Reviewer's report

Title: Prevalence of asthma, rhinitis and eczema symptoms in rural and urban school-aged children from Oropeza Province - Bolivia: a cross-sectional study

Version: 1 Date: 7 May 2013

Reviewer: Leila D Amorim

Reviewer's report:

The paper is well written. However some concerns are listed below.

Major Compulsory Revisions:

1. Selection of study population

The authors mentioned 185 registered schools, among which 36 were included in the study (30 in urban areas and 6 in rural areas). Some missing information is regarding:

(i) Distribution of all registered schools in rural and urban areas;

(ii) Reasons for randomly selecting 43 schools out of 185. Why the majority of schools are from urban areas?

(iii) A one-stage cluster sampling design is used, but it is not well described. Parameters considered for sample size calculation are missing. What is the intraclass correlation coefficient? What is the effect size?

2. Statistical methods

(i) Authors use chi-square tests and logistic regression models for data analysis. However, both methods assume independent observations coming from a random sampling scheme. Use of such methods for analysis of correlated data may lead to invalid and biased results. Since the data is clustered, extensions of those methodologies are required. There exists several statistical methods for handling correlated data (one reference is Shoukri and Chaudhary, 2007, Analysis of Correlated Data with SAS and R). For logistic regression models, authors might use GEE or random effects approaches.

(ii) In page 5, authors mentioned that they determined sample size based on 1% significance level. However, 95% confidence intervals are presented. Significance level used for sample size calculation should be the same used for statistical analysis.

(iii) P-values in Table 1 should be revised with appropriate statistical method.

Minor Essential Revisions:

1. Response rate is reported to be 91%. Are you able to compare some information regarding two groups of individuals (those who participated and those who did not participated in the study) in order to assume that missing is at random?
2. The study is highly unbalanced, with very large proportion of schools and students from urban areas, but the authors mentioned that they had a representative sample of children from urban and rural areas. Could you please explain with details about the representativeness of this sample for this population?

3. Authors should discuss potential selection bias and limitations of study.

4. Authors should estimate and present the intraclass correlation coefficient of the study.

5. Table 1 contains private type of school, which is not observed in rural areas. Please recategorize this variable.

Discretionary Revisions:
1. Include 95% CI in front of all confidence intervals cited throughout the text.
2. On page 9, correct word “statistically” (second last line)
3. Title of Table 2 is very long and confused. Please review it.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests