proposed that SRH should be measured using a VAS: it would be helpful if this could be substantiated or re-worded.

Answer: The sentence has now been reworded and a reference has been added to the list of references after the following sentence.

9. The sentence “For the logistic regression, all variables were divided by quartile split into high and low categories to render comparable odds ratios” on page 10 could be re-worded. Do the authors really mean “all variables”? Did this include baseline SRH? If the variables were divided into quartiles, then there must have been more than just “high” and “low” categories.

Answer: This statement has now been clarified in the text, with an explanation that “high” refers to the top quartile and “low” refers to the remaining quartiles.

10. On page 12 the authors state that both groups’ SRH improved over time, but in Figure 1 SRH in the reference group appears to decline. However, this figure appeared very small in my print-out so it is difficult to be sure, but perhaps the authors might check this.

Answer: We have now changed the wording and specify that the group as a whole improves in SRH (time effect), but there was no statistically significant difference between the groups over time (time x group effect). Please note also that the y-axis is broken to better illustrate the S.E.M., which may make the changes appear larger than they are.

11. It would be helpful if the authors could provide a more detailed explanation of the possible impact of regression towards the mean on internal validity on page 16.

Answer:
12. On page 17 the authors conclude that several factors “might be predictors of future SRH”; however the authors were examining predictors of change in SRH and this sentence could be re-worded to indicate this.

Answer: We agree with this comment, but as we have now changed the focus of the manuscript the final sentence is correct.

13. There are a few spelling mistakes that require correcting, e.g., diskriminant on page 9, sited on page 13, patters on page 16. Also some re-wording of sentences to avoid confusion and ambiguity as indicated above.

Answer: These spelling mistakes have now been corrected.

14. The most prominent finding was that baseline SRH predicted future change in SRH and it was interpreted to be partly due to statistical phenomenon of regression to the mean. Does this mean that one year is too short period to recognize real changes in rather healthy population?

Answer: It is correct that this result could partly be due to regression towards the mean. However, this phenomenon is not related to the measurement period itself. Rather it is the result of lack of reliability of the dependent variable. However, as it is implied in the article, other longitudinal studies have also found SRH to be a major predictor of future SRH. This was explained in the Discussion section → Regression analyses → 4th paragraph (page 15 in our former version). However, please note that in our revised manuscript where we have changed the dependent variable, regression to the mean no longer occurs. Therefore the text about this has been omitted.

Major revisions

15. The study was planned as a experimental trial in order to study the beneficial effects of a web-based stress management system (first report, reference 13) and also in this report the results have been reported separately in (or in relation to) intervention vs. reference group. The formation of research groups (randomization process?) should be described.

Answer: It is correct that the groups were randomized, which is described in the previous article. However, we agree that it would be better to clarify this fact in the present paper. Therefore, a sentence about the randomization process has been added under: Methods → Participants → second sentence second paragraph (page 5 in our version).

16. As well it should be considered what could be the importance of the selection of study sample for the results (highly selected group of IT experts and other well educated professionals): is there enough variation in the SRH variable in a homogeneous study group and how can the results be generalized to other populations.

Answer: We agree with this comment and have added a paragraph about this under Discussion → Methodological considerations (page 16 in our version).

17. The study participants and variation of the SRH variable according to main background factors of the study subjects should be described better (SRH according gender, age, socioeconomic background, other health measures). Table 5 gives the correlations between these background factors but the difference e.g. between the highest vs. lowest quartiles cannot be estimated. This kind of data would be useful in estimating the results and comparing the observations to former studies.
**Answer:** A new table has been created that depicts the baseline SRH means and medians divided by the main background and socioeconomic factors (Table 5). The former Table 5 is now Table 6.