Reviewer's report

Title: Mental health and wellbeing in spouses of persons with dementia: the Nord-Trondelag health study

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Reviewer: Karlijn J Joling

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REVIEW
'Mental health and wellbeing in spouses of persons with dementia: the Nord-Trondelag health study'
Helga Ask, Ellen M Langballe, Jostein Holmen, Geir Selbæk, Ingvild Saltvedt and Kristian Tambs

This paper addresses an important topic by investigating the relationship between dementia and spousal mental health. Clearly, these caregivers play a socially very important and economically valuable role within society, but many may do so at a considerable cost to themselves and develop (mental) health problems. Although, the prevalence of mental health problems have been documented quite well in dementia caregivers this study compares spouses of dementia patients with spouses of elderly people without dementia using a large population-based sample, which has not been done often before. I therefore believe this is potentially an important paper that again shows the vulnerability of this target group. I do have, however, some points that need improvement and clarification.

Major comments

1. Introduction: Although the limitations in caregiver research are described pretty extensively, it is not totally clear how the main aim of this study relates to these shortcomings. The background of the study could be described more structured and to the point. I would recommend to focus the introduction more on the gap that this study is trying to fill in particular and to describe more in detail what previous studies have found with regard to the prevalence (and development) of depression and anxiety in dementia caregivers whether or not in comparison with other or non-caregivers. Several key studies are left out and most of the references are from more than 10 years ago. I would like to call attention to the following previous studies on this topic: (Ballard et al., 1996; Joling et al., 2010; Joling et al., 2012; Mahoney et al., 2005; Neundorfer et al., 2006; Whitlatch et al., 1996).

2. Methods: Treatment of missing values: the approach used to handle missing values seems a bit ‘messy’: several strategies are used, e.g. for educational level and functional impairment were replaced by the lowest possible value, while in other cases EM imputation or LOCF is used if I understand it correctly. I would
suggest to handle all missing values in the same way and use more precise imputation methods to estimate these values, e.g. multiple imputation or EM imputation.

3. Discussion: The comparison with previous findings can be discussed more in detail. How do the ‘rather low estimates’ relate to the rates found in earlier studies using control groups (e.g. Joling et al 2010, Ory et al. 1999) and how can differences be explained? It would be interesting if the authors could discuss whether significant differences that were found are clinically relevant or not.

Minor points
1. It seems not appropriate to speak about the ‘effects’ of dementia on the outcomes. Because it involves a cross-sectional analysis, authors can only speak about the association between being a spouse of a person with dementia and presence of mental health symptoms.
2. I assume that Q1 and Q2 were administered at the same time, but this is not specified.
3. A flow chart that visualizes the composition of the study sample described at page 6 and 7 might be helpful.
4. At the end of the conclusions paragraph, some sentences are written in Norse?

References

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