Reviewer's report

**Title:** Serum Gamma-Glutamyltransferase and Uric Acid Levels are associated with Prediabetes in Adults from Inner Mongolia, China

**Version:** 1  **Date:** 10 December 2012

**Reviewer:** Yong-Jae Lee

Reviewers report:

12. BMC Public Health_GGT/UA and IFG_2012_12_10

Response to the Author

The study by Wu and colleagues aimed at investigating whether gamma-glutamyltransferase (GGT) and uric acid (UA) were associated with impaired fasting glucose in Inner Mongolian Chinese adults. The authors found that high resting heart rate was associated with arterial stiffness independently of other variables. The large number of subjects is a major strength of this study, but this manuscript could be improved by addressing the following points:

I. Major comments

1. Originality

This study has shown that there is a graded-positive association of GGT and with IFG in both men and women. The authors also found a significant relationship between uric acid and IFG only in women. However, many previous studies, even in Chinese population, demonstrated these associations between two variables. Sun et al. suggested that GGT is a predictive marker for not only IFG but IGT in apparently health Chinese adults (The association of gamma-glutamyltransferase and C-reactive protein with IFG/IGT in Chinese adults in Qingdao, China. Clin Chim Acta. 2011 Aug 17;412:1658-61). Kawamoto et al. also demonstrated that high MPV is an independent risk factor for coronary atherosclerosis and myocardial infarction (Serum gamma-glutamyl transferase within its normal concentration range is related to the presence of impaired fasting glucose and diabetes among Japanese community-dwelling persons. Endocr Res. 2011;36(2):64-73). Moreover, Krishnan et al. have shown that hyperuricemia in the mid-twenties is an independent marker for predicting diabetes and prediabetes among young adults in the subsequent 15 years (Hyperuricemia in young adults and risk of insulin resistance, prediabetes, and diabetes: a 15-year follow-up study. Am J Epidemiol. 2012 Jul 15;176(2):108-16.). Thus, I recommended including more subjects with DM and without CAD in your study and reanalysis. In this regard, the authors should describe the originality of the current manuscript in more details.

2. Title

The title of this manuscript is misleading. This is NOT “Serum gamma-glutamyltransferase and uric acid levels are associated with prediabetes
in adults from inner Mongolia, China”. The authors have adopted only IFG rather
than IGT in the current manuscript. Thus, the title should be changed as follows:
"Serum gamma-glutamyltransferase and uric acid levels are associated with
impaired fasting glucose in adults from Inner Mongolia.

3. Abstract

3.1. Results of the Abstract

The authors have documented a graded-positive association of GGT and with
IFG in both men and women, whereas a significant relationship between uric acid
and IFG only in women. However, the authors have presented as follows: “A
clear positive association between GGT/UA and prediabetes was present among
both men and women, independent of age, ethnicity, smoking, drinking, blood
pressure, labor activity and other confounders.”. Thus, the authors should correct
the errors in the Results of the Abstract.

3.2. Conclusion of the Abstract

“Gradually elevated serum GGT, UA levels within their normal ranges can
significantly …” should be changed, because ranges of Q4 in Table 3 show above normal range
of GGT and UA

4. Definition of prediabetes

The definition of prediabetes in this manuscript is somewhat confusing, because
you have adopted only the definition of IFG in your manuscript. Thus, PreDM or
prediabetes should be in the entire manuscript.

5. Study population

Did you include the study subjects within normal range of GGT and UA in your
work? However, Q4 in Table 3 shows above normal range of GGT and UA. How
do authors explain these discrepancies between the description of the Abstract
and Discussion and Table 3.

6. Statistical analysis

6.1. Weighted data are important.

Are the statistics in all Tables unweighted or weighted data?, For example table
1, I guess that they are unweighted data, in that case it might not be appropriate.
Although, the target population was selected though a stratified, multistage,
probability-sampling design based on geographic area, sex, and age group,
Weights indicating the probability of being sampled should be assigned to each
participant, to represent the entire Inner Mongolian adult population.

5.2. All P-values in Table 3 are P-value for trends ?

5.3. Please describe specific methods of statistical analyses in Table 2 and Table
3.

It should be indicated below the tables which statistical analyses you used, - not
only generally stated in the section on Statistical analyses.

7. Discussion

The authors have described as follows: “Furthermore, logistic regression analysis demonstrated that GGT and UA quartile subgroup levels were positively correlated with prediabetes and the correlations were still exist after adjustment for age, gender, ethnicity, smoking, drinking, BMI, WC, BP, TC, TG, HDL-C, LDL-C and other important confounders” However, they presented gender-specific results in Table 3.

II. Minor comments

1. Table 2

Is it the result of simple correlation analysis or multivariate linear regression analysis? You should carefully explain it.

2. References

2.1 Citation references 3, 10, 13, 14, 19 need to be re-checked in the form of the BMC Public health.

3. Abbreviations and acronyms

Please ensure that abbreviations and acronyms are given on first mention in text.

4. Please supply manufacturer’s name, city, state, country for all devices and software mentioned throughout.

Level of interest: An article of limited interest

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.