Reviewer’s report

Title: Accuracy of self-reported body weight, height and waist circumference in a Dutch overweight working population

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Reviewer: Sarah Connor Gorber

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Referee’s Comments

The authors have conducted an analysis of data from an ongoing randomized controlled trial in which a lifestyle intervention program for an overweight working population is being evaluated. The authors use these data to examine the relationship between self-reported/assessed height, weight and waist circumference in comparison to their directly measured values.

It is well accepted in the international literature that self-reported assessments of height and weight overestimate and underestimate respectively their measured values, which results in an underestimation of obesity when calculated based on the BMI. Less is known about the relationship between reported and measured waist circumference. Hundreds of studies have been published that examine the relationship between measured and reported obesity including a systematic review which summarized results from 64 studies on adult populations (Connor Gorber et al., 2007) and a smaller review of 11 studies that focused on adolescents (Sherry et al., 2007). These reviews concluded that in most cases obesity was underestimated when based on self-reported measures.

Given the knowledge that we currently have in the area, my primary concern with this study is that the authors have not clearly demonstrated how their work is an improvement over past research (i.e., how their study advances our knowledge). Although it is still important to monitor the bias over time and to examine the bias and its implications in different countries, this may be better done in a population based survey that collects data on the entire population rather than limiting it to a clinical trial of overweight and obese respondents.

I would also recommend that the authors consider the following specific comments

Specific Comments

Authors refer to self-reported waist circumference (WC) but actually they are studying self-assessed WC as participants were mailed measuring tapes and asked to measure their WC. The policy implications of understanding the
accuracy of self-reported WC are clear given the relationship between abdominal adiposity and morbidity and mortality, and the fact that most health data are collected through self-report. And, the inclusion of WC is one of the key strengths of this study. However, the importance of studying the relationship between self-assessed and directly measured WC is not as intuitively clear. Authors need to expand on the importance of self-assessed WC. In addition the wording throughout the paper should be changed from self-reported to self-assessed WC.

In the introduction the authors note the accuracy of height, weight and WC have never been studied in a Dutch population. Perhaps they would like to cite van der Voort et al (Osteoporos Int 2000). Their study only examined the accuracy of self-reported height but it was conducted in the Netherlands.

Methods
1. The methods section needs to be expanded to provide more detail about the conditions under which the data were collected. The following should be clearly stated:

§ Whether participants were aware or were told that they would be measured.
§ The self-reported questions for measuring height and weight should be listed (the actual question should be stated).
§ Were the conditions in which the measures were taken the same as those in which the reporting was done? In other words were participants asked to report the height without shoes and their weight in light clothing to be consistent with the procedures under which they were measured? The instructions provided to respondents, if any, should be discussed.
§ Respondents were sent the questionnaire at home; were they asked not to weigh themselves prior to completing the self reported questionnaire? If not was there a way to determine if they had weighed themselves in order to fill out the questionnaire?
§ Why were two measures taken of each of the measurements and the values averaged? Were both measures taken in the same session (i.e., no delay between measures)?
§ What equipment was used to measure height and weight and was it calibrated?

All of these factors could influence the accuracy of the reported measured and it is difficult to comment on the study’s results/conclusions without this information.

Why was SES limited to education? Does the low BMI category correspond to overweight and the high BMI category to obese?
The authors may wish to change their wording from “gender” to “sex”

Results
Why was the analysis limited to the role of BMI, SES, age and sex? Was this a limitation of the data set? If not other characteristics known to affect the bias
should be examined.

In order to strengthen their paper the authors should consider running a regression analysis to examine the factors that are associated with the bias. Ideally these analyses should be run separately for male sand females as we know that the bias differs by sex. The descriptive information is interesting but it does not provide any clear understanding of the association between the bias and potential independent variables. In addition past studies have examined the factors that are associated with the bias and therefore the descriptive analysis is not adding any new information to the literature.

The finding that the prevalence of overweight was over-reported is not consistent with the literature, which has shown that both the prevalence of overweight and obesity is underestimated when based on self-reports and that the degree of under-reporting increases as the respondent's BMI increases. Given that this sample is made up of overweight and obese respondents I would have expected an underestimate in the prevalence of overweight and obesity when based on self-report. Perhaps this is because participants were aware that they would be weighed (which tends to increase the accuracy of the reporting) or because they were participating in a lifestyle intervention study which could have influenced their awareness of their weight. I am therefore not sure how generalizable these findings would be. The authors need to further discuss their findings in relation to the past literature, and comment on whether the results are due to the sample and data collection methods or whether they suspect that they truly reflect a differing trend in their overweight participants.

I commend the authors for good reporting of results in the additional tables. Means, SDs and the SDs of the mean differences are essential but rarely reported in these types of studies.

More explanation/elaboration needs to be provided in the results section under the heading “Accuracy of self-reported anthropometrics in relation to gender, BMI, age and SES”. For instance it is not clear why the authors state “As a consequence of the misreporting, the prevalence of overweight was over-reported and that of obesity under-reported in all gender, age and SES groups.” My interpretation of the underreporting of BMI would have been that the prevalence of overweight would have also been under-reported. I need more explanation to understand the link between the under-reporting of BMI and the over-reporting of overweight.

Discussion

In the third paragraph the authors state “Another explanation for the under-reporting of weight is that subjects most probably weighed themselves at home with less clothing compared to the clothing they were wearing during the measurement for this study.” This implies that the subjects did in fact weigh themselves at home prior to responding the questionnaire, which means that the study is not examining self-reported weight but rather self-assessed weight. If this is the case the authors need to explain the utility of comparing self-assessed to directly measured values.
In addition, even if respondents were not asked to weigh themselves prior to filling out the questionnaire, if there was no way of knowing whether they did weigh themselves, there is a potential bias built into the study design. This makes the results difficult to interpret.

Paragraph 8 page 12, the statement that “the assessment of the prevalence of overweight/obesity in this overweight population and the concomitant disease and mortality risk could be done with reasonable accuracy” is, in my opinion, speaking beyond the data presented in this paper. In fact, new research is showing that the known underestimation of obesity based on self-report is translating into an exaggeration of risk for obesity related morbidity and mortality. See for example Chiolero et al., 2007; Shields et al., 2008.

References


Chiolero A, Peytreman-Bridevaux, I, Paccaud, F. Associations between obesity and health conditions may be overestimated if self-reported body mass index is used. Obes Rev 2007; 8(4): 373-374.


Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests