

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	URBAN CITY TRANSPORTATION MODE AND RESPIRATORY HEALTH EFFECT OF AIR POLLUTION: A CROSS SECTIONAL STUDY AMONG TRANSIT AND NON-TRANSIT WORKERS IN NIGERIA.
<b>AUTHORS</b>	Ekpenyong, Chris ; Ettebong, E.; Akpan, E.; Timothy, Kayode; Daniel, Nyebuk

### VERSION 1 - REVIEW

<b>REVIEWER</b>	David Rojas-Rueda MD, MPH. Position: Researcher of Centre de Research in Environmental Epidemiology (CREAL), Barcelona, Spain.  Competing interests: None declared
<b>REVIEW RETURNED</b>	16-Apr-2012

<b>THE STUDY</b>	<p>1. The design of the study mentioned in the title (cases and controls) does not correspond with the methodology presented. In my opinion this study has more characteristics of a cross-sectional study. There is no follow up of cases or controls, is a single take of information over the time (for both the exposure and the outcome) and the statistical methodology focuses on identifying only the statistical differences between groups. This cross-sectional study should to estimate the prevalence of the outcomes in the study population, relate it to the multiple exposures (smoking, socioeconomic status, air pollution, etc.) and create hypotheses on existing associations.</p> <p>2. Within this cross-sectional study we identified different exposed (taxi drivers and motorcyclists) and not exposed groups to air pollution (civil servants). Unfortunately, the characterization of the exposure is not fully described, could be clarified characteristics as the average time of exposure in each study group (hours of daily exposure on trips by motorcycle and taxi), physical activity level (in METs / week) for each mode of transport (some authors suggest that drivers have a higher energy expenditure than the passengers). And should describe other confounding factors that may alter exposure as an area where it has its home (if there are differences between the housing areas between cases and control group(according to their level of pollution)), exposure to the biomass (wood, etc.) for cooking at home, or heating, if the cars had the windows open or closed during the measurement of exposure in the car (not just the use of air conditioning), the type of fuel used by taxis (% gasoline vehicles, diesel, etc.) and mode of transport used by the civil servants for commute (the exposure of the group's control, between work and home is not mentioned in the manuscript). And other factors that may affect the outcome on health as having pets or live animals (especially birds), feather pillow, a</p>
------------------	--

	<p>history of allergy, atopy, asthma, respiratory disease, baseline physical activity level, concomitant diseases, nutritional level, etc. All these factors can influence a change in respiratory health, and should be considered as potential confounders or at least mentioned as a weakness of the study if they do not have this information.</p> <p>3. The representativeness of the study subjects is not clearly defined. Not reports the total number of taxi drivers and motorcyclists in the city (and their characterization), so it is not known if this study is representative of this population. A very important point is the control group, in addition to not being socio-economically comparable (as mentioned in the manuscript) is not clearly described whether they are comparable to the case groups, especially in the confounding factors (exposure and outcomes) mentioned above.</p> <p>4. References need to be checked, eg some references errors. Reference # 7, says "Rueda-DR, de_Nazelle A," and should say "Rojas-Rueda D, de Nazelle A,".</p> <p>5. Since my consideration is a cross-sectional studies should include STROBE checklist for cross-sectional studies.</p> <p>6. Should include additional information on the modal split in the city in a separate table (%or # of trips in each mode of transport within the city).</p> <p>7. On page 5 line 13, mentions that motorcycle passengers carried increased physical activity, compared to traveling by car? You can justify this relationship?</p> <p>8. Why only men are included in the study? there are no women holding these jobs? If soyou have to mention it.</p> <p>9. Should be described very well the type of work performed by employees in the control group, working time, type of work, and if possible to know the levels of exposure to indoor pollution, if you do not have this data, the authors have to mention in the discussion.</p> <p>10. The measurement of pollution in the city took place on 6 points. How were selected this 6 points? And Why that only areas with high levels of pollution? The taxi drivers and motorcyclists never travel in less polluted routes? What percentage of trips made by the cases was performed in these highly contaminated areas? If you do not have this information, mention if you assume that these measurements are representative of the entire city or all routes.</p> <p>11. Measurements are taken only at rush hour. Taxi drivers and motorcycle drivers only work in these hours? If not and the authors assume that this concentration is representative of the entire working day, should be mentioned in the discussion</p>
<p><b>RESULTS &amp; CONCLUSIONS</b></p>	<p>12. Tables should be improved, including a description of all the acronyms as table footer, should include units of measure for each parameter e. age (years) Duration on job (months), FVC (ml / sec), and so on. Be included in the table footer definition of some data in the table (eg ex-smokers: have smoked in the last # months, etc..). Would be desirable to highlight the p values in bold to help identify significant. Table 4 should be included in the column "WHO (2005)" the 24-hour average values reported by the WHO for PM2.5 (25mgc/m3) and PM10 (50 mcg/m3).</p>

	13. In the manuscript is not fully defined smoking exposure (number of cigarettes per day, duration of smoking, etc.) between different groups of cases or controls.
<b>REPORTING &amp; ETHICS</b>	5. Since my consideration is a cross-sectional studies should include STROBE checklist for cross-sectional studies.

