Reviewer's report

Title: Influenza vaccination coverage rates among adults before and after the 2009 influenza pandemic and the reasons for non-vaccination in Beijing, China: a cross-sectional study

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Reviewer: Catherine Wetmore

Reviewer's report:

- Major Compulsory Revisions

1. In the methods section of the manuscript, the authors should describe how they selected ~87 participants from each community. How/where did the surveys take place? Did the interviewers visit households and did they complete household rosters in order to randomly-select one eligible adult from within the household? Or did they simply ask for volunteers within the household? Did they find convenience samples of 87 community residents? If so, from where were these convenience samples drawn? Did participants need to be residents of the districts>towns>communities from which they were drawn, or did they simply need to be physically present in the community at the time of the study?

2. The authors have clearly stated that for the 2009/2010 season, they included both seasonal influenza vaccination as well as H1N1 influenza vaccination in their calculation of vaccine coverage. The authors should state their rationale for doing this. Did they think that respondents would not be able to differentiate between the type of vaccine that they received that year or was there some other reason? Furthermore, the authors state that there were two separate campaigns that year (one for seasonal vaccine, and one for H1N1 vaccine) — nonetheless, the authors repeatedly state that the increased vaccine coverage was “not sustained” the following season. The authors should provide some justification as to why they would have expected the increases in vaccination coverage to have been sustained in the following year. Without this justification, it seems like a simple issue of comparing “apples” to “apples+oranges”.

3. Throughout the abstract and manuscript, the authors’ interpretation of their primary result is that “the significantly increased uptake of vaccination during the pandemic was not sustained in season 2010/2011.” An alternative interpretation could be that the overall vaccination coverage increased but then declined significantly between 2009/2010 and 2010/2011 (the authors would need to verify/confirm the significance of this decline). Furthermore, a closer examination of their subgroup analyses suggests that this potentially significant decline was not observed among the elderly populations. In other words, vaccination coverage rates remained much higher in 2010/2011, as compared to 2008/2009 among adults aged 60 and older. The authors should consider emphasizing this relative “success story” among elderly populations, despite the fact that the coverage rate still fell far short of the WHO target of 75%.
4. The ordering of response options can greatly impact multiple-choice survey questions. Were the response options in the section on reasons for non-vaccination randomly ordered or always shown in a fixed order? Based on the description in the methods section, it appears that “I don’t think I am very likely to catch the flu” was the first response option. If this response option was among the first options listed on the survey, it is not at all surprising that this would be the most common response option. On multiple-choice survey items, respondents frequently select the first response that is applicable to them and then they move on to the next question, without reviewing the full list of response options.

5. In the discussion section, the authors state “according to our knowledge, very few people received influenza vaccination after December”. The authors should provide a citation for this statement.

- Minor Essential Revisions

6. When describing the 3 sections of the questionnaire (in the abstract and methods sections of the manuscript), the authors should consider the following revision “(gender, age, educational level, and residential district name)”. 

7. In the background section of the manuscript, the authors refer to “consistently low coverage rates” based on surveys of 5 European countries [refs 12, 13]. The authors should provide some indication of the estimated coverage rates that were observed so the reader can better understand what is meant by “low”. Similarly, the authors mention a study in China that reported “low” vaccine coverage [ref 22]. The authors should provide an indication of the actual vaccine coverage rates that were observed, in addition to the qualitative statement that coverage rates were “low”.

8. In the background section of the manuscript, the authors should consider the following revision: “In Beijing, the first case of H1N1 infection was reported on May 16, 2009.”

9. In the methods section of the manuscript, the authors should include the units for population density (e.g., “6,548 people per km2”).

10. In the discussion section of the manuscript, the authors state that their results were “similar” to the low vaccination coverage rates observed in 5 European countries. In fact, vaccination coverage in Beijing was markedly lower than vaccination coverage observed in the previous studies in 5 European countries.

11. In the discussion section of the manuscript, the authors state that vaccination coverage among elderly adults in their study was “significantly lower” than the vaccination coverage among elderly in the previous studies conducted in 5 European countries. Did the authors perform significance testing to support this claim? If not, a synonym should be used to describe this difference which does not have any statistical implications.

12. In the discussion section, the authors cite previous research [ref 16] which showed that free vaccination would facilitate improvements in vaccination coverage rates. The authors should comment/discuss whether or not they think their results support (or contradict) this previous finding.
13. In the discussion section, the authors discuss the role of “suspicion” and fear of side effects and allude that these may have been more important impediments to vaccination for adults with higher levels of education and more access to social media. However, their survey results indicate that fear of side effects was relatively infrequently reported (<20%), and was actually more commonly reported among elderly adults (who are less likely to be well-educated or to have access to social media) than younger adults.

14. In the tables, the column headers should be titled “Weighted %” rather than “%”, if the authors did in fact conduct a weighted analysis.

15. In Table 2, there is a clear bi-modal distribution of vaccination frequency among illiterate respondents (either 0 or 3). The authors should comment on this striking finding.

- Discretionary Revisions

None

- Minor Issues Not for Publication

16. Although the authors have made many editorial revision to the text of this paper, the manuscript still suffers from typographical/grammatical/editorial errors that need to be addressed prior to publication, either by the authors or the editorial office.

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

**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.