Reviewer's report

Title: Accuracy of anthropometric measurements by general practitioners in overweight and obese patients

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Reviewer: Masaharu Kagawa

Reviewer's report:

This study aimed to determine measurement error of general practitioners (GPs) in their measurements of various anthropometric variables such as height, weight, waist and hip circumferences. The authors requested 26 GPs to measure ten adult patients in two occasions and compared the results with the values measured by two trained research assistants. From the results, the authors concluded that weight, height, and hip circumference measurements were more accurate than waist circumference measurement. Also the body mass index (BMI) was found to be more accurate compared to waist-to-hip ratio (WHR). In addition, measurement error was increased as increase in BMI of patients.

Understanding measurement error in clinical practice is an important topic and therefore the present study has a significant importance. However, the present study has a number of considerations and insufficient information in their study design and methodology. Most important consideration is uncertainty of acceptable measurement error. While previous studies and existing protocols indicated certain criteria for acceptable measurement errors such as technical error of measurement (TEM), percentage technical error of measurement (%TEM) or intra-class correlation coefficient (ICC) (Stewart et al. 2012; Wang et al. 2000; Ulijaszke and Kerr, 1999), the present study have not indicate such particular cut-off point for acceptable measurement errors. In fact, the authors did not calculate both inter- and intra-TEM of each GP.

Rather than calculating TEM of each GP, the authors aimed to compare the results measured by GPs and those from two trained research assistants. However, again the authors have not provided TEM of each research assistant on the manuscript. In addition, there is no description about how much experience each research assistant had at the time of generating this paper. Furthermore, as two trained research investigators involved in the study, the present study should include their inter-tester TEM in order to clarify that these two research assistants have comparable measurement skill. In addition to no information on skill level of research assistants whose results were utilized as criterion, the authors did not provide any information on experience of anthropometric measurements by GPs and their frequency of measurements.
In addition to no information on anthropometric skill and calculation of TEM, the authors failed to provide whether they have standardized measurement protocols, including landmarking protocol, equipment used, the method of measurements. While the authors stated that they undertook training session to a group of GPs based on an international guideline, they failed to clearly indicate which protocol they followed (e.g. the WHO protocol, the ISAK protocol, the IAEA protocol). In addition, there is insufficient information how the training course was conducted to the intervention group (e.g. skill level of the instructor, a number of GPs attended the session at once, an hour of hand-on session, presence of practical exam). As a result, although the authors stated that the intervention did not appear to be associated with a significant improvement in GP's measurement accuracy, readers cannot justify if the intervention was appropriately conducted.

Furthermore, few minor points need to be clarified:

- Waist and hip circumferences and subsequent waist-to-hip ratio (WHR) are not very "new" anthropometric variables. The authors should clarify their intention of calling these anthropometric variables as "new".

- While the authors described that every GPs have measured 20 volunteers, the text in the manuscript stated that measured only 10 volunteers but at two occasions. Measuring 20 different volunteers and conducting repeated measures on 10 volunteers are different and therefore strongly request the authors to correct the sentence.

- It is unclear where the authors obtained ethical approval from. Since the present study involved a multiple sites to conduct a data collection, it is anticipating that ethical approval may need to be obtained from each hospital/clinics as well as the affiliated institutions of the authors.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
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No

Are the conclusions drawn adequately supported by the data shown?
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