<b>REVIEWER</b>	Dr Dotun Olowoporoku Research Associate Air Quality Management Resource Centre University of the West of England Bristol BS16 1QY
<b>REVIEW RETURNED</b>	29-Jun-2012

<b>GENERAL COMMENTS</b>	<p>This is a very interesting research and very timely as well. It investigates the health effect of long-term exposure to traffic-related air pollution in a Nigerian city. Its intention to correlate the findings with the smoking habits of the participants raises few questions: is exposure to tobacco smoke used as potential confounder to diseases attributable to air pollution? If yes, why is this chosen? What about other significant confounders such as exposure to indoor pollution from kerosene stoves and lanterns, exposure to particulates from diesel-powered generators and road-side dusts?</p> <p>Title: the title is rather too long and does not succinctly describe the research undertaken here. It can do with two full colons</p> <p>Introduction</p> <p>Page 4</p> <p>Line 13: change to - loss of life</p> <p>Line 17: why US and China? Do these countries represent the highest level of annual mortality attributable to air pollution?</p> <p>Line 32: what do the authors mean by 'common routes for human'? are they saying that evidence have shown that people are more at risk of occupational exposure to air pollution than other means?</p> <p>Line 36: the word culprit may be out of place here. Also the reference for the assertion made here is rather old. The argument here is central to the rationale for this research and will therefore benefit from a more recent peer-reviewed journal article.</p> <p>Line 38: What does the author mean by 'classic' here?</p> <p>Line 42: 'within and even to the suburbs' sentence might need re-phrasing to communicate better</p> <p>Line 44: 'nooks and crannies' seems too colloquial for this article</p>
-------------------------	---

	<p>Lines 46 – 49: may need references</p> <p>Line 51: which trend?</p> <p>Page 5</p> <p>Line 2: are the previous statistics of pollutant contributions for world estimates or for the case study city?</p> <p>Lines 15 – 18: re-phrase or break the sentence into separate parts to communicate better</p> <p>Lines 24 – 27: references needed</p> <p>Lines 38 – 39: there is a big jump between these paragraphs. More sentences may be needed to link up the background of the research with its rationale. The last paragraph may need more work to expand the objectives of the research</p> <p>Methods</p> <p>Page 6</p> <p>Lines 5 -9: any particular reasons why female participants are excluded from this research? Why are road-side traders – with significant exposure to traffic-related air pollution – not included in this study?</p> <p>Line 20: is the CRSQ based on methodology designed by the authors? If yes, there is need to expand on this? If not, reference may be needed along with reason for choosing this questionnaire for this study?</p> <p>Line 28: 'gather information' may be more appropriate in this context</p> <p>Line 29: more information is needed about the ethics committee? Which institution? What criteria are used?</p> <p>Measures</p> <p>Line 41: refer to the earlier comment about the rationale for using smoking habit as a confounding factor. There is need to elaborate on this in method section.</p> <p>Line 54: are other potential confounders considered for the control group?</p> <p>Page 7</p> <p>Line 1 – 14: which specific pollutants are monitored during this period? What emission factor was used to adjust the results? What is the average period that each participant is likely to be exposed to</p>
--	--

	<p>these pollutant?</p> <p>Results</p> <p>Page 9</p> <p>Line 9: 'Smoking' why capital letter?</p> <p>Lines 12 – 13: This need to be explained a little bit further with reference to the importance of these results to the overall aims of the study: does the level of education of the participants have any relationship with their exposure to air pollution?</p> <p>Table 4: change 'open air pollutants' to 'ambient air pollutants'. Open connote different meaning in air pollution context</p> <p>What is the reference for the NAAQS standard?</p> <p>Discussion</p> <p>Lines 6 – 7: how certain are the authors about the assumption that the baseline group are not exposed to air pollution through other means apart from the nature of their work?</p> <p>Conclusion</p> <p>Few issues needs to be addressed in this conclusion: what is the importance of this study on policy and practice? How does this study fit into other similar studies (if there is any) in Nigeria? How applicable is this study elsewhere? What are the transferable lessons that can be drawn for readers outside Nigeria? These issues need to be explicit rather than implicit in the conclusion.</p>
--	--

