

Original Article

The prevalence and intensity of DSM-V feeding and eating disorders and its sub-thresholds among Iranian women

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Abstract

Introduction: Eating disorders are serious psychiatric illness, defined by abnormal eating behaviors, shape and weight regulation difficulties and over weight concern. This study sought to explore the prevalence and intensity of anorexia nervosa, bulimia nervosa, binge eating and their sub-thresholds in women who referred to wellness and fitness centers.

Methods: 946 women with a mean age of 24.64 were selected via convenience sampling among women who is residing in Shiraz. All participants were asked to complete Eating Disorder Diagnostic Scale (EDDS) and their body mass index (BMI) was calculated.

Results: The prevalence rate of anorexia nervosa, bulimia nervosa, binge eating in whole sample is 6.02%, 4.01% and 13.0% respectively.

Conclusion: DSM-5-defined eating disorders and its sub thresholds are common in women; binge eating with 16% prevalence rate is more common than other disorders. Further studies with assessing DSM-5 eating disorders in clinical and non-clinical population are greatly needed.

Declaration of interest: None.

Key words: Eating disorders, Prevalence; Intensity, Women.

Introduction

Eating disorders has been defined amongst the most resistant psychiatric disorders to treat, with a lifetime prevalence of 5% for young women (1). It has been found that up to 4.5% of individuals might suffer from binge eating behaviors (2), 0.3% of young women might develop anorexia nervosa and 1% bulimia nervosa (3). Previous studies have reported the prevalence of 20-29% for psychiatric comorbidity of eating disorders. In these patients the most common comorbidities include mood disorders (with estimates between 20 and 98%), anxiety disorders (7-67%) and substance use disorder (6-55%) (4).

The Diagnostic and Statistical Manual of Mental Disorders-fifth edition (DSM-5; (5) diagnostic criteria for anorexia nervosa include significant

weight loss and intense sense of fear contributing weight gain. Diagnostic criteria for bulimia nervosa are the presentation of binge eating (e.g., eating large amount of food within two hours accompanied by a feeling of loss of control) and compulsive behaviors such as intentional vomiting and laxative abuse. A transdiagnostic concept in both disorders is the overvaluation of shape and weight in defining self (3).

An additional important consideration is that distorted attitudes and behaviors, such as unhealthy weight control behaviors or the desire to be thinner are highly prevalent (6). This will have negative effects on one's mental and physical health (7) and increase the risk of weight gain and the development of eating disorders (1). For those who suffer from this disorder, these life-threatening conditions are chronic and will

lead to individual's psychosocial dysfunction and poor health status (3). More specifically, cognitive difficulties in patients with anorexia nervosa include inflexible and irrational thoughts and behaviors towards eating and weight. Rigidity and poor internal coherence are the main features of individuals with anorexia nervosa (8). Conversely, inhibitory control deficit is a central component in patients with bulimia nervosa. These malfunctions have a robust association with disease-salient stimuli like eating, high-calories food and weight related stimuli. As a result, impulsive/compulsive endophenotype might underlie the perpetual nature of binge eating in bulimic patients (9).

A substantial body of literature has suggested that individuals suffering from eating disorders experience pervasive interpersonal difficulties. In this manner, abnormal eating behaviors might serve as a strategy to increase social acceptance (10). Those with eating disorders however, have a great tendency to interpret interpersonal relationships and encounters in a negative way, and this will lead to poor social adjustment and maintenance of abnormal eating behaviors. Thus, neuroprogressive changes associated with dietary restriction, bingeing and purging may intensify their impaired ability to make a relationship (3). Another maintenance factor contributing eating disorders is negative emotional states. Haedt-Matt & Keel (2011) acknowledge that negative emotional states have a strong correlation with binge episodes in individuals with bulimia nervosa and binge eating (11) and with dietary restrictions in patients with anorexia nervosa (12). More broadly, negative affective states such as anxiety affect caloric intake (higher anxiety, lower intake) in anorexic patients. Furthermore, both patients with bulimia and anorexia experience more negative affect during meal consumption (13).

