Author's response to reviews

Title: A survey of knowledge, attitudes and practices towards avian influenza in an adult population of Italy

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Author's response to reviews:

I am submitting the revised manuscript entitled "A survey of knowledge, attitudes and practices towards avian influenza in the general population of Italy" and we have fully addressed the referees' concerns and below we have indicated all the revisions made.

Referee 1
1. As suggested, we have added references.
2. As suggested, we have deleted "conducted by one of us".

Referee 2
Main compulsory revision
1. As suggested, we have refrained to include the references for SARS in Hong Kong.
2. As suggested, we have specified that the primary outcomes of interest were to assess the knowledge, attitudes, and behaviors relating to avian influenza.
3. As suggested, the title has been modified in "A survey of knowledge, attitudes and practices towards avian influenza in an adult population of Italy".
4. In response to the point regarding details about sample selection, we have already clarified in the first revision that a two-stage cluster sample was selected. Four public schools were randomly selected among all 40 schools in the area. As we have already clarified in the first revision, socio-demographic characteristics of the responding were similar to those of the non-respondents, since none of the between-group comparisons were statistically significant. Similar SES and other variables have been observed between public and private schools. Moreover, we have selected a random sample of parents of school children not parents that bring students to school. Therefore, we have no restricted to parents who brought children to school and, in order to avoid misunderstanding, we have clarified the point.
5. In response to the point regarding how the questions were phrased, we have partially explained it in the text and as already specified in the first revision the questionnaire was a modification of one used in our previous study on poultry workers available on the website of the CDC (Abbate et al. Emerg Infect Dis 2006;12:1762-5).

6. In response to the point regarding details about entry and removal, it is clear for a reader that has basic knowledge in statistical analysis and in model building strategy of logistic regression analysis that, as well described in the manuscript and already explained in details in the first revision, that the significance level for variables entering the logistic regression models was set at 0.2 and for removing from the model at 0.4. Therefore, we are confident that such details should not be put in footnotes of tables.

7. In response to the point raised regarding the housewives category, we have dichotomized the variable employment status and, as suggested, in Table 1 we have included the housewives category.

8. As suggested, we have included the frequency for the do not know category in Table 1.

9. In response to the point raised regarding the questions on the knowledge, we have already explained in details in the first revision that, for example, the question is whether different subjects are at risk of contracting the disease and we have specified that the questionnaire used is a modification of one used in our previous study on poultry workers (Abbate et al. Emerg Infect Dis 2006;12:1762-5). The "knowledge" items are measuring knowledge and they are measuring beliefs. Moreover, this approach was similar to many of other studies conducted by us (Journal of Food Protection 2000;63:381-5; Public Health 2000;114:348-52, 2003;117:202-7, 2006;120:942-5; International Journal of Food Microbiology 2001;64:161-6; The Journal of Hospital Infection 2001;47:314-20; Infection Control and Hospital Epidemiology 2001;22:363-9; Oral Oncology 2004;40:490-5, 2004;40:638-44; European Journal of Public Health 2004;14:258-60; European Journal of Pediatrics 2005;41:260-4; Cephalalgia 2005;25:767-75; Journal of Infection 2006;52:269-75; BMC Public Health 2006 6:176; Emerging Infectious Diseases 2006;12:1762-5; Vaccine 2007;25:1669-75).

10. In response to the point regarding the logistic regression models, we have clarified how the dependent variable in Model 1 was formed. Moreover, we have used the logistic regression since our outcome of interest was knowledge about the modes of transmission and the animals classified as common vehicles for avian influenza and we were not interested to assess the level of knowledge in all questions and, therefore, we did not use a summative scale. This approach was similar to many of other studies conducted by us (Journal of Food Protection 2000;63:381-5; Public Health 2000;114:348-52, 2003;117:202-7, 2006;120:942-5; International Journal of Food Microbiology 2001;64:161-6; The Journal of Hospital Infection 2001;47:314-20; Infection Control and Hospital Epidemiology 2001;22:363-9; Oral Oncology 2004;40:490-5, 2004;40:638-44; European Journal of Public Health 2004;14:258-60; European Journal of
11. In response to the point raised regarding the frequency distribution of the dependent variables, these frequencies were already included in the manuscript.

12. In response to the point regarding the fact that respondents did not recognize the major risk factors is problematic, I do not understand the referee comment that everyone is at risk to some extent and that this is a risk perception measurement. We have already explained the point previously (see point 9) and in the first revision. The question is whether the respondent knows the risk group and it is not matter of belief. This approach has been used in several similar studies conducted by us (Journal of Food Protection 2000;63:381-5; Public Health 2000;114:348-52, 2003;117:202-7, 2006;120:942-5; International Journal of Food Microbiology 2001;64:161-6; The Journal of Hospital Infection 2001;47:314-20; Infection Control and Hospital Epidemiology 2001;22:363-9; Oral Oncology 2004;40:490-5, 2004;40:638-44; European Journal of Public Health 2004;14:258-60; European Journal of Pediatrics 2005;164:207-11; Journal of Paediatrics and Child Health 2005;41:260-4; Cephalalgia 2005;25:767-75; Journal of Infection 2006;52:269-75; BMC Public Health 2006;6:176; Emerging Infectious Diseases 2006;12:1762-5; Vaccine 2007;25:1669-75).

