Reviewer's report

Title: Analysis of awareness of health knowledge among rural residents in western China

Version: 4 Date: 20 November 2014

Reviewer: Christopher A. Loffredo

Reviewer's report:

I have reviewed the revised manuscript. The authors have responded adequately to some of the points raised previously, but some of the major limitations remain and therefore diminish enthusiasm for the current draft to be published. These points are summarized below.

Major Compulsory Revisions: all of the following points are in this category.

Is the question posed by the authors well defined?
Yes, it is now well defined.

Are the methods appropriate and well described?
Measures assessing how well the study sample represents the source population are still missing. The authors need to cite other sources: for example, how does the proportion of female respondents in their survey population compare to the proportion of females reported in the census data for this same region.

Are the data sound?
In general, yes, but some problems remain.

The complex patterns of results indicated by results of ANOVA (Table 3) are still grossly oversimplified in the revised text: for example, the non-monotonic trend for distance from home to nearest medical center was completely ignored in the text. The reader needs to be guided to understand the direction of the relationships shown in this table. For example, the text merely states that age, education, and the other variables were statistically significant, but the reader would be better informed by sentences that describe the direction of the relationship, i.e. knowledge levels declined steadily with increasing age, but increased with higher educational attainment.

A second problem relates to Table 4. The non-monotonic trend in distance shown in Table 3 suggests that its relationship to knowledge level is non-linear, but the analysis in Table 4 has forced this variable to be linear. Therefore the beta, standard error, and p-value for distance in Table 4 are misleading since they are based on the assumption of linearity. The analysis needs to be revised to account for the non-linear trend with distance. Another problem in Table 4 is about the income variable: its beta value is so tiny (0.000006) that, despite its small p-value, it cannot possibly be an important predictor of knowledge. Perhaps
the problem is with the units of this variable: are the authors trying to estimate the per-yuan effect of income on knowledge score? If so, perhaps one solution to the problem is grouping the currency into the categories shown in table 3, and analyzing the variable as categorical in table 4 instead of continuous. This will also eliminate the problem of all the zero values for income in table 4.

Does the manuscript adhere to the relevant standards for reporting and data deposition?
No, due to the above issues.

Are the discussion and conclusions well balanced and adequately supported by the data?
The Discussion section is improved and better balanced, now that appropriate references to other relevant work have been included.

However, the Conclusion section still needs work. The first sentence is fine, but the rest of the section does not flow logically from the survey results and is highly speculative regarding the relationships between variables like income, education, and occupation — those relationships were not explored in the data analysis, so it is not clear from where the authors are drawing these statements. It would be much better to follow the first sentence with a simple statement about how the results can be used to plan for future health awareness interventions.

Are limitations of the work clearly stated?
Yes.

Do the authors clearly acknowledge any work upon which they are building both published and unpublished?
Yes.

Do the title and abstract accurately convey what has been found?
The title is acceptable. The abstract has some one remaining flaw: it still mentions discrimination due to HBV even though that topic was removed from the main text.

Is the writing acceptable?
The writing has been improved but there are still flaws in English grammar and syntax that need to be corrected by a skilled technical editor.

Minor revisions: none
Discretionary revisions: none

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published
Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.