Original article

Are low self-esteem and body image dissatisfaction related with body mass index?

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Summary. *Aim:* To determine the prevalence of self-esteem and body image dissatisfaction and its association with body mass index as well as other related factors. *Material/Methods:* A total of 240 women in the age range of 18 to 64 with normal weight (n=80), overweight (n=80), and obesity (n=80) were involved in this cross-sectional study. Body weight and height were measured and BMI was calculated according to WHO criteria. Individuals' self-esteem has been evaluated through Self-Esteem Inventory developed by Coopersmith. On the other hand, body image concern degrees have been evaluated by Body Image Concern Inventory. Data were statistically analyzed by chi-square, ANOVA tests, logistic regression and correlation analysis on SPSS version 16. *Results:* The average of self-esteem and body image concern scores is the highest in normal-weight women and the difference between the groups has been detected to be statistically significant. Self-esteem of 7.5% of the women and body image concern of 64.2% of them are low whereas self-esteem of 49.6% and body image concern of 35.8% of them are high. An inverse relationship was found among BMI, body image and self-esteem. Having low levels of socio-economic status and education, being married, having chronical diseases and obese individuals in family were determined to be associated with low self-esteem. Moreover, older age and lower socio-economic status were related with body image dissatisfaction. *Conclusion:* Obesity negatively affects self-esteem and body image. Overweight and obesity must be prevented not only for decreasing non-communicable diseases, but also decreasing psychosocial and physical problems in the population.

Key words: obesity, self-esteem, body image, women

Introduction

Obesity is the most common nutritional disorder in the developed countries and is assumed to become a health problem in developing countries (1). Based on the global estimate of World Health Organization (WHO), there were about 1.9 billion overweight adults at the age of 18 or older and among them at least 600 million adults were obese in 2014 (2). In the Turkish Nutrition and Health Survey 2010, obesity was highlighted as an important public health problem, since the reported percentages for obesity (Body Mass Index (BMI) ≥30 kg/m^2) and overweight (BMI=25.0-29.9 kg/m^2) were 30.3% and 34.6%, respectively (3).

It isn't clear yet how and why obesity occurs. It involves an integration of social, behavioral, cultural, physiological, metabolic, and genetic factors (4). Obesity has a significant impact on physical health, and its negative medical consequences are well-documented. Obesity comorbidities include coronary heart disease, hypertension and stroke, certain types of cancer, non-insulin-dependent diabetes mellitus, gallbladder disease, dyslipidaemia, osteoarthritis and gout, and pulmonary diseases, including sleep apnea (5). In ad-

dition, studies suggest that obesity has also negative psychological consequences (6,7).

Self-esteem is the evaluative and affective dimension of the self-concept and is important for good mental health (8). Self-esteem is a person's self-recognition and acceptance. In this way, people accept their own abilities and power. In the literature, a number of researches reveal an inverse relationship between BMI and self-esteem (9,10); however, there are also other ones indicating no such a relationship (11). It is also hard for obese females to maintain a positive self-image while Western culture strongly markets the thin body ideal as its prevailing norm (12).

Body image is how we have shaped our body in our mind and is closely related to self-esteem. Many obese people have an altered body image, they see their bodies as ugly and believe that others wish to exclude them from social interaction. This is mostly encountered in young women of middle and upper socioeconomic status, among whom obesity is less prevalent, and in those who have been obese since childhood (5). A meta-analysis of studies on obesity and body image suggests a link between obesity and body image dissatisfaction among the obese population (13). Body image dissatisfaction is also associated with low self-esteem and depression (14).

Body image and self-esteem have long been known to be linked and are salient issues for young people, particularly during adolescence and puberty. These issues affect people throughout their lifetime, from childhood to old age. Previous research focused predominantly on body image and self-esteem in children and adolescents. More recently, research in this area has begun to focus on older people (15). Thus, the aim of this study was to determine the prevalence of self-esteem and body image dissatisfaction and its association with body mass index as well as other related factors in women aged between 18 and 64.

Materials and methods

Study population

The cross-sectional study was conducted between November 2012-March 2013. A total of 240 women,

18 to 64 years, were recruited into the study and classified as women with normal body weight (BMI=18.5-24.9 kg/m², n=80), overweight (BMI= 25.0-29.9 kg/m², n=80) and obesity (BMI=≥30 kg/m², n=80), who attended to the Latif Baskal Family Health Center. BMI calculations were performed according to WHO criteria (16).

Sample

Considering α=0.05 and β=0.20, minimum sample size has been calculated to be 65 for each group. In total 240 women, 80 per group, were included in the research.

Exclusion criteria

Women having any of the following conditions were excluded from the study: women aged under 18 years and over 64 years, pregnant, lactating, underweight (BMI<18.5 kg/m²), with dementia and disability, communication problems.

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Data collection

Design of the questionnaire

Individuals' sociodemographic attributes such as age, educational status, marital status, job and socioeconomic status have been examined by the sociodemographic data form which consists of 24 questions and is prepared by the researcher based on literature and expert views.

Anthropometric measurements

Anthropometric measurements were conducted by a researcher according to criteria suggested by WHO (5). Body weight was measured using a digital scale (Oncomed SC 102) with an accuracy of ± 100 g. All subjects were weighed without shoes and in light clothes. Height was measured using a tape measure with the subjects standing barefoot, keep-

ing their shoulders in a relaxed position, arms hanging freely and being held in the Frankfort horizontal plane (17).

Based on participants' calculated BMI values, women were classified as normal weight (BMI=18.5-24.9 kg/m²), overweight (BMI=25.0-29.9 kg/m²) and obese (BMI=≥30 kg/m²) (16).

Assessment of CSEI and BICI

Individuals' self-esteem has been evaluated through Self-Esteem Inventory developed by Coopersmith. The inventory consists of 25 sentences which can be selected as "Like Me" or "Unlike Me". These sentences include statements about the individuals' world view, family and social relationships, self-assessment and self-perception (18). If individuals select "Like Me" in the 1st,4th,5th,8th,9th,14th,19th and 20th questions and "Unlike Me" in the 2nd,3rd,6th,7th,10th,11th,12th,13th,15th,16th,17th,18th,21st,22nd,23rd,24th and 25th questions they gain 1 point. If not, a 0 is given for each of them. Scores per questions are multiplied by 4. Women have been classified in accordance with their scores they have got from the inventory. In conclusion, values between 10-30 symbolizes "low", 30-70 "average" and 70-100 "high" self-esteem (18).

On the other hand, individuals' body image concern degrees have been evaluated by BICI. The inventory consists of 5-point 40 questions on Likert scale. A part of the body or an organ is defined in each of the articles. Each question is worth 1-5 points and the whole inventory has 40-200 points in total. Getting a high score from the inventory refers to a positive rise in the assessment. The cutoff score of the inventory is 135, and individuals with a lower score are identified as the group of low body image concern (19).

Statistical Analysis

All of the data obtained during the study were assessed using SPSS 16.0 (Statistical Package for the Social Sciences, SPSS Inc. Chicago, USA) software under the supervision of academicians from Erciyes University, Faculty of Medicine, Department of Biostatistics and Medical Informatics. Normality of the data distribution was determined with the Shapiro-

Wilk test. One way analysis of variance (ANOVA) was used to assess the descriptive characteristics of the participants. Pearson chi-square test was used to compare categorical variables. In addition, risk factors for low self-esteem and poor body image were evaluated by logistic regression analysis. Correlation analysis was performed to determine the association between self-esteem and body image. A p value less than 0.05 was considered statistically significant.

Results

Table 1 compares women's self-esteem and body image concern scores who are classified according to BMI while Table 2 indicates the categorization of self-esteem and body image concern based on the inventory scores. The average of self-esteem and body image concern scores is the highest in normal-weight women and the difference between the groups has been detected to be statistically significant. Self-esteem of 7.5% of the women and body image concern of 64.2% of them are low whereas self-esteem of 49.6% and body image concern of 35.8% of them are high. The percentage of normal-weight women who have high self-esteem and body image concern and of the obese women who have low self-esteem and body image concern is the highest.

Table 3 and 4 demonstrate the potential variables which can affect self-esteem and body image concern in addition to the relationship between self-esteem and body image concern classifications. The percentage of the individuals between the ages of 18-29 who have high levels of self-esteem and body image concern is the

Table 1. Self-esteem and body image concern scores of women according to BMI classification

CSEI Scores	
Groups	$\overline{X}\pm$ SD
Normal weight (BMI=18.5-24.9 kg/m², n=80)	80.10±14.90
Overweight (BMI= 25.0-29.9 kg/m², n=80)	69.45±18.47
Obese (BMI=≥30 kg/m², n=80)	51.45±22.39
BICI Scores	
Normal weight (BMI=18.5-24.9 kg/m², n=80)	143.67±19.12
Overweight (BMI= 25.0-29.9 kg/m², n=80)	124.30±20.14
Obese (BMI=≥30 kg/m², n=80)	102.19±14.43

x±SD: Mean± Standart Deviation

Table 2. Self-esteem and body image concern groups of women according to BMI classification

Groups	Low		Medium		High		Total	
	n	%	n	%	n	%	n	%
CSEI Scores								
Normal weight	0	0.0	17	21.2	63	78.8	80	100.0
Overweight	2	2.5	38	47.5	40	50.0	80	100.0
Obese	16	20.0	48	60.0	16	20.0	80	100.0
Total	18	7.5	103	42.9	119	49.6	240	100.0
BICI Scores								
Normal weight	20	25.0	-	-	60	75.0	80	100.0
Overweight	56	70.0	-	-	24	30.0	80	100.0
Obese	78	97.5	-	-	2	2.5	80	100.0
Total	154	64.2	-	-	86	35.8	240	100.0

Pearson chi-square test, p<0.001

highest whereas it decreases as the age increases. Among the individuals who are not primary school graduates, the percentage of the ones with high self-esteem is the lowest and this percentage increases in proportion to level of education. Similarly, all of the women who are not primary school graduates have been observed to have low levels of body image concern. While the percentage of the single women with high self-esteem and body image concern is the highest, it is the lowest in widows or divorced females (Table 3 and Table 4).

The percentage of the childless women with high self-esteem and body image concern is the highest; however it decreases as the number of children increases. On the other hand, the percentage of the individuals who live with their own families and have high self-esteem and body image concern is the highest, which is followed by other individuals living with their spouses and kids. The percentage of working women with high self-esteem and body image concern has been reported to be significantly higher than the ones who are not occupied (Table 3 and Table 4).

Students have the highest percentage of self-esteem and body image concern and are followed by officers. Yet, this percentage of the housewives is lower than the other groups. The percentage of high self-esteem and body image concern is the highest among the females who state that their socio-economic status (SES) is satisfactory. However, as the SES gets worse, this percentage decreases. The percentage of self-esteem and body image concern in women without chronic diseases is found to

be significantly higher than the ones with such diseases.

The percentage of self-esteem and body image concern in women who do not have any overweight individuals in their families is significantly higher than the women who do. The percentage of self-esteem and body image concern in women who do not exercise is the lowest. Among the women who own a car, the percentage of the ones with high self-esteem and body image concern is significantly higher than the ones who do not have such possession (Table 3 and Table 4).

The percentage of high self-esteem and body image concern in smoking women is higher than the ones who do not or used to smoke. While body image concern of the women who consume alcohol is high, the percentage of their fellows who do not drink is the lowest (Table 3 and Table 4).

Logistic regression analysis of the factors which have an effect on low levels of self-esteem and body image concern is indicated respectively in Table 5 and 6.

Compared to normal-weight women, overweight ones have 3.09 and their obese fellows have 12.19 times low or average risk of self-esteem. Compared to university graduate women, their primary school (or a lower level) graduate fellows have 9.95 times higher risk of low or average self-esteem or body image concern. This number is 5.93 in married women compared to single females. In addition, women with chronic diseases have 3.77 times higher risk than females who do not have this kind of diseases. Furthermore, this number changes to 2.09 in women who have overweight in-

Table 3. Self-esteem score groups of women according to socio-demographic features

Variables		CSEI Scores							
		Low		Medium		High		Total	
		n	%	n	%	n	%	n	%
Age groups (year)									
18-29		1	1.5	21	32.3	43	66.2	65	100.0
30-39		3	4.3	24	34.3	43	61.4	70	100.0
40-49		8	14.2	24	42.9	24	42.9	56	100.0
50-64		6	12.2	34	69.4	9	18.4	49	100.0
χ^2 =35.595	p<0.001								
Education level									
Under primary school		3	13.0	18	78.3	2	8.7	23	100.0
Primary school		10	14.1	34	49.9	27	38.0	71	100.0
Secondary school		3	7.7	20	51.3	16	41.0	39	100.0
High school		2	3.9	21	41.2	28	54.9	51	100.0
University		0	0.0	10	17.9	46	82.1	56	100.0
χ^2 =48.596	p<0.001								
Marital Status									
Married		13	7.3	74	41.6	91	51.1	178	100.0
Divorced		3	10.7	22	78.6	3	10.7	28	100.0
Single		2	5.9	7	20.6	25	73.5	34	100.0
χ^2 =25.381	p<0.001								
Number of child									
None		2	4.1	10	20.4	37	75.5	49	100.0
1-2		8	7.3	47	42.7	55	50.0	110	100.0
≥3		8	9.9	46	56.8	27	33.3	81	100.0
χ^2 =21.760	p<0.001								
Living arrangement									
Alone		2	25.0	3	37.5	3	37.5	8	100.0
With the spouse		2	5.4	21	56.8	14	37.8	37	100.0
With the spouse and children		8	6.3	45	35.4	74	58.3	127	100.0
With other family member without spouse		1	2.7	11	30.6	24	66.7	36	100.0
Others*		5	15.6	23	71.9	4	12.5	32	100.0
χ^2 = 32.703	p<0.001								
Working status									
Working		2	3.6	14	25.5	39	70.9	55	100.0
Not working		16	8.6	89	48.2	80	43.2	185	100.0
χ^2 =13.034	p=0.001								
Occupation									
Housewife		15	9.1	86	52.1	64	38.8	165	100.0
Officer		1	3.4	4	13.8	24	82.8	29	100.0
Student		1	5.3	2	10.5	16	84.2	19	100.0
Other**		1	3.7	11	40.7	15	55.6	27	100.0
χ^2 = 30.605	p<0.001								
SES									
Good		1	1.3	23	31.1	50	67.6	74	100.0
Middle		10	7.3	65	47.4	62	45.3	137	100.0
Worse		7	24.1	15	51.8	7	24.1	29	100.0
χ^2 = 27.167	p<0.001								

Variables	CSEI Scores							
	Low		Medium		High		Total	
	n	%	n	%	n	%	n	%
Having chronic diseases								
No	10	5.5	61	33.9	109	60.6	180	100.0
Yes	8	13.3	42	70.0	10	16.7	60	100.0
$\chi^2 = 34.785$ p<0.001								
Having obese individuals in family								
No	3	3.0	34	34.0	63	63.0	100	100.0
Yes	15	10.7	69	49.3	56	40.0	140	100.0
$\chi^2 = 14.028$ p=0.001								
Smoking status								
Smoking	4	6.2	20	31.2	40	62.6	64	100.0
Non-smoker	11	7.5	67	45.6	69	46.9	147	100.0
Quit smoking	3	10.3	16	55.2	10	34.5	29	100.0
$\chi^2 = 7.428$ p>0.05								
Alcohol consumption								
User	0	0.0	0	0.0	7	100.0	7	100.0
Non-user	18	7.8	102	44.3	110	47.9	230	100.0
Quit drinking	0	0.0	1	33.3	2	66.7	3	100.0
$\chi^2 = 7.869$ p>0.05								
Doing exercise								
Regular	1	6.6	5	33.4	9	60.0	15	100.0
Sometimes	3	3.2	26	28.0	64	68.8	93	100.0
Never	14	10.6	72	54.6	46	34.8	132	100.0
$\chi^2 = 26.354$ p<0.001								
Having a house								
Yes	11	7.4	64	43.2	73	49.4	148	100.0
No	7	7.6	39	42.4	46	50.0	92	100.0
$\chi^2 = 0.017$ p>0.05								
Having a car								
Yes	3	2.1	52	36.9	86	61.0	141	100.0
No	15	15.2	51	51.5	33	33.3	99	100.0
$\chi^2 = 25.031$ p<0.001								

dividuals in their families compared to the ones who do not. Also, females who do not possess a house have 2.05 times higher risk than women who own one.

Compared to normal-weight women, overweight women have 4.80 times and obese women have 91.22 times lower body image concern risk. In addition, the group of individuals aged between 40 and 64 is found to have 6.71 times lower body image concern risks than the ones between 18 and 29. Also in this group, individuals with unsatisfactory SES have 8.30 times lower body image concern risks.

Discussion

Body image, dissatisfaction, and self-esteem are not only young people's issues during puberty and adolescence, but are also significant matters for people throughout their lifetime (15). To the best of our knowledge, this is the first study to evaluate the self-esteem and body image of normal weight, overweight and obese women and to investigate the related factors with self-esteem and body image.

Body image can affect ones' perception of weight. It is believed that sociocultural factors influence desired body weight within cultures. In the African American

Table 4. Body image concern score groups of women according to age and some socio-demographic features

Variables			BICI Scores					
		Low		High		Total		
		n	%	n	%	n	%	
Age groups (year)								
18-29		25	38.5	40	61.5	65	100.0	
30-39		37	52.9	33	47.1	70	100.0	
40-49		45	80.4	11	19.6	56	100.0	
50-64		47	95.9	2	4.1	49	100.0	
χ^2 =50.442	p<0.001							
Education level								
Under primary school		23	100.0	0	0.0	23	100.0	
Primary school		58	81.7	13	18.3	71	100.0	
Secondary school		28	71.8	11	28.2	39	100.0	
High school		27	52.9	24	47.1	51	100.0	
University		18	32.1	38	67.9	56	100.0	
χ^2 =51.085	p<0.001							
Marital status								
Married		119	66.9	59	33.1	178	100.0	
Divorced		25	89.3	3	10.7	28	100.0	
Single		10	29.4	24	70.6	34	100.0	
χ^2 =26.104	p<0.001							
Number of child								
None		15	30.6	34	69.4	49	100.0	
1-2		72	65.5	38	34.5	110	100.0	
≥3		67	82.7	14	17.3	81	100.0	
χ^2 =36.194	p<0.001							
Living arrangement								
Alone		6	75.0	2	25.0	8	100.0	
With the spouse		28	75.7	9	24.3	37	100.0	
With the spouse and children		77	60.6	50	39.4	127	100.0	
With other family member without spouse		13	36.1	23	63.9	36	100.0	
Other*		30	93.8	2	6.2	32	100.0	
χ^2 =27.734	p<0.001							
Working status								
Working		21	38.2	34	61.8	55	100.0	
Not working		133	71.9	52	28.1	185	100.0	
χ^2 =20.953	p<0.001							
Occupation								
Housewife		127	77.0	38	23.0	165	100.0	
Officer		10	34.5	19	65.5	29	100.0	
Student		5	26.3	14	73.7	19	100.0	
Other**		12	44.4	15	55.6	27	100.0	
χ^2 =39.283	p<0.001							
SES								
Good		37	50.0	37	50.0	74	100.0	
Middle		92	67.2	45	32.8	137	100.0	
Worse		25	86.2	4	13.8	29	100.0	
χ^2 =13.117	p=0.001							

Variables		BICI Scores					
		Low		High		Total	
		n	%	n	%	n	%
Having chronic diseases							
No		98	54.4	82	45.6	180	100.0
Yes		56	93.3	4	6.7	60	100.0
χ^2 =29.598	p<0.001						
Having obese individuals in family							
No		50	50.0	50	50.0	100	100.0
Yes		104	74.3	36	25.7	140	100.0
χ^2 =14.963	p<0.001						
Smoking status							
Smoking		34	53.1	30	46.9	64	100
Non-smoker		95	64.6	52	35.4	147	100
Quit smoking		25	86.2	4	13.8	29	100
χ^2 =9.534	p=0.009						
Alcohol consumption							
User		0	0.0	7	100.0	7	100.0
Non-user		153	66.5	77	33.5	230	100.0
Quit drinking		1	33.3	2	66.7	3	100.0
χ^2 =14.330	p=0.001						
Doing exercise							
Regular		7	46.7	8	53.3	15	100.0
Sometimes		42	45.2	51	54.8	93	100.0
Never		105	79.5	27	20.5	132	100.0
χ^2 =30.185	p<0.001						

Table 5. Logistic regression analysis of factors related with low self-esteem

Independent Variables		Odds Ratio	95% Confidence Interval	p
Groups	Normal weight	1		
	Overweight	3.09	1.29-7.41	0.011
	Obese	12.19	4.50-33.01	<0.001
Education level	≤ primary school	9.95	3.35-29.59	<0.001
	Secondary school	8.70	2.55-29.67	0.001
	High school	7.79	2.54-23.93	<0.001
	University	1		
Marital status	Single	1		
	Married	5.93	2.19-16.04	<0.001
Having chronic diseases	No	1	1.50-9.50	0.005
	Yes	3.77		
Having obese individuals in family	No	1	1.02-4.30	0.045
	Yes	2.09		
Having a home	Yes	1	1.01-4.20	0.048
	No	2.05		

Table 6. Logistic regression analysis of factors related with body dissatisfaction

Independent Variables		Odds Ratio	95% Confidence Interval	p
Groups	Normal weight	1		
	Overweight	4.79	2.15-10.68	<0.001
	Obese	91.22	19.66-423.22	<0.001
Age groups	18-29	1		
	30-39	1.34	0.53-3.41	0.535
	40-64	6.71	2.51-17.92	<0.001
SES	Good	1		
	Middle	1.88	0.84-4.22	0.124
	Worse	8.30	1.95-35.39	0.004

community, women are less concerned about their weight, feel less pressure to be thin, and are less dissatisfied with their weight than white women (20). In addition, males tend to be less concerned than women about their body weight, experience less dissatisfaction and are less willing to lose weight (20). On the other hand, thinner bodies are more ideal and acceptable particularly in white communities (21).

Fashion magazines published articles on how to achieve an ideally thin body and white models appeared in 30% of television commercials. Cosmetic surgery was popular and many women wish that they were taller, blond and had longer legs. Pacific Islander women tend to be heavier but are better able than most other women to accept their bodies, in spite of their size. In the Pacific Islands, if someone is thin they are considered to be ill and are rejected by their families and the community. Food is thought to be a social element and the enjoyment of gathering together and outweighs concerns about appearance (22).

In developed countries, having high levels of income has been reported to be associated with body image dissatisfaction (23). However, because of the economic and cultural differences, it seems that these indicators cannot be generalized in developing countries like Turkey.

Consistent with our hypothesis, overweight and obese women report greater body image dissatisfaction than their normal-weight fellows. Compared to normal-weight women, overweight ones have 4.80 times and obese women have 91.22 times lower body image concern risk. In addition, the group of individuals in the age range of 40 to 64 is found to have 6.71 times lower body image concern risks than the ones aged between 18 and 29. Age was found to be a factor significantly associated

with body dissatisfaction, which is possibly related to the participants' greater age range. Also in this group, individuals with unsatisfactory SES have 8.30 times lower body image concern risks. The association between SES and body image perception was controversial. Reports from developed countries indicated that women of high SES overestimate their body weight more often than women of lower status (24). Contrary to Mikolajczyk et al's study (24), there is an association between lower SES and body image distortion as well as low self-esteem in the present study.

Conclusion

In this study, it is observed that obesity is one of the most important determinants of self-esteem and body image among women. Preventing obesity is not only important for the prevention of non-communicable diseases but is also important for the prevention of psychiatric problems.

