

Comments from Reviewer 2

General comment from Reviewer 2

Thank you for giving me the possibility to review this article. It is very interesting the objective of this work which is to explore the cross-sectional and longitudinal associations between major depression and low back pain in a national sample of adults in the US using data from the Midlife in the United States Survey (MIDUS) with a population-based prospective design.

Response to the general comments from Reviewer 2

We appreciate your general positive feedback on the paper.

Comment 1 from Reviewer 2

It is not so much the changes but the doubts I have about their results and how they are explained.

Figure 1 is illegible, it should be possible to read it correctly.

Response to Comment 1 from Reviewer 2

We spent a lot of time in constructing this figure to help readers to understand how we obtained the samples for different models, especially the models on prospective bidirectional associations. To improve the understanding of study population, we revised the text of section on study population according to the figure 1:

The MIDUS collects data through telephone interviews and a self-administered questionnaire (SAQ). In total, 4,963 participants who were 30 years of age and above in the MIDUS II, were included in the baseline (T-1) for the study, as indicated in Figure 1. However, there were 922 participants who were not part of the SAQ and did not provide data for back pain. An additional 41 participants had no answer to the question on back pain and there were 557 participants with missing data for covariates. Thus, those without data on back pain or covariates were excluded, leaving 3,443 participants for T-1, which we used as the sample for the cross-sectional analysis. After 9 years, 882 participants who were lost to follow up, 203 participants who did not have data on back pain (161 participants were not part of the SAQ, and 42 participants had missing data for back pain) at MIDUS III (T-2) were excluded. The final sample size used for the current analysis was 2,358 (Figure 1). For the longitudinal analysis on the association between major depression at T-1 and back pain at T-2, we included 2,109 participants who were free of major depression at T-1 (249 participants with major depression were excluded). For the longitudinal analysis on the association between back pain at T-1 and major depression at T-2, we included 1,790 participants who were free of back pain at T-1 (568 participants with back pain at T-1 were excluded).

Comment 2 from Reviewer 2

In point 2.2.1 Low back pain

Low back pain was evaluated by means of a separate question focused on the frequency of back pain. Low back pain was defined as the respondent's response of experiencing back pain "almost every day" or "several times a week" in the last 30 days.

The question they ask if you have back pain is very general, they should ask if you have back pain referred to the lower back. If not, they are not talking about low back pain, but about back pain without specifying a specific location.

Although they consider it as a limitation, I would like to point out the very long period from one questionnaire to another. The results should be taken with certain uncertainties regarding the associations, since in the variable back pain, the question only considers having back pain in the last 30 days.

To consider that there is a bidirectional association is very courageous on their part.

It is interesting in terms of their approach to the control of the subject, whether they have depression or back pain, although it would not be superfluous to include in the manuscript (since the objective of the MIDUS questionnaires was to investigate behavioral, psychological and social factors of health and well-being in a national sample in the United States), that variables be studied with questions that reflect their physical and cognitive situation during the last year.

Response to Comment 2 from Reviewer 2

The variable of back pain was derived from an independent survey question in MIDUS 2, "During the past 30 days, how often have you experienced each of the following?" Back pain is one questions on the 10 health conditions with response options in terms of frequency. There is no screening question on back pain, and thus this question is not a follow-up question. However, we recognize one of the limitations in this assessment of back pain used in this study is the time frame is the past 30 days, not last year which could be more ideal.

Comment 3 from Reviewer 2

You should review the bibliography if you follow the Vancouver format.

For example number 3, modify:

Bair, M. J.; Robinson, R. L.; Katon, W.; Kroenke, K. Depression and pain comorbidity: a literature review. Arch Intern Med 2003, 163, (20), 2433-45.

Response to Comment 3 from Reviewer 2

We followed the IJERPH reference style for this paper. We did not use Vancouver style for formatting the reference.