

## Peer Review Report

# Review Report on Long-term visit-to-visit blood pressure variability and risk of diabetes mellitus in Chinese population: a retrospective population-based study

Original Article, Int J Public Health

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### EVALUATION

#### **Q 1** Please summarize the main findings of the study.

The authors present a retrospective secondary data-analysis chinese population-based study to evaluate the relation between long-time BP variation from visit-to-visit BP and the incidence of diabetes. They find a significant association between visit-to-visit SBP ARV and DBP ARV and the risk of diabetes, independently of age, ethnicity, region of residence, education level, smoking status, alcohol consumption, physical activity level, BMI, and history of hypertension and the mean BP. Sex had significant impact on the relation between ARV and diabetes risk, with women presenting higher adjusted HR of DM (P of 0.05 and 0.01 for SBPV and DBPV interaction, respectively).

#### **Q 2** Please highlight the limitations and strengths.

The authors present a cohort to evaluate the relation between long-time BP variation from visit-to-visit BP and the incidence of diabetes.

Pros: a large sample size, a clear methodology.

Cons: it is a secondary analysis of data, which can introduce some data missing or reporting issues. The outcome definition might present report bias since for the first 20 years it was only based on patient reports to a questionnaire. Anyway, authors explored the diabetes definition in sensitive analysis. As the authors mention on limitations: "(...)data for several potential confounders (e.g., dietary habits and family history of diabetes) were not available (...)".

#### **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.

Overall:

Major comment: I would strongly recommend the application of STROBE guidelines and checklist submission as supplementary content. (P.S. I have no conflicts of interest regarding this suggestion).

Page 6:

Methods section:

- Please clearly report this study as a retrospective secondary data analysis population-based cohort. Also, mention the exact period of time considered for analysis (i.e. 1st january 1989 to 31st december 2015).
- Please report also a dispersion measurement for the interval of BP measurements (like range or SD). It would also be interesting, as a supplementary analysis, to evaluate if patients that developed diabetes or hypertension had a tendency for a decreasing visit-to-visit evaluation interval and total number of visits.

Page 7.

!! Major comment: There must be a reporting bias regarding the outcome, as the definition is mainly based on patient report and includes vast and diverse possibilities of treatments that can also be recommended just for weight control or if there's a family tendency for diabetes, for example.

Page 8.

There might be a report bias regarding alcohol drinking status.

!! Major comment: Does normality distribution apply to every continuous variable?

Page 9.

!! Major comment: Why were the presented co-variables selected for multivariate analysis? Just because of clinical relevance or because of relevance/significance in univariate analysis? I understand that there might not be enough power to merge all relevant co-variables in the same model, but wouldn't it be possible to present a model that merged the three covariate subtypes (demographic, habits/clinical, measurements)? Like a stepwise selection model?

Page 10.

!! Major comment: Please present p-values for comparison between groups in table 1 (and report the statistical tests applied in the Methods section).

Page 12.

I would shortly mention the relation of ARV and clinical outcomes – how important is it to predict diabetes risk before its incidence? How would it be possible to reduce the risk of diabetes, how to reduce ARV and how it would reduce clinical risk? I would also mention the clinical applicability/feasibility of doing an ARV of visit-to-visit BP in real life (how would general practitioners calculate this and apply this information in clinical practice ?).

#### PLEASE COMMENT

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

Yes, the title clearly states the study design and the main objective. Still, it should mention Chinese population – i.e. Long-term visit-to-visit blood pressure variability and risk of diabetes mellitus in Chinese population: a prospective population-based study

##### **Q 5** Are the keywords appropriate?

Yes.

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

English is adequate. The language is clear and easily understandable.

##### **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?)

As expected, there is a higher relative frequency of Chinese authors in the references. They cite 3 articles from the team of authors Zhang B. and Muntner P, but I think it is justifiable. The first belongs to the group that developed the China Health and Nutrition Survey and the last is a renowned American epidemiologist. They also include relevant literature such as reference 7, 12 and 13.

However, I would also mention:

Chiriaco M, Pateras K, Viridis A, et al. Association between blood pressure variability, cardiovascular disease and mortality in type 2 diabetes: A systematic review and meta-analysis. *Diabetes, Obes Metab.* 2019;(June):1-12.

(P.S. I have no conflicts of interest regarding this suggestion).

#### QUALITY ASSESSMENT

<b>Q 9</b>	Originality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q 10</b>	Rigor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Q 11</b>	Significance to the field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Q 12</b>	Interest to a general audience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q 13</b>	Quality of the writing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Q 14</b>	Overall scientific quality of the study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### REVISION LEVEL

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

Major revisions.