

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	BMI, waist to height ratio and waist circumference as a screening tool for hypertension in hospital outpatients: a cross-sectional, non-inferiority study
<b>AUTHORS</b>	Shrestha, Rajan; Upadhyay, Sanjib; Khatri, Bijay; Bhattarai, Janak; Kayastha, Manish; Upadhyay, Madan

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Jones, Erika University of Cape Town, Medicine
<b>REVIEW RETURNED</b>	19-Apr-2021

<b>GENERAL COMMENTS</b>	<p>Thank you for this insightful paper.</p> <p>It is highly important to demonstrate the usefulness of anthropomorphic measurements. This paper demonstrates that hypertension is associated with obesity and that WtHR and WC are important measurements for cardiovascular risk. They add extra value to BMI.</p> <p>However there are some concerns:</p> <p>Underlying cause and co-morbidities are not included in the analysis. This could bias the selection of the patients: e.g. many diabetics will need to access eye clinics. Obviously diabetes is associated with obesity and hypertension increasing the prevalence of obesity in this setting over that of the normal population.</p> <p>Abnormal body composition is not reported (amutations etc.)</p> <p>An important additional fact that should be stressed is that BP must be checked at all health care provider appointments.</p> <p>Abbreviations should be defined at first use, including in the abstract.</p> <p>WHtR should presumably be WtHR</p> <p>Significant English language editing is required.</p> <p>Definitions should appear in the methods, not in results.</p>
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<b>REVIEWER</b>	Mbelambela, Etongola Papy Kochi University, Environmental Medicine
<b>REVIEW RETURNED</b>	26-Apr-2021

## GENERAL COMMENTS

### General Comment

1. The author needs to restructure the manuscript for being clear for reader. Results, discussion and conclusion sections need to be restructured.
2. In the discussion section the author needs to discuss the significant results comparing with other studies (similar and contrast results) and add if possible, the explanations or hypothesis to support your results
3. In the conclusion section the author needs to display the main findings or the relevance of this research and add the recommendation.

### Specific Comment

- 4- Line 53. The first time to use the acronym LMICs; the author needs to add the explanation
5. Line 22. CVD causes 30% of death among 60% of all death in Nepal. The author needs to add whether the Nepalese government had implemented one national program for resolving this matter. The same question about the prevalence of hypertension, overweight, and obesity in the line 26-27
6. Anthropometric measurements. The cut off of anthropometric measures from WHO are slightly high compared to the cut off from Asia or from other Asia countries. I need to know what did you use in your study.
7. We known that the tendency of adiposity tissues is gynoid for women and abdominal for man. How you can explain the higher prevalence of WC among females than males?
8. When you talk about the highest correlation you allude to r coefficient or p value? I need the meaning of highest correlation for  $r=0.188$  and  $r=0.214$
9. In Obesity and Hypertension (Discussion section). Line55-57. What table shown that WC was better for females, WHtR being better predictor for males?
10. Abstract: Page3, line 3, it proved the superiority of WC in the detection of obesity in female. I don't see this result in your tables. Please tell me what table display this result.

## VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. Erika Jones, University of Cape Town

Comments to the Author:

Thank you for this insightful paper. It is highly important to demonstrate the usefulness of anthropomorphic measurements. This paper demonstrates that hypertension is associated with obesity and that WtHR and WC are important measurements for cardiovascular risk. They add extra value to BMI.

However, there are some concerns:

- 1) Underlying causes and co-morbidities are not included in the analysis. This could bias the selection of the patients: e.g. many diabetics will need to access eye clinics. Obviously, diabetes is associated with

obesity and hypertension increasing the prevalence of obesity in this setting over that of the normal population.

We did look for diabetes, SpO2 and is being reported in a separate paper

2) Abnormal body composition is not reported (amputations etc.)

Participants with abnormal body composition which did not allow to measure height, weight and waist circumference was excluded in this study. Description added in inclusion exclusion section.

3) An important additional fact that should be stressed is that BP must be checked at all health care provider appointments.

Added in recommendation part

4) Abbreviations should be defined at first use, including in the abstract. WHtR should presumably be WtHR

The abbreviation is added at first use.

We found Waist to Height Ratio is written as WHtR in all major studies and reported as such.

5) Significant English language editing is required.

Done

6) Definitions should appear in the methods, not in results.

Definition of overweight and obesity deleted from result, as recommended.

Reviewer: 2

Dr. Etongola Papy Mbelambela, Kochi University, Kochi Daigaku

Comments to the Author:

General Comment

1) The author needs to restructure the manuscript for being clear for reader. Results, discussion and conclusion sections need to be restructured.

Restructured as suggested

2) In the discussion section the author needs to discuss the significant results comparing with other studies (similar and contrast results) and add if possible, the explanations or hypothesis to support your results

Restructured as suggested

3) In the conclusion section the author needs to display the main findings or the relevance of this research and add the recommendation.

Conclusion section is restructured with addition of recommendation as suggested

Specific Comment

4) Line 53. The first time to use the acronym LMICs; the author needs to add the explanation

Thank you for pointing out the error, acronym added.

5) Line 22. CVD causes 30% of death among 60% of all death in Nepal. The author needs to add whether the Nepalese government had implemented one national program for resolving this matter. The same question about the prevalence of hypertension, overweight, and obesity in the line 26-27

Added the text describing government's activities to address this matter

6) Anthropometric measurements. The cut off of anthropometric measures from WHO are slightly high compared to the cut off from Asia or from other Asia countries. I need to know what did you use in your study.

We used WHO cut off values in this study.

7) We've known that the tendency of adiposity tissues is gynoid for women and abdominal for man. How you can explain the higher prevalence of WC among females than males?

We are unable to explain higher abdominal obesity in women who are supposed to have more of gynoid than abdominal obesity. Since we did not measure distribution of fat in hip and thighs for reasons of cultural sensitivity, this may be a reflection of overall higher obesity in women.

As we used the cut off value provided by WHO for Waist circumference, which is different for male (90 cm) and female (80 cm), higher abdominal obesity in women could also be due to a lower cut off value for Waist circumference for women.

The reported increase in abdominal obesity with each pregnancy independent of total body fat may be another factor to explain higher abdominal obesity among women.

8) When you talk about the highest correlation you allude to r coefficient or p value? I need the meaning of highest correlation for  $r=0.188$  and  $r=0.214$

We allude to r coefficient when talking about highest correlation between SBP and three anthropometric metrics.

This highest correlation is only the highest among weak r-coefficients.

9) In Obesity and Hypertension (Discussion section). Line55-57. What table shown that WC was better for females, WHtR being better predictor for males?

It was an error. We have now corrected the narrative on discussion

Comparison of area under ROC curve values of each of three metrics is shown in table 5.

10) Abstract: Page 3, line 3, it proved the superiority of WC in the detection of obesity in females. I don't see this result in your tables. Please tell me what table displays this result.

It was an error, the conclusion section in abstract is now restructured.

Comparison of area under ROC curve values of each of three metrics is shown in table 5.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Mbelambela, Etongola Papy Kochi University, Environmental Medicine
<b>REVIEW RETURNED</b>	24-Aug-2021
<b>GENERAL COMMENTS</b>	Thanks so much for the manuscript improved