Author's response to reviews

Title: Body Composition, Water turnover and Physical activity among women in Narok County, Kenya

Authors:

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Version: 5 Date: 25 June 2014

Author's response to reviews: see over
25th June, 2014

Dear Editor,

Re: Submission of Revised Manuscript

I am writing to submit our revised manuscript entitled ‘Body composition, water turnover and physical activity among women in Narok County, Kenya’ for consideration in the BMC Public Health.

Reviewer's report

Title: Body Composition, Water turnover and Physical activity among women in Narok County, Kenya

Version: Date: 25 April 2014

Reviewer: Robert J Brychta

Reviewer's report:

I feel that there are several lingering minor essential revisions that should be made to strengthen the paper. Primarily, the presentation of the multivariate regression analysis should be cleaned up, both in the text (results section) and in Table 4.

Minor Essential Revisions:

1. Pg4, Paragraph 1: “Another aim was to describe the difference in body composition and physical activity among rural and urban Kenyan women.” The authors should also include differences in water turnover amongst the 2 groups in this sentence, since water turnover is in the main subject of the paper.

   In Page 4 Paragraph 1- water turnover has been included in the sentence.

2. “intensity of physical activity was obtained using Troiano et al. cut-off points [15]. To determine the wear time, we used at least 600 minutes per day for the minimum needed for a day to be included as valid.” The authors have still not discussed the method to detect non-wear time.
I assume there was an automated method to detect non-wear time and that this method used the NHANES criteria stated in the Troiano paper. This should be noted in the text.

In Page 7 paragraph 1- we used a 60 minute consecutive zero count non-wear definition and referenced accordingly.

3. In reference to Tables 1, 2, and 3 and the text associated with them in the results section: Were there any significant differences between the Urban and Rural groups studied (in terms of body composition, water turnover, or physical activity). If there were no significant differences, this should be noted in the text and the tables since comparing these groups was one of the goals of the study. If significant differences do exist, this should be noted in the tables with a p-value.

Page 7 last paragraph: Tables 1, 2 and 3 - there was no significant difference in the means of the groups (rural and urban) as indicated in line 3, 6 (page 8) and 11 (page 8).

4. Page 7, Paragraph 2: If the authors elect to use $R^2$ rather than $R$-value they should also note the direction of the relationship between water turnover and FMI, FFMI, and physical activity (positive or negative).

Page 8 paragraph 1- All these variables (Fat mass index (FMI), fat free mass index (FFMI) and physical activity are positively correlated with water turnover.

5. Table 4 is not well presented. The columns appear to change (From B, SE, standardized B, P To $R^2$, SEE, P) they then change back to the original (B, SE, standardized B, P) for model 2, but this is not labeled. The details of the different models are also not stated in the Table caption. The number of participants used in this analysis is also not stated anywhere. This is important since the analysis only includes the 22 participants with 2 days of valid wear from the original 28 participants.

6. Page 8 Paragraph 2, “Multiple regression analysis showed physical activity on top of BMI resulted…” the use of the phrase “on top of” is still confusing here.

Table 4 was completely reorganized and the new table is presented on page 20. And the number of participants ($n=22$) included. We have removed the words ‘…on top of’ and used the words ‘…explained additional variation of ‘.

7. Page 8 Paragraph 2. I think most of the paragraph is rather confusing. For instance: “Whereas physical activity in addition to FMI resulted in explaining additional variation in ($r^2=.37, p<0.005$; $\#r^2=.12, p<0.05$) and the beta values were .509 for FMI and .359 for physical activity, indicating that FMI was stronger predictor in this model.” I assume that the delta-$r^2$ means that this model explains additional variability compared to FMI alone (and not physical activity alone) and that n=22 now for both FMI alone and FMI+PA. But results for FMI alone with n=22 are not shown anywhere.
Page 8, we have added the information on the additional variation in water loss when FMI (table 5) alone were included in the equation and together with physical activity using \( n = 22 \).

8. Page 8 Paragraph 2. Same comment as #7 is true for the FFMI. “Physical activity in addition to FFMI showed an additional variation of 26% in water loss (\( r^2 = .14, p>0.05, \#r^2 = .26 p<0.05 \))” compared to FFMI alone (\( r^2 = ? \)). And there are no Beta values, etc for FFMI alone or FFMI+PA.

Page 9, we have added the information on the additional variation in water loss when and FFMI (table 6) alone were included in the equation and together with physical activity using \( n = 22 \).

Reviewer’s report

**Title:** Body Composition, Water turnover and Physical activity among women in Narok County, Kenya

**Version:** Date: 14 April 2014

**Reviewer:** Maciej Buchowski

Reviewer's report:

*Minor Essential Revision*

#The randomization process it still unclear (selection method).

We purposively sampled out the women from two clusters in both the rural (Rotian) and urban (Majengo) setting, and they were asked if they were willing to participate, the inclusion criteria were that the woman had to have a child less than five years old and not pregnant at the time of data collection.

#The rationale for dividing women into urban and rural groups is still missing. I have read the paragraph 1 on page 4 as instructed by the authors, I could not find the rationale (there is an aim included). In addition, it is unclear why the urban to rural ratio was 2:1.

The study was carried out in the urban and rural settings and since the method for selecting the participants was purposive sampling, we ended up with the ratio 2:1.

*Discretionary Revisions*

Several statement are unclear and/or require referencing. For example:
1. “Physical activity in most sub-Saharan Africa is part and parcel of the daily routine of searching for water and gathering food unlike in the developed countries where it is emphasized for health purposes”. Should be clarified and referenced.

