Reviewer's report

Title: Trends in cause-specific mortality by marital status among elderly Norwegian men and women

Version: 1 Date: 21 March 2011

Reviewer: Lamberto Manzoli

Reviewer's report:

Dear Editor-Sir,

On my opinion, this work represents a potentially important contribution to the literature on the association between marital status and mortality, because of the appropriate methodology of the study, the large size of the sample and the long time-period considered. I have some major reservations about the manuscript in its current version, but believe that if these issues are tackled by the author the work could be largely improved. Therefore, overall I believe that this manuscript may be acceptable upon major revisions, which are listed below.

With best regards,
Lamberto Manzoli

Major compulsory revisions

1. The Background is the most problematic section of the manuscript. First, the author affirms (several times…) that “the effects of marriage are less clear among the elderly” (“the results for older people are inconsistent”, or similar). In particular, the author writes that “Some have shown higher mortality among older…. Other report no associations…” . There are several major problems here. First, among the “some” who are showing higher mortality rates, there is me and my colleagues, who published a meta-analysis including 53 comparisons and more than 250,000 individuals. Such a meta-analysis included all the studies that are cited by the author among “those who report different results”: Nybo et al., Noale et al., and both works by Manor et al. It is therefore logically and methodologically incorrect to mention the evidence that is coming from a meta-analysis, which includes single studies, at the same level of (a minority of) the same single studies that have been included in the meta-analysis. Over and beyond our meta-analysis, the number of studies showing the existence of a significant excess mortality for non married elderly is probably ten times higher than the number of studies that did not find significant results. In other terms, the evidence behind the association between lower mortality and married status is overwhelming among the elderly also, and this fact is universally accepted in the scientific community. Therefore, the entire section of the background/rationale in which the author affirms that “results on the elderly are inconsistent” is wrong and should cut or reformulated, as well as the same statement throughout the text
and even in the Conclusion (besides the fact that this is not a conclusive statement and should not be placed there in any case).

Also, I would not use the word “effects” or “influence” of marriage, because it is still unclear whether the association between marital status and mortality is due to a real effect of marriage or just selection. There are studies which are probably showing that healthy selection or lifestyle factors probably cannot explain entirely the association, but unless such issue is discussed I would rather conservatively use the term “association” to describe the relationship between marriage and mortality.

A similar problem rises when the author affirms that “the mortality status differentials may differ by sex”. This is not so certain, and I would substantiate such a statement much more (in general, I would always avoid the use of “e.g.” for the references, and rather cite the most important ones), or just cut such a rationale.

By contrast, the third rationale, the potential variation in the strength of the association between mortality and marital status over time is well described and appropriate. Overall, I strongly suggest the author to entirely cut, or substantially reduce (and revise) the above two points of the rationale and leave only the third, which is still very interesting and it is much more pertinent to the main aim of the study.

2.

Still in the background, for the same (valid) reasons above mentioned, and because these two parts would be better placed into the Discussion, I would entirely cut the two sections “Possible mechanisms – Differences in mortality by marital status”, and “Trends in mortality by marital status”. Besides both sections should logically be located into the Discussion section, the first section is totally unneeded and could be entirely cut: it reports facts and theories that are well-known in the literature and there is nothing innovative. It could be justified only if the results are discussed and contribute to such debate, otherwise it does not add to the literature. The second section is still unnecessary and could be integrated in the Discussion, or (at least) relevantly reduced.

3.

In the methods, the author declares that “those with missing information on education were grouped together with compulsory education”. Please explain the rational for doing this and, most importantly, provide data on how many were those with missing education.

4.

The last two paragraphs of the Discussion (from “it is not possible to conclude…”) are speculative and should be cut. It is obvious that the study could not clarify the mechanisms of the variation over time in marriage-mortality association, the study was not designed for such aim! Therefore, I would only keep the first sentence and place it among the limitations, and entirely cut the rest (up to “married over time”).
In addition, no discussion on the potential implications of the results has been made in any part of the manuscript. Please add.

Minor essential revisions

1. In the abstract and several times in the manuscript, the author inappropriately use the term “low” to define the mortality of married people versus unmarried: do use “lower” everywhere (it is not “low” in absolute terms).

2. Given that the same author correctly states that the reduced mortality for lung cancer in never married men is the result of health selection over age (that is, a bias…), I would reduce the emphasis on such a result and cut it from the abstract. Similarly, for the reasons mentioned above, I would cut the last sentence of the abstract.

3. As mentioned, cut sentences like “the relationship between marital status and mortality among the elderly show inconsistent results” everywhere.

4. Please clarify the sentence “educational level in 1970 is extracted from the Population Census this year” (Methods, page 8, line 7).

5. Results, page 10, first line of the paragraph “Trends in mortality…”: change “shows” with “show”. Line 12 in the same paragraph, cut “more” before “diverse”.

6. Results, page 12, first paragraph, please explain that such conclusions are based upon the interaction terms. Readers that are not so experts in statistics could find very difficult to understand upon which results are based the statements (such as “there is a significant increase in excess all-cause mortality for all unmarried…”). Please cut the last sentence, which is unessential (This accords well…).

7. Conclusions: cut the first sentence. Cut “material” after “data”. Cut the sentence starting with “as reported also in a few other studies…” (line 5).

8. Figure legends: specify in all figures that married people is the reference category.

9.
Table 1: add the person-years and raw mortality rates for each time-period (1971-1979, 1980-1989, etc.). Specify that the numbers in the table are percentages, except for age. Add the standard deviation for age, and specify that it is years. Everywhere except for the causes of death, cut one decimal from means and percentages: two decimals are unneeded and make the table very difficult to read. Consider the addition here of how many missings in educational level.

10.

Table 2: as above, two decimals are too unnecessary and they may impair the readability of the table. Cut one decimal and, instead, consider reporting the exact p-values. Specify the reference category and what “year” is referred to (year of birth?).

Discretionary revisions

1.
Results, page 11, second line: I would reduce the emphasis on that point, also because it does not seem to be so in 2000-2007 cohort, at least it does not seem to be significant (please also see later Tables/Figures issues).

2.
Results, page 11, second paragraph. Given that the results are a little bit complex to read, please consider reducing these two paragraphs. I.e., all cardiovascular diseases seem to follow the same trend, and it could be shown only the overall trend and declare that cause-specific trends are similar (as the author correctly did in page 12).

3.
Discussion, line 1: I would use “differences” rather than “inequalities”.

4.
Figures: Add a vertical bar indicating the 95% Confidence Intervals for each time point in each figure: these would relevantly increase the comprehension of the results and of which of the trends are statistically significant.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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