**VERSION 2 – REVIEW**

<b>REVIEWER</b>	<p>David Rojas-Rueda MD, MPH.          Position: Researcher of Centre de Research in Environmental Epidemiology (CREAL), Barcelona, Spain.</p>
-----------------	--

	I declare no conflicts of interest for the revision of this manuscript.
<b>REVIEW RETURNED</b>	01-Aug-2012

<b>RESULTS &amp; CONCLUSIONS</b>	<p>4. Table 2. I think the main findings are summarized in Table 2. But this table does not include in its analysis an adjustment for the covariates listed in Table 3 (that are essential). The authors have already done the hard work of collecting this information and process; it is only necessary to include in the regression analysis of the OR adjusted for age, education level, smoking, etc. Could be presented in Table 2, the raw and adjusted odds or just the OR adjusted for these covariates. See the examples reference added.</p>
<b>GENERAL COMMENTS</b>	<p>1. First I want to thank the great effort that has made by the authors to meet the recommendations made in the previous review.</p> <p>2. Page 8, line 34: Please describe the acronyms GOLD and NICE. It is important make the description of acronyms when appear in the manuscript.</p> <p>3. Tables 1, 2 y 3. Is recommended to present as the first column of results of the reference group (Civil Servant), and the comparison groups in subsequent columns. This will facilitate the reading of the tables.</p> <p>4. Table 2. I think the main findings are summarized in Table 2. But this table does not include in its analysis an adjustment for the covariates listed in Table 3 (that are essential). The authors have already done the hard work of collecting this information and process; it is only necessary to include in the regression analysis of the OR adjusted for age, education level, smoking, etc. Could be presented in Table 2, the raw and adjusted odds or just the OR adjusted for these covariates. See the examples reference added.</p> <p>5. Strengths and limitations. Page 22. We recommend including between the limitations of the study the number of subjects included in the reference group CS (n = 6). It is also recommended to include a sentence with the limitations of a cross-sectional study. It is also recommended adding a sentence that mentions that that this cross-sectional study can not define if the occupational exposures cause the chronic lungs damage.</p> <p>6. Not mentioned in the manuscript the sample size calculation, if performed previously or not.</p> <p>Examples references for multivariate regression (OR adjusted)</p> <p>1: Kahwa EK, Waldron NK, Younger NO, Edwards NC, Knight-Madden JM, Bailey KA, Wint YB, Lewis-Bell KN. Asthma and allergies in Jamaican children aged 2-17 years: a cross-sectional prevalence survey. <i>BMJ Open</i>. 2012 Jul 12;2(4). (See table 7)</p> <p>2: Corsi DJ, Subramanian SV. Association between socioeconomic status and self-reported diabetes in India: a cross-sectional multilevel analysis. <i>BMJ Open</i>. 2012 Jul 18;2(4). pii: e000895. doi: 10.1136/bmjopen-2012-000895. (See table table 3 or 4)</p>

**VERSION 2 – AUTHOR RESPONSE**

<b>S/N</b>	<b>Section</b>	<b>Reviewers' Comment</b>	<b>Response</b>	<b>(Revised Version) Page</b>
1		Commendation	Appreciated	
2	<b>Page 8, Line 34</b>	To describe the acronyms "GOLD and NICE"	Done	Page 8, Paragraph 5
3	<b>Table 1, 2 and 3</b>	To present as the 1 <sup>st</sup> column the results of the reference group in table 1, 2 and 3	Done	Pages 12,13 and 14 Table 1, 2 and 3
4	<b>Table 2</b>	To include adjusted values for the covariates listed in table 3 in table 2	Done	Page 13
5	<b>Strengths and Limitations</b>	<ul style="list-style-type: none"> <li>To include a sentence with limitations of a cross-sectional study.</li> <li>To include as a limitation of the study the number of subjects included in the reference group CS (n=6) as shown in Table 2</li> </ul>	<ul style="list-style-type: none"> <li>Done</li> <li>The referee suggested including as a limitation of the study the number of subjects included in the reference group CS (n=6) in table 2. I wish to explain that CS (n=6) was the total number of civil servants with respiratory function impairment but not the total number CS who took part in the survey hence it is not a limitation. A total of 58 civil servants took part in the study, out of which 6 had respiratory function impairment as shown in table 2.</li> </ul>	<ul style="list-style-type: none"> <li>Page 23</li> <li>Page 6</li> </ul>
6	<b>Sample Size Determination</b>	Sample size calculation not mentioned in manuscript	The representativeness of the study subjects was difficult to determine, as effort to get information regarding the total number of registered commercial motorcyclists and taxi drivers from the city	Page 23

			authority was not successful	
--	--	--	------------------------------	--