

Relationship of Body Satisfaction, with Nutrition and Weight Control Behaviors in Women

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ABSTRACT

Background: Considering the importance and prevalence of obesity and the desire to lose weight, especially among women, this study intended to investigate the relationship between Body Mass Index, body satisfaction, and weight control behavior among women employees in Isfahan.

Methods: An analytical cross-sectional study was conducted among 408 women who were selected by stratified random sampling method among employees at Isfahan University and Isfahan University of Medical Sciences during 2012. The data collection tool was a multidimensional questionnaire which comprised two sections: Demographic Tool and Body Satisfaction Tool (7 items), Weight Control Behavior Scale (18 items).

Results: Age, marital status, educational level, and multiparity were significantly correlated with body size satisfaction. Seventy-five participants were dissatisfied with their weight and 60.5% reported a desire to lose weight; 92.15% of women studied had participated in a healthy dieting behavior and 10.8% of them had participated in an unhealthy one during the past six months. There was an inverse correlation between body satisfaction and Body Mass Index (BMI) ($r = -0.64$, $P = 0.001$). Ninety percent of participants had at least one of the dieting behaviors. There was an inverse significant relationship between body satisfaction and dieting behaviors ($r = -0.19$, $P = 0.001$).

Conclusions: Due to the importance of the prevention of obesity and the necessity of having a normal BMI in order to prevent subsequent complications, precise self-evaluation of body size can be used to focus on designing and conducting public health programs, especially for women.

Keywords: Body satisfaction, weight control behaviors, women

INTRODUCTION

The problem of being overweight and obesity is one of the important predictors of cardiovascular diseases. The World Health Organization predicts that the number of overweight people will be around 2.5 billion in 2015.^[1] Nowadays, the global pandemic of obesity is also a major problem in developing

countries such as Iran.^[2] Around 34% of Iranian women are overweight.^[3]

Precise body image can have a role in weight control. Thomson *et al.*, (1999), presented 16 different terms for this word, including: Weight dissatisfaction, body image, body image satisfaction, body satisfaction, appearance evaluation, appearance knowledge, fear of physical condition and so on.^[4]

Body image is the picture of our own body in our mind. Actually, the way in which the body appears to ourselves is our body image.^[4] Body dissatisfaction is a negative distortion of one's body which is especially mentioned by women.^[5-8]

Many studies have shown links between body image and health.^[9] Weight is a major component which influences body image. The emotional notion that people have towards their bodies will affect their behaviors.^[10] There is a significant relationship between body image and weight control behaviors. More than 80% of women aged between 40-60 years are on a diet to lose or to maintain their weight.^[11] In a study in the United States 38.3% of normal-weight women thought they were overweight.^[12] Most of the women are on unhealthy regimens in order to achieve an ideal weight^[13] and they feel overweight even with a normal figure.^[14,15]

This problem can become very important when we observe that the trend towards a Western lifestyle is becoming widespread in developing countries due to bombardment of media's propaganda, satellite advertisements, movies, the Internet and other events, following the phenomenon of globalization. While the issue of dieting and body satisfaction has been deeply inspected in the Western world, there are only few studies in this regard in developing countries such as Iran. So, this study intended to determine the relationship between perceived body satisfaction and weight control behaviors.

METHODS

Subject: This cross-sectional study was done on 408 female employees at Isfahan University and Isfahan University of Medical Sciences during 2012. They were chosen according to the stratified random sampling method. After obtaining the numbers of women who worked in

different departments, appropriate percentage of female employees were selected in a way that the sample included employees from all the various educational and administrative sections in the faculties and departments of the two universities. After the approval of the proposal by the ethics committee and coordinating with the related units, the goals of research were explained to the female personnel, Satisfactions' forms were given to them, questionnaires were distributed, and then the next day, the questionnaires were collected. Participation in the study was completely voluntary. Inclusion criteria were: (1) Willing to participate in the study and (2) lack of serious physical defect. Exclusion criteria were pregnancy or breastfeeding.

Study tool

A 9-item demographic questionnaire was designed to identify the socioeconomic information of the participants. This included age, marital status, education, occupation, job location, number of children, history of plastic surgery, and self-evaluation of income.

Body satisfaction tool was a self-administered questionnaire designed for self-assessment of women's satisfaction with different aspect and parts of the body including weight, chest, abdominal, waist and hip circumference, height, and overall body appearance. Items were scored based on a five points scale from "I'm not satisfied" to "very satisfied". Each question had a score between 0-4. The overall scores varied between 0-28. Acquiring a higher total score indicated a higher level of body satisfaction.

Dieting behaviors was assessed using the standard questionnaire named Weight Control Behavior Scale (WCBS; French, Perry, Leon, and Fulkerson, 1995). The WCBS is a measure of various weight loss behaviors; it contains a healthy dieting behavior (10 items) and an unhealthy dieting behavior (8 items) subscale. Considering cultural adaptation, some questions were deleted from this questionnaire. For each weight loss behavior, participants were asked to indicate how often they had used each strategy in the past six months to try to lose weight. Each dieting strategy was rated on a Likert scale that ranges from 0 to 3; "0" indicated they had "never" used that strategy, "1" indicated that they "sometimes" used the strategy, and "2" showed that they "often" used

the strategy and “3” showed that they “always” did the tasks. Based on the scoring, higher score means better dieting behavior. The internal correlation for healthy behavior (low consumption of high-fat, high-calorie food, reducing snacks and exercise.) was 0.93 and for unhealthy behavior (use of various medications mitigating appetite, eliminate a main food) was 0.81.^[16]

Reliability of the tool: To determine the reliability of the tool, the questionnaire was completed by 30 women employees of the two universities who were later excluded from the study. The obtained internal correlation for the scales varied from 0.70 to 0.84 which was acceptable. Completing the questionnaire took about 15 min, while receiving the questionnaires, their height and weight were measured. Their height was obtained by taking the average of two readings of height in meters using a portable stadiometer, and their weight was recorded in the scale of kilogram and measured using a weight capacity pre-calibrated digital scale. Participants were weighed fully clothed without their shoes. Body mass index (BMI) was determined by dividing weight (kg) by height square (m²). BMI category served as a classification of weight status and the following categorical values was used (Centers for Disease Control and Prevention, 2008):

(1) Those with BMI less than 18.5 kg/m² were considered as underweight, (2) Normal weight status was considered as having a BMI from 18.5 kg/m² to 24.9 kg/m², (3) Overweight status was defined as having a BMI from 25.0 kg/m²-29.9kg/m², (4) Obesity was described as having a BMI at or greater than 30.0 kg/m².^[17]

There was a question about the numbers of regimens during the last six months, and their willingness to do something about their weight was measured in another question.

Finally, the collected data was analyzed by SPSS Version 18 using the independent T-test, one-way ANOVA, Pearson correlation coefficient, and Spearman correlation analysis to determine the relationship of body satisfaction scores with dietary intake and weight control behavior in women. To determine the differences in body image score between women employees of the two universities we used T-test. One-way ANOVA was used to distinguish body satisfaction differences between women employees with different marital

status. Pearson correlation coefficient was used to clarify the relationship of body satisfaction score with age and Parity. Spearman correlation was used to clarify the relationship of body satisfaction with educational status, occupational status and self-evaluation of income. $P < 0.05$ was considered significant.

RESULTS

Four hundred and eight women employees from two universities participated in this study. Women had a mean age of 36.12 ± 7.67 years and mean height of 159.67 ± 5.68 cm. The mean weight was 64.74 ± 10.80 kg. The minimum weight was 40 and maximum was 115 kg. The mean BMI was 25.41 ± 4.21 kg/m², which falls into the “overweight” range. Minimum BMI was 16.65, and maximum was 46.07 kg/m². 14.1% of participants were obese, 35.3% overweight, 47.6% normal weight, 3.0% underweight. In other words, around 50% of the women were obese or overweight. Other demographic characteristics are given in Table 1.

