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The Accuracy of Body Mass Index Estimated from Self-Reported Height and Weight in Turkish Adults

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Abstract

BACKGROUND/AIMS: This study aimed to identify the level of agreement between self-reported and objectively measured data among healthy Turkish adults in order to assess the validity of self-reported data.

MATERIALS AND METHODS: Self-reported data along with independent measurements were obtained from 958 men and 502 women, aged between 18-53 years. The subjects were classified according to their body mass index (BMI) scores and margins of error in self-reported anthropometric data were calculated. The misclassification status according to BMI deriving from self-reported data was determined. Intraclass correlation coefficients were calculated at 95% confidence interval. Independent sample t-test and One-Way ANOVA were used for comparisons. Bland-Altman graph, specificity and sensitivity, Cohen's kappa and receiver operating characteristic curve inspections were carried out.

RESULTS: The results indicate that both men and women underestimated their weight and overestimated their height. The margin of error in estimating height for the men was found to be significantly larger than for women. In contrast, women tended to underestimate their weight more than men. The subjects' self-reported and measured anthropometric data were significantly different ($p<0.01$) in both sexes. Specificity scores were found to be high but sensitivity scores were low.

CONCLUSION: These results indicate that the subjects' margins of error were large and that BMI assessment through self-reported data can lead to erroneous estimates when used to assess obesity in Turkish adults and BMI should not be relied on unless the scores are obtained by objective anthropometric measurements.

Keywords: Validity, sensitivity, specificity, obesity

INTRODUCTION

Body mass index [(BMI); kg/m^2)], calculated as mass (kg) divided by the height squared (m^2), is a well-known and widely used measure to assess body composition and obesity prevalence.[1] The anthropometrical variables used to calculate BMI are commonly self-reported data in epidemiological studies.[2] Although it has limited predictive power on personal body composition assessment[3] and the accuracy of such data is widely questioned, it is still the most commonly used measure to assess obesity in broad groups all over the world, not only because it only requires basic anthropometric data, namely, height and weight[4] but also because the assessment is non-invasive, inexpensive and easy-to-use.[5] Self-reported data is a useful tool to calculate BMI in large groups, especially when it is impractical to take independent measurements.[6]

Many studies use self-reported data, either raw or calculated, as a data collection method as it is easier, faster, and more economical than direct measurements.[7] Social scientists, in general, use self-report to collect data because of the high cost of collecting data by measurement.[8] It is widely recognized that self-reports of body weight

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and height are often inaccurate[1,9] and studies suggest that self-reported height and weight tend to be inaccurate and biased when compared to objectively measured data.[10] Such inaccuracies may prevent researchers from determining the obesity levels of a population.[7,11] Although some previous studies suggested that BMI scores obtained using self-reported height and weight were highly correlated with objectively measured BMI scores,[12,13] overweight, and elderly people along with women tend to underestimate their weight while overestimating their height.[5,7]

Obesity has been known to be a major public health issue since the late 1980s[14] and in today's world, monitoring the obesity level of a large group is important to identify obesity-related health problems, premature death rates,[11,15] and occupational health status.[16] Some studies[5,17] have attempted to suggest a correction factor for self-reported data in BMI classification, but no successful solution has been provided to date because the mechanism underlying the inaccuracy in self-reported BMI is unknown.[4] Other ways to correct self-reported BMI, such as using the Stunkard Figure Rating Scale, were found to be impractical because they relied on the body image perceptions of individuals.[5]

In today's world, governments look for solutions to prevent obesity at the individual level and to slow down or reduce obesity levels in the population.[4,18] High BMI levels are related to certain types of cancer,[19,20] ischemic heart disease,[21] cardiorespiratory fitness,[22] and low quality of life levels.[23] Obesity is known to contribute to cancers at a rate of about 6% in the U.S. population[24] and it is also associated with cardiorespiratory fitness.[25]

Many countries have set some public policies and public health goals to prevent obesity at the individual level and to slow down obesity rates at the population level[4] and BMI is widely used in determining these public health policies.[3]

Numerous studies have been conducted in several countries and regions, including the U.S.A., France, South America, Great Britain, Scandinavian countries, Australia, New Zealand, and Eastern countries to assess the association between self-reported and measured anthropometric data but only limited research on Turkish adults has been carried out. This study aimed to assess the association between self-reported and measured BMI categorizations in Turkish adults and to test the validity of self-reported anthropometric data.

