Reviewer's report

Title: Influenza vaccination coverage rates of adults before and after 2009 influenza pandemic in Beijing, China: a cross-sectional study

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Reviewer: Catherine Wetmore

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BMC Public Health Reviewer’s Report

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- General Comments

1. Is the question posed by the authors well defined? The question posed by the authors is well-defined. These authors, like many before them, sought to identify reasons for suboptimal coverage rates of the influenza vaccine. A better understanding of the reasons for low uptake of the influenza vaccine could have major public health implications, if research findings can be translated into improved vaccination strategies. A unique aspect of this particular study is the fact that the study population in Beijing experienced pandemic H1N1 influenza during the recall period, and the investigators hypothesized that this event might have influenced uptake of the seasonal influenza vaccine in subsequent years.

2. Are the methods appropriate and well described? The methods for data collection appear to be appropriate and well-described. The authors achieved a remarkably high response rate for this population-based survey; it would be interesting to know about the strategies they employed to achieve such a fantastic response rate. The methods for the analysis seem to be a bit too simplistic, and don’t account for the sampling design of the study. As I mention in my comment below (under “Major compulsory revisions”), I would encourage the investigators to develop survey weights to account for the sampling design and to ensure that results are representative of the underlying general population of adults in Beijing. The results presented by the authors in this unweighted analysis are likely very similar to those that would be produced from a more appropriately-designed weighted analysis, so the investigators’ conclusions are likely to hold.

3. Are the data sound? The data appear to be sound.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? The estimates presented in the text and tables should include some measure of uncertainty (e.g., 95% confidence intervals or weighted standard
5. Are the discussion and conclusions well balanced and adequately supported by the data? Yes.

6. Are limitations of the work clearly stated? Yes, the authors mention several important limitations of their work. While they noted the issue of recall bias, they did not consider the differential impact of recall bias over time. Recall bias is likely to have the greatest impact on self-reported vaccination rates from the earlier flu seasons. Differential misreporting of vaccination could have obscured any real trends in vaccination coverage. It is my understanding that flu season typically extends through March (although these authors define the end of the flu season in Beijing to be June), so the authors correctly note that estimates for the 2010/2011 season, based on data collected in January 2011 are likely to represent an underestimation of influenza vaccination coverage for that particular season.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? This work appears to have been a stand-alone study.

8. Do the title and abstract accurately convey what has been found? Yes.

9. Is the writing acceptable? No, the writing, as is, is not acceptable for publication. The writing could be greatly improved with the help of an editor.

- Major Compulsory Revisions

10. This very concise paper describes a very simple and straightforward analysis that provides current estimates of the proportion of adults in Beijing who received a vaccination for the seasonal influenza virus during three recent flu seasons. My primary concern pertains to the quality of the writing. As is, this manuscript requires extensive editorial revisions.

11. I believe that the analysis should account for the complex sampling design. It does not appear that communities were selected with probability proportional to population size, so I don’t think it is appropriate to simply calculate the proportion of survey responders who received the flu vaccine at year time point in unweighted analyses, since responders do not represent a simple random sample of the underlying population. At minimum, please present 95% confidence intervals for the vaccination coverage estimates in the text and tables. Given the very large sample size, these intervals are likely to be fairly narrow. To save space in tables, the weighted standard errors could be presented as an alternative to the 95% confidence intervals, although I think the interpretation of the 95% confidence interval is a bit more straightforward for most readers. At any rate, some estimate of the uncertainty of the estimates should be shown.

12. Please provide more background about Beijing, where the study was conducted. For example, what is the total population?

13. In the results section, under the subheading “Description of the sample”, the last sentence states that “the sample is representative of the adult population in Beijing”. The authors should include a reference for this statement, perhaps to a recent census report or other appropriate source.
14. Please provide more background about the recent H1N1 pandemic influenza in Beijing. In addition to the number of infections (which are presented), please report the number of hospitalizations and/or deaths. Also, if any existing evidence exist that better characterize the morbidity/mortality of seasonal influenza in Beijing, it should be presented. Additional detail of this nature would provide valuable contextual information about what the perceived “risk” of influenza infection is for individuals living in the study population.

- Minor Essential Revisions
15. Please define IVCR in the first paragraph of the methods section.

- Discretionary Revisions
None

- Minor Issues Not for Publication
16. Numerous typographical/grammatical/editorial errors that should be addressed throughout the abstract and text of the manuscript. These issues are too numerous to list in this review. Here are a sample of suggested revisions from the first few lines of the abstract:
   a. Title: Consider making the following two revisions to the title (shown in UPPERCASE LETTERS): Influenza vaccination coverage rates AMONG adults before and after THE 2009 influenza pandemic in Beijing, China: a cross-sectional study
   b. Replace “generation” with “general” (Abstract, Background)
   c. Replace “needed to understand” with “need to be understood” (Abstract, Background)

**Level of interest:** An article whose findings are important to those with closely related research interests

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

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests.