Author’s response to reviews

Title: Prevalence of kidney damage in Chinese elderly: a large-scale population-based study

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Author’s response to reviews:

Dear Editors:

We would like to submit the revised manuscript entitled “Prevalence of kidney damage in Chinese elderly: a large-scale population-based study”(BNEP-D-19-00368), which we wish to be considered for publication in “BMC Nephrology”.

Thanks very much for the comments from the reviewers. Our point-by-point responses to the comments are below.

Reviewer 1:

Major comments:

1. The problem of such studies based on voluntary consent, is that it may select less healthy people. Selection bias should be discussed. Are some information available in the general population concerning BMI, diabetes or hypertension that could be compared to rule out or not this hypothesis.

Thank you very much for your advice. In 2010, The 3rd Chronic Non-communicable Disease & Risk Factor Surveillance in China was conducted in 31 provinces and Xinjiang Production & Construction Corps, which showed the prevalence of hypertension and diabetes in Chinese adults aged >= 60 years were 66.9% and 19.6%. In our participants, they were 60.5% and 12.5%. So the selection bias can be rule out.

2. The definition of CKD should be based on a second evaluation at 3 month. The possible bias toward an higher estimation because of having only one evaluation should also be discussed.

Thank you very much for your advice. Yes, the definition of CKD should be based on a second evaluation at 3 month. There is currently no large sample of research showing how much this bias is in the elderly. Data from 485 participants aged >60 years in the Oxford Renal Cohort Study showed that use of a single screening test overestimated the proportion of people with CKD by around 25% no matter which equation was used, compared with the use of two tests. So we defined patients with eGFR less than 60 mL/min per 1.73 m² or the presence of proteinuria as Kidney damage, not CKD in the revised paper.


3. The sentence in the results concerning the logistic regression should be moved in the Methods. Why is age not included in the model? The process of selection of the variables should be described, as well as some performance criteria of the model like the c-test.

Thank you very much for your advice. We have corrected it. Age, sex, blood urea nitrogen, serum creatinine, blood cholesterol, serum triglyceride, fast blood glucose, BMI, abdominal circumference, history of hypertension, diabetes, hyperlipidaemia, obesity, stroke and coronary heart disease were analyzed by the multivariate logistic regression and age, female, BMI, abdominal circumference, history of hypertension, diabetes, stroke and coronary heart disease were all independently associated with eGFR decline and kidney damage (Table 7).

4. The standardization on age should be described in the methods. Why were the results not adjusted on sex?

The age-standardized prevalence of kidney damage, decreased renal function and proteinuria were calculated using the direct standardization method. The standardized population is based on

In order to compare the incidence of kidney damage in different age groups in different regions of China in the future, we adjusted the results on age not on sex.

5. We would suggest to present the results in the same manner from one table to another. For example between table 3 and 4. It would simplify the lecture.

Thank you very much for your advice. We have corrected it.

6. In the discussion, the seem to take for granted that screening and treatment will prevent effectively the progression and the quality of life. Some references should be added to support this.

Whether these patients' renal function is persistently stable or rapid progress requires further observation. Focusing attention on elderly people with CKD stage 3 may prove to be a more cost-effective approach to preventing ESRD in elderly, although further work is required to confirm this hypothesis [34].


7. Some other alternative hypothesis in addition to a lower access to health care concerning the higher prevalence in rural area could be discussed like chemical pesticides use for example.

Yes. Some study has reported that phosphate fertilizer is a main source of arsenic in areas affected with chronic kidney disease of unknown etiology in Sri Lanka [35].

8. The conclusion should appear after the strengths and limitation paragraph.

Thank you very much for your advice. We have corrected it.

9. In the abstract it seems strange to see that the prevalence is 17.2 while it is 17.1 and 15.1 according to the area. We would suggest to present also the age-standardized prevalence in suburbs and urban area and not the crude one.

Thank you very much for your advice. The age-standardized prevalence in suburbs and urban area were 18.3% and 16.0%, than the total age-standardized prevalence was 17.2.

10. Figure 4 is not clear.

Thank you very much for your advice. We describe it directly in the text.

(Reviewer 2): This study looks at the prevalence and risk factors of CKD in the elderly in Wuhan, China.

1. It will not be appropriate to label people has having CKD based on just one time screening test that includes estimated GFR and dipstick proteinuria.

Thank you very much for your advice. Yes, the definition of CKD should be based on a second evaluation at 3 month. There is currently no large sample of research showing how much this bias is in the elderly. Data from 485 participants aged >60 years in the Oxford Renal Cohort Study showed that use of a single screening test overestimated the proportion of people with CKD by around 25% no matter which equation was used, compared with the use of two tests. So we defined patients with eGFR less than 60 mL/min per 1·73 m² or the presence of proteinuria as Kidney damage, not CKD in the revised paper.


2. Though the authors comment that adequate treatment of CKD 3 in this population will prevent ESRD, this needs to be substantiated by facts.
Whether these patients’ renal function is persistently stable or rapid progress requires further observation. Focusing attention on elderly people with CKD stage 3 may prove to be a more cost-effective approach to preventing ESRD in elderly, although further work is required to confirm this hypothesis [34].


3. The model building for risk variables using logistic regression needs to be explained in detail.

Thank you very much for your advice. We have corrected it. Age, sex, blood urea nitrogen, serum creatinine, blood cholesterol, serum triglyceride, fast blood glucose, BMI, abdominal circumference, history of hypertension, diabetes, hyperlipidaemia, obesity, stroke and coronary heart disease were analyzed by the multivariate logistic regression and age, female, BMI, abdominal circumference, history of hypertension, diabetes, stroke and coronary heart disease were all independently associated with eGFR decline and kidney damage (Table 7).

4. What is the relationship of dipstick proteinuria to ACR in this population?

The research showed that both sensitivity and specificity of dipstick proteinuria were >80% in older patients. Dongmin Lim et al suggested that urine dipstick test can be used for screening in older outpatients with ACR ≥300 mg/g. However, they cannot recommend the test as a screening tool with ACR ≥30 mg/g as the reference owing to its low sensitivity.


5. Authors have said that they will rule out UTI before labelling CKD. How was this done?

Proteinuria was defined as urine protein ≥1+ and without urine WBC or nitrite positive.
6. How do eGFRs fare in this population?

The eGFR decline is associated with the age, the eGFR decline in elderly whether correlated with the diseases progress is needed to further research.

7. What was the proportion of the elderly in this region that was left out of this screening programme? Are there any details pertaining to them?

Wuhan consists of 17 districts and has 854,833 elderly. The studies based on voluntary consent. A total of 372,990 elders participated in the examination.

We hope this paper is suitable for “BMC Nephrology”.

We deeply appreciate your consideration of our manuscript, and we look forward to receiving your decision. If you have any queries, please don’t hesitate to contact me at the address below.

Thank you and best regards.

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