Author's response to reviews

Title: Prevalence of asthma and other allergic conditions in Colombia 2009-2010: a cross-sectional study

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Author's response to reviews: see over
Reply to reviewer’s comments.

**Title:** Increased prevalence of asthma and other allergic conditions in Colombia (changed to “Prevalence of asthma and other allergic conditions in Colombia 2009-2010: a cross-sectional study”).

**Date for version No. 3:** 10-March-2012

Dear Editors:

Please find attached our revised manuscript entitled “Prevalence of asthma and other allergic conditions in Colombia 2009-2010: a cross-sectional study” for consideration of publication in *BMC Pulmonary Medicine*.

We would like to thank the reviewer for the feedback and critique. The revised manuscript addresses the comments. We think that the newly revised manuscript is now improved in clarity due to the observations.

Below please find our point by point answers to the observations.

No part of this manuscript is under consideration in any other journal. All authors have reviewed the manuscript and approve of its content. As described in the manuscript, all authors have contributed significantly to the manuscript. No author discloses any conflict of interest that relates to this work.

We thank you in advance for your consideration of this revised manuscript.

Respectfully,

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Reviewer Prof. De Sario:

MAJOR COMPULSORY REVISIONS.

My major concern is still low response rates and the non-random sampling of the 1-4 and 18-59 years old populations. Authors have answered through post-stratification weight adjustments. However, they do not provide the rationale to understand if this method is able to correct for possible selection bias. I recommend authors to provide such a rationale and a bibliographic reference of this method and to discuss among limitations its ability to reduce selection bias especially in the case of no random sampling. Please also clarify “weighted percentages” in the footnote of tables.

We regret that we were not able to clarify this issue. Firstly, the possibility of selection bias with the non-random sampling is present in our study and our statistical analysis is not able to correct for this likelihood. However, we do acknowledge this in the Discussion section: “…Second, the community-based strategy was not random and selection bias is possible if subjects willing to participate were also more likely to have one of the conditions under study, biasing results towards higher disease prevalence. While we do not have information on non-participants to evaluate this possibility, we used a systematic approach to select eligible and consenting neighboring households, and subjects within households were randomly selected.”

Secondly, we have clarified in the Methods Section (Statistical Analysis) the weight adjustments conducted in the analysis: “For the random sampling, weights (the inverse of the selection probability of each observation) were calculated to account for differential inclusion probabilities due to the complex design; for this, information was obtained on the number of enrolled students during the 2009-2010 academic years in combination with the Colombian census bureau projections for year 2009. For the total sample, in addition to the previous weights, post-stratification weight adjustments were calculated to ensure that city, age, and gender composition in the sample was the same as in the sampling frame and census projections.”

We have clarified as well “weighted percentages” in the footnote of tables.

MINOR ESSENTIAL REVISIONS:

Regarding the allergens considered in the IgE analysis, authors have added some other allergens to the discussion but I advise to specify if all of them were potentially of interest in the study population.

Reply: The purpose of the paragraph was to address a previous observation by Prof. De Sario: “Authors should discuss other allergens of potential interest in the study population”, and to make clear a limitation of the study, as was suggested by reviewer Grize: “Differences of allergen sensitization between cases and controls could be greater if we had included...” should be part of the study limitations.” Considering the number of allergens to test, it is just a general concept.
Based on probabilities and is not intended to define the type of allergen that should be used. We now think that the idea is better expressed as follows: “...given that we used two allergens to diagnose atopy by sIgE (extracts from *D. pteronyssinus* and *B. tropicalis*), it is possible that the effects of cross reacting antibodies were more relevant. Differences of allergen sensitization between patients and controls could have been greater if we had included other allergens of interest, such as *Dermatophagoides farinae*, but financial limitations and the population-based design precluded this.”

Regarding missing data, I advise authors to specify in the Methods section as they answered to me that missing answers were included in the prevalence calculations as “no” answers as well as to explicitate the proportion of missing answers in the Result section.

Reply: This has been done now; in the Methods section, under “questionnaire and data collection”, and in Results section, in the first paragraph.

Regarding the difference between asthma symptoms and diagnosis, authors have added a short comment to the discussion. I suggest to search for possible explanations of asthma underdiagnosis in the local context (health service organizations), and discussing this point more in detail (in which age group the difference seems to be greater).

