Reviewer's report

Title: Comparisons of Intensity-Duration Patterns of Physical Activity in the US, Jamaica and 3 African Countries

Version: 2 Date: 9 July 2014

Reviewer: Deirdre Harrington

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This paper reports on an analysis of data from the METs study. This study collected a variety of data, including accelerometer and self-report physical activity data, from over 2500 adults in 5 countries across the epidemiological transition. The main aims of METS (as taken from the protocol document of Luke et al 2011) is to investigate the population mean levels of PA and how they related to population mean levels of obesity and relative weight.

Please comment on the different sampling strategies for each site d whether it is considered a limitation. For example, in the US site recruitment was done through randomly selecting at the city block level, Jamaica sampled at a district level. While Seychelles stratified individuals to represent the age and sex breakdown of the whole country. Ghana and South Africa also stratified by age and sex but only to represent the locality. All these strategies are robust but limit readers from making direct comparisons between countries involved i.e. saying that the US had a higher obesity rate than Ghana. However, it is fine for comparing relationships i.e. physical activity on the weekend was associated with adiposity in one country but not in another.

The paper is very well written and is a lot of work has gone in to all aspect of the study and the analysis. Well done. The paper itself (results section especially) is very text and number heavy and was difficult to get through. However, when seeing the figures the differences within each country and between countries are extremely clear. This needs to be capitalised upon. For example, Figure 3 for women it seems very obvious that in Seychelles women need to be intervened upon on the weekend days (regardless of BMI status) while in South Africa weekday/weekend are so similar while in the US OW and OB women on both weekdays and weekend days are a target for intervention. These differences take a little while longer to pull out from the text.

*Minor essential revisions

Line 74- mention context/setting as well as pattern and intensity of physical activity

Line 113 - how were data on infectious disease etc collected and at what stage? Before other measures were taken during the screening process? Self-reported?

Line 128 – How many times were height, weight etc measured? Doesn’t say in the protocol document

Line 150 – Was the SAS macro specially developed for this study? Freely
available for others to use?
Line 191 - where was the data entry done? At the one central location in Chicago?
Line 203 – middle HDI is mentioned twice and very high not mentioned. Be consistent with the protocol document that says ‘Ghana is defined as a low HDI country, South Africa as middle HDI, Jamaica and Seychelles as high HDI and the US as a very high HDI country’ (Luke et al., 2011).
Line 252- Since there is a separate heading for ‘self-reported PA by adiposity’ and since the PA-adiposity relationship is a main aim of METS, suggest to have a heading for ‘weekday and weekend day PA by adiposity’ or similar for line 252 to 259 and also 272 to 277. Also complete this analysis for within each country rather than just all countries combined. What about total MVPA from accelerometer by adiposity within each country?
Line 262- state that this part of the analysis is for all countries combined.
Line 266 – are the differences in MPA based on occupation true for all countries?
Line 280 – in this paper we have METS (study name) and MET (for metabolic equivs) which may be a little confusing. Consider not using MET when describing the outputs from the GPAQ or state it differently. Alternatively, perhaps put the study name METS into italics.
Table 1- waist, hip and blood pressure are reported but not used anywhere. Delete.
Table 1 - state in the footnote examples of what ‘manual laborer’ were for context
Table 3a and b – consider highlighting significant differences between BMI categories within each country

1. Is the question posed by the authors well defined? yes
2. Are the methods appropriate and well described? yes
3. Are the data sound? yes
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? yes
5. Are the discussion and conclusions well balanced and adequately supported by the data? yes
6. Are limitations of the work clearly stated? State any limitations to the different sampling frames
7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? yes
8. Do the title and abstract accurately convey what has been found? yes
9. Is the writing acceptable? yes

Level of interest: An article of importance in its field
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'