Numerous studies have demonstrated that weight loss strategies that increase dietary restriction are ineffective for long-term weight loss or maintenance. Additionally, restrictive eating behaviors are associated with higher body mass index (BMI), weight gain, higher risk for disordered eating and psychological complexes such as emotional difficulties, distorted body image and decreased cognitive functioning (14). The high prevalence of eating disorder and

disordered eating has its robust association with other mental disorders as well as its high correlation with physical and psychological health issues plus treatment resistance constitute the requisiteness for doing the current study. The main aim of this study is to determine prevalence rates of eating disorder. No studies, to our knowledge, have assessed the prevalence of eating disorder in general women population using DSM-5 criteria. We, therefore, evaluate the prevalence, intensity and sub-threshold of current DSM-5-defined anorexia nervosa, bulimia nervosa and binge eating among 946 non-clinical women.

Methods

We studied the whole nonclinical population cross-sectionally to estimate the point prevalence of full bulimia nervosa syndrome, anorexia nervosa, binge eating and sub-thresholds (including high risk for bulimia, anorexia and binge eating). The study was approved by Shiraz University (Department of Psychology). Because eating disorders are rare among men, this study focused on data obtained from women. The sample consisted of 946 women, ranged in age from 18 to 59 years old that referred to wellness and fitness centers in Shiraz, selected by convenience sampling. An exclusion criterion was age 17 years old and younger or age 60 years old and older. The data obtained by demographic information (age, marriage status, and educational level), Eating Disorder Diagnostic Scale (EDDS) and participants body mass index (BMI), were analyzed.

Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000) is a 22-item self-report questionnaire designed to assess the DSM-V criteria for anorexia nervosa, bulimia nervosa and binge eating disorder (15). The questionnaire consists of a combination of Likert scores, dichotomous scores, frequency scores and open-ended questions such as weight and height. The first 4 items measure ones attitudinal symptoms of anorexia nervosa and bulimia nervosa, the next 4 items assess the frequency of uncontrollable tendency to intake large amount of food with a focus The next 4 items evaluate the frequency of compensatory behaviors (vomiting, laxative use, fasting and excessive exercise) for binge eating. Finally, participants fill the open-ended questions

about weight, height, missed menstrual cycles and the use of birth control pills (16). The scale has demonstrated good internal consistency ($\alpha = 0.89$), adequate test retest reliability ($r = 0.87$), and convergent validity (ranging from 0.36 to 0.66) (17). The Persian form of this scale has demonstrated internal consistency ($\alpha = 0.89$) and criterion validity (ranging from 0.83 to 0.90) (18). In the current study Cronbach's α was calculated to be 0.74.

Body Mass Index (BMI) is a common proxy measure of adult adiposity (19), defined as a person's weight in kilograms divided by a square of height in meter (20). Obesity is characterized as BMI of 30 Kg/m² or more (subdivided into Class I, II and III depending on the level of BMI), overweight is defined as having a BMI between 25 Kg/m² and 29.9 Kg/m² (21). In this study self-report height and weight were not acceptable. Therefore, all participants were measured without shoes, heavy outer garment and hair ornaments. Height was assessed using stadiometer and weight was measured using digital scale.

Results

The study sample consisted of 946 women, who referred to wellness and fitness centers in Shiraz. The age ranged from 18 to 59 years old with an average of 24.64 (SD= 4.30). The mean of participants BMI was 25.76 (SD=5.99). 13.3% of subjects were underweight, 60.8% with normal weight, and 25.9% were overweight. Demographic characteristics (age, marriage status, education level) and BMI of the study sample are presented in table 1.

Table 1. Sample demographic characteristics (age, marriage status, education level and BMI).

Index	Variables	N-Percent
Age	18-35	609-64.37
	36-55	254-26.84
	Aged ≥ 55	83-8.77
Education	Diploma, Lower	179-18.9
	BA	645-68.2
	MA	111-11.7
	PhD	11-1.2
Marriage	Single	465-49.2
	Married	478-50.5
	Under weight	126-13.3
BMI	Normal weight	575-60.8
	Over weight	245-25.9
	Obesity	68-7.18

Note: young adults: 18-35; middle-age adults: 36-55; older adults: aged older than 55 years.

BA: Bachelor degree; MA: Master degree; PhD: Doctor of philosophy degree.

Under weight: BMI < 18.5; Normal weight: BMI = 18.5-24.9; Overweight: BMI = 25-29.9; Obesity: BMI of 30 or greater.

As can be seen in table 1, 18-35-year-old-women is accounted for 64.37% and allocated for the majority of study sample. Most of our participants (68.2%) hold a bachelor degree. 49.2 % of them are single and 50.5% are married. 60.8% of the sample are in the normal weight range, 25.9% have overweight, 13.3% are underweight and 7.18% of them are obese. The prevalence rate of eating disorders and its sub-thresholds are presented in table 2.

Table 2. Prevalence of eating disorders and its subthreshold.

Participants	Sample	Frequency	Prevalence
ED	218	23.03	23.03%
AN	57	6.02	6.02%
BN	38	4.01	4.01%
BED	123	13.0	13.0%
STA	69	7.29	7.29%
STB	71	7.50	7.50%
STBE	89	9.40	9.40%
NED	499	52.74	52.74%

Abbreviations: ED: Eating disorders; AN:

Anorexia nervosa; BN: Bulimia nervosa; BED:

Binge eating disorder; STA: Sub-threshold of Anorexia; STB: Sub-threshold of Bulimia; STBE: Sub-threshold of Binge Eating; NED: No Eating disorder

Data presented in table 2 demonstrate that the total prevalence of eating disorders amongst women is 23.21%, anorexia nervosa 6.02%, bulimia nervosa 4.01%, binge eating 13.0%, sub-threshold of anorexia 7.29%, sub-thresholds of bulimia 4.01%, sub threshold of binge eating 13.0% and those participants with no diagnosis 52.74.

Table 3. Prevalence of eating disorders and its subthreshold based on BMI.

BMI	Diagnosis						
	AN	STA	BN	STB	BE	STBE	NED
	N	N	N	N	N	N	N
	(%F)	(%F)	(%F)	(%F)	(%F)	(%F)	(%F)
Under weight	57 (45.23)	69 (54.76)	-	-	-	-	-
Normal weight	-	-	-	38 (6.60)	21 (3.65)	3.65 (6.08)	6.08 (83.65)
Over weight	-	-	14 (7.90)	6 (3.38)	89 (50.28)	50.28 (28.24)	28.24 (10.16)
Obesity	-	-	24 (35.29)	27 (39.70)	16 (23.52)	23.52 (1.47)	1.47

Abbreviations: AN: Anorexia nervosa; BN: Bulimia nervosa; BED: Binge eating disorder; STA: Sub-threshold of Anorexia; STB: Sub-

threshold of Bulimia; STBE: Sub threshold of Binge Eating; NED: No Eating disorder

Under weight: BMI < 18.5; Normal weight: BMI =18.5-24.9; Overweight: BMI= 25-29.9; Obesity: BMI of 30 or greater.

As seen in Table 3, the total prevalence of anorexia nervosa and sub-threshold of anorexia among underweight women are 45.23% and 54.76%. The prevalence of binge eating among women with normal weight is 3.65%, (sub-thresholds of bulimia 6.60%, sub-threshold of binge eating 6.08%). The prevalence rate of bulimia nervosa and binge eating in overweight women are 7.90% and 50.28%. Also, the sub-thresholds of bulimia and sub-threshold of binge eating in this group are 3.38%, 28.24% respectively. The prevalence rate of bulimia nervosa among obese women is 35.29%, binge eating 23.52%, sub-thresholds of bulimia 39.70%, and sub-threshold of binge eating 1.47%. 83.65% of women with normal weight and 10.16% of participants with overweight receive no diagnosis of eating disorders.

