
Peer-Review Report

Peer Review of “Predicting Waist Circumference From a Single Computed Tomography Image Using a Mobile App (Measure It): Development and Evaluation Study”

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Keywords: waist circumference; computed tomography; abdominal CT; mobile health; health apps; CT; CT scan; CT image; mobile app; app; application; waist; body; body mass; BMI; morbidity; mortality; clinical; tool; prototype; design; obesity; abdominal; usability; validity; medical

This is a peer-review report submitted for the paper “Predicting Waist Circumference From a Single Computed Tomography Image Using a Mobile App (Measure It): Development and Evaluation Study.”

Round 1 Review

General Comments

The authors created a mobile app that predicts waist circumference (WC) from computed tomography (CT) images [1]. After creating the app, the authors conducted a preliminary study involving 20 patients. The results showed that the developed app can predict WC from CT images with high accuracy. Though the paper showed some promising results, the authors still need to clarify a few important points. I hope the authors would be happy to clarify those points.

Specific Comments

Major Comments

1. What was the primary reason for selecting equation 1 as a reference method for WC calculation? Isn't it possible to calculate the exact circumference from the CT images using image-processing algorithms? Wouldn't it be more representative compared to the manual WC detection procedure?

2. Keeping the mobile app aside, how much different is this study compared to Ciudin et al [2]?

3. On page 3, please expand the discussion on “App Requirements.” It is not evident what was meant by “app requirements” in this section.

4. How many images were taken from each CT slice? As the measurements for the waist parameters (a and b) were taken using a manual process, what kind of procedure

was followed to ensure that the person-to-person variability remains low?

5. In Figures 3 and 4, there is a small dot around the top of the figures. Is this a data point? Additionally, proper x- and y-axis labels are missing. Please add appropriate units on the x- and y-axis.

6. In the Discussion section, it was claimed that “this is the first of a kind mobile app helping physicians to estimate WC.” Do the authors think the physicians would be able to use apps such as [3] to assess WC?

7. In the Discussion section, it was stated that “Moreover, the simplicity of the app may reduce the time required for physicians to assess WC.” How fast is the app compared to the manual approach?

Minor Comments

8. The authors stated that “WC cannot be physically assessed in patients with intellectual or motor disabilities” but did not provide any other details as to why it can't be assessed. The authors should discuss this in detail in the Introduction.

9. The sentence “However, for a radiologist, this method requires training and can be more or less time consuming” seems confusing. If possible, please restructure this sentence.

10. In equation 1, what is denoted by “p”?

11. Although the authors discussed in the Methods section how the measurements were taken just above the iliac crest and the CT images were taken from the last slice to ensure that those are not taken from different places, do the authors think that there could be some positional errors being introduced based on your approach?

12. On page 3, it was stated that there were further modifications to the app design. What kind of modifications were carried out? Did the authors discard the prior mobile

app-based WC measurements (mWCs) after modifying the app?

13. Please try to make sure that periods and commas are being used appropriately. On page 4, one of the sentences was “The mean BMI was 26 ± 4 ; $27,8\pm 2,7$ for women and $24.2\pm 4,4$ for men.” For women, a comma was used as a decimal point. On the other hand, for men, a period was used as a decimal point.

14. In Table 1, what is the unit for “Confidence Interval”?

15. What kind of procedure was used to perform the diagnostic test to detect abdominal obesity? Please discuss this in the Methods section.

Round 2 Review

Thanks to the authors for providing a detailed revised version and comments.

If the authors can clear up a few more confusions, then it would be great.

Conflicts of Interest

None declared.

References

1. Masmoudi A, Zouari A, Bouzid A, et al. Predicting waist circumference from a single computed tomography image using a mobile app (Measure It): development and evaluation study. *JMIRx Med*. 2023;4:e38852. [doi: [10.2196/38852](https://doi.org/10.2196/38852)]
2. Ciudin A, Salvador R, Budoy A, et al. Measurement of waist circumference for retrospective studies - prospective validation of use of CT images to assess abdominal circumference. *Endocrinol Nutr*. 2014 Mar;61(3):147-152. [doi: [10.1016/j.endonu.2013.10.004](https://doi.org/10.1016/j.endonu.2013.10.004)] [Medline: [24342428](https://pubmed.ncbi.nlm.nih.gov/24342428/)]
3. 3DLOOK. URL: <https://3dlook.ai/> [Accessed 2023-11-16]

Abbreviations

CT: computed tomography

mWC: mobile app-based waist circumference measurement

WC: waist circumference

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