Author’s response to reviews

Title: In-School adolescents' weight status and blood pressure profile in South-western Nigeria: urban-rural comparison

Authors:

Gabriel Omisore (akinlolu.omisore@uniosun.edu.ng)

Bridget Omisore (bridgetomisore@yahoo.com)

Emmanuel Abioye-Kuteyi (eakuteyi@gmail.com)

Ibrahim Bello (bello.ibrahim@gmail.com)

Samuel Olowookere (sanuolowookere@yahoo.com)

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REVIEWERS’ COMMENTS AND CORRECTIONS MADE BY AUTHORS

REVIEWER 1

Comment 1: This is a survey based study. Are there missing items or values involved for the survey variables? What is the response rate of the survey?

Response: At the point of data collection on the field, there were indeed missing items or values, however an on-site/field check of each completed questionnaire by the lead and second authors was done and respondents who had missing values were encouraged to kindly complete the questionnaire. The response rate of the survey was in excess of 95%, most parents to whom the informed consent forms were sent signed the forms and permitted their children to be part of the study (This last sentence has been incorporated into the declarations). Line number 56-58

Comment 2: In the method section, statistical analysis methods used for the study were missing. The authors should add a subsection to elaborate on the methods used for data analysis in this study.

Response: Thanks. It was not missing. We have improved on it. See Line number 211-217

Comment 3: The definition of socio-economic status is confusing. Is it comprehensive index developed from multiple socio-economic factors? What is the cut-off used to determine "low" or "high" SES?
Response: Done as requested. See Line number 232-241

Comment 4: The headings of table 5 is quite messy and pretty hard to identify the columns.

Response: Thanks so much. Appropriate corrections have been made to the heading. See Line number 618

Comment 5: The results in table 6 are quite confusing. For instance, the odds ratio of HBP associated with sex is 0.6. I guess this should be the odds ratio of HBP associated with "Male" rather than "Female", but many reader could misunderstand this as you put Female instead of Male there. For age group, late adolescent was a reference, how could you get p value 0.999 for this reference category? The same case happens to other variables. What is the reference for weight status?

Response: Thanks. This table has been corrected. See Line number 632

REVIEWER 2

Comment 1: Supposedly BMI is a biological factor affecting BP, how would we expect the aetiology in Nigeria (and between urban and rural area) to be differed from other populations?

Response: Thanks. Like you stated, in most parts of the world there is an established relationship between the BMI and blood pressure irrespective of rural-urban location. However it is still important to periodically check whether this assertion still holds true or not, that’s the essence of research. For instance, in developed countries obesity is commoner in rural areas while it is commoner in urban areas in sub-Saharan Africa. Even with respect to the biological factor, sex, there is variation between studies on whether high BP is commoner among male or female adolescents. Thus, the need to check and re-check certain assertions becomes imperative.

Comment 2: P.10 Methods SES was mentioned to be based on a wealth index approach, but more details should be given because it could one of the possible reasons for the urban-rural difference. Was the SES reported by parent or child? What was the exact SES indicator (household income, wealth or number of key possessions)? Also, SES is a broad term that also includes education and occupation and other socio-economic aspects. Please use the exact SES indicator, rather than "SES".

Response: Done as requested. The SES was reported by the child, based on what he/she knows that the parents possess. See Line number 232-241
Comment 3: What were the associations of father's and mother's education with BP? Also, what were the associations of father's and mother's education, as well as the exact SES indicator with BMI?

Response: They were excluded because some respondents did not know their father’s or mother’s educational status. The association with fathers’ and mothers’ educational statuses have now been included (unknown educational status excluded) with relevant comments inserted in the results and/or discussion sections and highlighted. See Table 2 and 5. Line numbers 574 and 624

Comment 4: P.13 Results Table 6 has to be revised. Given there are only 3 categories for weight status (normal, overweight, obese), why there was p-value reported for all three groups? I suppose "Obese" was used as the reference, but given the very small number of obese children especially in rural area, I suggest the authors use "Normal weight" as the reference instead.

Response: Thanks. This table has been corrected and an additional Table (7) has been added. See Line number 643-648.

Comment 5: P.13 Results Also, for the sentence "Similar but a more pronounced finding was seen in rural area (AOR = 0.009), with respondents having normal weight about 111 times (1/0.009) less likely to have high BP compared with those who were obese", considering the wide 95% confidence interval, I would suggest the authors focus on interpreting the direction of the association, rather than the magnitude.

Response: This sentence has been deleted

Comment 6: P.13 Discussion What do the authors mean by "perceived" difference in lifestyle between urban and rural students? Are there previous studies that demonstrate the "actual" difference in lifestyle or other factors that would be related to BMI?

Response: There are studies that have made this hypothesis and one such study is now quoted (reference 10). The word perceived has now been removed. Line number 333-334

Comment 7: Limitation. The validity of the prevalence of higher BP and BMI requires a population-representative sample, please add a discussion about the population representativeness and generalizability.

Response: This has been done. See Line number 308-311; 320-323

Thank you
Dr. S.A. Olowookere
Corresponding author