Reviewer's report

Title: Anxiety and depression lowers blood pressure: 22-year follow-up of the population based HUNT study, Norway

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Reviewer: Hermann Nabi

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"Anxiety and depression lowers blood pressure: 22-year follow-up of the population based HUNT study, Norway"

The purpose of this manuscript by Hildrum et al. is to examine the associations of repeated assessment of anxiety/depression and blood pressure.

To do this, they used data on 17, 410 men and women aged 20 to 67 participating in the Nord-Trøndelag Health Study (HUNT) in Norway set-up in 1984-86 who were re-examined 11 and 22 years later. They found that symptoms of anxiety and depression are associated with decrease in blood pressure. The topic is of great interest and this kind of research with repeated measurements is needed to understand the mechanisms underlying the association between psychological factors and cardiovascular diseases.

After saying this, I believe that there are several important issues regarding the way the study has been conducted.

Minor Essential Revisions

1. Although, the present study could be considered as a large scale study, the sample included represents 1/3 of the initial population of the HUNT study (N >60, 000). There is no description of the differences between those included and not included in this study, making it very hard for reader to appreciate any potential bias in the study.

2. The second major issue is related to the time lag between the three assessments of anxiety, depression and blood pressure. We all know that blood pressure for instance is prone to substantial fluctuations even in relatively short time. Thus, a time lag of 11 years between measurements did not really allow the investigation of the dynamic of the association between depression, anxiety and blood pressure levels.

Major Compulsory Revisions

3. Thirdly, the authors found that the co-morbid anxiety and depression lowers blood pressure 22 years later. Results may be statistically significant but be clinically unimportant. In fact, I don’t understand the reason why the authors performed the analyses using blood pressure measure as continuous variables. There are commonly accepted clinical cut-offs for both anxiety/depression and
blood pressure and I wondering why the authors did not use them. It will be interesting for readers to know if the associations remained essentially the same when the cut-offs values are considered.

Discretionary Revisions

4. Fourthly, different methods of measuring blood pressure, anxiety and depression have been used across study phases. This constitutes another major limitation of the present study.

5. Finally, I would like to inform the authors that a large scale study using repeated measures of both depressive symptoms and blood pressure assessed at 5 points in time over 24 years has just been published in online first of the HYPERTENSION, 21 February.

**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.