Reviewer's report

Title: Association between physical and mental health-related quality of life and adverse outcomes; a retrospective cohort study of 5,272 Scottish adults

Version: 3  Date: 21 August 2014

Reviewer: Carlos Garcia Forero

Reviewer's report:

The paper “Association between physical and mental health-related quality of life and adverse outcomes; a retrospective cohort study of 5,272 Scottish adults” deals with the association between SF12 scores as predictors of health outcomes, both in the physical and mental components.

The paper is well-written and structured, but I’d like to point out some remarks for author consideration, mostly dealing with data analysis strategy.

Major compulsory revisions:

1) My main concern is the categorization of scores in the Cox models. While it is understandable that discrete categories using cut-off points are useful for clinical decisions, it is not necessarily so in population studies. In fact, it can lead to substantial power losses and misleading results (see, for instance, Royston et al. 2006, whose points can be generalized to any kind of regression model).

In fact, the categorization of SF12 scores in quintiles might seem a bit arbitrary. Given that Cox regression allows mixing predictors of different measurement status, I’d recommend the authors to repeat the analysis treating PCS and MCS (and perhaps BMI and age) as continuous. I know that interpretation might be a bit more cumbersome as results in this case are hazard changes in 1-unit score changes, (however the score changes can be changed for more informative hazard scale changes), I believe that PCS and MCS results would greatly benefit from such treatment.

I’d strongly recommend the authors to change the analysis strategy to continuous covariates for a stronger message. Otherwise, they must provide a stronger rationale for choosing the quintile discretization of SF scores, which seems a bit loose at the moment.


Minor essential revisions:

2) While the SF12 PCS and MCS are the more commonly used scores for the SF12, they are not necessarily the only scoring systems (see for instance the RAND12 or multidimensional IRT models approximations for scoring the SF12). I
understand that the authors chose a scoring system, and it is not necessary to repeat the analysis further, however, the existence of other possibilities and potential influences in results are recommended to be acknowledged in the discussion.

3) A limitation section in the discussion should be included. Using retrospective designs has its own caveats, but there are others depending on the nature of the analysis (for instance, what could be the results if a non-proportional hazard model had been used, or —if the authors stick to the categorical predictor approximation, it should be mentioned as a strong limitation of this work).

4) Table 1 is nice, but I miss a table with sample characteristic information and the overall distribution information in the full sample (and not just by quintiles)

Discretionary Revisions:

The MCS results could have been related to adverse mental outcomes (such as incident severe psychopathology, suicidality). Did the authors have access to such information? It is not a heavy criticism and more like a personal curiosity, but it is out of doubt that this would be a quite relevant information, and I’d love to see some results or comments on the issue, where they available either in this or future papers.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests