Reviewer's report

Title: The Prevalence and Correlates of High Aortic Stiffness in North China: a Community-based Study

Version: 3 Date: 1 October 2012

Reviewer: Eric Loucks

Reviewer's report:

This manuscript has improved. Remaining comments are shown below.

1. There remain substantial issues with proper use of grammar, including verb tenses. I would recommend the authors having the manuscript be improved by an expert in written English. The basic ideas behind the communication are very good.

2. With regard to my previous comment below, I understand the authors were hesitant to include the reasons due to concerns about a word limit and that many readers will understand the reasons for exclusion. With there not being a firm word limit in BMC Cardiovascular Disorders, and that readers who are not experts in this field will likely not understand the reasons behind these exclusion criteria, please provide brief rationale for excluding these participants, using appropriate references.

Prior Comment:
Please state the reasons for excluding participants with the following factors:
a) Previous percutaneous coronary intervention and/or coronary artery bypass grafting;
b) aortic valvular heart disease;
c) aortic aneurysm;
d) serious myocardial dysfunction with an ejection fraction of <30%;
e) peripheral arteriosclerosis obliterans with an ankle-brachial index (ABI) of <0.9.

3. Adjustment for age: I understand the authors were hesitant to adjust for age, as the cutpoints for high baPWV were calculated based on 10-year age-specific cutpoints. In determining whether age may be a confounder in the associations between CVD risk factors and high baPWV, a confounder is associated with both the exposure (e.g. blood pressure) and the outcome (i.e. baPWV). In the case of age, this is clearly still the case even after the age-specific cutpoints are used, as shown in Tables 4 and 5, where for example in females those with baPWV>cut-off have a mean age of 58.1 years and those with baPWV<cut-off have a mean age of 52.8 years (p<0.001). This shows that there continues to be confounding by age within the 10-year categories. As an example, for
participants in the age 50-59 y category, those aged 50 years likely have lower BaPWV (and other CVD risk factors) than those aged 59, even though they are in the same age category for analyses. Please adjust for age in Table 6. In interpreting the point estimates shown in Tables 4 and 5, I expect many of the associations there are also confounded by age. I don’t feel as strongly about adjusting for age in these tables as it is clearly stated age is not adjusted for there. However as a reader, I am unclear whether the differences in associations of CHD risk factors such as cholesterol with baPWV are due to confounding by age, or due to cholesterol having an effect on baPWV. The multivariate models in Table 6 (after age is included) should clarify this, so I would consider it optional about whether to adjust for age in Tables 4 and 5.

4. Discussion section, pg. 8: Please use the terms such as “study population” instead of “cohort” for this study. The term “cohort” refers to longitudinal study population. This study is cross-sectional, so does not seem to have a longitudinal component at this time.

5. Pg. 9, para. 2 (starting with “The present data indicated…”): The statement “This suggests that decrease of estrogen in menopause should take effects on the arterial stiffness” appears somewhat speculative, given that rates were lower in females than males after the age of 59 years. Please provide strong rationale and references to support this statement, or modify it as needed.

6. Pg. 9, para. 3 (starting with “On the basis of the age-specific…”): This paragraph was very difficult to understand. Please rephrase so that the intended meaning is very clear.

7. Pg. 10, para. 4: The statement “The low response rate would lead to biased associations only when participation was associated with both arterial stiffness and the risk factors in question, which is considered to be less common.” seems fairly speculative. For example, people with low socioeconomic position often have different CHD risk factor levels than those with higher socioeconomic position (in most Western countries, people with low socioeconomic position tend to have elevated CHD risk factors but this may not be the case in Northern China), and are less likely to participate in research studies. Please provide rigorous references for this statement, or modify as needed.

8. Table 2: Please correct the typo in the title from “health reference sample” to “healthy reference sample”

9. Table 4: The title for the third column should likely state “High baPWV” instead of “Low baPWV”. Please correct it, and also made the column headings for Tables 4 and 5 consistent with each other.

10. Table 6: In a footnote, please state that stepwise regression was performed and that the symbol “-” represents covariates that did not significantly contribute to the model. Readers often jump to the tables without reading the methods section, so it is helpful for the tables to be understandable without referring to the methods section.