Reviewer’s report

Title: Association of major dietary patterns and different metabolic phenotypes: A population-based study of northwestern Iran

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Reviewer: Zhongshang Yuan

Reviewer's report:

Thank you for the opportunity to review this manuscript. The authors use the cross-sectional data of a project to explore the association between dietary patterns and cardiometabolic phenotypes and find a dietary pattern related to some metabolic phenotypes, which the authors intend to apply to prevention programs. The findings may have guiding significance for improving metabolic status indeed, however, there are several problems in this article. I have attached my more detailed comments below in case the authors find them useful in refining their manuscript.

Page 2 - The background is similar to conclusion, and the conclusion is kind of overbroad. The study finds that animal dietary pattern relates to MHO (metabolically healthy obese) and MUHO (metabolically unhealthy obese) phenotype, so I recommend that the authors should rewrite conclusion more specifically from this prospective.

Page 4 - The author put together the evaluation of biochemical parameters and some anthropometric measurements, so I suggest that this part should be measurements, which is more appropriate. As for anthropometric measurements, I don't know exactly how they were collected, but it should be measured at least twice and calculate the mean value to control the measuring error. Besides, the authors did not clarify some definitions, such as fasting blood sample and metabolic syndrome. I recommend that some necessary definitions should be included in this article so that readers could understand it better. And I suggest that the definition of metabolic syndrome (Mets) and how to categorize cardiometabolic phenotypes should be put together in a new part to make the structure of this article clearly.

Page 5 - The definition of BMI is repeated, I advise that this should be removed. In addition, table 1 is baseline characteristics of participants rather than defined food group.
The authors simply said details were presented elsewhere, which makes the article incomplete and difficult to understand. I recommend that the authors should enrich the contents of this article so that readers could understand it better.

The description of table 1 is inconsistent with the data in table 1, and table 1 itself may have several mistakes. I suppose that the authors had mistaken the denominator when calculating proportions. And in line 131, table 3 should be altered to table 1. And the statement here is incorrect, either.

Why did the authors categorize the participants according to tertiles of dietary pattern scores? And what is the stratification criterion? What if the sample size of each level was not enough after this stratification? I wonder how the authors deal with these problems and I wonder if the results in Table 3 are reliable. Furthermore, The authors seems to categorize the participants within one specific dietary pattern scores and failed to detect the association between different dietary patterns and the outcome.

Table 1 - The authors said final analysis was done on 504 participants, so I suppose that the numbers and proportions in this table are incorrect, the details marked in table 1. Or the authors did not illustrate the exclusion criteria clearly. In addition, I think table 1 is lack of some baseline characteristics mentioned before in this article. I recommend that the indices of defining Mets should be included in table 1, including BMI, hypertensions, hyperglycemia and dyslipidemia.

Table 2 - This table has the same problem with table 1, which is marked in table 2. And I suggest that the units of some variables should be included in the table and the digits of numbers should be the same. And there are several small frequencies in the table, I wonder if the authors had considered about the application condition when doing chi-square test.

Tables in an article should be clear at a glance. However, in Table 1 and 2, the significant and insignificant p-values are all marked by * or ** according to the testing method, which will give readers an illusion that they are all significant. I recommend that the authors should mark the significant p-values only to make the results more clearly and readable. Besides, I suggest the authors to check the tables carefully and give a reasonable explanation.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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I am able to assess the statistics

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