Tendency toward Weight Loss among Iranian Adolescent Girls: Study on Perceived Weight, Ideal Body Mass Index and Attitude toward Eating Disorders

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Abstract

Background

Adolescents' perception of their weight is a strong factor in shaping dietary habits and weight control and management. Among non-overweight and overweight adolescents, both overestimation and underestimation of weight status are associated with harmful effects. This study aimed to examine the relationship between perceived weight and attitude toward eating disorders among adolescent girls living in Karaj, Iran.

Materials and Methods

Involving a two-stage random sampling, this cross-sectional study was conducted on a total of 537 high school girls 14-18 years of age living in Karaj. The Eating Attitudes Test (EAT-26) was employed to screen for attitude toward eating disorders. Also, anthropometric measurements (weight and height), perceived and the ideal weights of the participants were assessed.

Results

The average age of girls participating in the study was 16.12 ± 1.20. According to the results, 70% of girls had normal body mass index. It was found that the ideal weight of 55% of the girls in the normal body mass index group fell under the lower than normal boundary. Moreover, the prevalence of eating disorders was estimated to be 23.6%. The attitude toward eating disorder was significantly correlated with body mass index of participants and their self-concept ($P<0.05$).

Conclusion

The results showed that girl's adolescent with normal BMI have tendency to the lower weight. Their opinion about ideal weight fall them to the underweight group. Concerns about lean and bony body require desirable planning and weight management for adolescent girls.

Key Words: Adolescent girls, Body image, Eating disorders, Ideal weight, Perceived weight.

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1- INTRODUCTION

The perception of adolescents about their weights is a key factor in describing the relationship between current weight and weight control behavior. Incorrect perceived weight may lead to weight loss or gain behaviors. In contrast, there is a group of overweight adolescents who take no action on weight loss. An increasing group of adolescents adopt inappropriate nutritional practices for weight loss despite being normal. This can pose serious complications in the long term (1). Overweight self-perception and attitude toward weight loss behaviors are common among adolescents. The feeling of being overweight versus actual weight gain in adolescents can leave psychological effects (2). The perceived weight is one of the important aspects of body image, reflecting the individual expected self-image. A misperception about weight can indirectly contribute to dissatisfaction with body weight (3). The individual perception of weight can be a better predictor of actual weight, while the adolescents' perception of their weight is a strong factor in shaping dietary habits and weight control and management. The normal weight or underweight adolescents perceive their body as overweight at greater risk of anorexia nervosa. Conversely, overweight adolescents lacking that perception do not exercise to control their weight (4).

The transition from childhood to adolescence is one of the most important stages of life. Unfavorable perception of the body is a common problem among adolescents (5). Due to physical changes in adolescents over this age range, self-image is affected, thus leading to certain disorders, including eating disorders (6). In psychological terms, eating disorder often begins in adolescence (9). One of the groups at risk of eating disorders involves females 14-25 years of age (7). Eating disorders refer to nutritional and psychological diseases whose common characteristics are disturbed behavior and nutritional attitudes (1). Common in adolescents, eating disorders are associated with important psychological, physiological and social complications, which might aggravate the behaviors related to eating disorders (2-8). All types of eating disorders lead to increased risk of death (3), accounting for the highest mortality rate among psychological diseases (4). Although anorexia and bulimia have been deemed two distinct eating disorders by the American Psychiatric Association Diagnostic and Statistical Manual (DSM-IV), the most common eating disorder in the samples is atypical associated with essential physiological and psychological problems (13). For instance, amenorrhea and osteoporosis are the key complications of eating disorders in this age group (10), while mood disorders and depression are common in people with bulimia nervosa (3). These groups of adolescents are at a higher risk for full eating disorders than healthy adolescents (11). The average prevalence of anorexia nervosa and bulimia nervosa among young women are 0.3 and 1%, respectively (12). The prevalence of anorexia nervosa in adolescent girls is estimated to be about 1%, even though up to 10% of young women aged 16 to 25 might be diagnosed with the subclinical condition. Moreover, 3 to 10% of American adolescent girls suffer from bulimia nervosa (5).

Since eating disorders form in adolescence persisting until young age, it is crucial to find solutions to curtail the risk of eating disorders in adolescence. Moreover, adolescents tend to respond faster to treatment owing to the shorter duration of disease and diagnosis (13). It is crucial to explore the issue of preventing and resolving the underlying causes of such disorders. The nutritional status is critical during adolescence in determining

mortality indices and disease in adult life. The importance of the issue doubles with regard to the prevalence of these disorders (adolescence and onset of adulthood) and its coincidence with the beginning of social activities and individual productivity. This study aimed to investigate the prevalence of eating disorders and associated behaviors such as perceived weight and perceived ideal body mass index (BMI) as well as the relationship between perceived weight and ideal body mass index with eating disorders.

2- MATERIALS AND METHODS

2-1. study group

This was cross-sectional study involving a two-stage random sampling, where a total of 537 high school students participated from Karaj, Iran.

2-2. Inclusion criteria

- Willing to participate in the study,
- Being female.

2-3. Exclusion criteria

- Not being in age range 14-18 years old.

2-4. Measures

Variables assessed in this study include socio-demographic characteristics, anthropometric measurements (weight and height), having attitude toward eating disorder, perceived and the ideal weights of the participants.

2-4-1. Demographic variables

Demographic questionnaire was used to gathering the socio-demographic data include age and parental occupation and education status.

2-4-2. Body weight and height

Height and body weight were measured by an expert examiner. The height was examined by tape measure. Body weight was rounded to the nearest 0.1 kg on a standard digital scale (Glamor, Bs-807), with the subjects dressed in light underwear and no shoes. The body mass index (BMI) was calculated as weight divided by height squared (kg/m2). Based on the international norms from the WHO (2007 reference) with age and gender-specific BMI (14), BMI cutoffs were the following: overweight, BMI >1SD; obesity, BMI >2SD; and underweight, BMI < -2SD. In this categorization, the ages were expressed by the subjects, including 14 years, from 14 to 15 years old and etc.

2-4-3. Attitude toward eating disorder

The nutrition and attitude assessment questionnaire Eating Attitude Test-26 (EAT-26) (Garner and Garfinkel, 1979) to estimate the frequency of subjects at risk of eating disorders was used.

EAT-26 is a screening tool for subjects prone to eating disorders, the validity and reliability of which have been confirmed by epidemiological studies in different countries. Reliability and validity of the translated EAT-26 in Iran were 0.80, 0.76, respectively (15).

The questionnaire contains 26 items related to attitude, habits and feeding behavior, where the maximum score is 78. The 11 items of questionnaire measure the nutrition attitude, while 15 items are related to diet performance. The responses in EAT-26 are scored on a Likert scale: always (3 points), most of the time (2 points), very often (1 point) and three additional options include sometimes, rarely or never (0 points). Nevertheless, item in question 25, the scores of "never", "rarely", and "sometimes" were 3, 2, and 1, respectively, and three other scales were scored as zero.

A score equal to 20 or greater is defined as disordered eating attitude (at risk for eating disorders).

2-4-4. Perceived weight

To assess the perceived weights, the participants were asked about how they perceive their present weights from four options including underweight, normal weight, overweight and obese. Furthermore, the participants answered to the ideal weight question from their viewpoint. At the next stage, the ideal BMI was calculated by considering measured height.

2-5. Ethics

This study was approved by the Ethics committee of Alborz University of Medical Sciences (ID number: 2427645).
After selecting the desired samples and coordination with educational departments and schools, the objectives of the study and how to complete the questionnaire have been explained for whom the consent was obtained.

2-6. Statistical analysis and sample size

According to the sample size equation, "estimating a qualitative trait in a society" involved α=0.05, p=0.21 (7) and d=0.04. The minimum number of samples was estimated at 399, which increased to 518 taking into account the design effect=1.3.
In this study, the data were analyzed through statistical software SPSS-21 and statistical tests including Chi- square, ANOVA and t-test at significance level of less than 0.05.

3- RESULT

A total of 537 high-school girls participated in this study. The average age of the participants was 16.12 ± 1.20 years old (minimum 14 years and maximum 18 years). The other socio-demographic characteristics of participants have been shown in **Table.**1.

In this study, 23.6% of participants had a disordered attitude toward eating disorders. Moreover, 59.1% of eating disorders were found in the normal body mass index group, while 2.4% was in the underweight group, 26% in the overweight and 12.6% in the obese group.

The average weight of the experimental group was 57.64 ± 11.84 kg, and the average height was 161±6.1 cm. According to the results, 70% (n=367) of girls had normal body mass index, 3.2% (n=17) had lower than normal body mass index, 20.1% (n=108) had overweight body mass index, and 6.7% (n=36) had obese body mass index.

The results of this study showed that the average ideal weight among the participating girls was 53.80 kg, while the average weight was measured to be 57.64 kg, indicating a statistically significant difference between the ideal weight and actual weight (P=0.000). In this study, 66.3% (n=343) of the participants had a tendency to lose weight (**Table.2**).

