Author’s response to reviews

Title: Performance of Neck Circumference to Predict Obesity and Metabolic Syndrome among Adult Saudis: A Cross-sectional study

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Author’s response to reviews:

Cover letter

We would like to thank the Editor and reviewers for their constructive comments. We are submitting the cover letter and another copy with highlighted changes as most of the line numbers had been changed because of corrections.

I. Editor Comments:

1) Please list the abbreviations in the text and not in a table.

Reply :Done (page 15,16, lines 343-365)

2) In ethics approval and consent to participate, please state whether written or verbal informed consent was obtained.

Reply :Done (page, lines 371)

3) In the Declarations, please remove the Publisher's Note and Open Access sections.

Reply :Done (page 17, lines 394)

II. Reviewer 1:
The presented work is quite sufficient in terms of sample and variable size. It includes innovations that can contribute to obesity and metabolic syndrome.

1. Page 9 of 10 in row: The multivariate should be changed to multiple.
   
   Reply: Done (page 9, line 204)

2. In all tables p values should be given 3 digits.
   
   Reply: Done (table 1, page 21)

3. Page 11 of 50 in row: It should be emphasized that there may be an additional indicator instead of evidence.
   
   Reply: Done (page 12, line 267)

III. Reviewer 2:

GENERAL COMMENTS: The study contributes to the existing literature on the potential of neck circumferences as accurate, simple and noninvasive tool for screening obesity and metabolic syndrome (MetS). The authors used gold standard experimental protocol to determine the obesity and component of MetS. The convenient sampling technique employed in the study may not allow the generalization of the results (a limitation also identifies by the author). However, the sample size may allow meaningful conclusion. Find below other suggestions that will help to improve on the quality and soundness of the manuscript.

1. Title

"A cross sectional study" A Cross Sectional Study (title case)

Reply: Done (page 1, line 2)

Abstract

Page 2

2. Line 4 "Background" add colon
3. Line 13 "performance of NC to diagnose general obesity .... " change to performance of NC to predict general obesity.

Reply :Done (page 2 line 47)

4. Line 15 "obesity, and MetS." remove comma after obesity.

Reply :Done

5. Line 23, please state the mean age of the study population.

Reply :Done (page 2 line 45)

6. Line 28 "Haemoglobin". Change the H to small letter that is hemoglobin (American spelling). It may be more appropriate to use British or American English rather than the mixture of both.

Reply :Done

7. Line 32 "Data were analyzed using SPSS"; please state the vision.

Reply :Done (page 2 line 50)

8. Line 37 "Receiver Operator Characteristic (ROC) curves", it is more appropriate to use ROC analyses.

Reply :Done (page 2 line 51, 52)

9. Lines 38 & 39 "The cutoff value of NC which possessed good discriminating power ...." between what? Please specify the groups you intended to discriminate.

Reply : The cutoff value of NC which possessed good discriminating power between obese and non-obese patients

10. Line 40 "Yoden index"; spelling Youden's.
11. Line 42 "OR" spell out odd ratio.

Reply: Done (page 2, line 54)

12. Line 43 state the type of logistic regression analysis used.

Reply: multiple logistic regression analysis. (page 2, line 55)

13. Line 48 "Results" add colon

Reply: Done (page 2, line 56)

14. Line 50 "ROC analyses..." Do you mean Receiver Operator Characteristic (ROC) curves?

Reply: analyses (page 2, line 57)

15. Line 53 "obesity, and MetS." remove comma after obesity

Reply: Done

16. Line 55 "Area Under the Curve (AUC) ranged from 0.86-0.77" start from lowest to highest that is 0.77-0.86.

Reply: Done (page 2, line 59)

17. Line 55 "0.77, and 0.82" remove comma

Reply: Done

18. Line 58 "neck circumference" use NC

Reply: Done

19. Line 58 "to identify" to predict. What of the cutoff values that predict MetS?
Reply: ≥ 37.5 cm for males versus ≥ 32.5 cm for females. (page 2, line 60)

20. line 65 "Results of adjusted logistic regression analysis" should read as the results of logistic regression adjusted for .......(state the variables adjusted for e.g age etc)

Reply: Done (page 3, line 61,62)

Page 3

21. Line 12, "NC stands out as an independent predictor of general obesity and the MetS". Any comment/conclusion on central adiposity?

Reply: this was added “general and central obesity as well as MetS”(page 3, line 69)

22. Line 24 Keywords; arrange alphabetically, add comma after metabolic syndrome

Reply: Done (page 3, line 73)

Page 4

Background

23. Lines 4&5"...even some cancers affect human's health, quality of life, and longevity”. Not clear paraphrase.

Reply: Done, (page 4, lines77-80)

“The epidemic of obesity constitutes a world-wide major health problem; its consequences on the occurrence of cardiovascular diseases, type 2 diabetes are major concerns for physicians because of the associated poor quality of life, increased morbidity and mortality”


Reply: Done (page 4, line 90)

25. Line 38 "Except for waist circumference" except for WC

Reply: Done (page 4, line 92)
26. Line 40 "measurement" measurements
   Reply: Done (page 4, line 93)

Page 5

27. Line 5 "NC cut-off varies" NC cut-off values varies. And be consistent in the write up cutoff (without hyphen) or cut-off (with hyphen)
   Reply: Done (page 5, line 104)

28. Line 5 "gender, and ethnic" remove comma
   Reply: Done

29. Line 22 "increased very-low-density" delete increased
   Reply: Done

30. Line 27 "hypertension, and vascular injury" remove comma
   Reply: Done

Page 6

31. Line 5: "(HHP) Study" (HHP) study
   Reply: Done (page 6, line 129)

32. Line 8 "king Saud University" King Saud University
   Reply: Done (page 4, line 130)

33. Line 20 "guidelines in the Declaration of Helsinki" any reference?
   Reply: no special reference

34. Line 25 "in 2016" delete
35. Line 42 Study sample: delete colon
   Reply: Done

36. Line 44 "amounted to 3,063" state the male and female proportion and mean age
   Reply: mentioned already in the results section

37. Line 45 "In this study, non-Saudis were excluded" does the Saudis population selected belong to the same ethnic group (if yes to what level?) or the selection was based on the Saudi indigenes or country of origin.
   Reply: Saudi means “country of origin”

38. Line 55 "Neck circumference (NC)" NC
   Reply: Done

39. Line 55 "all Participants, using a tape measure" all participant and what is the model of the tape. Is the tape non elastic?
   Reply: this section was added to the methodology section
   “non-stretch Teflon, with increments down to 0.1 cm”. (page 7, line 147-148)

Page 7

40. Lines 11 and 12 "Valid measures of central obesity including WC, hip circumference (HC), WHpR and WHtR were estimated according to standardized techniques." Reference is need. What of the measurement of the height as component of WHtR. For all the measurement name the instrument and manufactures as applicable.
   Reply: this sentence was added to the methodology section (page 7, lines 159-162)
   “Height was measured without shoes to the nearest 0.01 meter on a stadiometer, and weight in kilogram was measured in light clothing on a level balance to the nearest 0.01 kg. The balance was checked for accuracy at frequent intervals.”
41. Line 22 "BMI is defined as a measure" how do you arrive at the BMI? Did you measure the weight before the calculating the BMI? (if yes please include such statement ).

Reply : Done(page 7, lines 159-162)

42. Line 34 "Hypertension:" remove colon

Reply : Done

43. Line 42 "Participants were subsequently classified," as what ? In the abstract you made mention of assessment of blood pressure. Did you measure the blood pressure? What the assessment meant for? Since you stated that "Participants were deemed hypertensive if they self-reported that they were currently using any anti-hypertensive medications regardless of their blood pressure readings".

Reply : patients were classified as hypertensive or not.

Measuring the blood pressure was done as following: After 10 minutes rest, arterial blood pressure was measured using an automated standard digital sphygmanometer (Mindary Datascpe Accutorr Plus, USA 2010), placed on the subject's left arm during a relaxed and sitting position. Both systolic and diastolic pressures were measured, at two readings, set five minutes apart; the average of the two readings was used. This statement was mentioned in the methodology section of the original study that was published 2016.

If the patient is on antihypertensive medication, we considered him as hypertensive patients regardless his current reading.

44. Line 44 "SpSS®19" SPSS

Reply : Done (page 8, line 194)

45. Line 50 "Participants were identified as having diabetes" state the type of diabetes mellitus (type 2?)

Reply : Done (page 8, line 171)

Page 8

46. Lines 46 and 47 "data were summarized as percentages and were compared using Chi-square test or Fisher's exact test" as frequency and percentage. You need to specify the type of chi-square used (Chi2goodness of fit not Chi2test of independence). The Fisher exact
test may not be applicable here since you are comparing two groups with large frequency. It is not possible to have expected frequency to be less than five in one of the groups (male or female group).

Reply: corrected, Fisher Exact test was removed and Goodness of fit test was added (page 8, lines 195, 196)

47. Lines 51 and 53 "using independent sample t-test or Mann-Whitney-U test after testing for normality." Here need to mention those variables after each test based on assumption of normality after. Example independent sample t-test (list the variables) or Mann-Whitney-U test (list the variables). It is also more appropriate to report median and interquartile range (not mean and standard deviation) for not normally distributed data.

Reply: Done (table 1)

48. Line 59 "accuracy of NC to diagnose" to predict

Reply: Done (page 9, line 200)

Page 9

49. Line 1 "BMI as the gold slandered" gold standard

Reply: Done (page 9, line 202)

50. Line 7 "(13)" [13]

Reply: Done (page 9, line 204)

51. Line 10 "were achieved" were determined

Reply: Done (page 9, line 205)

52. Line 14 "fit for data" fit for the data, "p-value" P-Value

Reply: Done (page 9, line 206)

53. Line 27 and 28 "while their mean ages were comparable." Not clear. Similar statistically?
54. Line 31 "yet the mean value of BMI was higher in females" except for the mean value of BMI which was higher in...

Reply: Done (page 9, line 213)

55. Line 40 "were nearly equal in both genders" were statistically equal in both gender.

Reply: Done (page 9, line 217)

56. Line 52 "In table 2;" In Table 2

Reply: Done

Page 10

57. Line 22 "were 0.8 and 0.77 for" were 0.8? and 0.77

Reply: 0.80 and 0.77

58. Line 27 "WC, and WHtR" remove comma

Reply: Done

59. Line 41 "In metabolic syndrome" Met S

Reply: Done

60. Lines 51 and 52 "to diagnose obesity and metabolic syndrome" to predict or discriminate and MetS

Reply: Done (page 11, line 246)

61. Line 56 "NPVs" spell out first

Reply: Done (page 11, line 248)
Discussion

62. Line 39 "neck circumferences" NC

Reply: Done (page 11, line 260)

63. Lines 39 to 60 this more like the result not the implication of your finding. There is no need to make reference to your tables in the discussion section. All the necessary information needed in the tables was reported in the results section.

Reply: reference to tables were removed

As an introductory paragraph for the discussion, researchers liked to highlight their main findings.

64. Line 54 "0.82 - 0.86", 0.82

Reply: Done (page 11, line 270)

Page 12

65. Lines 7 and 13 "(12-14) and (16-18)" [12-14] [16-18]

Reply: Done

Page 13

66. Lines 23 and 24 "estimated based on large sample size to ensure generalizability of the study results" the sampling technique is also important for generalization of results.

Reply: this is mentioned in the limitation

Page 14

67. Line 10 "(16-18, 39)" [16-18, 39]

Reply: Done
68. Line 37 "to diagnose" to predict
   Reply: Done

69. Line 42 "using neck" delete neck
   Reply: Done

70. Line 57 "Table of abbreviations" the abbreviation should be written in sentence case and arranged alphabetically
   Reply: Done (page 15, 16, lines 345-366)

Page 16

Funding

71. Line 36 "college of medicine research center" College of Medicine Research Center
   Reply: Done (page 16, line 374)

Page 18

72. Line 11 References

   The reference form was not uniform e.g Journal names were written in full in some citation whereas in others they were abbreviated.
   Reply: Done

Page 21

73. Line 1 Table 1

   Indicate the unit of NC, WC and HC. Delete (NC) (WC) & (HC). Use symbol to indicate the anthropometric measurement that were not normally distributed. Used median and inter quartile rage for not normally distributed variable. P value should be written at least at 3 decimal place e.g <0.001 and percentages to 2 decimal places. The unit of blood pressure is mmHg. Explain the abbreviation below the table e.g LDL; low density lipoprotein
In the first column write the major headings as Obesity (Diabetics & Non-diabetics), Obesity (Non-diabetics), Obesity (Diabetics) similarly, Central Obesity (Diabetics & Non-diabetics), Central Obesity (Non-diabetics), Obesity (Diabetics). Also specify the first obesity as general?

In the first column you have combination of title case and sentence case

Reply: Only one cutoff value was used for NC

Decimal places corrected

In the first column you have combination of title case and sentence case

Reply: corrected