Reviewer’s report

Title: Adherence to the Australian Dietary Guidelines and development of depressive symptoms at 5 years follow-up amongst women in the READI cohort study

Version: 0 Date: 01 Dec 2019

Reviewer: Alexandr Parlesak

Reviewer's report:

This is an interesting retrospective cohort study (nested case-control) study focussing on the association between an index representing diet quality (DGI-2013) and the development of depression over a period of five years. The topic is relevant for the scientific community and the study follows general rules on conducting this type of studies. The authors found that a higher healthy eating indexed was associated with a lower risk to develop depression symptoms in Australian women with a low socioeconomic status. The Discussion and the included conclusions are justified.

Before this manuscript can be recommended for publication, a few points need to be changed or addressed.

Major:

From my point of view, the statistical analysis is flawed. The Mann-Whitney-U test is inappropriately used as a post-hoc test after a Kruskal-Wallis-test (e.g. l. 303) - an appropriate test would be the test of Nemenyi - see e.g. https://cran.r-project.org/web/packages/PMCMR/vignettes/PMCMR.pdf. Hence, all post-hoc comparisons with this (or another acknowledged non-parametric post-hoc test), if the three-group comparisons are kept in the manuscript. The authors should consider NOT to evaluate the data for the same hypothesis twice by using different statistical methods. Grouping is always associated with a major loss of information and I don't see a good reason why the Kruskal-Wallis-Test is applied to the three groups at all (l. 308-312) when you already found significant betas in the general linear model that you used for the evaluation. This looks as if the authors were using different statistical methods just to make sure that they find under all circumstances a significant p value. This approach stands in contrast to good statistical practice as you have to decide BEFORE the evaluation which test to apply and to apply only one test to accept/reject the null hypothesis. Deviation from this practice typically weakens the scientific credibility of a study.

Minor:

The sentences in l. 49 "Depression is ranked …" and l. 53 "Depression poses a …" state more or less the same fact and the second sentence seems therefore redundant.
1. 55 Replace e.g. with "for example" or "such as" and remove the parantheses

1. 63+107+457 (and other places in the text): The authors should carefully consider the usage of the term "lifestyle". It poses a major part of the responsibility (and evtl. guilt) on the shoulders of the affected individuals and moves the focus from the systemic responsibility for the resulting burden of disease - see for example https://ukpublichealthnetwork.org.uk/lifestyle-a-plea-to-abandon-the-use-of-this-word-in-public-health/

1. 71 "symptomatology" - doesn't this mean rather the science of how to interpret symptoms?

1. 72 Change "the diet and depression link" to " the link between diet and depression".

1. 77-81: I don't think that a "diet" can "treat or manage" depression - I suggest to replace this with "may interfere with"

1. 85: I suggest to cite here the official WHO definition of health (which includes wellness).

1. 93: Replace "hypothesise" with "hypothesis".

1. 102-105: "Data was …" The paper describing the original study should be cited at the end of this sentence.

1. 111 "The study …" please indicate the file number of the ethical approval.

1. 116: "of those who responded…"

1. 119: I think that "withdrew does not fit into the logical structure of the sentence - "having withdrawn" (as a possible reason)?

1. 127-129: "Importantly, …" This sentence needs a reference.

1. 146-148 and 149-151. The second sentence ("… and has high levels of reliability…") repeats basically the sentence "This scale is …" and seems therefore redundant.

1. 181: There is only one Australian population so it should say either "the Australian population" or "an Australian sub-population.

1. 242-267: I disagree on how the statistical analysis was done.

1. 272: What is the subject to "were older"? - "the eligible sub-sample" is singular. Reformulate this.

1. 280: "Women with depressive symptoms at 5 years follow-up were more likely to have higher levels of depressive symptoms … than women without depressive symptoms at follow-up." Well, that's surprising  - I suggest to remove this part of the sentence.
1. 316-317: The authors should explain in the Discussion how the extremely low reduction in the RR of 0.013 can result in 12% lower risk per 10 unit decrease in the DGI-2013 score.

1. 325: unclear what the value -0.44 means.

The Discussion reads well.

**Level of interest**

Please indicate how interesting you found the manuscript:

An article of importance in its field

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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