

Prevalence of and attitudes toward eating disorders among female nurses

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Objective

The aim of the study was to investigate the prevalence of and attitudes toward eating disorders among female nurses.

Participants and methods

Female nurses who were under training in Alamal Psychiatric Complex Medina constituted the participants of the study.

Nurses were differentiated into two groups: group A, with BMI below 20, and group B with BMI equal to or above 20. Group A and group B were subjected to a two-stage epidemiological study. In the first stage, Eating Attitude Test 26 (EAT 26) and Bulimic Investigatory Test Edinburgh were used. In the second stage, Structured Clinical Interview of DSM-IV (SCID) was administered on nurses who had a score above the cutoff points.

Results

Anorexia nervosa was not diagnosed in any nurse (0%). Twelve (3.2%) nurses were diagnosed with bulimia nervosa. Thirteen (3.5%) nurses were diagnosed with binge eating and five (1.4%) nurses were diagnosed with eating disorder not otherwise specified. Both bulimic and oral subscales of EAT 26 were higher in group A than in group B ($P < 0.001$ and < 0.05 , respectively). No significant difference was found between the two groups in the two subscales of Bulimic Investigatory Test Edinburgh.

Conclusion

Among female nurses, bulimia nervosa, binge eating, and eating disorders not otherwise specified were common, whereas anorexia nervosa was not found. This must warrant the development of specific strategies for early detection and proper management.

Keywords:

anorexia nervosa, binge eating, bulimia nervosa, female nurses, prevalence

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Introduction

Anorexia nervosa is often coupled with a distorted self-image [1], which may be maintained by various cognitive biases [2] that alter how the affected individual evaluates and thinks about his or her body, food, and eating [3]. People with anorexia nervosa often view themselves as overweight or 'big' even when they are underweight [4]. Anorexia nervosa most often has its onset in adolescence and is more prevalent among adolescent females than among adolescent males. In general, men appear to be more comfortable with their weight and perceive less pressure to be thin than do women [5,6]. Bulimia nervosa is an eating disorder characterized by binge eating and purging, or by consuming a large amount of food in a short amount of time followed by an attempt to rid oneself of the food consumed (purging), typically by vomiting taking a laxative, diuretic, or stimulant, and/or excessive exercise, because of an extensive concern for body weight [7]. Among women, the lifetime prevalence of anorexia nervosa is 1.7%, that of bulimia nervosa is 0.8%, and that of binge eating disorder is 2.3%. Eating disorders are relatively rare among men [8]. Kamata *et al.* [9], in their study on 1250 females ranging from high school to college, found the prevalence of binge eating to range from 7.5% among high school students,

to 8.3% among college students, to 33.8% among students in a physical education college. Previous research has suggested a raised prevalence of eating disorders among female medical students. There is also a belief commonly held by occupational physicians that there is an increased prevalence of eating disorders among female applicants to nurse training [10].

Aim

The study aimed to investigate the prevalence of anorexia nervosa, bulimia nervosa, binge eating, and eating disorders not otherwise specified (NOS) among female nurses during the course of their training in Alamal Psychiatric Complex Medina and investigate some of their eating attitudes and behavior.

Participants and methods

Participants

Young female nurses who were under training in Alamal Psychiatric Complex Medina in northwestern Saudi Arabia constituted the participants of our study, which

was conducted over a period of 3 years, starting from January 2011 up to the end of December 2013. 'Alamal Psychiatric Complex' is the only psychiatric hospital in the region of Medina receiving about 150 young Saudi female nurses annually for training. After obtaining approval from the local ethics committee of the hospital, nurses were informed about the purpose of the study and asked to participate after giving their written informed consent. They were then subjected to an initial psychiatric interview at the hospital.

Exclusion criteria

Nurses were excluded if they had chronic debilitating diseases, persistent upper or lower gastrointestinal diseases, brain tumors, psychotic disorders, or a history of substance misuse. Pregnant nurses and those older than 25 years were also excluded.

Measures

BMI was derived by dividing weight in kg by height in m² (kg/m²). The acceptable range for BMI is generally 20–24.9 kg/m² [11]. The nurses were divided into two groups according to BMI: group A with BMI below 20 and group B with BMI equal to or above 20. The lower limit of normal BMI was chosen to maximize the liability of detection of anorexia nervosa in group A. Nurses of both groups were subjected to a two-stage epidemiological study.

In the first stage, two screening scales were used. The Eating Attitude Test 26 (EAT 26; Arabic version with high sensitivity and specificity in Saudi culture) and the Bulimic Investigatory Test Edinburgh (BITE; Arabic version with high sensitivity and specificity). The EAT 26 [12] is the most widely used standardized measure of symptoms, and concerns characteristics of eating disorders [13]. The scale consists of 26 items on eating habits with a score of 0–3 for each item. The scale is subdivided into three subscales: a dieting subscale, a bulimic subscale, and a food preoccupation and oral control subscale. The cutoff point was 20 for the total scale [13]. In addition to the 26 items, there were five items on behavioral symptoms of eating with a positive or negative response.

BITE (Arabic version with high sensitivity and specificity) [14] was developed by Henderson and Freeman [15] to detect bulimic episodes and the factors related to cognition and behavior of bulimic individuals [16]. BITE is subdivided into two subscales: the symptom subscale and the severity subscale. The symptom subscale consists of 30 items for assessment of symptoms, eating behavior, and diet, with a score of 0 or 1 for each item and a total score ranging from 0 to 30. Nurses with a score ranging from 10 to 19 are considered to have a somewhat unusual eating behavior but not to meet all of the criteria for the diagnosis of bulimia; those with a score higher than 19 show a high level of eating disorder, and high risks for bulimia nervosa. The severity subscale consisted of three items for assessment of the severity of eating disorders based on their frequency; those with a score equal to or greater than 5 show significant severity [16].

In the second stage, Structured Clinical Interview for Diagnosis of eating disorders according to the criteria of *Diagnostic and statistical manual of mental disorders*, 4th ed. (DSM-IV) (SCID) [17] was administered by two experienced psychiatrists to all nurses who scored 20 or above or responded positive to any of the five behavioral items of EAT 26 or scored 10 or above on the symptom subscale of BITE.

Statistical analysis

Data analysis and sample size calculations were performed using the statistical package for the social sciences (SPSS, version 20; SPSS Inc., Chicago, Illinois, USA). Categorical data were presented as number and percentage and continuous data as mean and SD. Groups were compared using the independent sample *t*-test for continuous variables. For categorical variables, the χ^2 -test was used as a test of significance of differences among groups. *P* values less than 0.05 were considered statistically significant.

Results

The total number of nurses was 417. Forty-seven (11%) nurses were excluded for various reasons: 10 nurses were older than 25 years; four nurses had psychotic symptoms; five nurses were pregnant; nine nurses refused to participate; and 19 nurses were later excluded from the analysis because of incomplete measures. In all, 370 nurses completed all measures of the study. A total of 164 (44%) nurses were found to have BMI below 20 (group A) and 206 (56%) nurses were found to have BMI equal to or above 20 (group B).

Sociodemographic characteristics of two groups

The mean age of group A was 19.6 ± 2.2 years, whereas that of group B was 20.1 ± 2.4 years. Group A was significantly younger than group B (*P* < 0.05). Fourteen nurses of group A and 18 nurses of group B were married. One nurse each in group A and B was divorced. A total of 149 participants in group A and 187 in group B were single. No significant difference was found between the two groups as regards the marital state. Eleven nurses of group A and 19 of group B had a history of previous psychiatric disorder but no significant difference was found between the two groups (Table 1).

Eating Attitude Test 26 and its three subscales

As regards the EAT 26 and its three subscales, more than 50% of nurses scored above the cutoff point of 20. Group A had significantly higher scores in both bulimic and oral control subscales compared with group B (*P* < 0.001 and < 0.05, respectively), but there was no significant difference between the two groups in the dieting subscale score (Table 2).