Nonetheless, the body mass index of only 144 (26.8%) of participants indicated actual overweight or obese. It was found that the ideal weight of 55% of the girls in the normal body mass index group fell under the lower than normal boundary. According to the calculated body mass index, 70.2% of girls with normal BMI had a correct perception of their weights. Nevertheless, 48.1% of girls in the overweight group and only 30.6% of girls in the obese group had a correct perception of their weight. In this regard, 76.5% of girls with lower than normal BMI had a correct perception of their weight. Fisher test indicated a significant relationship between the individual's perception of their weight and BMI at P=0.000. According to the ideal weight expressed by the participants, the BMIs were calculated based on the ideal weights. In this respect, 53.8% of subjects in the group with lower than normal body mass index had normal weight perception, while 23.1% had lower than normal weight perception. Furthermore, 59.2% of subject in the overweight body mass index group, were

overweight or had obese perceptions about their weights (**Table.3**). There was a significant relationship between attitude toward eating disorders and BMI based on the EAT-26 questionnaire (P=0.002). Also, There was a significant relationship between attitude toward eating disorders and ideal body mass index based on the EAT-26 questionnaire (Fisher test, P=0.034). Among disordered eating attitude group, 85.8% had normal ideal BMI vs 93.5% among healthy group. The individual's perception of body and attitude toward eating disorders was statistically significant (P=0.000) and Chi-square was 59.38 (**Table.4**).

Table-1: Socio-demographic characteristics of participants

Socio-demographic characteristics	Number (%)	Variables
Age	(11)59	14 years
	(20.5)110	15 years
	(27.4)147	16 years
	(27.6)148	17 years
	(13.6)73	18 years
Maternal Education	(5.8)31	Illiterate
	(43.6)234	Primary and Secondary
	(24.4)131	High-school
	(26.3)141	Associate degree and above
Parental Education	(2.3)12	Illiterate
	(38)201	Primary and Secondary
	(28.9)153	High-school
	(30.8)163	Associate degree and above
Maternal occupation	(83)443	Housewife
	(15.5)83	Employed
	(1.5)8	Retired
Parental occupation	(1.9)10	Unemployed
	(13.2)69	Worker
	(28.)146	Employee
	(45.5)237	Unemployed
	(11.3)59	Retired

Table-2: Tendency of participants toward changing weight

Attitude toward changing weight	Number (%)
Loss	343 (66.3)
Unchanged	22 (4.3)
Gain	152 (29.4)
Total	517(100)

Table- 3: Relationship between Actual Body Image Index, Perceived Weight and Ideal Body Image Index

Variables	Perceived Weight				P- Value
	Underweight	About Right	Overweight	Obese	
Actual Calculated BMI (%, n)					
Underweight	76.5%(13)	17.6%(3)	0%(0)	5.9%(1)	
Normal	16.6%(62)	70.2%(262)	9.7%(36)	3.5%(13)	
Overweight	.0%(0)	34.3%(37)	48.1%(52)	17.6%(19)	<0.001
Obese	.0%(0)	.0%(0)	69.4%(25)	30.6%(11)	
Ideal BMI (%, n)					
Underweight	23.1%(3)	53.8%(7)	7.7%(1)	15.4%(2)	
Normal	14.7%(68)	57.6%(266)	20.6%(95)	7.1%(33)	
Overweight	7.4%(2)	33.3%(9)	40.7%(11)	18.5%(5)	<0.001
Obese	0%(0)	100.0%(2)	0%(0)	0%(0)	
BMI= Body Mass Index.					

Table-4: Relationship between Disorders Eating and Actual Body Image Index, Perceived Weight and Ideal Body Image Index

Variables	Eating Disorder		P- Value
	Yes	No	
Actual Calculated BMI (%, n)			
Underweight	2.4% (3)	3.4%(14)	0.002
Normal	59.1%(76)	73.4%(301)	
Overweight	26%(33)	18.3%(75)	
Obese	12.6%(16)	4.9%(20)	
Ideal BMI (%, n)			
Underweight	5% (6)	1,8%(7)	0.034
Normal	85.8% (103)	93.5%(360)	
Overweight	8.3%(10)	4.4%(17)	
Obese	0.8%(1)	0.3%(1)	
Perceived Weight (%, n)			
Underweight	18.3% (23)	5.1%(22)	<0.0001
About Right	38.1% (48)	15.9%(65)	
Overweight	34.9% (44)	63.2%(285)	
Obese	8.7% (11)	15.7%(64)	
BMI= Body Mass Index.			

4- DISCUSSION

The present study aimed to investigate the perceived weight, expected weight and attitude toward eating disorders among adolescents living in Karaj, Iran. This study involved the WHO-2007 (BMI) of female adolescents 14-18 years old. The prevalence of overweight and obesity were 20.8% and 6.7%, respectively.

The results were similar to other studies using the WHO-2007 Cutoff (16 - 17). According to a study by CASPIAN-IV (2012), the prevalence of overweight and obesity in adolescents were reported differently in provinces of Iran. The lowest obesity rate was in Hormozgan, Iran (2.6%), while the highest obesity rate was in Bushehr, Iran (19%). The prevalence of overweight and obesity among high school students in Iran were reported to be 11.35% and 10.29%, respectively (16). Moreover, a systematic study by Bibiloni et al. (2013) calculated the prevalence of obesity and overweight among girls around the world as follows: 9.4% and 19.6% in Saudi Arabia (13-18 years old), 28.5% and 4.2% in India (12-18 years old),

8.5% and 15.5% in Spain (12-17 years old), 9.6% and 23.1% in Portugal (10-18 years old), 12.1% and 26% in New Zealand (13-17 years old) and 9.4% and 19.6% in Canada (12-17 years old) (17). The results of perception among girls about their ideal body and ideal MBI indicated that the majority of subjects with normal body mass index and low weight had a tendency toward thinner body despite a correct perception of their current weight. The results showed that more than 70% of participants with normal body mass index and low weight had good perception of their weight, but they tended to lose weight.

The results of this study were examined with regard to perceived weight and ideal weight in the age group 14-18 years without any comparisons available in Iran. Only in a study by Bahreynian et al. (2015), it was reported that 35.3% of girl's adolescents with normal body mass index had a correct perceived weight. The average age of participants was 12.6 years, which was lower than the age group in this study (16.12 years) (18). In a study by

Ibrahim et al. (2014), it was reported that the majority of girl's students (70.2%) with normal body mass index had a good perception of their weight (19). The results of Shams et al. (2010) study revealed that participants with overweight and obesity BMI had a correct perceived weight by 40.7% and 30.6%, respectively, and the rest had lower perception of weight (6). Concerning the relationship between perceived weight and body mass index, Brenner et al. found that 39.5% of girl's students perceived normal weight and 27.3% perceived overweight. Also, in this study, 53.7% of students who were at risk of overweight perceived normal weight, while only 23.6% thought they were overweight (20). Also, Tang et al. (2010) found that 23.6% of the adolescents perceived overweight, whereas only 11.5% of them perceived true overweight. Moreover, 20% of adolescents who were underweight perceived underweight, while only 2.5% were actually underweight (21).

The adoption of EAT-26 as a screening tool for eating disorders in this study, revealed the high prevalence of eating disorders in the age group of girls. In this study, 23.6% of participants had an attitude toward eating disorders. In fact, about 60% of cases of eating disorders in participants had normal body mass index. Considering the extent of ethnic and cultural diversity of the country, the prevalence of eating disorders has been reported differently in regions of Iran. Mozaffari Khosravi et al. (2011) reported that 12% of adolescents were at risk for eating disorders. In this study, 15.7% of subjects at risk of eating disorders suffered from obesity and overweight, where there was a significant relationship between BMI and the risk of eating disorders (22). Rusatee et al. (2013) examined high school students in Tehran, where 21% scored above 20 on the EAT-26. Overweight and obesity significantly aggravated the risk of eating disorders (23). Other results showed that 24.2% of adolescents in the North West of Iran (24), 10.5% in Sari (25) and 16.7% in Tabriz (15) were at risk for eating disorders. The strength of our study is selection of Karaj as a metropolis. One of the features of the area is adjacency to the capital of Iran, Tehran, bringing about immigration from all parts of Iran. Such immigration has provided the inhabiting of different ethnicity (Fars, Turks, Kurds, Lors and Baluchis).

5- CONCLUSION

The findings showed that normal BMI participants had weight misperception: 13.2% overweight or obese and 16.6% underweight perception. The surveys demonstrate that body size perceptions among adolescents have changed, potentially due to a shifting of body weight norms. According to the higher incidence of eating disorders in normal BMI group, there is a warning that female adolescents might wish to be thinner despite having a correct perceived weight. Regardless of weight status, adolescents who misperceive their weight status may be at risk for negative health risk behaviors, weight gain/obesity and psychological problems. Hence, this result may useful for programs aimed weight management behaviors in adolescence.

Further research is needed to examine the implications of these findings. For example, there may be many factors within country that could mediate or moderate perceptions of body weight and dieting to lose weight such as the amount and types of media viewed by adolescents

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGMENT

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