13. In response to the point raised that many independent variables were not clearly defined, for instance, perception of risk, we have already reported the respondents' level of perceived risk of contracting avian influenza for them and for friends/familiars in the results section of the manuscript. The mean total scores were respectively of 5.9+2.9 and 6.2+2.8. Since we have reported mean and standard deviation, I believe that these variables were used as continuous. Moreover, as already in the first version of the manuscript, the number of children has not been used as a continuous variable but as categorical one.

14. In response to the point raised regarding the description of some hypotheses in the introduction, we believe that was clearly indicate that the objectives were to assess the knowledge, attitudes, and behaviors relating to avian influenza and to evaluate the effect of several potential predictors on such outcomes of interest. We are confident that the selection of the independent variables for modeling was not ad hoc.

15. In response to the point raised regarding the risk perception for respondent and his friends or familiars, we have already indicated in the manuscript that we have asked two different questions and we have already reported the respondents' level of perceived risk of contracting avian influenza for them and for friends/familiars in the results section of the manuscript. The mean total scores were respectively of 5.9+2.9 and 6.2+2.8.

16. In response to the point raised regarding collinearity, we have already addressed the point in the first revision of the manuscript. It was determined by model fitting, because via logistic regression as in linear regression is also
sensitive to collinearities among the independent variables in the model. The statistical package that we have used has a sort of diagnostic check and we did not find collinear and all variables have been used for modelling. Moreover, it is possible for variables to pass these tests, but we did not observe any extraordinary large estimated standard errors and estimated coefficients.

17. In response to the point raised regarding the last paragraph of the Results, we did not move it because in our opinion it should be at the end of the section.

18. In response to the point raised regarding the Model 4, we have already indicated that a stepwise multivariate linear regression model was constructed aiming at understanding which variable had stronger associations with the perception of risk of contraction avian influenza by the respondent. It involves the risk only for self and, therefore, the independent variables match very well with the outcome. Moreover, its frequency distribution was already included in the manuscript. Since the variable was normally distributed it was used as a continuous variable. Moreover, the level of education has been not used as continuous variable as already indicated in the first version of the manuscript. Finally, we have removed the SE of coefficients in Table 2 as requested by the other Referee.

19. In response to the point regarding the variables that were not selected by the models, it is clear for a reader that have basic knowledge in statistical analysis and in model building strategy of logistic and linear regression analysis that, as well described in the manuscript and already explained in details in the first revision, that before testing multivariable regression models assessing predictors of the outcomes of interest, we examined the association between the independent variables and the dependent variable, as indicated in the Methods section. The criterion to be met before any independent variable was considered for entry into an initial multivariable logistic regression model was a p-value < 0.25 obtained for each outcome variable in the univariate analysis. Furthermore, the significance level for variables entering the logistic regression models was set at 0.2 and for removing from the model at 0.4. Therefore, all variables indicated in the Methods section that are not included in the Table 3, were not selected by the models.

20. As suggested, we have condensed the first half of the first paragraph in the discussion.

21. In response to the point regarding the low % identifying risk group, the question is whether the respondent know the risk group and it is not matter of belief. We have already explained the point in the first revision. I agree that How would make a difference to the prevention campaign if more people believe that butchers are at risk and for this reason the questions are if the respondent know (not believe) that butchers are at risk. This approach has been used in several similar studies conducted by some of us (Journal of Food Protection 2000;63:381-5; Public Health 2000;114:348-52, 2003;117:202-7, 2006;120:942-5; International Journal of Food Microbiology 2001;64:161-6; The Journal of Hospital Infection 2001;47:314-20; Infection Control and Hospital Epidemiology 2001;22:363-9; Oral Oncology 2004;40:490-5, 2004;40:638-44; European Journal of Public Health 2004;14:258-60; European Journal of
22. As suggested, in the conclusion we have stressed the implications of the study in terms of policy and education.

23. In response to the point regarding the comparisons with other studies, we have compared our results with two studies conducted in Thailand and Hong Kong and two studies conducted by some of us in a similar geographic area. We have indicated in the text the source of the study population and my co-authors and I are confident that differences may also be due to the outbreaks of the H5N1 highly pathogenic avian influenza strain identified in these countries.

24. As suggested, in the conclusion we have stressed the overall implications of the study.

25. In response to the point regarding the possibility that the respondents have discussed the responses with the family members, this is a limitation of all surveys, in particular those conducted by self-administered questionnaires or telephone interviews. This approach has been used in several similar studies conducted by us (Journal of Food Protection 2000;63:381-5; Public Health 2000;114:348-52, 2003;117:202-7, 2006;120:942-5; International Journal of Food Microbiology 2001;64:161-6; The Journal of Hospital Infection 2001;47:314-20; Infection Control and Hospital Epidemiology 2001;22:363-9; Oral Oncology 2004;40:490-5, 2004;40:638-44; European Journal of Public Health 2004;14:258-60; European Journal of Pediatrics 2005;164:207-11; Journal of Paediatrics and Child Health 2005;41:260-4; Cephalalgia 2005;25:767-75; Journal of Infection 2006;52:269-75; BMC Public Health 2006,6:176; Emerging Infectious Diseases 2006;12:1762-5; Vaccine 2007;25:1669-75). We have discussed this methodological consideration in the paragraph on the limitations of our study. However, I do not understand why the regress analyses make little sense and that the response rate was not as high as it sounds.

26. As suggested, we have made the correction of the type-writer error in the last paragraph since the correct wording is ... had a great perceived risk of experiencing avian influenza, and had a low compliance with ....

We are confident that these changes fully address the concerns raised therein and that the paper is publishable in BMC Infectious Diseases.

Yours sincerely,

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Professor and Chairman