MATERIALS AND METHODS

Participants

The participants who volunteered to take part in this study were aged 18 and over. This cross-sectional study was carried out between September, 2018 and June, 2019. Data were collected in the Çorum province of Turkey. The participants were comprised of university students, urban and rural people, attendees and spectators of public meetings such as academic year opening ceremonies, art exhibitions and other events such as sporting games. Over 2,000 people were invited to take part and, of these, a total of 1,460 individuals agreed to take part in this study.

Data Collection

The subjects were informed about the aim of this study and their written consent was obtained. The subjects were asked to fill out a questionnaire including their anthropometric data. A Seca (model 703) professional weighing-scale was used to measure weight to 1/100 of a kilogram and a Seca (model 220) stadiometer was used to measure height to 1/10 of a centimetre accuracy. Measurement errors were minimized by applying standard operating procedures strictly and calibrating the measurement devices regularly.

Ethics Approval

The study protocol was approved by the Non-Interventional Researches Ethics Committee of Hitit University (approval number: 2018-07).

Statistical Analysis

Descriptive statistics are presented as mean ± standard deviation and quartiles of the anthropometric data are also given. The normality of the data was tested and found to be normally distributed. Intraclass correlation coefficients (ICCs) were calculated at 95% confidence interval (CI). The Independent sample t-test was used to analyse differences between dichotomous groups; One-Way ANOVA was used for analysis between three or more groups. Bland-Altman graphs were created to inspect the level of agreement between the self-reported and measured anthropometric data. Specificity and sensitivity scores were calculated to assess the levels of conformity of the self-reported BMI values. Cohen's Kappa was also calculated to assess the strength of agreement between the self-reported and objectively measured BMI categorization. SPSS (IBM Corp. 2013, Release 22.0.0.0, 64-bit edition; Licensed to Hitit University) was used for statistical analyses.

RESULTS

A total of 1,460 participants, aged 18 to 52 (31.91±8.18 years) participated in this study and the number of men (n=958) was nearly twice the number of women (n=502). The subjects' measured and self-reported height, weight, and BMI values were included in the data analyses. The subjects' gender, marital status, level of education, level of income, and smoking status were also used for statistical calculations.

Margins of error were calculated as the difference between the self-reported and measured values (self-reported minus measured). Those scores below zero reflect underestimation and those scores over zero reflect overestimation.

ICCs were 0.944 (95% CI: 0.939-0.960) for height, 0.971 (95% CI: 0.968-0.974) for weight and 0.878 (95% CI: 0.866-0.890) for BMI between the self-reported and measured values for the variables. All measurements for the variables revealed very high concordance but BMI had the lowest ICC value.

A summary of the statistics regarding the anthropometric measurements by gender is shown in Table 1. Men over-reported their heights by 1.99±1.86 cm while women over-reported by 2.82±1.71 cm. The self-reported weight margin of error for men was -0.77±2.33 kg and it was -1.08±2.39 for women. Both men and women underestimated their weight but overestimated their height. Women were prone to underestimate their weight and overestimate their height more than men. Analysis of BMI values yielded similar results and the difference between the reported and measured BMI data for men was -0.78±0.98 kg/m^2 and -1.18±1.07 kg/m^2 for women. The differences between the reported and measured weight, height, and BMI data for men and women were statistically examined using the independent sample t-test and all found to be significant ($p<0.001$ and $p<0.05$). The subjects in the overweight/obese category significantly overestimated their heights and underestimated their weights and BMI scores when compared to normal category subjects ($p<0.001$).

