Author's response to reviews

Title: Chronic respiratory disease among the elderly in South Africa: Any association with mine dumps?

Authors:

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Author's response to reviews: see over
Chronic respiratory disease among the elderly in South Africa: Any association with mine dumps?

Dear Editor,

Authors would like to thank the reviewers for the comments. Below are our responses to reviewers’ comments.

Yours sincerely,

Vusumuzi Nkosi, Janine Wichmann and Kuku Voyi

Referee: Bert Brunekreef

Confounding: all epidemiology textbooks tell you NOT to use statistical significance of confounder-outcome associations as a means to select confounders into the models. Confounders need to be specified in advance; then, unadjusted and adjusted associations need to be presented. And confounding is judged to be present if the effect estimates of the exposure of interest (in this case: living in a community near a mine dump) changes by some predefined %. Then possibly you may wish to find out which covariate was the most influential confounder, and you may want to discuss residual confounding by unmeasured or poorly measured confounders.

Comment accepted: confounders were specified in advance as mentioned in the methodology section. Confounding was judged to be present if the effect estimates of the exposure of interest changed by 5% and those variables were included in the multilevel logistic regression analysis. See the methodology section, page 7-8.

The analysis also needs to take into account that responses are likely to depend on the community to some extent. Some form of multilevel modeling is needed to obtain correct effect estimates, and unbiased confidence intervals.

Comment Accepted: Although the exposed and exposed communities were similar by socio-economic status and demographic profile. However, when multilevel modeling analysis conducted by province and population group we did observe some deflation in the effect estimate values and its confidence intervals as the reviewer had suggested. The result section was amended accordingly, see table 3 and 4.

The authors touch upon, but not really discuss the potential for response bias: if living in a community near mine dumps is a public concern in the exposed communities, inhabitants may be more likely to report and attribute diagnoses.
Comment accepted: We acknowledge that inhabitants in exposed communities may be more likely to report and attribute diagnoses. This is mentioned as one of the study limitation. The sentence “The differential participation rate between exposed and unexposed communities is of concern and may well have introduced response bias, which is likely to overestimate the prevalence estimates derived from our cross-sectional study and also bias the association in either direction” was added in the manuscript. It is possible that the elderly who lived closer to the mine dumps and had the health outcomes considered in this study were more motivated to take part in the study than those living further away.

Quality of written English: Needs some language corrections before being published.

Comment accepted: The manuscript was sent to a professional language editor, and was amended accordingly.

Referee: Bill B Brashier

Major compulsory revision

Introduction:

The introduction starts well with epidemiological relevance of respiratory diseases and probable risk factors, but it does not indicate that why does the author thinks that mine dump can be a potential source of air pollution. Are air pollutants from mine dumps characterized particularly in context to respiratory health? The air pollution implications of mine dumps need to be described in this section.

Comment accepted: Introduction was amended accordingly, see paragraph 3 of this section.

Further as population selection was elderly, why did author select elderly population?

As part of the bigger project, we also conducted ISAAC study (International Studies of Asthma and Allergies in Childhood) that focused on 13-14 year olds in exposed and unexposed communities and the findings have been submitted separately for peer review.

Methods:

This is a plain questionnaire based study, however, was the randomly based selection of homes was conducted in a radial fashion of homes around the dump or was this unidirectional selection. This is important, as the wind direction could also be an important contributor. If the wind direction has potential to transfer the pollutants. However this may not change the results but is relevant.

Comment accepted: The methods section was amended accordingly. The sentence
“Four to five houses were then randomly selected in each street in a radial fashion” was added in the manuscript.

Why was not COPD described?

We used ATS-DLD-78 questionnaire from British Medical Research Council (BMRC) that did not include COPD.

Further for quality control the fieldworkers randomly selected 10% of homes and re-administered the same questionnaire on the same previously interviewed participants to verify their responses was stated. However, its not clear that what % of deviations within the interviews were considered unacceptable.

Comment accepted: The methods section was amended accordingly. The sentence “Ten percent deviations within the interviews were deemed unacceptable” was added in the manuscript.

Also were the question translations validated for the population? If not please discuss why the author did not do this, and then why the results should be reliable?

Comment accepted: Face-to-face interviews were conducted using a previously validated ATS-DLD-78 questionnaire from British Medical Research Council (BMRC). A pilot study was conducted in one of the community located in close proximity to the mine dump, and was not included in the cross-sectional/main study.

Also, since the dump exposed versus unexposed was predetermined basis of the study this could have biased the interviewers towards more positive response in the exposed areas, please explain.

Comment accepted: We acknowledge that inhabitants in exposed communities may be more likely to report and attribute diagnoses. This is mentioned as one of the study limitation. The sentence “The differential participation rate between exposed and unexposed communities is of concern and may well have introduced response bias, which is likely to overestimate the prevalence estimates derived from our cross-sectional study and also bias the association in either direction” was added in the manuscript. It is possible that the elderly who lived closer to the mine dumps and had the health outcomes considered in this study were more motivated to take part in the study than those living further away.

Results:

Please remove table 4 from the second last-paragraph 4th line of results as there is no table 4 in the manuscript.

Comment accepted: The results section was amended accordingly.
Also the OR have been adjusted which is appropriate, however it is important to also tabulate unadjusted OR. The comparison of adjusted and unadjusted OR can be important to see the influence of different factors on mine dump exposure odds.

Comment accepted: “Crude odds ratios with 95% confidence intervals of chronic respiratory symptoms and diseases in all 11-study communities located 1-2km and ≥5km from mine dumps in Gauteng and North West provinces, South Africa during November-December 2012”. See supplemental table 1 & 2.

Minor compulsory revision

One of the limitation is also not using spirometry, please add this.

Comment accepted: The sentence “No lung function tests and or spirometry were conducted during the study” is mentioned as one of the study limitation in the manuscript.