Conclusion

The aim of this study was to determine prevalence rates of eating disorders (including bulimia nervosa, anorexia nervosa and binge eating) and its sub-thresholds (including high risk for bulimia, anorexia and binge eating) in non-clinical sample of women. The prevalence is the most useful instrument for planning health care facilities, since it shows the demand for care (22). Using the EDDS, we found 23.03% of women had a current DSM-5-defined eating disorders; 6.02% of women had anorexia nervosa, 4.01% had bulimia nervosa, 13.0% had binge eating; 7.29% had sub-threshold of anorexia, 7.50% had sub-threshold of bulimia, 9.40% had sub-threshold of binge eating and 52.74% of participants receive no diagnosis. By comparison, The results reported by Hay et al., (23) have demonstrate the 3-month prevalence rate of 16.3% for all types of eating disorders, 0.5% for anorexia nervosa, 0.7% for bulimia nervosa, 5.6% for binge eating and sub-threshold of binge eating were 5.6-6.9%.

Our results also indicate that the prevalence rate of anorexia (45.23%) and sub-threshold of anorexia (54.76%) in underweight women is notable. Binge eating disorder (3.65%) is the

most prevalent disorders among normal weight women and they have the sub-thresholds of bulimia nervosa (6.60%) and binge eating (6.08%). 83.65% of the women with normal weight had no eating disorders. In overweight participants, the most prevalent eating disorders are binge eating (50.28%) and bulimia nervosa (7.90%), respectively. They have also sub-thresholds of bulimia (3.38%) and binge eating (28.24%) and 10.16% of them received no diagnosis in eating disorders. Obese women show 35.29% prevalence rate in bulimia and 23.52% in binge eating. This means they are more prone to bulimia than other eating disorders. More interestingly, all our participants who are obese (BMI of 30 or greater) and underweight (BMI < 18.5) are among those who receive diagnosis of eating disorders.

Consistently with existing literature, the high prevalence of these symptoms suggested that disordered eating is a significant problem among women. Women largely endorse binge eating and bulimia nervosa is reported less frequently. Our finding that 13.0% of women had binge eating is consistent with recent epidemiological study of eating disorders among 324 female students (mean age of 21) found the prevalence rate of 49% for binge eating and compensatory behaviors in women (24) demonstrating high prevalence of binge eating among women. Findings reported by previous similar studies performed in different cultures can be compared to our finding. The reported percentage of girls prone to eating disorder in northwest of Iran (n=1039) was 29.7% (25), 24.6% in Saudi Arabia (n=129) (26), 15.76% in Brazil (27). More specifically, the results reported by Vilela et al., (26) demonstrated that 13.3% of female students had disordered eating behaviors. 1.1% had bulimia nervosa, 12% presented binge-eating and 10% used purgative methods to control weight.

Earlier, eating disorders have been described as cultural-bound syndromes, specific to western developed and industrial societies. Today, emerging evidences suggest that eating disorders and disordered eating do occur in non-western countries (25, 26, 28). An increasing prevalence rate of eating disorders in non-western countries has been correlated with life and cultural transition, globalization and mass media exposure to the western beauty ideal (22). Previous studies

(25) mentioned several reasons for the different results from different countries. Among these reasons we can consider the deep impact of advertisement about the standards of beauty, comprehensive influences of foreign cultures, class status and social development, racial properties, and people's tendency toward following the fashions, as those variables, which cause findings differences in the present study.

In sum, eating disorders is relatively prevalent among women and since all eating disorders have an increased mortality risk (22), the health care system should consider it as a serious problem to observe and treat.

Despite its large sample size and noteworthy findings, this study is subject to several limitations; first we use self-report questionnaire rather than interview-based instruments to measure eating disorders and the sub-thresholds. Although the scale used has robust psychometric properties, researchers have questioned whether disorders constructs are accurately understood and interpreted by participants (24). Second, the sample was derived among those women who referred to wellness and fitness clinic, although 60.8% of them was in normal weight, but their attitudes may have a unique effect on their eating behaviors and body satisfaction. Thus, the results may not generalize to general population of women. Moreover, further studies is needed to identify and examine the risk and protective factors associated with developing eating disorders in women and compare the prevalence of eating disorders in age-matched control women who attend gym and use diet with those who don't participate in gym and dietary programs.

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