The sentence has been re-written to read; ‘Physical activity in most sub-Saharan Africa is part and parcel of the daily routine of walking in searching for water and gathering food (1,2) and physical activity is more common in the rural compared to the urban areas since the rural populations rely on walking as a means of transport and often have intense agricultural activities as their main occupation’ The references have been provided accordingly (2)


2. “During increased physical activity, there is increased sweating and breathing which contributes to body water loss”. – reference(s) is (are) needed.

This sentence has been referenced accordingly:


3. “The impact of physical activity (PA) on water loss in Kenyan women is crucial since women are the primary caregivers within homes resulting in high workloads and energetic demands.” – reference(s) is (are) needed.

The sentence has been reference accordingly:


4. “Thus fluid loss can compromise their nutritional status and lead to reduced work performance due to dehydration and general apathy.” – reference(s) is (are) needed.

The sentence has been referenced accordingly:

5. "The tri-axial accelerometer measures 4.6cm x 3.3cm x 1.5 cm and weighs 19g and is a validated tool that has shown to be reliable for the assessment of PA. It was attached to the lower back by means of an elastic belt and worn all the time except during sleep and while taking a bath or shower for a period of 2-4 days.” The reference showing the validity of GT3X worn on lower back should be provided.

The sentence has been reference accordingly:

6. “The data was downloaded using the Actilife software and Vector magnitude counts per day were obtained from the output and intensity of physical activity was obtained using Troiano et al. cut-off points”. Referenced cut-off points were established for different Actigraph and for vertical axis and not vector magnitude. This should be clarified.

There are cut-off points for vector magnitude counts as follows:

- **Cut Points**
  - Sedentary: 0 - 99 CPM
  - Light: 100 - 2019 CPM
  - Moderate: 2020 - 5998 CPM
  - Vigorous: 5999 - ∞ CPM


7. “To determine the wear time, we used at least 600 minutes per day for the minimum needed for a day to be included as valid.” This is a repetition of already provided information.

The repeated text has been deleted

8. .. and to the best of our knowledge this study is the first among native black women” - this information is very general.

We have deleted the sentence.. ‘and to the best of our knowledge ….’ from the text.

9."Water needs and requirements are a challenge to meet in sub-Saharan Africa, where food and water can be scarce and some communities in arid and semi-arid lands have to travel for several miles in search of both.” – reference(s) is (are) needed.

The reference has been provided accordingly:

10.“The average temperatures in our study area during the March – May season were between 14 C and 24 C” – source of the data should be provided.

The source is;

11.“, due to the mostly high temperatures the activity levels may be intense for a short period of time and during the rest of the day the activity intensity levels may slow down and remain low throughout.” It is unclear if these based on results of the present study.” This sentence has been deleted from the text.

12. Page 10, last paragraph contains comparison with the unpublished results. It is unclear why the data were compared. Were the studies populations, methods, duration, and protocols similar?
The comparison with the Dutch study was because we followed a similar protocol.

13.“Interesting to note however, was the high overweight levels among women in the study area and although our sample size was small to give us estimated prevalence, the trends of increasing overweight cases in African is worrying and previous studies have shown that overweight impedes physical activity and movement [24]” - This statement needs clarification. In other words, although comparing results of <30 women recruited from a clinic to a national average may be fine, extrapolating these results to “African” is rather an overstretch.

the sentence has been reworded to read ‘Overweight existed among women in the study area and although our sample size was small to give us an estimated prevalence, the trends of increasing overweight cases in African is worrying and previous studies have shown that overweight impedes physical activity and movement (28)’.

14.“Despite varying water needs brought about by differences in climatic conditions, physical activity levels, metabolic rate, body surface area and body weight and body composition, healthy humans regulate their water balance with precision. – reference(s) is (are) needed.

The references have been included:


15. Meeting water requirements among women in Africa is essential for proper normal body function in order for them to accomplish cultural responsibilities of caring for household members.” – reference(s) is (are) needed.

The reference has been included accordingly;


16.“Acclimation may play a role in minimizing water loss among individuals in arid areas in order for the body to utilize water well since water loss was more or less similar to those of women in other climatic regions.” – reference(s) is (are) needed.

The references have been included accordingly:


17.“Our recommendation for future research is that it would focus more on coping mechanism adopted by people living in warm climates to cope with water loss.” – this is unclear. What exactly the authors propose?

The sentence has been re-written to read:

‘Our recommendation for future research is the need for more research on physical activity, water requirement and regulation as well as coping mechanism among women in sub-Saharan Africa with a larger study population to offer representative data’.

18.“Our study is not without limitation, and this is due to the small sample size and care must be exercised while making generalizations. “ The limitations should be listed and discussed.

The sentence has been re-written to read:

‘Our study was limited by the small sample size and care must be exercised while making generalizations’.

Miscellaneous edits:
“…only 22 women met the cut-off point which was…” perhaps: 22 women wore the accelerometer for at least 2 days and 600 minutes per day set as a minimum criteria for inclusion in data analysis”

The sentence was corrected as suggested by reviewer

“SECA 762” manufacturer should be added.
The manufacturer has been included in the text (SECA, USA)

Thank you for the comments by reviewers which have helped us to substantially improve on our paper. Below you find a point-by-point account of our answers to the comments of the reviewers:

RESPONSES TO THE REVIEWER 1 COMMENTS: Robert J Brychta

Thank you again for accepting this manuscript for review and we look forward to a positive response.

Kind regards,

Susan Keino
Moi University
School of Public Health