Reply: We have now expanded on this comment, and provide two references, one in Latin America and one worldwide that highlight these issues. The paragraph now reads as: “Disease severity for asthma remains high when compared with results 11 years ago. This may be due to under-diagnosis of asthma; in both surveys, the frequency of physician diagnosis is very low when compared to symptom-based prevalence, especially for subjects below age 18 years of age, suggesting limited access to specialized health care in these age groups. Suboptimal asthma control can be another explanation for persistent disease severity, due to lack of general physician awareness on current guidelines on effective treatment strategies for asthma [29, 30].”

Regarding the analysis of the burden of disease (table 8), authors have left the percentages only. It could be useful if authors clarify in the foot note which are the denominators of the percentages, whether they are referring to the lifetime or the last year conditions. It could be useful if they discussed a little bit more about days away from work or school and the other indicators of burden of disease, discussing also about the application of the international guidelines for treatment of asthma, rhinitis and eczema in Colombia. I wonder if, specifically for asthma, there are data in Colombia regarding another indicator of quality of care, the prevalence of admission rates for asthma, especially in children.
Reply: This has been now done now in the footnote of table 8: “Weighted Percentage of those subjects with symptoms in the previous 12 months”; additionally, each item now has the time period to which it refers (the last 6 or 12 months).

We have now expanded as well in the Discussion the disease burden seen in our study, specifically for asthma, and provide two additional references: “Disease burden to the patient and the caregiver was important in our study, with more of 60% of asthma patients reporting out-of-pocket expenses. Inappropriate ambulatory care of subjects with asthma can also be associated with increased hospitalization due to exacerbations; asthma is an ambulatory care sensitive condition where the need for hospitalization can be a marker of inappropriate health care [31]. Additionally, the mean number of days lost from work or school in our study is consistent with moderate persistent asthma, a stage of severity associated with substantial health care costs and hospitalizations in previous studies in the literature [32,33].”

We do not have access to admission rates for asthma in the country, since this is not of obligatory report.

Regarding the international comparisons, authors have addressed this point but reminded for details to other studies. However, I recommend authors to cite relevant risk factors for prevalence of asthma and allergies in the local context (poor housing conditions, overcrowding, malnutrition, early exposure to infections and parasites).

Reply: This has been done now. We have added in the Discussion additional factors identified locally in Colombia, and added a new reference: “These differences suggest that local factors may dramatically alter the prevalence of these conditions, and they can include a wide number of both genetic and environmental characteristics acting simultaneously and synergistically. The study by Mallol et al [24] that included three cities in Colombia (Bogota, Cali, Barranquilla), did not find a positive associations between asthma and the socioeconomic variables studied (latitude, altitude, national gross income, poverty). The Isaac III study in Bogota, however, found that asthma symptoms were correlated with the presence of a cat in the home, higher maternal education, watching television 1 to 2 hours per day, and the use of acetaminophen and antibiotics in the last year [17]. In that same study, rhinoconjunctivitis symptoms were associated with previous acetaminophen and antibiotic use, and higher maternal education and cesarean birth [25]. Additional risk factors in Latin America have also been postulated and described in detail by Cooper et al elsewhere [26, 27].”

Even in the absence of data on the proportion of kids not attending school, anyway I advise authors to discuss this point among possible limitations.

Reply: This is included in the Discussion among limitations: “Our study has limitations. First, results may not be extrapolated to children not attending school or living in rural dwellings in Colombia...”

As in my first review, I advise authors to provide, if possible, in the rationale, some demographic, socioeconomic and health data for Colombia and to compare them with other LA countries.
Reply: This has now been included in the Introduction section: “Colombia is a country of over 41 million inhabitants, predominantly urban (72%), where about 30% live in the four largest cities (Bogota, Medellin, Cali and Barranquilla). Similar to other countries in the Andean region (Venezuela, Ecuador, Peru, Bolivia), Colombia is experimenting changes consistent with a society in transition, with an aging population, where the main causes for death now are chronic diseases. Colombia’s GIP, life expectancy, mortality rates and other basic health indicators are closer to those of Peru and Ecuador [16].”