Reviewer's report

Title: The association of physical activity, body mass index and the blood pressure levels among urban poor youth in Accra, Ghana.

Version: 1  Date: 23 September 2014

Reviewer: William Bosu

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The association between physical activity, BMI and BP levels among urban poor youth in Accra, Ghana

Reviewer Comments

Introduction

A cross-sectional study among a subsample aged 15-24 years in three poor communities of Accra was undertaken to assess the relationship between physical activity and BMI as determinants of blood pressure levels and hypertension.

Minor comments

1. Some typos – misuse of “adolescence” as a noun and adjective (e.g. lines 48, 51); change “activity of” to “activity in” on line 139,
2. P value is a probability and so cannot be negative, so revise P<0.000 on line 167
3. “Higher prevalence” on line 200. Measured against which comparison group?
4. Revise lines 165 and 226: “females had higher proportions .....”
5. Revise line 234: “females had elevated ...”
6. Harmonize reference format in bibliography – for example BMC is rendered as an abbreviation on lines 299 and 385 but in full on lines 344 and 355
7. Figs 1a & 1b are cited in text after Figs. 2 and 3. Figs 1a & 1b they could be merged

Major comments

1. Several references, particularly those cited to support statements on trends and on aetiology are inappropriate. For example:
   a. None of the first three references supports the factual statement on how adolescent high blood pressure is associated with “health problems in later life”.
   b. References 8-10 do not support the assertion that physical inactivity, obesity and certain risk factors such as alcohol and tobacco consumption have increased among the youth. Indeed, ref 10 was a study among elderly Japanese subjects with a mean age of 72 years.
c. The references to support the statement on line 82 should also be reviewed
d. Reference 9 on line 211 is inappropriate

2. There are some inaccurate statements (lines 61; 72-74; 77-78) that should be reviewed

3. The background could be revised to make it more focused on patterns and trends of obesity, physical activity and hypertension among adolescents in Africa

4. Missing “each” in lines 109-110 based on a description of the same study in Awuah et al 2014

5. The total sample aged 15-24 y in the previously published study is 240 (130 females and 110 males). This sample is 39 more than the 201 reported in the current paper. What explains the difference?

6. The response rate among persons aged 15-24 years was 62.4%. More information should be provided on reasons for non-response and if available, how their sociodemographic characteristics compare with those who participated

7. The classification of physical activity normally requires a combination frequency, intensity and duration. The use of frequency of leisure-based physical activity appears to impute intensity is confusing. A person who is engaged in low-intensity or moderate-intensity physical activity 5 or more times in the past week, even if it all occurred on a single day is classified as being vigorously active. Without a clearer definition, there is a risk of misclassification which may not be random.

8. In the published paper based on this study (Awuah et al 2014), physical activity was based on household activities such as washing clothes, brisk walking etc. However, in this study, only “leisure physical activity” was considered. Please clarify the difference in approach.

9. Persons in the study area as described as being “migrant” – engaged mainly in fishing, petty trading and artisan work. Most of these occupational activities typically involve manual work. And so to restrict the assessment of physical activity only to that undertaken during “free time” will likely underestimate their true levels of physical activity and thereby possibly exaggerate the effect size in relation to hypertension. This may explain why 84% of the respondents were classified as physically inactive (line 166).

10. If a list of households and its members are available, then, in order to take account of the selection probabilities at the different sampling levels, it will be useful to do a weighted analysis

11. The study found 11.5% of women had ever smoked tobacco in the preceding 30 days. This figure is much higher than estimates of from other surveys such as the GDHS 2008, GSHS 2008, and GYTS 2009. This needs to be commented on.

12. The dichotomous classification into “ever smoked” and “never smoked” does not enable public health officials to know the current prevalence of smoking in the study communities.

13. The age categories in Table 1 are not mutually exclusive
14. Comparisons of the study findings among the youth with those of other studies in adults and elderly populations in other parts of Ghana and South Africa are inappropriate (Lines 211-214). More relevant articles such as Addo et al 2006, Kunutsor & Powles 2009; Pobee et al 1977 and Pobee et al 1979 were not cited

15. The arguments in the limitations section seem tenuous:
   a. Even in BP was measured in multiple visits, one cannot impute causality in a cross-sectional study such as this
   b. Bias with respect to recall or self-report will arise if the authors determine a possible differential by sex, location, BMI or some other attribute. For example, if young men tend to more often report recreational sports than women, then bias would be present
   c. Large sample size does not imply generalizability (lines 253-254)

16. One limitation not mentioned is the difficulty of establishing cause and effect between physical activity and BMI

Discretionary revisions

1. Six different charts are presented based on (confounded) bivariate analysis and these covariates are subsequently adjusted for in a table with multiple linear regression. Authors could consider combining these six charts in a table so that effect sizes can be estimated and statistical test for trend performed.

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

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests