

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

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| <b>TITLE (PROVISIONAL)</b> | Social participation and risk of influenza infection in older adults: A cross-sectional study |
| <b>AUTHORS</b>             | Shobugawa, Yugo; Fujiwara, Takeo; Tashiro, Atsushi; Saito, Reiko; Kondo, Katsunori            |

### VERSION 1 - REVIEW

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| <b>REVIEWER</b>        | Edward Goldstein<br>Harvard TH Chan School of Public Health<br>Boston, MA USA |
| <b>REVIEW RETURNED</b> | 27-Mar-2017   |

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| <b>GENERAL COMMENTS</b> | <p>The reviewer wishes to thank the authors for their responses. Below are the remaining questions:</p> <ol style="list-style-type: none"> <li>1. In Figure 1B, participation in any kind of social activity has an odds ratio above 1 for self-reported influenza in unvaccinated males, some of those estimates being statistically significant (the only exception is the leisurely activity group, OR=0.98 (0.64, 1.50)). On the other hand in Table 2, participation in exactly 1 social activity had an odds ratio 0.94 (0.58, 1.53) for self-reported influenza compared to the reference group of no participation, with a relatively low odds ratio for 2 or more activities, 1.27 (0.85, 1.91). This looks a bit odd, and perhaps reflects the fact that the reference group of unvaccinated males participating in no activities is rather small? If so, perhaps using this group as a reference group is not optimal – see the next question.</li> <li>2. The review was curious what would the results of the analyses be if for each positive integer N (particularly for N=1), one would restrict the logistic regression analysis to the cohort of individuals participating in at least N activities, and consider the covariate X1 equaling (# activities minus N), or, alternatively a binary covariate <math>X2 = \min(X1, 1)</math> – thus the effect of additional activities is measured.</li> </ol> |
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| <b>REVIEWER</b>        | Amalie Dyda<br>University of NSW, Australia |
| <b>REVIEW RETURNED</b> | 05-Apr-2017                                 |

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| <b>GENERAL COMMENTS</b> | <p>The authors should be congratulated on attempting to address all previous comments, and I believe this would be a valuable addition to the literature. However, some revisions are required.</p> <p>I think overall the English could be looked at again. It is very good, but still has many grammatical errors.</p> <p>Please find more detailed comments below:</p> <p>Abstract,<br/>first sentence: some numbers or description of the disease burden would help.<br/>second sentence: in contrast? it seems to be discussing the same group but later in the sentence discusses elders.<br/>Also, please clarify elders. I think its better to say &gt;65 years than elders. otherwise its ambiguous.</p> <p>page 10, line 38- the first sentence is information for the introduction, not the methods</p> <p>page 11, line 44- this is important information regarding interaction terms but put this in the results not methods. In the methods you should describe how you dealt with interaction terms which were significant.</p> <p>page 14, line 12- this just states older...need to clarify with numbers<br/>page 14, line 21- remove 'unvaccinated'</p> <p>page 15, line 6- you repeat 2.20 twice. please describe the result and then state 2.20 OR</p> <p>Results in general- you need more discussion of the stats in the results. please include numbers and CI's or p values. I know they are in the tables but the text in the results should point out the important findings with reference to the numbers.</p> <p>page 24, line 12- This information on vaccine recommendations, and much that follows, should be in the introduction.</p> <p>Discussion in general, there is a lot of information in the discussion that should be in the introduction.</p> |
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## VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Edward Goldstein

Institution and Country: Harvard TH Chan School of Public Health, Boston, MA USA

Competing Interests: None declared

The reviewer wishes to thank the authors for their responses. Below are the remaining questions:

1. In Figure 1B, participation in any kind of social activity has an odds ratio above 1 for self-reported influenza in unvaccinated males, some of those estimates being statistically significant (the only exception is the leisurely activity group, OR=0.98 (0.64,1.50)). On the other hand in Table 2, participation in exactly 1 social activity had an odds ratio 0.94 (0.58,1.53) for self-reported influenza compared to the reference group of no participation, with a relatively low odds ratio for 2 or more activities, 1.27 (0.85,1.91). This looks a bit odd, and perhaps reflects the fact that the reference group of unvaccinated males participating in no activities is rather small? If so, perhaps using this group as a reference group is not optimal – see the next question.

Thank you very much for your careful reading. Actually, the number of unvaccinated men participating in no activities was not that small (N=3408, 59.5%). However, we agree that this analysis was confusing. The unusual results are due to the fact that most persons participated in multiple activities and that number of activities was more significantly associated with the outcome (influenza infection).

