Peer Review Report

Review Report on Association of the CUN-BAE body adiposity estimator with type 2 diabetes in middle-aged and older adults: a retrospective cohort study
Original Article, Int J Public Health

EVALUATION

Q 1   Please summarize the main findings of the study.

This study explored the association between CUN-BAE and the risk of T2DM in a Chinese middle-aged and elderly population and compared the strength of the association between CUN-BAE and BMI, WC, and WHtR with T2DM. This study showed that increased CUN-BAE was associated with an increased risk of T2DM and that CUN-BAE was more strongly associated with the risk of T2DM than BMI, WC, or WHtR.

Q 2   Please highlight the limitations and strengths.

This study has several strengths and limitations.

Strengthsلبر

1) The large sample size, the standardized measures used, and the use of an annual health examination dataset in this study avoided recall bias to some extent.

2) This is the first large population-based cohort study to examine the relationship between CUN-BA and the risk of T2DM in Chinese population.

3) The differences in the association between obesity indicators and T2DM risk were compared in different subgroups by age and sex subgroup analysis.

Limitations

1) This study focused on the middle-aged and elderly population, and it was therefore not possible to compare the relationship between obesity indicators and T2DM risk in other age groups, which limited the generalizability of this study. Participants was excluded because of age <45 years. In fact, early-onset T2DM meant lager duration of diabetes and higher risk of non-fatal cardiovascular disease in future.

2) Diabetes in this study was defined as: (1) self-reported doctor-diagnosed diabetes, (2) fasting plasma glucose $\geq$ 7.0 mmol/ L, or (3) current treatment with antidiabetic medication. This definition will lead to a underdiagnosis of diabetes.

Q 3   Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

1) Why continuous variables were expressed as the medians (first quartile, third quartile) instead of mean ± standard deviation. It is not clear which normality test was conducted to find out normal or skewed distribution of the study variables. Please confirm that the Kruskal - Wallis test for continuous variables were suitable to compare the differences between two groups defined by T2DM. Please also confirm that the Pearson correlations was suitable to analyze the correlations between CUN-BAE, BMI, WC, and WHtR.

2) Figure 2: HRs are adjusted for age and sex. The calculation of CUN-BAE involved in age and sex. Whether this lead to higher HRs for CUN-BAE? Other cox regression regression analysis also be needed to think about.

3) Authors concluded that CUN-BAE was more strongly associated with the risk of T2DM than BMI, WC, or WHtR. This conclusion was mainly based on HR (95%CI) comparison in Figure 2. Authors could consider comparing directly these models by C-index.

4) Follow-up time should be presented.

5) Table 2 and Table 3 were confused. I suggested that Table 2 presented the results of general people, and Table 3 presented the results of different age groups.

PLEASE COMMENT

Q 4   **Is the title appropriate, concise, attractive?**

Yes.

Q 5   **Are the keywords appropriate?**

Waist-to-height ratio should be added.

Q 6   **Is the English language of sufficient quality?**

Yes.

Q 7   **Is the quality of the figures and tables satisfactory?**

Yes.

Q 8   **Does the reference list cover the relevant literature adequately and in an unbiased manner?)**

Yes.

QUALITY ASSESSMENT

Q	Item	Rating (out of 5)
Q 9	Originality	3
Q 10	Rigor	2
Q 11	Significance to the field	3
Q 12	Interest to a general audience	3
Q 13	Quality of the writing	3
Q 14	Overall scientific quality of the study	3

REVISION LEVEL

Q 15   **Please make a recommendation based on your comments:**

Major revisions.