Behavioral items of Eating Attitude Test 26

With regard to the behavioral items of EAT 26, there was significant difference between the two groups in three of the five items. Group A resorted to vomiting to control their weight significantly more often compared with group B

Table 1 Some sociodemographic characteristics and history of previous psychiatric disorder in the two groups

| Variables | Group A BMI < 20 (n = 164) | Group B BMI ≥ 20 (n = 206) | Analysis |
|--|----------------------------------|----------------------------------|---------------------------------|
| Age (years) | 19.6 ± 2.2 | 20.1 ± 2.4 | $t = 2.08$; $P < 0.05^*$ |
| Marital status | | | |
| Single | 149 (91) | 187 (90.8) | $\chi^2 = 0.02$; $P > 0.05$ |
| Married | 14 (8.5) | 18 (8.7) | |
| Divorced | 1 (0.5) | 1 (0.5) | |
| History of previous psychiatric disorder | | | |
| Positive | 11 (7) | 19 (9) | $\chi^2 = 0.79$; $P > 0.05$ |
| Negative | 153 (93) | 187 (91) | |

Values are represented as mean ± SD or *n* (%).

t Student's test.

$P > 0.05$ indicates nonsignificance.

*Significant P -value.

Table 2 Comparison between the two groups according to scores of the three subscales of Eating Attitude Test 26

| Subscales | Group A BMI < 20 (n = 164) | | Group B BMI ≥ 20 (n = 206) | | <i>t</i> | <i>P</i> |
|--------------|-------------------------------|------|-------------------------------|-----|----------|----------|
| | Mean | SD | Mean | SD | | |
| Dieting | 12.6 | 11.4 | 12.4 | 8.1 | 0.19 | > 0.05 |
| Bulimic | 4.8 | 5.9 | 2.9 | 3.7 | 3.58 | < 0.001* |
| Oral control | 10.1 | 5.3 | 8.8 | 4.8 | 2.45 | < 0.05* |

t Student's test.

$P > 0.05$ indicates nonsignificance.

*Significant P -value.

($P < 0.001$), whereas group B used laxatives and diet pills to control their body weight significantly more often compared with group A ($P < 0.01$). Group B lost more than 20 pounds of their body weight in the last 6 months significantly more often compared with group A ($P < 0.01$). No significant differences were found between the two groups in binge eating and exercising more than 60 min/day (Table 3).

Bulimic Investigatory Test Edinburgh and its two subscales

As regards the BITE scale, more than one-fourth of group A and more than one-third of group B scored above 10. There was no significant difference between the two groups in the symptom subscale with respect to high scores (≥ 20), medium scores (10–19), and low scores (< 10). There was no significant difference between the two groups in the severity subscale either (Table 4).

Diagnoses according to the criteria of DSM-IV

In the second stage, interviews were conducted on 221 (60%) of 370 students. According to the criteria of DSM-IV, no (0%) nurse was diagnosed with anorexia nervosa; 12 (3.2%) nurses were diagnosed with bulimia nervosa; 13 (3.5%) nurses were diagnosed with binge eating; and five (1.4%) were diagnosed with eating disorder NOS.

Discussion

Prevalence of anorexia nervosa

Although there were 164 nurses with low BMI and more than 50% of the total sample scored above the cutoff

point of 20 in the EAT 26 scale, anorexia nervosa was not diagnosed in any case. This may be attributed to many factors, the first among which is the relatively old age of the sample as it was noticed that some Saudi nurses had completed their education after a delay either because of early marriage or because of recurrent years of failure. However, there was high prevalence of other eating disorders in our sample. Second, anorexia nervosa was regarded by many authors as a culture-bound syndrome prevalent in western communities and rare outside these cultures. Kirmayer [18] reported that eating disorders have historically been described as illnesses diagnosed in young, white, educated women with high socioeconomic status living in the western world. This assumption has now been refuted by numerous reports of eating disorders in nonwestern populations. It has now been suggested that eating disorders are 'culture reactive' [19], affecting individuals experiencing a culture change. Vulnerability in this model is tied less to the pursuit of a thin ideal and more to the erosion of traditional values [20]. Third, the degree of westernization is not so severe in Medina and this may also explain the absence of anorexia nervosa. Finally, self-starvation outside religious consideration is not encouraged in Saudi culture and may be regarded as killing of oneself. Point prevalence of anorexia nervosa has been reported to be around 0.3% in American and European studies [21,22] with lifetime prevalence approximating 0.5–0.6% among young women in two large population-based surveys in the USA and Canada [23,24] and reaching 1% in a very large population survey in the Netherlands [25]. Anorexia nervosa was reported to be very rare in other Arab cultures. For example, in Sudan, anorexia nervosa was considered a rare symptom of hysteria [26]. In Egypt, in a survey of university students found only two female students (among 1050 students) with anorexia nervosa who had hysterical personalities and psychopathology related to sex [27].

Prevalence of bulimia nervosa and binge eating

In contrast to anorexia, the prevalence of bulimia nervosa in our sample was 3.2%. This high prevalence is similar to the 1–3% lifetime prevalence of bulimia nervosa in three large surveys conducted in New Zealand, USA, and Canada [28–30], but in contrast to the low prevalence of 0.6% in the Netherlands [25] and 0.5% reported by Preti *et al.* [31]. Lower prevalence of bulimia has also been reported in samples including adolescent respondents: from 0.2% among 2544 students aged 13–18 years in the USA [32] to 0.5% in Hong Kong ($N = 1020$ students) among 17–24-year-olds [33]. In other Arab cultures, Nasser [34] made a comparative study of two matched samples of Arab female students attending London and Cairo Universities and found a higher proportion of abnormal eating attitudes in the London sample (22%) compared with the Cairo sample (12%). Moreover, among the 50 London-Arab students, six satisfied diagnostic criteria for bulimia nervosa and five were thought to have a partial syndrome of anorexia nervosa, whereas no cases of anorexia or bulimia nervosa were seen among 60 Cairo students. In a further survey of 351 secondary-school girls in Egypt using the EAT, three (1.2%) cases with Russell's syndrome of bulimia nervosa were reported, a rate that is similar to that obtained in

Table 3 Comparison between the two groups according to the five behavioral items of Eating Attitude Test 26

| Items | Group A BMI < 20 (n = 164) | | Group B BMI ≥ 20 (n = 206) | | χ^2 | P |
|--------------------------------|-------------------------------|----|-------------------------------|----|----------|----------|
| | Positive | % | Positive | % | | |
| Binge eating | 33 | 20 | 41 | 20 | 0.003 | > 0.05 |
| Vomiting | 45 | 27 | 27 | 13 | 12 | < 0.001* |
| Use of laxatives or diet pills | 28 | 17 | 64 | 31 | 9.61 | < 0.01* |
| Exercise more than 60 min/day | 13 | 8 | 21 | 10 | 0.57 | > 0.05 |
| Lost 20 pounds/6 months | 18 | 11 | 42 | 20 | 5.95 | < 0.01* |

Positive indicates that the symptom is present.

P > 0.05 indicates nonsignificance.

*Significant P-value.

Table 4 Comparison between the two groups according to the symptoms and severity subscales of Bulimic Investigatory Test Edinburgh

| Scores | n (%) | | χ^2 | P |
|----------------------|-------------------------------|-------------------------------|----------|--------|
| | Group A BMI < 20 (n = 164) | Group B BMI ≥ 20 (n = 206) | | |
| High score (≥ 20) | 22 (13) | 27 (13) | 0.008 | > 0.05 |
| medium score (10–19) | 27 (16) | 43 (21) | 1.15 | > 0.05 |
| Lower score (< 10) | 115 (70) | 136 (66) | 0.69 | > 0.05 |
| Severity (≥ 5) | 9 (5) | 12 (6) | 0.02 | > 0.05 |

P > 0.05 indicates nonsignificance.