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Bibliografia

1. Mirzazadeh A, Sadeghirad B, Haghdoost AA, Bahrein F, Rezazadeh Kermani M. The prevalence of obesity in Iran in recent decade; a systematic review and meta-analysis study. Iran J Public Health 2009; 38:1-11.
2. World Health Organization. Obesity and overweight, 2014. Available online: http://www.who.int/. 2014.
3. The Ministry of Health of Turkey. Nutrition and Health Survey. Ankara, 2010.
4. National Institute of Health, National Heart, Lung and Blood Institute. Practical Guide Evaluation and Treatment of Overweight and Obesity in Adults. NIH Publications, 2000.
5. World Health Organization. Prevention and management of the global epidemic. Report of the WHO consultation on Obesity. Geneva; 2000.
6. Wyatt SB, Winters KP, Dubbert PM. Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. Am J Med Sci 2006; 331:166-74.
7. Sullivan PW, Ghushchyan V, Wyatt HR, Wu EQ, Hill JO. Impact of cardiometabolic risk factor clusters on health-related quality of life in the U.S. Obesity 2007;15:511-21.
8. Mann M, Hosman CM, Schaalma HP, de Vries NK. Self-esteem in a broad-spectrum approach for mental health promotion. Health Educ Res 2004;19(4):357-72.
9. Abilés V, Rodríguez-Ruiz S, Abilés J et al. Psychological characteristics of morbidly obese candidates for bariatric surgery. Obes Surg 2010;20: 161-67.
10. Mond J, van den Berg P, Boutelle K, Hannan P, Neumark-Sztainer D. Obesity, body dissatisfaction, and emotional well-being in early and late adolescence: findings from the project EAT study. J Adolesc Health 2011; 48: 373-78.
11. Sarwer DB, Wadden TA, Foster GD. Assesment of body image dissatisfaction of obese women: specificity, severity, and clinical significance. J Consult and Clin Psych 1998; 66:651-54.
12. Buote VM, Wilson AE, Strahan EJ, Gazzola SB, Papps F. Setting the bar: divergent sociocultural norms for women's andmen's ideal appearance in real-world contexts. Body Image 2011;8(4):322–34.
13. Doll HA, Petersen SE, Stewart-Brown SL. Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. Obes Res 2000;8:160-70.
14. Pimenta AM, Shanchez-Villegas A, Bes-Rastrollo M, Lo´pez CN, Martinez-Gonzalez MA.Relationship between body image disturbance and incidence of depression:The SUN prospective cohort. BMC Public Health 2009; 9(1): 1.

15. O'Dea JA. (2012). Body image and self-esteem. In T. F. Cash (Ed.), Encyclopedia of body image and human appearance London, UK: Academic Press, 2012; 141-47.
16. WHO expert consultation. Appropriate body-mass index for Asian populations its implications for policy and intervention strategies. The Lancet 2004; 157-163.
17. Mahan KL, Escott-Stump S. Measurement of Height and Weight, The Assessment of Nutritional Status, Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Company, 9th edition. 1996: 371.
18. Peterson C, Austin J. Review of the Coopersmith Self-Esteem Inventory. In Mitchell, J. (ed.), The Ninth Mental Measurements Yearbook. University of Nebraska Press, Lincoln, 1985.
19. Littleton HL, Axsom D, Pury CLS. Development of the Body Image Concern Inventory. Behav Res Ther 2005;43: 229–41.
20. Paeratakul S, White M, Williamson DA, Ryan DH, Bray GA. Sex, Race/Ethnicity, Socioeconomic Status, and BMI in Relation to Self Perception of Overweight. Obes Res 2002; 10(5): 345-50.
21. Padgett J, Biro FM. Different shapes in different cultures: body dissatisfaction, overweight, and obesity in African American and Caucasian females. Journal of Pediatric and Adolescent Gynecology 2003; 16(6):349-54.
22. Yates A, Edman J, Aruguete AM. Ethnic Differences in BMI and Body/Self Dissatisfaction Among Whites, Asian Subgroups, Pacific Islanders, and African Americans. 2004, J Adolescent Health 2004; 34:300-07.
23. Luo Y, Parish WL, Laumann EO. A population-based study of body image concerns among urban Chinese adults. Body Image 2005; 2: 333–45.
24. Mikolajczyk RT, Maxwell AE, El Ansari W, Stock Ch, Petkeviciene J, Guillen Grima F. Relationship between perceived body weight and body mass index based on self- reported height and weight among university students: A cross-sectional study in seven European countries. BMC Public Health 2010; 10(40):1–11.

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