Author's response to reviews

Title: Mistrust Surrounding Vaccination Recommendations by the Japanese Government: Results from a National Survey of Working-Age Individuals

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Author's response to reviews: see over
Submission of the revised manuscript (MS: 2102988750153627)

Dr. Daniela Amicizia
Editor

BMC Public Health

Dear Dr. Amicizia,

We would like to submit our revised manuscript entitled: ‘Mistrust Surrounding Vaccination Recommendations by the Japanese Government: Results from a National Survey of Working-Age Individuals’ (MS: 2102988750153627) for consideration for publication as a research article.

We thank the editors and reviewers for providing useful suggestions and comments. We have addressed these issues in our revised manuscript, as indicated on the following pages.

We declare that this manuscript has not been considered for publication elsewhere. We also declare that we have no conflicts of interest. We hereby approve the submission of this manuscript for publication in BMC Public Health and trust that our revised version meets with your favourable consideration.

Sincerely yours,

Authors
Editor

The enrolments does not seem correct and it is not clear why the authors performed logistic regression analysis dividing into 2 groups broken down sex (table n.3). I suggest analysing males and females together and use sex as variable. Instead "Cor" the authors should use "adjusted" and better explain the correction factor.

We thank the reviewer for their comments. With regard to corrected odds ratios, we have now described it as an adjusted odds ratio by Zhang’s formula.

In the previous response to the reviewer’s comments, we were asked to provide our analysis undertaken by gender. In this regard, the results of logistic regression analysis combining men and women were shown below.

When compared to the table in our current manuscript the analysis by gender shown below appears to miss some important gender differences in various categories. For these reasons, we believe that the analysis should still be performed by gender men and women as we have shown on Table 3 of our revised manuscript.

We have mentioned that “Statistical analysis was also undertaken by gender, to help establish more detailed background factors.” in the Methods section.

Statistical Associations with Mistrust Attitudes Regarding Government Adults’ Vaccination Information in Japan for men and women (N=3140)

<table>
<thead>
<tr>
<th>Most trusted information source on vaccination</th>
<th>aOR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care workers</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Information from the government</td>
<td>0.36</td>
<td>(0.23-0.55)</td>
</tr>
<tr>
<td>Family</td>
<td>1.38</td>
<td>(1.13-1.64)</td>
</tr>
<tr>
<td>Friends</td>
<td>1.86</td>
<td>(1.36-2.34)</td>
</tr>
<tr>
<td>Television</td>
<td>1.14</td>
<td>(0.87-1.44)</td>
</tr>
<tr>
<td>Newspapers</td>
<td>1.38</td>
<td>(1.01-1.79)</td>
</tr>
<tr>
<td>The Internet</td>
<td>1.91</td>
<td>(1.50-2.30)</td>
</tr>
</tbody>
</table>
### General health condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>aOR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good health</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Relatively good health</td>
<td>1.16</td>
<td>(1.01-1.31)</td>
</tr>
<tr>
<td>Relatively poor health</td>
<td>1.46</td>
<td>(1.25-1.70)</td>
</tr>
<tr>
<td>Poor health</td>
<td>1.61</td>
<td>(1.25-1.99)</td>
</tr>
</tbody>
</table>

### Smoking status

<table>
<thead>
<tr>
<th>Status</th>
<th>aOR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoked</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Ex-Smoker</td>
<td>0.95</td>
<td>(0.81-1.25)</td>
</tr>
<tr>
<td>Current smoker</td>
<td>1.08</td>
<td>(0.92-1.25)</td>
</tr>
</tbody>
</table>

aOR: adjusted Odds Ratio by Zhang's formula; CI: Confidence Interval

**Reviewer #1:**

1. *First, although authors added a study limitation in the Discussion, the authors did not mention the reason why almost equal numbers of study participants in each age range were selected. This needs to be clarified because this might be another potential bias selecting study population.*

We conducted an internet survey which may have some bias for age distribution of registrants, for example there are likely proportionally more younger people using the internet. As such, we set the limit of participants for 300 per age group by gender.

In the manuscript, we mentioned that “Participants were classified into five age groups (20-29, 30-39, 40-49, 50-59, and 60-69 years), and by gender since the distribution of registrants for the internet survey may be biased.” in methods.

2. *Second, authors should describe how they conducted the multivariate analyses in the methods section. This reviewer still not convinced that the analyses performed in the Table 3 are appropriate.*

Please refer to our comments on page 2 of this letter.
Reviewer #3:

1. Line 52 in the abstract: p-value for trend is reported, and also mentioned in the methods section (line 173), but it is not reported in the results section.

We have now added the results for trend analysis in the results section, as requested.

2. In the results section (lines 191-195), the authors report the general demographic characteristics as also reported in table 1. However, although the authors states that their main interest was the trust on the government, it would be interesting to know if, for instance, the source of trusted information was different depending on age, gender, general health status, or educational level. If not, it should be reported, while in case of significant differences, those should be stated, possibly together with p-values, and the table should be modified adding separate columns for the appropriate characteristics (as done for males and females in table 2).

Thank you for your suggestions. We agree that this is a good idea, but it is beyond the scope of the current article. Future research is intended that will focus on the association on the source of trusted information on vaccination and social backgrounds such as age, gender, general health status and educational level.

3. Also in table 2 significant differences between males and females should be indicated, reporting significant p-values or marking significant differences by an asterisk.

We have revised this part as suggested.

4. They report a worsening self-rated health conditions for women significantly associated with mistrust for the governmental recommendations in the discussion (lines 302-304), but not in the results.

We have shown the results on the association between a worsening self-rated health conditions and mistrust for the governmental recommendations as follows: “Among female respondents, those reporting relatively good health (aOR: 1.24; 95%CI: 1.02-1.47), relatively poor health (aOR: 1.55; 95%CI: 1.22-1.90), and poor health (aOR: 2.10; 95%CI: 1.41-2.63) had a significantly high likelihood of mistrust for vaccination (p<0.01). “
5. In addition, it seems to me that also the source of information is somewhat different among males and females.

We also showed the results on the source of information for males and females as follows: “the Internet (men, aOR: 1.67; 95%CI: 1.12-2.22; women, aOR: 2.19; 95%CI: 1.58-2.73); books (men, aOR: 2.53; 95%CI: 1.67-3.05; women, aOR: 2.99; 95%CI: 2.19-3.40); newspapers (women, aOR: 1.56; 95%CI: 1.03-2.15), family (women, aOR: 1.60; 95%CI: 1.23-1.99); and friends (men, aOR: 1.96; 95%CI: 1.24-2.60; women, aOR: 1.80: 95%CI: 1.11-2.51).”

6. Significant p-values should be reported or indicated by asterisks for non statistician readers also for the associations with mistrust attitudes toward the government recommendations (table 3).

We added the asterisks which indicate the p-value <0.05.

7. In particular, the authors report they had adjusted the analysis for education levels (line 172) and that participants who had completed university education or higher had a lower risk of mistrust for governmental recommendations on vaccination at the univariate statistical analysis (line 332), but this is not reported neither in the results section nor in table 3.

We added the following sentences in results “With regard to educational level among females, univariate logistic regression suggested that having a university level or higher education was important when compared to those with high school or lower education (aOR: 0.77; 95%CI: 0.60-0.99); although this relationship disappeared when an adjusted model was used (aOR: 0.92; 95%CI: 0.70-1.20). For males, educational level was not associated with mistrust of the government’s vaccination recommendation during regression analysis.”

8. Line 298-299: the authors comment that a previous study revealed that family and friends’ recommendation was a positive factor in influenza vaccination, especially among those aged in their 20s. It would be interesting to know if in the present manuscript this can be evaluated and reported it in the results section.

See comments in no 2 shown above.

9. Since the target sample are adults, I assume that the topic of the manuscript is
about “adult” vaccination. Child vaccinations, in my opinion, has quite different implications, attitude and perception of risks. If I am right, in the title and in the text it should be clearly stated that the topic is “adult” vaccination, otherwise a proper discussion should be added.

Thank you for your comments. In our questionnaire we did not ask whether the mistrust is for vaccination relating to either adults or children. We have now mentioned this point in the limitations.

10. Line 161: please, specify which univariate analysis have been undertaken: logistic regression? Chi-square comparisons?

This section has now been revised accordingly.

We appreciate the reviewer’s comments and suggestions and trust that our manuscript now meets with their favourable consideration.

The authors