We re-analyzed the data in accordance with the reviewer's suggestion. (see the next answer)

2. The review was curious what would the results of the analyses be if for each positive integer N (particularly for N=1), one would restrict the logistic regression analysis to the cohort of individuals participating in at least N activities, and consider the covariate X1 equaling (# activities minus N), or, alternatively a binary covariate  $X2 = \min(X1, 1)$  – thus the effect of additional activities is measured.

Thank you for this helpful suggestion. We agree and have re-analyzed the data. We put number of activities as the covariate in the equation when measuring the effect of each activity on influenza infection. In addition, the revised figures (1A, 1B, 1C, and 1D) include these new results. The text has been revised accordingly.

Reviewer: 2

Reviewer Name: Amalie Dyda

Institution and Country: University of NSW, Australia

Competing Interests: None declared

The authors should be congratulated on attempting to address all previous comments, and I believe this would be a valuable addition to the literature. However, some revisions are required.

I think overall the English could be looked at again. It is very good, but still has many grammatical errors.

Please find more detailed comments below:

Abstract,

first sentence: some numbers or description or the disease burden would help.

Thank you for the comment. We agree and have added data on the disease burden of influenza

infection.

second sentence: in contrast? it seems to be discussing the same group but later in the sentence discusses elders.

Also, please clarify elders. I think its better to say >65 years than elders. otherwise its ambiguous.

Thank you. In accordance with the reviewer's suggestion, we changed the expression "older adults" to "adults 65 years or older" in the Abstract.

page 10, line 38- the first sentence is information for the introduction, not the methods

We moved the sentence to the Introduction, as requested.

page 11, line 44- this is important information regarding interaction terms but put this in the results not methods. In the methods you should describe how you dealt with interaction terms which were significant.

Thank you very much for the helpful comment. We agree and have revised the text accordingly. A description of how we dealt with significant interaction terms was added to the Methods section. The sentence including important information on interaction terms was moved to the Results section.

page 14, line 12- this just states older...need to clarify with numbers

Thank you. An explanation, including the data in question, has been added.

page 14, line 21- remove 'unvaccinated'

We have made the change.

page 15, line 6- you repeat 2.20 twice. please describe the result and then state 2.20 OR

We have revised the text accordingly.

Results in general- you need more discussion of the stats in the results. please include numbers and CI's or p values. I know they are in the tables but the text in the results should point out the important findings with reference to the numbers.

Thank you. We agree and have revised the text accordingly. In particular, we added the data for the important findings, in the Results section.

page 24, line 12- This information on vaccine recommendations, and much that follows, should be in the introduction.

We have moved most of the text in question to the Introduction, in accordance with the reviewer's suggestion.

Discussion in general, there is a lot of information in the discussion that should be in the introduction.

## VERSION 2 – REVIEW

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| <b>REVIEWER</b>        | Edward Goldstein<br>Harvard TH Chan School of Public Health |
| <b>REVIEW RETURNED</b> | 01-Jun-2017   |

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| <b>GENERAL COMMENTS</b> | <p>The reviewer thanks the authors for the modifications that they introduced. The reviewer has two (optional) suggestions:</p> <ol style="list-style-type: none"> <li>1. The authors have considered the risk of influenza associated with each specific activity for those individuals who participated in at least one activity, adjusting for the number of activities that an individual took part in. Thus, effectively they've examined the risk of each specific activity compared to other activities. The review was wondering what the results would be if one performed the same analyses with all individuals (not just those who partook in at least one activity) included – thus the results could be interpreted as risks associated with participation in a specific activity (rather than this activity compared to others).</li> <li>2. The reviewer was wondering what the results would be if the main analyses, instead of the covariates being participation in exactly 1 activity, and at least 2 activities, the authors would use one covariate equaling the number of activities that an individual partook in.</li> </ol> |
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## VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

The reviewer thanks the authors for the modifications that they introduced. The reviewer has two (optional) suggestions:

1. The authors have considered the risk of influenza associated with each specific activity for those individuals who participated in at least one activity, adjusting for the number of activities that an individual took part in. Thus, effectively they've examined the risk of each specific activity compared to other activities. The review was wondering what the results would be if one performed the same analyses with all individuals (not just those who partook in at least one activity) included – thus the results could be interpreted as risks associated with participation in a specific activity (rather than this activity compared to others).

Thank you very much for this useful comment. The authors re-analyzed using all individuals on the additional analyses. All including text and figures were changed according to obtained results. However, obtained results do not show remarkable difference from the previous result (analysis using responders who participate in at least one activity). The authors thought that reason for the lack of a significant association with most activities was larger effect of number of participation rather than type of social activity. We appreciate that we could find this fact according the reviewer's suggestion.

2. The reviewer was wondering what the results would be if the main analyses, instead of the covariates being participation in exactly 1 activity, and at least 2 activities, the authors would use one covariate equaling the number of activities that an individual partook in.