Reviewer's report

Title: Prehypertension and long-term risk of type 2 diabetes: 35-year prospective population based cohort study of men

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Reviewer: Margareta Norberg

Reviewer's report:

This paper evaluates association between blood pressure and the risk of developing diabetes among men during a follow-up period of 35 years. It is a population based prospective study.

• Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

1. Methods: Throughout the paper the definitions of blood-pressure categories are not clearly defined. Authors use several concepts but it is unclear what they mean by “normal”, “prehypertension”, “mildly raised blood pressure”, “upper normal”, “high normal”.

In the Methods section, paragraph Classification of blood pressure, the rationale of the selected definition should be given and authors are strongly recommended to use either the WHO-ISH definition (Journal of Hypertension 1999; 15: 51) or the JNC 7 definition (JAMA; 289: 2560), and to use that definition consistently. For example, according to WHO-ISH “normal” is defined as SBT <130 and DBT < 85 and “high-normal” as 130-139 and 85-89. According to JNC 7 is “normal” SBT <120 and DBT <80 and 120-139 and 80-89 is “prehypertension”.

It seems that in this manuscript are SBT<130 and DBT < 80 considered “normal” which seems to be a mixture of WHO-ISH and JNC7 definitions.

2. Discussion: There was a 10% increased risk of diabetes per 10 mmHg increase of SBP and results presented in the figure suggest a graded increase of the risk, which is stated in the first part of the discussion. But there was no difference in the HR for diabetes between the SBP 130-139 and the SBP 140-149 groups. This suggests a more step-wise increase of the risk of diabetes. What could be the reason to this? In the Figure 1 there are three categories, and the 130-139 and the 140-149 categories are collapsed. Why – are the curves for these two groups similar?? Again, the same categories should be used throughout the paper.

• Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

3. Discussion paragraph first sentence: Here authors present results (64.5% hypertensive) and a definition (systolic hypertension), this should be moved to
the results and the methods sections, respectively.

4. According to Figure 1 the risk of developing diabetes was practically zero during the first 10 years of observation. This is hardly true for men aged 50+ and should be discussed. A reasonable explanation is that diabetes type 2 is usually taken care of in primary health care and therefore not registered in the registers that were used in this study.

5. Conclusion: This is a population based study according to the methods section. If there is any value of defining 17% of the population as “normal”, and 18% as “pre-hypertensive” and the rest “hypertensive” could be discussed, see for example Epidemiologic reviews 2011; 33: 122. It could be questioned to recommend an individual clinically based approach to reduce the impact of prehypertension and hypertension.

• Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

6. Abstract: The metabolic syndrome is questioned during recent years and the rationale of mentioning it in the background is unclear.

7. Methods: How were the two non-intervention groups defined?

8. Page 8 “100 000 observations years” if that is “100 000 person years” this term should be used.

9. Discussion: First line should be “were followed for 35 years or until death”

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests