Author’s response to reviews

Title: Factors associated with uptake of influenza vaccine in people aged 50 to 64 years in Hong Kong: A case-control study

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Author’s response to reviews: see over
5 June 2015

Dear Editor-in-Chief,

Your reference: MS: 5401085261551009

Thank you again for your emails dated 5 June 2015 and for consideration of our manuscript for publication in BMC Public Health. Below is a revised point-by-point response to the editor’s request. This cover letter and the revised manuscript (word and pdf) have also been uploaded. In this version the new changes are marked in orange. Those appeared in blue and green are in the changes in the last versions. We welcome any suggestion that improve the article and present it better to the readers.

Please address all correspondence to me by email <maypsyeung@gmail.com>, or by phone at (+852)9771 7501. Thank you.

Best regards,
May PS YEUNG
Point-by-point response to the Editor’s Request

Title: Factors associated with uptake of influenza vaccine in people aged 50 to 64 years in Hong Kong: A case-control study

Version: 3 Date: 1 June 2015

1. The authors have addressed most points but this statement is still not clear: "The excess non-vaccinated individuals approached by the interviewers were counted as non-responders". I think the confusion arises because it isn't clear what the estimated sample size was- how many vaccinated and unvaccinated individuals were required for the survey as per the sample size calculation?

The following sentence is added to line 115 under Methods. “A minimum sample size of 510 was required with a case-to-control ratio of 1:2.”

2. Are the authors trying to say that only recruited sufficient numbers of individuals to meet the estimated sample size? Or are they saying that they found after the surveys had been conducted that they had more unvaccinated individuals than were needed according to the predetermined sample size estimates therefore they did not include these 'extra' unvaccinated individuals in their analysis (even though they had collected data for them)?

We mean the latter. During the street interview, more unvaccinated individuals (control) than were needed according to the predetermined sample size therefore they did not include these 'extra' unvaccinated individuals in their analysis.

Line 161 is changed to: After the required number of non-vaccinated was recruited, the excess approached by the interviewers were counted as non-responders.
3. This needs to be made clear and if the latter scenario is true, there is no statistical reason for not including the data from these people in the study.

Agree. This is made clear hopefully by the revisions stated above.

**Supplement information**

The sample size calculation has taken reference to the odds ratios (OR) in the articles from a systematic review (now being under review in another journal). The list of variables positively associated with influenza vaccination with OR ranged from 2.07 to 18.7. One factor, fear of adverse reactions, is negatively associated with influenza vaccination with OR 0.21. Therefore an OR of 2.07 is used to calculate the sample size required. The calculation details are:

**Fleiss formula**

\[
 n_1 = \left\{ \frac{Z_{\alpha/2}}{\sqrt{\frac{(r+1)\bar{p}q}{2}}} + \frac{Z_{1-\beta}}{\sqrt{\frac{r(p_1q_1 + p_0q_0)}}} \right\}^2 / \left[ \frac{r(p_1-p_0)}{2} \right]
\]

- \( n_1 \): number of exposed, \( n_2 \): number of unexposed; \( n_2 = n_1 \)
- \( \bar{p} = \frac{p_1 + rp_0}{r+1} \)
- \( \bar{q} = 1 - \bar{p} \)
- \( Z_{\alpha/2} \): standard normal deviate corresponding to the probability of an alpha error = 5%
- \( Z_{1-\beta} \): standard normal deviate corresponding to a power of 1-\( \beta = 80\% \)
- \( r \): ratio of controls to cases
- \( p_1 \): proportion of exposed with disease and \( q_1 = 1 - p_1 \)
- \( p_0 \): proportion of exposed without disease and \( q_0 = 1 - p_0 \)

Assumptions:

i. OR under the null hypothesis, \( OR_0 = 1 \)
ii. Anticipatory OR, \( OR_a = 2.07 \)
iii. Alternative hypothesis (for two-sided test), \( OR \neq 1 \)
iv. Exposure in control = 10%

4. It would also be better to state in the methods that a 'survey was conducted in a community setting in Hong Kong... following which a case-control analysis was used to investigate the study hypothesis'(line 101) rather than a case-control study. This would be clearer for readers.
The sentence (line 101) is changed to “A survey was conducted in a community setting in Hong Kong from 17 July to 15 August 2013, following which a case-control analysis was used to investigate the study hypothesis.”