Mean body satisfaction score was 54.07 ± 20.33 . Seventy-five percent of women were dissatisfied with their weight. The least satisfaction was related to their abdominal circumference [Table 2].

There was an inverse correlation between body satisfaction and BMI ($r = -0.64$, $P = 0.001$).

In addition, weight satisfaction was low, 75% of the women were dissatisfied with their weight and nearly more than half of the respondents (60.5%) reported a desire to lose weight. Less than one tenth of the women (7.4%) reported that they did not desire special attempts to lose weight; 25.5% of the participants desired to maintain their weight and only 6.6% wanted to gain weight; 15.2% of women had been on a diet at least for one time, 7.1% had been on a diet for two times and 6.1% had been on a diet for three times or more during the past two years; 71.6% did not use any special diet during the past two years.

Pearson correlation test showed a significant inverse relationship between body satisfaction and healthy and unhealthy dieting behaviors ($r = -0.19$, $P = 0.001$). BMI and body satisfaction were associated with their participation in healthy and unhealthy dieting behaviors. Spearman correlation test showed a weakly significant relationship

Table 1: Socio-demographic characteristics of the study population

Social-demographic variable	Number (%)
Job location	
Isfahan university	202 (49.5)
Isfahan university of medical sciences	206 (50.5)
Marital status	
Not currently married	110 (27.0)
Married	282 (69.0)
Widow or divorced	16 (4.0)
Educational status	
12 years	82 (20.1)
14 years	62 (15.2)
Bachelor	199 (49.0)
Postgraduate	57 (14.0)
PHD	7 (1.7)
Self-evaluation of income	
Bad	73 (18.0)
Medium	266 (65.5)
Good	67 (16.5)
History of plastic surgery	
Yes	29 (7.1)
No	379 (92.9)
Number of children	
0	72 (24.0)
1	93 (31.0)
2	103 (34.0)
3 or more	32 (10.7)
Age group (years)	
20-30	110 (27.2)
30-40	176 (43.6)
>40	118 (29.2)
BMI	
>18.5	12 (3)
18.5-24.99	192 (47.6)
25-29.99	143 (35.3)
<30	23 (14.1)

BMI=Body mass index

between body satisfaction and attempt to lose weight during the past two years ($r = -0.22$, $P = 0.001$) and a significant relationship between body satisfaction and the desire to lose weight ($r = 0.45$, $P = 0.001$) and Appearance Evaluation ($r = -0.57$, $P = 0.001$). Also, Spearman correlation test showed significant correlation between evaluation of bodies and dieting behaviors ($r = 0.31$, $P = 0.001$) [Tables 3 and 4].

The most practiced healthy dieting behavior was increased consumption of fruit and vegetables as 47.4% ($n = 194$) reported that they had practiced

this behavior either often or always. The second healthy dieting behavior was the increasing exercise 26.1% ($n = 107$). The prevalence of other practices were: reducing high-fat meat (24.4%, $n = 100$); decreasing sweets and junk food (23.2%, $n = 95$); eliminating snacks (21.5%, $n = 88$); decreasing the amount of food in each meal (18.7%, $n = 77$); consuming low-carbohydrate food (17.1, $n = 77$); and consuming low-fat food (14.7, $n = 60$).

The most practiced unhealthy behavior was skipping dinner to lose weight; almost 8.8%, ($n = 36$) reported practicing this behavior either often or always. The second most practiced unhealthy behavior was skipping breakfast; 8.1% reported this behavior ($n = 33$). Of all the participants, 2.7% ($n = 11$) reported that they used medications either often or always and 1.2% ($n = 11$) fasted for many hours to lose weight. Increasing smoking to lose weight was only practiced by 1.5% ($n = 6$).