Table 1. Summary of statistics by gender

	Male (n=958)				Female (n=502)				p†
	Q_1	Q_2	Q_3	Mean ± SD	Q_1	Q_2	Q_3	Mean ± SD	
Age (years)	25	32	37	31.83±8.27	25	31	38	32.05±8.03	0.630
Height (cm)									
Measured (H_M)	169.7	174.5	181.8	175.63±8.43	161.4	166.4	169.8	165.52±5.57	0.000*
Self-reported (H_R)	172	177	183	177.62±8.00	165	169	172	168.33±5.48	0.000*
Difference ($H_D = H_M - H_R$)	0.6	1.9	3.4	1.99±1.86	1.6	3.0	4.0	2.82±1.71	0.000*
(%) difference ($100 \cdot H_D/H_M$)	0.36	1.09	1.96	1.15±1.08	0.96	1.84	2.41	1.71±1.05	0.000*
Weight (kg)									
Measured (W_M)	66.8	72.8	79.7	73.28±10.38	59.9	66.4	70.6	65.70±9.78	0.000*
Self-reported (W_R)	67	72	78	72.51±9.56	59	65	69	64.62±8.68	0.000*
Difference ($W_D = W_M - W_R$)	-2.10	-0.80	0.60	-0.77±2.33	-2.33	-1.10	0.30	-1.08±2.39	0.021**
(%) difference ($100 \cdot W_D/W_M$)	-2.86	-1.06	0.83	-0.86±3.24	-3.50	-1.71	0.40	-1.39±3.45	0.000*
BMI (kg/m²)									
Measured ($B_M = W_M/H_M^2$)	21.98	23.99	24.90	23.74±2.88	22.58	24.00	25.29	23.95±3.20	0.223
Self-reported ($B_R = W_R/H_R^2$)	21.63	23.16	24.30	22.96±2.45	21.69	22.79	23.84	22.77±2.62	0.165
Difference ($B_D = B_M - B_R$)	-1.35	-0.75	-0.14	-0.78±0.98	-1.81	-1.13	-0.48	-1.18±1.07	0.000*
(%) difference ($100 \cdot W_D/W_M$)	-5.44	-3.10	-0.63	-3.06±3.95	-7.37	-4.86	-2.08	-4.65±4.08	0.000*

†Independent samples t-test, *p<0.001, **p<0.05, SD: standard deviation.

The mean differences between the measured and self-reported height, weight, and BMI values were not significantly different in any of the categories as shown in Table 2. Gender was found to cause statistically significant differences in reporting bias. Women overestimated their height ($p<0.001$) and underestimated their weight ($p<0.05$) and consequently the BMI scores of women were much lower when compared to men ($p<0.001$). The level of education, marital status, monthly income, and smoking status resulted in no significant differences between the measured and self-reported data ($p>0.05$). All groups tended to overestimate heights and underestimate weights. As a result of this general tendency, the self-reported BMI in each category was lower than the measured BMI.

The differences between the self-reported and measured data by age groups are summarized in Table 3. ANOVA results (Table 4) yielded no significant differences between the age categories ($p>0.05$).

The Bland-Altman plot of weight estimation errors demonstrated a slightly skewed distribution. The subjects tended to underestimate their weight by up to 9.4 kg and overestimate by up to 6.1 kg. The plot of height estimation error revealed that most of the subjects overestimated their heights, by up to 8.5 cm, but underestimated by only up to 2.9 cm.

The Bland-Altman plot of BMI errors revealed that the self-reported and measured data did not have a good level of agreement. A very large portion of the subjects' BMI data was underestimated by up to 4.77 kg/m² but overestimated by only 1.81 kg/m². The plots support that the belief that the subjects have a strong tendency to overestimate their height and underestimate their weight (Figure 1).

The map of estimation errors presented a clear picture of the bias of the subjects. Most of the errors are pooled in the lower-right quadrant which represents both an overestimation of height and an underestimation of weight. Subjects who overestimated their weight and underestimated

Table 2. Differences by categories

Categories		Height difference (mean ± SD)	p†	Weight difference (mean ± SD)	p†	BMI difference (mean ± SD)	p†
Gender	Male	1.99±1.86	0.001*	-0.77±2.33	0.015**	-0.78±0.98	0.001*
	Female	2.82±1.71		-1.08±2.39		-1.18±1.07	
Level of education	K12	2.28±1.84	0.893	-0.84±2.28	0.491	-0.91±1.01	0.780
	University	2.27±1.87		-0.93±2.45		-0.93±1.05	
Marital status	Single	2.28±1.86	0.800	-0.93±2.34	0.198	-0.94±1.02	0.369
	Married	2.26±1.84		-0.77±2.36		-0.89±1.04	
Monthly income	Below average	2.31±1.83	0.283	-0.9±2.41	0.533	-0.94±1.05	0.311
	Average or above	2.20±1.89		-0.82±2.23		-0.88±0.99	
Smoking status	Non-smoker	2.29±1.90	0.835	-1.05±2.26	0.084	-0.99±1.01	0.055
	Smoker	2.27±1.82		-0.76±2.41		-0.88±1.04	

†Independent samples t-test, *p<0.001, **p<0.05, BMI: body mass index, SD: standard deviation.

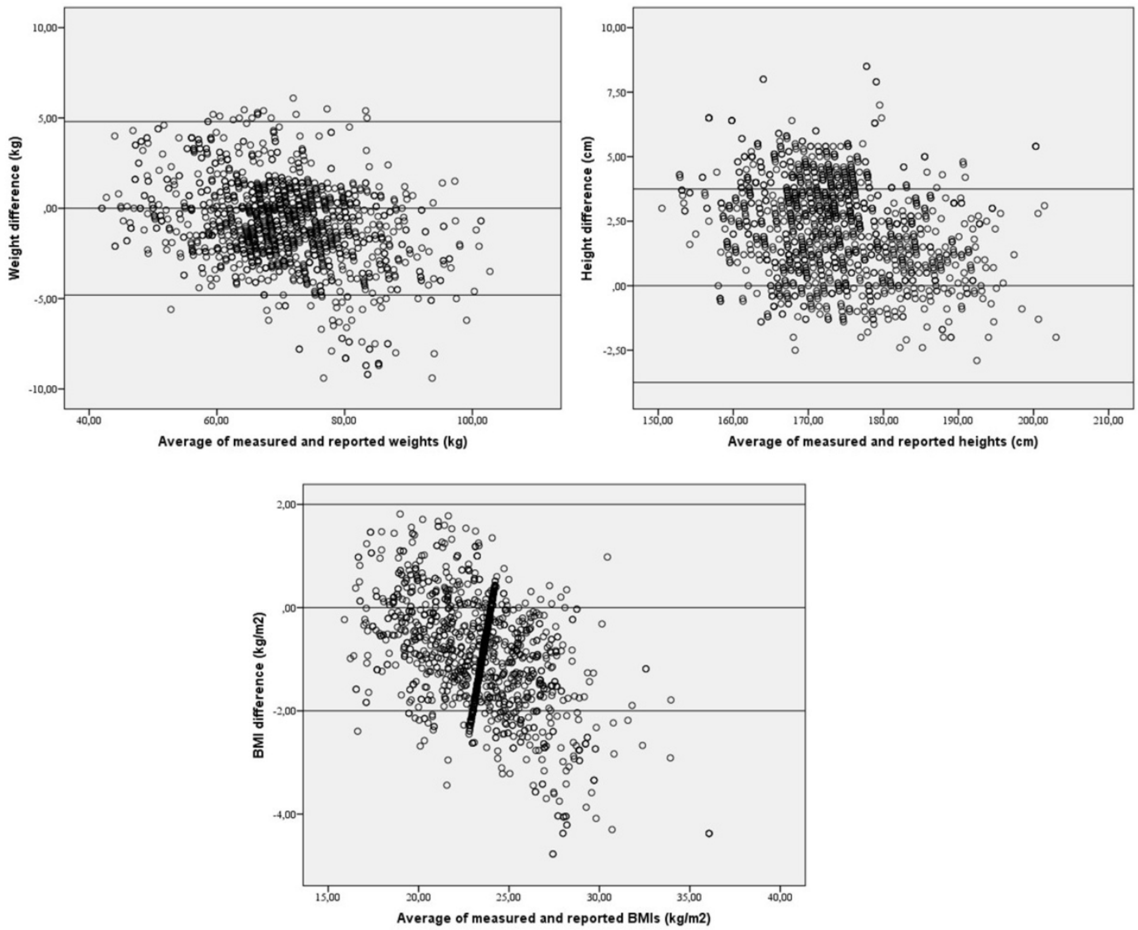

Figure 1. Bland-Altman plots of weight, height, and BMI errors.

BMI: body mass index.

their height are in the upper-left quadrant and the number of these subjects was fairly small (Figure 2).

Figure 3 (graph on top) shows that all of the obese class II subjects underestimated their BMI scores and the rate of underestimation of BMI scores decreased as the level of obesity decreased. Over 90% of the obese class I subjects and more than half of the overweight subjects underestimated their BMI scores. The subjects in the normal and underweight categories did a fairly good estimation and both categories accurately estimated their BMI scores at about 80%. Only about 10% of all subjects overestimated their BMI scores but no overestimation was observed in the overweight, obese class I, or obese class II subjects. As stated previously, agreement on BMI estimation was set at ±1.40 kg/m^2 between the self-reported and measured data.

