Author’s response to reviews

Title: Quality of Sleep and Risk for Obstructive Sleep Apnoea in Ambulant Individuals with Type 2 Diabetes Mellitus at a Tertiary Referral Hospital in Kenya: a Cross-sectional, Comparative Study

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Dear Editor/ Reviewers:

Once again, we thank you for the additional comments/ suggestions for improvement of our manuscript. Please find below a point to point response to each concern raised:

Reviewer 1:

‘I would like to thank the authors for their time and effort in addressing my previous comments on the manuscript. In my opinion, the manuscript is now substantially improved. My remaining concerns are:
Major

1. Line 171 -- “The association between categories of QOS and categorical variables were estimated using Odds Ratios… “

• In multivariate analysis, the authors used logistic regression to compute odds ratio. Why not do so for univariate analysis as well? In that way, odds ratio for age, duration of T2DM, and anthropometric measures in Table 5 can be computed as well.

Correction: the odds ratio for categorical variables has been computed and included as suggested in table 5 (page 26, section of tables)

2. Analysis in Table 2 (adjustment for anthropometric measures)

• As mentioned in the previous round of revision, I do not think it is appropriate to adjust for all anthropometric variables (BMI, waist circumference, neck circumference, waist-hip ratio) in the same model. They all measure adiposity, and are very similar to one another. Even though according to table 1, these measures are all different between the comparison groups; it will confuse the model when everything is adjusted for at the same time.

• Also, residence, employment status, and level of education were also different across the comparison groups. Why weren’t they included in the multivariable models in Table 2?

Correction: we have amended table 2 as suggested by including adjustments for only neck circumference as a measure of obesity in the model. We have also included residence, employment status and level of education in the multivariate models in table 2. (page 24, section on tables). We subsequently made amendments in the results section to conform with the above (pages 11-12, lines 213-215)

3. Multivariate analysis in Table 6

• In table 6, waist and hip circumferences were mutually adjusted. These two measures are too similar, I would recommend only adjusting for waist circumference in the model.
• Why weren’t the results from age, employment and hip circumference shown in Table 6?

Correction: adjustment has been made to table 6 as suggested by only adjusting for waist circumference. We included employment status in table 6 but age and hip circumference were significantly correlated to waist circumference hence excluded from the model (page 26, tables section). Similar adjustment has been made to the text in results section (page 12, lines 228-230).

Minor

4. Line 104 -- “We excluded pregnant women, individuals with known psychiatric and/or neurologic disease…”

• I am not sure why people suffering from psychiatric disease (which includes a wide range of conditions) were excluded from the study. People with sleep conditions often also have psychiatric disease (especially mood disorders such as depression). Excluding them will result in an underestimation of the prevalence of the sleep problems in the study population.

Correction: we agree that exclusion of psychiatric diseases may lead to underestimation of sleep disorders in this study population.

• We excluded those with known/ diagnosed psychiatric diseases for two main reasons:

  1) These patients could have impaired cognitive capacity which could have interfered with filling of the self administered questionnaires

  2) Psychiatric medication may contribute to altered sleep patterns.

• However, in the final analysis, no potential subject was excluded on this basis.
5. Line 114 -- “Imputing a 16% prevalence of high risk for obstructive sleep apnoea as reported in a Korean study, and a 5% precision a minimal sample size of 207 was arrived at.”

- Sample size calculation was only performed for the sample cases, not controls.

Correction: this observation is correct in that a sample size of comparison group was not computed but they were recruited in a 1:2 ratio of comparison group to cases. ’Methods’ section (page 6, lines 117-120)

6. Line 137 -- “Anthropometric measurements (BMI, waist circumference, neck circumference, hip circumference and waist/hip ratio) were then obtained using standard procedures recommended by the World Health Organisation”.

- The reference provided by the author was only for measurement of waist and hip circumferences; not for BMI and neck circumference.

Correction: the reference has been altered to include all anthropometric measurements (reference 16 in reference section, page 20, lines 396-399)

7. Line 202 -- “The age and sex matched comparison group had a similar distribution as cases with regard to residence, employment status, level of education and marital status”

- But according to table 1, these characteristics are different between cases and control (p<0.05)?

Correction: the statement has been rectified to indicate which characteristics are similar and those that differ between cases and comparison group (results section, page 11, lines 202-205)

8. Line 266 -- “Old age is often accompanied by muscular and neurological loss of muscle tone of the upper airway, thus increasing risk of OSA”
• Please provide a reference to this.

Correction: reference has been provided (references 34 and 35, page 22, reference section; lines 269, page 14, discussion section)

9. Line 279 -- “In addition, these could be spurious findings confounded by a measurement bias in establishing duration of disease”

• How else could duration of diabetes be measured? Those studies that reported a positive association between duration of diabetes and poor QOS, how did they measure duration of diabetes?

Correction: in this study we determined duration of disease by patient interview and health record review. We acknowledge that this is the only method of determining duration of disease. On account of low level of educational achievement and poor/ inadequate record keeping in our setup, this may have led to a measurement bias on the variable of duration of disease.

We earnestly hope to have responded to your suggestions adequately and welcome any further comments/ concerns.

Thank you,

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