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Eating Disorders among Iranian Male Adolescents

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Abstract

Objectives: Eating disorders are important health issues of body image disturbances. These disorders are not limited to Western countries or females. The current study aimed to investigate the prevalence of eating disorders among Iranian male adolescents and the associated factors.

Materials and Methods: This cross-sectional survey was conducted on 433 male high school students. The study assessed the effects of demographic characteristics, social pressures from family and friends, self-esteem, body satisfaction and media on eating disorders. Results are presented in terms of odds ratio (OR) and confidence interval (CI). P-values less than 0.05 were considered as statistically significant.

Results: About 15% of male adolescents had eating disorders. There were significant differences between the two groups (with and without eating disorders) in terms of social pressure, body dissatisfaction and body mass index (BMI). Body dissatisfaction (OR = 1.23, 95% CI: 1.01-1.50) and BMI (OR = 1.14, 95% CI: 1.06-1.21) were identified as predictive factors in eating disorders.

Conclusions: The results indicated the need for more attention to eating disorders and predictive factors in Iranian adolescents as an example of Asian cultures.

Keywords: Adolescents, Eating Disorders, Iran, Male

1. Introduction

Eating disorders are different varieties of disorders that body dissatisfaction is their central core (1). In such disorders, individuals are intensively preoccupied with their weight, eating behaviors and dieting.

Eating disorders are known as serious and debilitating health problems that could lead to many medical and psychological consequences (2). These health consequences are including disturbances in medical conditions, obesity, depression, suicidal thoughts and even death (1, 3). These disorders include anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED) and eating disorders otherwise not specified (EDNOS) (1).

Eating disorders prevalence differs in both genders. Females are more prone to eating disorders development than males (1, 4, 5). Recent studies indicated an increase in eating disorders in males, especially adolescents (5).

Prevalence of eating disorders in Asian societies is about 3% - 10% (6). The peak of eating disorders is seen in adolescence period, especially 15 - 19 years (7).

Prevalence of eating disorders in adolescents is reported very different in Asian societies. In one Japanese review research, prevalence of eating disorders in adolescents were about 0.025% to 0.2% for AN, and from 1.9% to 2.9% for BN (8). Study on eating disorders among Omani male adolescents showed that weight loss strategies and binge eating were more than Western male adolescents. About 33% of Omani teenagers were vulnerable to express anorexic-like behavior and 12.3% for binge eating or bulimia (9). Bulimia nervosa (0.6%), BED (1.8%) and EDNOS (31%) were also reported in Jordanian female adolescents (10).

There are several factors that affect body image formation and explain eating disorders etiology. Among many, the bio-psycho-social model is one of the models that can explain body image development. This model can identify the interaction between various contributing factors, such as physical changes in puberty (biological factors), self-evaluation, beliefs, internalization of the concept of the ideal body and self-esteem (psychological dimensions), the environment influencing body image, such as cultural beliefs, peer-parent pressure, and the media (social dimension) (11)

In other words, individuals' concept regarding appearance can be influenced by many contributing factors especially self-confidence. Self-esteem is described as self-evaluations and feelings about oneself; therefore, positive evaluation could lead to a greater body satisfaction (11).

Eating disorders were identified as a Western culture bound phenomenon for many years. It was not surpris-

ing that Western female were the main subject of body image researches. In recent years, however, eating disorders are increasingly reported in non-Western societies and in males (4, 5).

Cultural values regarding the body and beauty differ among various societies. Gender role, economic and religious values, even political issues are important contributing factors (11). It is necessary to understand that globalization and the international media could affect these cultural values.

Researchers argued that cultural norms and accepted ideal beauty play an important role in eating disorders development (4, 12). These norms and attitudes could affect individuals especially adolescents via mediating variables such as parents/peers and media (12, 13). Therefore, any studies on eating disorders is important for a better understanding of sociocultural pressures in different cultural contexts.