The rates of estimation consistency between the self-reported and measured BMI scores are given in Figure 3 (graph on bottom). Less than 10% of the subjects correctly reported their BMI scores. All of the obese subjects (both class I and II) and more than 95% of the overweight subjects underestimated their BMI scores. About 45% of the underweight and 20% of the normal subjects overestimated their BMIs. Except for a limited number of overweight subjects, no subjects above the normal range overestimated their BMI scores.

Table 3. Differences between self-reported and measured anthropometric data by age groups

Age groups (years)	n	Height difference (cm)		Weight difference (kg)		BMI difference (kg/m^2)	
		Mean	SD	Mean	SD	Mean	SD
18-29	597	2.23	1.90	-0.88	2.35	-0.90	1.02
30-39	609	2.30	1.83	-0.83	2.26	-0.91	1.00
40-49	224	2.31	1.83	-1.06	2.54	-1.02	1.10
50 and over	30	2.31	1.68	-0.24	2.68	-0.71	1.15

BMI: body mass index, SD: standard deviation.

Table 4. ANOVA statistics by age categories

		Sum of squares	df	Mean square	F	p
Height difference (cm)	Between groups	1.765	3	0.588	0.17	0.921
	Within groups	5004.24	1456	3.437		
	Total	5006.01	1459	-		
Weight difference (kg)	Between groups	20.443	3	6.814	1.23	0.302
	Within groups	8045.66	1456	5.526		
	Total	8066.11	1459	-		
BMI difference (kg/m^2)	Between groups	3.636	3	1.212	1.15	0.328
	Within groups	1540.15	1456	1.058		
	Total	1543.79	1459	-		

BMI: body mass index.

The receiver operating characteristic (ROC) graphs indicate the accuracy of the self-reported BMI for men and women. The area under the curve for men was 0.71 (95% CI: 0.667-0.751) and 0.76 (95% CI: 0.718-0.803) for women (Figure 4). The statistics for ROC curves of the BMI accuracy levels are summarized in Table 5.

The specificity of the self-report was almost perfect (≥99.7%) but its sensitivity was only 69.5% for men, about 59.4% for women, and 65.9% overall (Table 6). Cohen's kappa was also calculated to assess the strength between the self-reported and measured BMI categories and Kappa was found to be 0.678 (SE: 0.020, p<0.001).

DISCUSSION

Reporting weight and height accurately is an essential part of obesity assessment via self-reported anthropometric data.[1] Although the strength of association between self-reported and measured BMI categories show substantial agreement in this study,[26] the accuracy of self-reported data has always been questioned and many authors have raised concerns,[27-30] while some others have championed its effectiveness.[14,31] There are many factors which affect the accuracy of self-reported data and it has been previously reported that the accuracy of self-reported anthropometric data is affected by certain variables.[32] The main variable which affects the accuracy of self-reported BMI is reported to be gender.[33] In a study conducted to assess the accuracy of self-reported anthropometric data in Scottish adults,[11] both sexes tended to misestimate their height and weight. In their study, Bolton-Smith et al.[11] found that self-reported anthropometric data differed from the measured data by gender. Men tended to overestimate their height but underestimate their weight in a similar way to women but the margin of error was larger in women. Women tended to inaccurately estimate their height and weight in favour of a lower BMI to a greater extent than men.[11] Many other studies have shown that women, when compared to men, misestimated their anthropometric data in such a way that it would lead to a lower BMI result.[4,6,8,11,14,32,34,35] Of the papers reviewed, only one study reported that women participants reported their BMI more accurately than men,[36] one study reported that men over-reported their BMI [17] and one study reported that men estimated their weight without significant bias.[37] The results of the current study are in line with previously published studies and revealed that weight was significantly underestimated and height was overestimated. As a result of this, BMI was significantly underestimated. In addition to this, our results were also similar to studies which found that women were more likely to underestimate their weight.

Table 5. Statistics for ROC curves of the BMI accuracy levels

		Male	Female
BMI accuracy	Positive	713	300
	Negative	245	202
Area		0.71	0.76
SE		0.021	0.022
p		0.000	0.000
95% CI		0.667 to 0.751	0.718 to 0.803

ROC: receiver operating characteristic, BMI: body mass index, SE: standard error, CI: confidence interval.

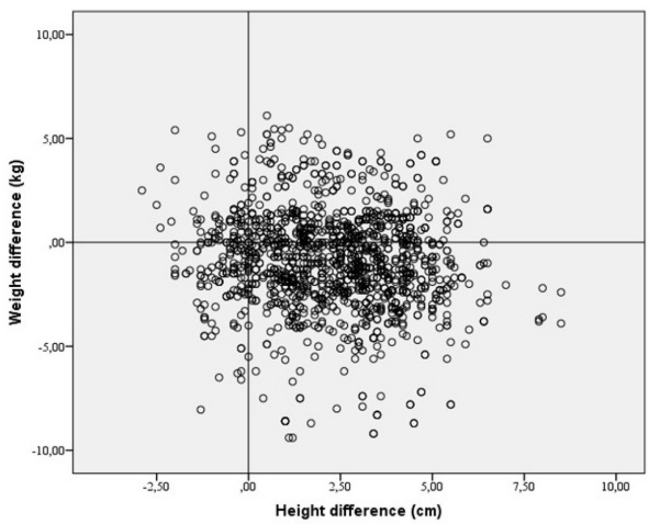

Figure 2. Map of estimation errors.

Table 6. Specificity, sensitivity and Kappa scores of self-reported data for BMI

	Men	Women	Overall
Specificity	99.9%	99.7%	99.8%
Sensitivity	69.5%	59.4%	65.9%
Kappa (SE)	0.719 (0.024)*	0.605 (0.036)*	0.678 (0.020)*

*p<0.001, BMI: body mass index, SE: standard error.

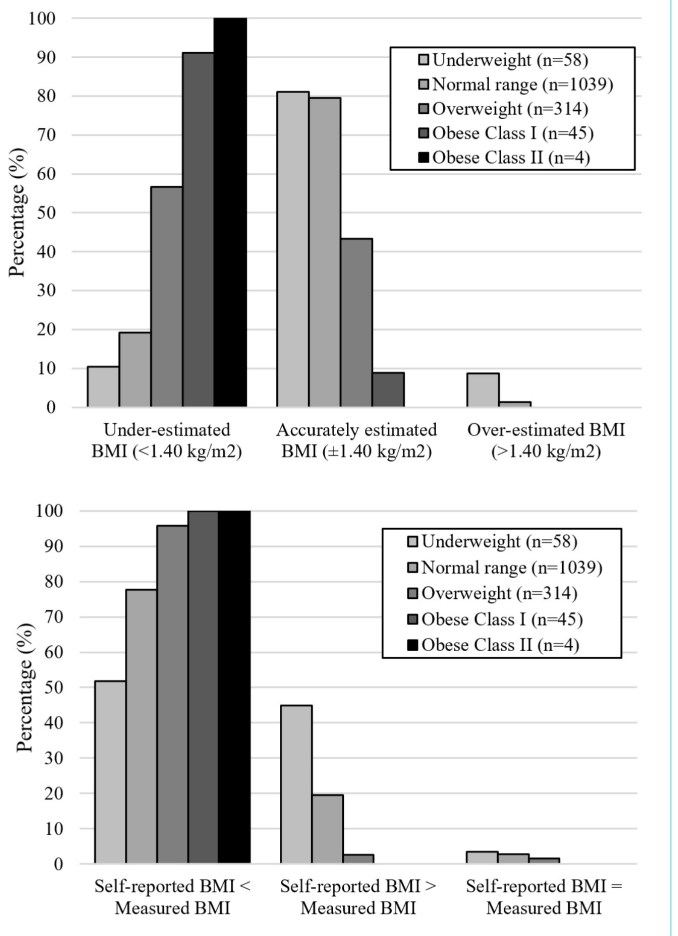

Figure 3. Estimation accuracy (top) and consistency (bottom) by BMI categories.

BMI: body mass index.

Engstrom et al.[38] reviewed the accuracy of self-report in women and it was found that overestimation was up to 7.6 cm in height and underestimation was up to 19 kg in weight. Engstrom et al.[38] reported that in all the studies reviewed, weight was underestimated while height was overestimated. These results are in line with the results of the current study.

It was previously reported that the reason for the tendency to underestimate weight might be that people weigh themselves with lighter clothes or without clothes in their private rooms compared with measurements taken when regularly dressed in public places such as a hospital or a clinic.[1,11] In addition to this, weighing with different scales might yield inconsistent results because of calibration inaccuracies. However, although this reason may contribute to an underestimation of weight, there is no strong evidence regarding it.[1] As the gap between the self-reported and measured weight is up to 20 kg, there might be another reason for this other than the calibration of the scales. In Turkish adults, it was revealed that there was a tendency to underestimate weight in both men and women. The main reason for this was thought to be the desire to be fit and thin, which is remarkably usual among women as has been reported.[2]

According to the results of a study carried out in Ireland, BMI misestimation was largely due to the underestimation of weight combined with the overestimation of height. It was also implied that as the level of BMI increased, both the prevalence and magnitude of self-reported BMI misestimation increased. It is believed that people misreport anthropometric data to depict a more socially desirable weight and height.[29] Some studies showed that the tendency to exhibit socially desired anthropometric ranges contributed to the misestimation of anthropometric data.[7,9]

Although "full-figured" women were desirable before the 1920s, this concept is clearly out of fashion in today's modern era and people have a desire to look more fit and thin. The reason for this transformation is not only due to societal concepts of how a person should look but also due to the goal to be thin which is promulgated by the fashion industry

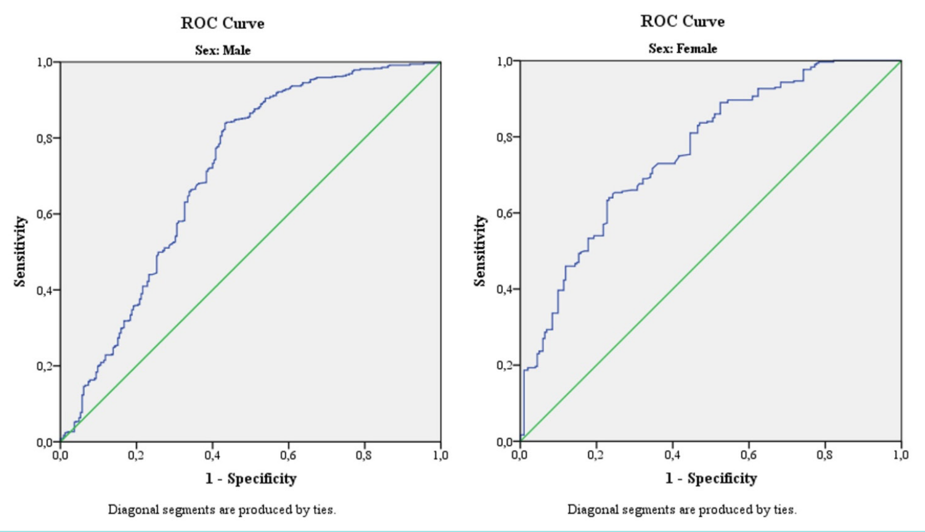

Figure 4. Receiver operating characteristics graph for BMI accuracy.

ROC: receiver operating characteristics, BMI: body mass index.

and reinforced by commercials.[3] It has been previously postulated that cultural pressures to be thin and tall cause people to misreport their anthropometric data towards more socially normative (i.e., desirable) values.[39] The bias revealed in this study for both genders may be due to the desire to look thinner and taller in order to comply with social norms. It has also been reported that there are results which support the view that heavier individuals desired to conform to social norms and attempted to appear thinner by underreporting their weight[40] more than their slimmer counterparts.[41]

Although the impact of age on the accuracy of self-reported BMI has been reported in some previous studies[17,31,42,43] and some studies revealed that aging affected the bias in self-report by leading to a tendency to over-report height and under-report weight,[36] no statistically significant differences between the age groups were found in the current study. The reason for this was thought to be that all the age groups overestimated their height and underestimated their weight.

The sociodemographic variables investigated in this study (level of education, marital status, and monthly income) and smoking habits were found to have no statistical influence on the accuracy of the self-reported anthropometric data although previous studies yielded different results regarding this.

In one study conducted on the American population, an association was reported between educational level and the degree of misreporting anthropometric data. The association between education and misreporting was explained by the fact that the concerns about excess weight were greater for those at higher socioeconomic and cultural levels.[42] Some other more recent studies revealed that sociodemographic variables including education had no association with misreporting height and weight.[2,15] In another study, no clear effect of the level of education on self-reported BMI accuracy was shown.[4] Craig and Adams[32] found that under-reporting was more likely to be among the well-educated but no supporting results were obtained in the current study. In a study conducted on Scottish adults,[11] no significant difference was found between the reported and measured data (including BMI) in terms of smoking habit or education level groups.

In the present study, no association between sociodemographic variables and self-reported anthropometric data was observed. This might be due to the fact that the desire to look thinner and taller in today's world is more common than ever before because of the wide utilization of web-based social networks and technology. Cultural and social pressures are postulated to have an effect on misreporting height and weight because social norms push people to look beyond how they actually look.[8,30,39] By being integrated into social networks and the internet, people see tall and fit people more frequently and the desire to look like them might contribute to bias in self-reported anthropometry.

Similar to the results of the studies conducted by Dekkers et al.[15] and Craig and Adams[32], the levels of agreement between BMI categorizations (self-reported and measured) were found to be substantial.

Bolton-Smith et al.[11] found the rate of specificity and sensitivity for estimates of obesity prevalence to be 83% and 96% (respectively, for men) and 89% and 97% (respectively, for women). In the current study, specificity for men was found to be 99.9% and 99.7% for women while sensitivity was 69.5% for men and 59.4% for women. Kappa values were 0.719 for men, 0.605 for women, and 0.678 in general. Similar to the findings of this study, Brener et al.[44] reported 99.2% specificity, 54.9% sensitivity, and a Kappa value of 0.77 for BMI classification.

It was reported in one study that the mean difference in the self-reported and measured height decreased as the measured height increased. Short (<173 cm for men, <160 cm for women) subjects reported their height at a sensitivity rate of 69% while the tall (>182 cm for men, >168 cm for women) subjects' rate was 94%. In contrast, weight was reported more accurately as the measured weight decreased in both men and women.[42]

The correlation between reported and measured BMI levels should be cautiously relied on. Despite the high correlation ($r>0.9$) between measured and self-reported BMI, misclassification of BMI level by self-report was shown to be about 30-40%.[45] In a study conducted in Australia, only 52% or the participants accurately reported their height while the rate of accurately reported weight was as low as 34%.[6] In a study conducted in Iran, the Kappa value for weight perception and measured weight was as low as 0.38 for women and 0.23 for men.[10]

In their work, Shiely et al.[29] reported that the Surveys of Lifestyle Attitudes and Nutrition 1998, 2002 and 2007 measurements revealed underreporting of BMI had statistically significantly increased over time across the three surveys (14%, 21%, 24% respectively). Specificity levels across the surveys did not change but sensitivity decreased in both the overweight and obese categories (75%, 68%, 66% for overweight and 80%, 64%, 53% for obese, respectively).

Although the severity of obesity is obvious, the size of the epidemic has usually been assessed by relying on self-reported anthropometric data.[8] It has been reported that self-reported height and weight could not be relied upon as an alternative to independent measurements in obesity assessments.[36] As obesity rates are threatening human health globally, accurate estimations of obesity prevalence are essential for setting effective health policies in order to prevent the obesity epidemic.[46]

CONCLUSION

The results of the current study suggest that the use of self-reported anthropometry in the Turkish population is questionable and measured data should be preferred to assess BMI. The subjects, both men and women, tended to overestimate their height and underestimate their weight, which led to biased BMIs. Such biases may lead to erroneous results with which to evaluate the obesity trend in Turkish adults. Women were more likely to deviate from their measured data in favour of their BMI categories than men. This general tendency to misclassification of BMI categories may prevent the government from setting appropriate policies to control obesity in Turkish adults. It should be kept in mind that self-reporting is a useful, easy, and cheap tool but it should not be relied on entirely to detect obesity prevalence. If a survey based on self-reported data is to be conducted, it would be good practice to measure a random subsample to investigate the magnitude and trajectory of any bias.

MAIN POINTS

- Turkish women were more prone to underestimate their weight and overestimate their height than Turkish men.
- Overestimation of height was found to reach up to 8.5 cm while underestimation in weight was about 9.4 kg.
- Self-reported anthropometry should be cautiously used in both personal and public obesity assessments and/or prevalence studies.

ETHICS

Ethics Committee Approval: The study protocol was approved by the Non-Interventional Researches Ethics Committee of Hitit University (approval number: 2018-07).

Informed Consent: The subjects were informed about the aim of this study and their written consent was obtained.

Peer-review: Externally peer-reviewed.

DISCLOSURES

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