Author's response to reviews

Title: Impact of air pollution on pulmonary function and respiratory symptoms in children during different seasons of the year. A cohort study.

Authors:

Benigno Linares (lisb700705@yahoo.com.mx)
Juan M Guizar (jmguizar@prodigy.net.mx)
Norma Amador (norma.amador@imss.gob.mx)
Alfonso Garcia (algavela@hotmail.com)
Rogelio Perez (perezpad@servidor.unam.mx)
Rocio Chapela (rociochm@iner.gob.mx)
Victor Miranda (vmsoberanis@gmail.com)

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Response to the reviewers

Impact of air pollution on pulmonary function and respiratory symptoms in children during different seasons of the year. A cohort study

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We thank the reviewers for their thoughtful comments. We have addressed each comment specifically.

Reviewer 1

1) The manuscript is improved, but it still overinterprets the effect of air pollution on study findings, especially in the discussion.

The discussion was revised and now it reflects more precisely our results.

2) In the methods section, the subsection on statistical analysis still does not tell what statistical technique was used to evaluate the symptom data. The abstract mentions multilevel logistic models. Specifically, how were these models constructed? Were separate models constructed for the different seasons?

We thank the reviewer for this comment. To evaluate the symptom data we used multilevel logistic models, clustering by child and intercept as a random effect. Furthermore, adaptive quadrature with Newton Raphson iterations was used instead of ordinary quadrature. Different choices of integration points were made as long as it showed a more adequate and superior model fit, however results did not vary significantly. Symptoms coded as dummy variables played the role of response variable.

Models were constructed and fitted for the whole year (not by season)

We have added this detailed information in the methods section.

3) In table 4, it appears the effect measure given is the modeled coefficient (the modeled log odds). However, I am not sure of this. Generally, odds ratios, not betas, are given in this situation. Was school included in every single-pollutant model?

Units should be given.

We agree with this point and have incorporated in table 4 the odd ratios (95%CI) for respiratory symptoms. We have also added this new information in the Results and Discussion.

And yes, “school” was included in every model in order to assess the “school” effect, as one school was located within a zone with high pollutant daily level, compared with the 2nd school.
4) In tables 4, 5 and 6, units are given.

5) Again, why are confidence intervals given in table 6, whereas p-values are given in the other tables?

Tables 4 and 5 are now showing odd ratios (95% CI).

6) The meaning of the variable for fossil fuel is still unclear, and I am not convinced that this variable helps the analysis.

We consider this variable because in our country natural gas for cooking is not generally available, and charcoal or wood are commonly used.

7) We agree that pollutant levels were more often associated with "obstructive-type" than "restrictive-type" changes in lung function and we specified in the discussion section that the manuscript does not present convincing evidence of an association of air pollution levels with obstructive lung function changes, or, for that matter, with restrictive lung function changes.

8) In the conclusions section it was specified that PM10 levels were positively associated with FEV1/FVC.

9) The manuscript was checked for grammatical and misspelling errors.

Sincerely yours

Dr. Juan Manuel Guizar Mendoza

Corresponding author

jmguizar@prodigy.net.mx