Socio-cultural messages can be from a variety of sources such as parents, peers and media.

The theme of the messages is usually about importance of gaining Ideal body and using diet, exercise or even invasive methods to lose weight or increase the bulk of muscles.

These socio-cultural messages have direct and indirect effects on body satisfaction and eating behaviors (13).

To the best of authors' knowledge, research on eating disorders and their contributing factors in Iran are very rare. In one study conducted among high school females about 1.7% of adolescents had AN, 1.7% and 2.9% of them had respectively BN and eating disorders not otherwise specified (NOS) (14). In another study, lifetime prevalence of 0.9% for AN, 3.2% for BN and 6.6% for the partial syndrome was reported among Iranian school-age females (15). But there were no data on eating disorders in male adolescents. Given the previous reports of an increase in the prevalence of eating disorders in Iranian population (16), the current study aimed to estimate the prevalence of eating disorders in male adolescents and determine the risk factors of eating disorders development in this group.

2. Materials and Methods

Four hundred and thirty three males from eight high schools of Kerman, Iran, participated in the study.

The high schools that selected for the study were located in different socio -economic areas and included public and private schools. Participants were selected by multi stage stratified sampling method followed by proportion to size. Inclusion criteria were being male, age 14 - 18 years, and willing to participate in the survey. Individuals with known psychiatric disorders and obvious physical deformity were excluded.

This cross-sectional survey was conducted as a part of a larger study entitled: "Body satisfaction and related issues in Iranian male adolescents" approved by the medical thesis and ethical committee of Kerman University of Medical Sciences. All participants signed the written informed consent. Self-reported questionnaires used in the study consisted of:

2.1. Demographic Variables

Demographic variables Such as age, grade and parental educational level (illiterate or elementary school, high school and higher educations), and economic status (fair, medium, good or excellent). Other variables were BMI (weight/height^2) and using media (foreign TV channels, internet and fashion magazines)

2.2. Eating Disorders Instrument

To assess eating disorders, eating disorder diagnostic scale (EDDS) was used. This questionnaire includes 22 items based on DSM-IV criteria. The instrument made it possible to diagnose a full threshold AN, full threshold BN, full threshold BED, sub threshold AN, sub threshold BN and sub threshold BED. The scale has acceptable internal consistency (17), test retest reliability and convergent validity in the Persian version (14).

2.3. Body Satisfaction Instrument

rating rating scale was used to assess body satisfaction (18). This scale includes nine silhouettes (male-female), numbered from 1 (very thin) to 9 (severely obese). This simple method is used in many studies with acceptable reliability and validity (18). The psychometric properties of figure rating scale in Persian, and its test-retest reliability ($\alpha = 0.79$), convergent validity and internal consistency are acceptable ($\alpha = 0.75$) (19). Participants were classified into three groups with no body dissatisfaction (if their current and ideal shapes were the same), mild dissatisfaction (when the BD score was 1), and severe dissatisfaction (when the difference was higher than 1) (20).

2.4. Socio-Cultural Pressure Instrument

The socio-cultural influences on body image and body change questionnaire consists of 10 items that assess the role of mother, father, best friends, and media regarding encouragement to lose weight or build up muscle bulk (21). This inventory scale has suitable reliability and validity to assess social pressure on the adolescents for body change. The Persian version of this questionnaire also has an acceptable reliability ($\alpha = 0.92$).

2.5. Self-Esteem Questionnaire

To assess self-estimation, the Rosenberg self-esteem scale (RSE) was used. This questionnaire consists of 10 global statements and total scores ranging-10 to 10. Positive scores indicate higher self-steam and negative scores show lower self- esteem. The psychometric properties of the Persian version of the questionnaire were already assessed and published (22).

2.6. Statistical Analysis

Two-sample T-test and Chi-square tests were applied to compare the continuous and categorical variables between subjects with and without eating disorders, respectively. To identify the variables that influenced eating disorders, in a multifactorial setting, logistic regression model was fitted. Results are presented in terms of odds ratio (OR) and 95% confidence interval (CI). All analyses were conducted using SPSS software. P values less than 0.05 were considered as statistically significant.

3. Results

Minimum and maximum ages of the subjects were 14 and 18 years, respectively. The mean ± SD age of respondents was 15.99 ± 0.86 years. The minimum and maximum scores of BMI were 12.86 and 36.33 (mean ± SD = 20.63 ± 4.14).

About 15.2% of fathers and 12.4% of mothers were illiterate or had elementary education. Nearly 39% of fathers and 31.6% of mothers had academic degrees; 8% of participants estimated their economic status as fair; about 49.25%, 75.5% and 24.7% of adolescents reported that they watch foreign TV channels, internet and fashion magazines, respectively.

In total, about 15% (n = 64) of subjects had eating disorders. Thirty-two (7.4%) subjects had diagnostic criteria for full threshold BN, and 28 (6.5%) individuals had sub-threshold BED. Only 3 (0.7%) adolescents had sub-threshold BN. Other forms of eating disorders were not reported.

In terms of demographic characteristics, no difference was observed between the subjects with and without eating disorders (Table 1). For example, nearly one forth to half of the subjects in each group declared using fashion magazines and foreign TV channels, respectively. Corresponding P values were 0.53 and 0.39.

On the other hand, significant differences were observed between the two groups in terms of social pressure, body dissatisfaction score and BMI. For example, about six unit difference was observed between groups in terms of social pressure (31 versus 25) giving a P value of < 0.0001. Score of body dissatisfaction was significantly higher among the subjects of with eating disorder group comparing the ones in the healthy group. Mean ± SD values were 1.93 ± 1.31 and 1.32 ± 1.23, respectively. In addition, BMI of the patients was significantly higher than those of the control group (P < 0.0001). Mean ± SD values of BMI for the two groups were 23.16 ± 5.07 and 20.2 ± 3.8, respectively. A marginally significant difference was observed between the groups in terms of self-esteem (P = 0.07). Variables with univariate P value < 0.25 were selected as candidates for multi factorial logistic regression model. The only variables retained significant were body dissatisfaction score and BMI. Social pressure was positively associated with risk of eating disorder. However, the association was not significant (P = 0.26). In addition, one step increase in financial status was associated with 14% decrease in risk of development of eating disorders, which did not reach statistical significance level (P = 0.85). Also, one unit increase in body dissatisfaction score was associated with 23% increase in risk of eating disorders (P = 0.04). In addition, one unit increase in BMI increased risk of eating disorders by 14% (P value < 0.0001).

4. Discussion

Body concern and its health consequences are important during adolescence; therefore, it is not surprising that eating disorders are increasingly observed in this period. The findings of the present study demonstrated that eating disorders prevalence in Iranian male adolescents was relatively high. Although this prevalence may not be as high in comparison to what is reported in some of the neighboring countries such as 26.4% abnormal eating behavior in Turkish male adolescents (23). In some Arab countries in the Middle-East region, the prevalence of eating disorders was considerably higher than that of the current study (9, 10, 24).

Although, in these studies, cultural differences should be noted, methodological issues are important as well. It should be noted that the current study measured the prevalence of eating disorders while other studies investigated a disordered eating attitude. In addition, the current study was conducted among male adolescents, but some of these studies were in both genders. In other Asian countries, outside the Middle East region, the prevalence of eating disorders is also different (6, 8, 12, 25). In the current study, the prevalence of AN was zero, which was consistent with that of the study by Rovensinge et al. (26). Previous research on eating disorders among Iranian population showed that symptoms of bulimic syndrome were greater in males (16). Although it seemed that the prevalence of different types of eating disorders was unexpected, based on previous research on general population, the results were not surprising (16).

Table 1. Demographic Characteristics of Study Subjects

Variable	Level	Without Eating Disorder Group, No. (%)	With Eating Disorders Group, No. (%)	Total, No. (%)	P Value
		N = 369	N = 64	N = 433	
Grade	1	144 (39.0)	19 (29.7)	163 (37.6)	0.36
	2	154 (41.7)	32 (50.0)	186	
	3	64 (17.3)	13 (20.3)	77 (17.7)	
	4	7 (1.9)	0	7 (1.6)	
Father's education	Elementary	55 (14.9)	11 (17.2)	66 (15.2)	0.83
	High school	169 (45.8)	30 (46.9)	199 (46)	
	University	169 (39.3)	30 (35.9)	199 (38.8)	
Mother's education	Elementary	43 (11.7)	11 (17.2)	54 (12.5)	0.45
	High school	209 (56.6)	33 (51.6)	242 (55.9)	
	University	117 (31.7)	20 (31.2)	137 (31.6)	
Financial status	Poor	31 (8.4)	6 (9.4)	37 (8.5)	0.17
	Middle	145 (39.3)	19 (29.7)	164 (37.9)	
	Good	165 (44.7)	37 (57.8)	202 (46.7)	
	Excellent	28 (7.6)	2 (3.1)	30 (6.9)	
Foreign TV channels	Yes	180 (48.8)	33 (51.6)	213 (49.2)	0.39
	No	189 (51.2)	31 (48.4)	220 (50.8)	
Internet	Yes	277 (75.1)	50 (78.1)	327 (75.5)	0.36
	No	92 (24.9)	14 (21.9)	106 (24.5)	
Fashion magazine	Yes	91 (24.7)	16 (25.0)	107 (24.7)	0.53
	No	278 (75.3)	48 (75.0)	326 (75.3)	

Table 2. Descriptive Statistics of Variables for Study Subjects

Variables	Groups	Mean	SD	P Value
Social pressure	Eating disorders	31.30	11.72	< 0.0001
	Without eating disorder group	25.69	9.56	
Self-esteem	Eating disorders	4.37	4.18	0.070
	Comparison	5.42	4.27	
Body dissatisfaction	Eating disorders	1.93	1.31	0.001
	Comparison	1.32	1.23	
BMI	Eating disorders	23.16	5.07	< 0.0001
	Comparison	20.20	3.80	

Abbreviation: BMI, body mass index.

As previously mentioned, symptoms of bulimic syndrome were greater in males. This issue needs further investigation. According to particular types of eating disorders, such as bulimia and high frequency of obesity, among Iranian adolescents (16), it is important to explore the contributing risk factors in eating disorders as a protective planning program.

In other studies on female/male, AN prevalence ratios were reported in different ranges (5). The rapid socioeconomic changes in Iran, similar to what has happened in

Table 3. Identification of Variables Associated With Eating Disorders through Multifactorial Logistic Regression Analysis

Variable	P Value	Odds Ratio	95% Confidence Interval	
Social pressure	0.26	1.02	0.98	1.04
Self-esteem	0.20	0.96	0.90	1.02
Body dissatisfaction	0.040	1.23	1.01	1.50
BMI	< 0.0001	1.14	1.06	1.21
Financial status	0.85	0.86	0.71	1.52

Abbreviation: BMI, body mass index.

some of the Middle-East countries, affected the acceptance of Western beauty values (becoming very slim) rather than traditional values especially in females. In addition, it seems that male adolescents' desire to become more muscular may be the reason for greater binge eating in this group.

Some researchers believe that family messages especially from mothers could lead to eating disorder behaviors (21). It is shown that positive messages from mothers could reduce the effects of negative social messages regarding eating disorder behaviors (27). Most of studies focused on how mothers contribute to the developing disturbed eating attitudes in their daughters. But the relationship between familial roles in eating attitude in boys is not obviously clear. Some studies showed no relationship between familial environment and eating attitudes in male adolescents. But a few studies demonstrated these relationships (27).

In the Iranian society, there is an extremely close relationship between the family members. Consequently, family members influence many aspects of an individual's life decisions. Therefore, it is not surprising that family dynamics have an important contributing effect on eating disorders.

Peers could also influence the eating behaviors in male adolescent. Peers are important source of behaviors for adolescences to follow (21). Peers' encouragement is identified as a direct contributing factor in eating disturbances, binge eating and body change strategies. Also, the role modeling effect of male peers may change the eating behaviors in male adolescents (27).

One of the mechanisms that messages ideal body to individuals, especially adolescents, is internalization and modeling.

Despite the known influence of media on body image perception, no difference was observed between the current study subjects, with or without eating disorders, regarding the use of foreign TV channels. Although the media's effect on eating disorders is controversial, many researchers confirmed its contributing effect (21, 28). Unlike many studies, in the current study social pressure had no contributing effects on eating disorders. This may be due to stronger effects of other variables.

Given the clear impact of BMI and relative effect of body dissatisfaction on eating disorders, it appears that socio-cultural factors have indirect effects. BMI is identified as an important risk factor in body dissatisfaction and eating disorders, especially in adolescents; since it was found that eating disorders were more prevalent in persons with overweight (29, 30). In the current study, BMI was a predictive factor for eating disorders; an increase in BMI was associated with increase in eating disorders. These findings were similar to those of some studies that showed with increasing BMI and body weight, eating disorders increased (29, 30). Although some of the studies reported abnormal eating behaviors in adolescents with normal range of BMI, this relation was similar to what other Asian countries reported (31, 32).

Overweight and obesity are rising among Iranian adolescents (33). Therefore, it is not surprising that BMI and ideal body image could lead to an increase in eating disorders in comparison to previous decades. Pubertal changes are also identified as predictors of body change strategies that could induce biological or psychological changes during adolescence. This body image concern in association with other factors, such as low self-esteem, family and peer pressure and media influences, can lead to efforts for body change and ultimately eating disorders. In the adolescent period, self-evaluation can also affect identity formation. These disturbances of identity could result in low self-esteem in adolescents (34)

It seems that despite cultural differences among Asian societies, factors that can affect body image disturbances and develop eating disorders are similar to what already reported in Western countries, though these contributing factors vary in severity and impact. In brief, results of the current study indicated that BMI and appearance satisfaction should be considered as important risk factors for eat-

ing disorders.

4.1. Conclusion

Eating disorders are culture bound syndromes, which can have different contributing factors in different countries based on socio-cultural and familial values. Adolescents' eating behavior is considered as a predictor of eating disorders in adulthood. Studies such as the current one need to be carried out to identify the frequency of eating disorders and their associated risk factors in adolescents. The findings of the current study help to draw the attention of all health professionals to the increased risk of eating disorders among adolescents and the associated risks.

The current study was one of the limited studies on eating disorders in Iranian population especially in male adolescent. Although the findings were roughly consistent with previous Western and Asian published studies, the topic of body image and related issues need to be explored further in this population in future studies. The study findings were limited due to the cross sectional nature of the study. Longitudinal studies can provide a greater understanding regarding the effects of socio-cultural factors on the topic of investigation. Another limitation of the study was the narrow age range of the participants. Future research should be designed in such a way that different adolescent age groups in both genders could be studied in more detail.

Research on eating disorders in various ethnic groups with different socio-cultural backgrounds should also be considered. Preventive strategies and treatment planning programs can be prepared on the basis of future researches.

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Footnotes

Authors' Contribution: Behshid Garrusi conceived, designed and supervised the evaluation, drafted the manuscript and revised it critically for important intellectual content. Mohammad Reza Baneshi and Mstafa Pakgohar developed the protocol, collected the data and performed the statistical analyses and interpreted the data. All authors read and approved the final manuscript.

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