Chi square test showed a significant correlation between BMI category with desire to lose weight and self evaluation weight ($P = 0.001$). More than half the women (51.7%) overestimated their weight and 5.7 thought that they were obese; 26.6% of "normal weight" thought they were "overweight"; 41.7% of "thin women" thought they were "about the right weight"; 67.2% "obese women" thought they were only a little "overweight" [Table 5].

DISCUSSION

In the current study there was an inverse correlation between body satisfaction and BMI. Many studies have found a similar pattern, in such a way that the presence of a significant negative association between body mass index (BMI), and body dissatisfaction could be seen. Also, a positive association between body dissatisfaction and behaviors such as dieting to control weight was proved.^[4,14,18-22]

In our study those with a high body weight, and low body satisfaction followed their diet more. These results were on the same lines as those of the Bayyari and Markey studies.^[13,16]

Our result indicated that 36.3% of normal-weight women thought they were "overweight,". This was consistent with Chang's and Markey's studies.^[14,15] Thin or obese individuals mostly misunderstood their weight and 67.2% of obese women imagined they were just overweight. It was revealed that

Table 2: Prevalence of dissatisfaction regarding different areas of the body

Different areas of body.	Never satisfied N (%)	Very low satisfied N (%)	Low satisfied N (%)	Very Satisfied N (%)	Very high satisfied N (%)	Total N (%)
Height	18 (3.2)	20 (4.4)	168 (41.6)	148 (36.3)	59 (14.5)	408 (100)
Weight	69 (16.8)	37 (9.1)	155 (38.0)	117 (28.7)	30 (7.4)	408 (100)
Waist	50 (12.3)	56 (13.7)	149 (36.5)	112 (27.5)	41 (10.0)	408 (100)
Abdominal girth	72 (17.7)	87 (21.3)	153 (37.5)	73 (17.9)	23 (5.6)	408 (100)
Hip circumference	57 (13.6)	57 (14.0)	132 (32.4)	132 (32.4)	31 (7.6)	408 (100)
Chest	30 (7.4)	42 (10.3)	134 (32.8)	162 (39.7)	40 (9.8)	408 (100)
The overall appearance of the body	25 (6.1)	21 (5.1)	168 (40.4)	166 (40.7)	28 (6.9)	408 (100)

Table 3: Correlations among BMI, body satisfaction, healthy and unhealthy dieting behaviors

Variable	1	2	3	4
BMI				
Body satisfaction score	-0.64**			
Desire to lose weight	0.46**	-0.45**		
Dietary behavior (healthy+unhealthy)	0.29**	-0.19**	-0.28**	

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed),

BMI=Body mass index

Table 4: Correlations among body satisfaction, appearance evaluation and number of attempts to lose weight during the past 2 years

Variable	1	2	3
Body satisfaction score	1		
Appearance evaluation	-0.56**	1	
Number of attempts to lose weight during the past 2 years	-0.22**	0.19**	1

**Correlation is significant at the 0.01 level (2-tailed)

even educated women misunderstood obesity or being overweight, so it's necessary to focus on this problem by increasing health literacy.

In the present study, 41.7% of thin or normal women desired to lose weight. This result of our study was consistent with the Wardle *et al.*, study among people of 23 countries.^[23] So, women prefer to be thin rather than obese or even normal weight. These results were similar to the Charlotte, Rodgers' study.^[14,24] It seems, like the Western culture, the value of thinness is increasing in our society and obesity is considered as an anti-norm. Our study showed that the women who evaluated their bodies as obese or overweight were more likely to engage in both healthy and unhealthy dieting behaviors than

those who were relatively satisfied with their bodies. In fact, in our study, what causes women focus on their food was their imagination about their not their objective BMI group.

In the current study 75% of women were dissatisfied with their weight. This result was more than Gingras.^[25]

In the current study women who were more dissatisfied with their bodies, participated more in healthy or unhealthy dieting behaviors (although in our study this correlation was weak). That means when these women did not like the size of the different parts of the body, they attempted to exterminate this defect by resorting to healthy and unhealthy dieting behaviors. This result was stronger in other studies such as the Bayyari, Markey, Suka, and Neumark-Sztainer studies, so participants who were heavy or assumed themselves overweight or obese were less satisfied with their bodies and had a greater desire to diet and were engaged in dieting more frequently than those who were relatively thin.^[14,16,26-28] The mean age of the women studied was younger than our study and this difference in results could be related to age difference. In the current research the women studied were middle-aged and according to the said studies, adolescents focus on their bodies more than others.

Also the most strategy of weight control was increasing the consumption of fruit and vegetables and the unhealthiest behavior was skipping dinner to lose weight. This result was inconsonant with Anton's study, therefore the women was more dissatisfied with their bodies used less fruit and vegetables.^[29] Other studies in our society have shown women consumed less than five or more servings of fruits and vegetables.^[30] Also, in Jackson's, Hofmann's study the most healthy

Table 5: Comparison of objective weight status with self-perceived weight status

Objective BMI group (n=408)	Appearance evaluation				Total
	Underweight	Normal weight	Overweight	Obese	
<18.5					
N	7	5	0	0	12
%	58.3	41.7	0.0	0.0	100.0
18.5-24.99					
N	17	124	51	0	192
%	8.9	64.6	26.6	0.0	100.0
25-29.99					
N	0	18	119	5	142
%	0.0	12.7	83.8	3.5	100.0
≥30					
N	0	1	39	22	58
%	0.0	1.7	67.2	31.1	100.0
Total					
N	24	148	209	27	408
%	5.9	36.6	51.7	5.7	100.0

BMI=Body mass index

behavior for weight control was exercising, and taking diet pills or fasting was the most unhealthy behavior. This result could be related to differences of age, group of studied people, differences of culture or the place of study.^[28,31] Also, like other studies in our country, the prevalence of physical activity in our study was low too.^[32] The unhealthiest strategy of weight control was skipping dinner. It was similar to Stigler's result.^[26] On the other hand, with a higher BMI, we observed omission of a number of meals to lose weight. Although its proved skipping main meal were associated with obesity.^[33] Therefore we should train our women about healthy weight management.

It can be stated that practicing unhealthy dieting behaviors was not common among this population. So the prevalence of smoking to lose weight was very low, while King, Croghan and Cavallo pointed to this strategy as one of the weight control behaviors among women.^[34-36] Perhaps this variation can be attributed to cultural differences. It is fortunate that our society's women did not believe in smoking as a dieting strategy. Also 2.7% of our population studied reported they used medications either often or always. Despite what there was in our study, greater prevalence of this practice was observed by Tami's study. This result may be related to differences in age and educational level in different studies.^[37] The prevalence of being overweight or

obese (BMI > 25) in the current study was similar to the Kelishadi *et al.*, study.^[38] However, Sotoodeh *et al.*, reported a higher prevalence of obesity.^[39] This difference may be related to the educational level or the sample size. The prevalence of obesity in adults was reported to be 20-25% in some countries such as the United States and it is now increasing in developing countries such as Iran.^[40] Therefore, the principles of a healthy diet such as consuming a diverse diet^[41,42] full of fruits, vegetables, functional foods^[43] and moderate amount of whole grains and low-fat dairy^[44] should be considered in any weight reduction program.

Limitations

The present study has been based upon self-report measures of eating patterns; there was no independent support for the self-report data. Secondly, generalization of the findings in this study may be limited to female employees, with high educational level.

It is recommended that this study is done in other age group.

Advantages

To the best of our knowledge this is the first study to explore the relationship between body dissatisfaction and levels of dieting behavior in women employees in our society.

CONCLUSIONS

Due to the importance of the prevention of obesity and the necessity of having a normal BMI in order to prevent subsequent complications, precise self-evaluation of the body is very important. So we should train our society and focus on designing and conducting public health programs, especially for women since lack of proper knowledge of normal weight will lead to unhealthy lifestyles. This issue is inaccessible without improvement of body image satisfaction.

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