Author’s response to reviews

Title: Health status in a transitional society: urban-rural comparisons from a dynamic perspective in China

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Reviewer #4:

Q1. Language needs improvement. Here are some examples:

Page 4 line 9: "would focus on" should be "have focused on".

We have corrected this expression.

Page 4 line 17: "kept watch especially"

We have changed the expression into “urban-rural disparity in health is worthy of our attention especially”

Page 5 line 32: "only in a higher level of income and education could urban residents get the same unite increment as rural residents in health” was not clear.

We have changed the word “unite” into “marginal”.

Page 5 line 6: "related perceptive stress" is what related?

We originally wanted to express stress related to pollution and larger population density. After consideration, we decide to delete the word “related” and express this expression as “perceived stress”.

Page 6 line 32: "related longitudinal analytical methods" may be removed.
We have changed the sentence into “Up to now, age-period-cohort (APC) model, which aims to separate age, period and cohort effects, is still in an exploratory stage.”

Page 7 line 51: What did authors mean by "rewarding tries"?

We originally wanted to show that several previous studies were beneficial attempts. In order to avoid misunderstandings, now we express the sentence as “Regardless various difficulties in the identification of age, period and cohort effects, several APC studies on health have been conducted in recent years.”

Page 13 line 12: "selection", "options", and usually we use 1=very poor, 2=poor xxx.

Thanks for this suggestion, and we have corrected our expression.

In addition, we seek a polish institution (American Journal Experts) to edit and improve the language.

Q2. I still do not agree with the authors about the definition of longitudinal studies. But it is not a core part of the study. Authors may need to go through the paper, and check the appropriateness of using the term.

Thanks for this good proposal. Maybe the reviewer thinks that longitudinal studies are studies based on panel or tracing data. But in a broader sense, we also treat studies using data from three or more cross-sectional surveys (repeated cross-sectional surveys). For example, Yang used GSS of America from 1972 to 2004 (several cross-sectional surveys) to discuss age, period, and cohort effects of subjective well-being, and they called their study a longitudinal study. (Yang Y: Social inequalities in happiness in the United States, 1972 to 2004: an age-period-cohort analysis. American Sociological Review 2008, 73:204-226). And just as it puts in our data source part, a longitudinal study needs data from three or more time points, which is recognized worldwide. Therefore, we do not think the use of the item “longitudinal studies” is improper in the present study.

Q3. Page 6: Authors introduced several different methods of APC model, but did not justify why HAPC-CCREM was adopted. I think the other methods can also be used to investigate repeated cross-sectional surveys, and solve the collinearity problem. Please briefly explain the reason why this one was used not the others. Plus some explanations in page 7 did not provide evidence to defend the appropriate use of HAPC-CCREM.

HAPC-CCREM is a method on the basis of multilevel model. Maybe the reviewer thinks that other analytic strategies, such as constrained generalized linear model (CGLM), intrinsic estimator (IE) algorithm or estimated function method (EFM), can also rationally solve the collinearity problem. However, two things should be noted. Firstly, all current methods cannot
perfectly solve the collinearity problem, they all have some application conditions and limitations. Secondly, different methods have different advantages, and some strategies work in most conditions, some work in limited conditions. For example, one or more contrived constraints should be set in CGLM, which may make the estimation biased more. For IE, this method is usually used in studies using aggregated data, and it is treated as one strategy belonging to EFM, which is mainly used to examine the APC problem in aggregated data (O’Brien RM: Age-period-cohort models: approaches and analyses with aggregate data. CRC Press; 2015). For CCREM we used, it is developed to solve the APC conundrum in repeated cross-sectional surveys, combining the data from macro and micro levels well (Yang Y, Land KC: A mixed models approach to the age-period-cohort analysis of repeated cross-section surveys, with an application to data on trends in verbal test scores. Sociological Methodology 2006, 36:75-97). Hence, we think it is no more proper for us to use the CCREM to discuss our current issue. Considering the suggestion of the review, we decide to add some necessary statements in our paper to explain why we choose CCREM rather than other methods. We change the first sentence and express it as “The HAPC-CCREM, first presented by Yang and Land in 2006 and originally developed to solve the APC conundrum in repeated cross-sectional surveys, combines the data from macro and micro levels well.”

Q4. Why authors used age2 in the model?

Most previous studies argue that the association between age and health is not linear but nonlinear or a quadratic curve. So adding age2 into the model can examine whether the relationship between age and health is a quadratic curve.

We hope the current edition can well meet the requests. And thank the reviewer for these valuable suggestions again.