UK studies [35]. With regard to binge eating disorder, 3.5% of the nurses in our study were diagnosed with binge eating. This rate is similar to the estimated prevalence of 3.3% among women in a large-scale population-based survey conducted through telephone interviews in Austria [36], and with a prevalence of 3.5% in the US National Comorbidity Replication study [37]. This was in contrast to the report by Preti *et al.* [31] in the Sesto Fiorentino study, in which the Mini International Neuropsychiatric Interview was administered to 2355 respondents representative of the population aged above 14 years and showed an estimated lifetime prevalence of 0.32% for bulimia nervosa and of 0.32% for binge eating disorder, with the majority of cases being female participants [38]. The high prevalence of bulimia and binge eating seems to confirm the theory put forth by Bulik *et al.* [39], Hoek and van Hoeken [21], Hudson *et al.* [37], and Kendler *et al.* [30] that there is increase in the prevalence of eating disorders across time, particularly in the second half of the 20th century. This high prevalence of bulimia and binge eating in our study may be attributed to multiple stresses encountered by the female population in Saudi culture – for example, they are unable to move freely outside their homes or to drive cars, and are sometimes obliged to discontinue their education for early marriage and are frequently exposed to divorce. Another important stress factor in our sample is the transitional period experienced by these nurses at the beginning of both adulthood and occupational life.

Eating disorders NOS

The prevalence of eating disorders NOS in our study was 1.4%. This was similar to the finding of Krizbai [40] in Romania who reported a prevalence of 1.2% for both subclinical anorexia nervosa and subclinical bulimia nervosa in a Hungarian female sample. However, the author found a higher prevalence of 2.6% for both

subclinical anorexia nervosa and subclinical bulimia nervosa in a Romanian female sample in the same study.

Eating Attitude Test 26 scale and its behavioral items

As regards the EAT 26 scale and its subscales, the bulimic and oral control subscales were significantly high in group A with low BMI but no difference was found between the two groups in the dieting subscale. This may be attributed to the greater concern about body weight in the younger age group. In a similar study about anorexia nervosa in Ghana, Bennett *et al.* [41] reported that the oral control subscale score was statistically high in the very low BMI group (< 17 kg/m²) but no significant difference could be detected in the other subscales and in the total median score of the scale.

With regard to the behavioral items of the EAT 26 scale, they were common among nurses of both groups, except for exercise. Laxatives and diet pills were the most commonly used methods to control body weight. Group A resorted to vomiting to control their weight significantly more often than did group B. Use of laxatives or diet pills and loss of more than 20 pounds of their body weight in the last 6 months were more represented in group B. This may be explained by the high prevalence of bulimia nervosa in our sample as bulimic patients use these methods to control their body weight more often than do anorexic patients. There was no significant difference between the two groups in terms of binge eating and exercise. In a similar study by Mendonça Vilela *et al.* [16] in Brazil, the abuse of laxatives, self-induced vomiting, pills, and diuretics were also quite common among students with a possible diagnosis of bulimia, but self-induced vomiting was the most widely used method to control weight.

Bulimic Investigatory Test Edinburgh scale

As regards the BITE scale, more than one-fourth of group A and more than one-third of group B had a possible score for the diagnosis of bulimia nervosa without significant difference

between the two groups in high, medium, or low scores on the symptom subscale. This was in contrast to the finding of Bennett *et al.* [41] in Ghana, who reported no female student as scoring above the cutoff point on the same Bulimic scale. This may be explained by the high cutoff point of 25 used in their study. With regard to the age of the two groups, the mean age of the two groups was relatively high because of the increased number of dropout years during education. But group A with low BMI was significantly younger than group B with normal or high BMI. This may be explained by the ability of the younger group to control their body weight more than the older group.

Conclusion and recommendations

Although anorexia nervosa was not found, bulimia nervosa, binge eating, and eating disorders NOS were common among female nurses in Medina. Other abnormal eating behaviors are extremely common. These disorders may have a lot of complications and require the development of specific strategies for early detection and proper management.

Strengths and limitations

To our knowledge, this study is the first on eating disorders among female nurses in Saudi Arabia. Valid and reliable screening tests and interviews were applied for a relatively large number of nurses. However, nurses with normal and high BMI were considered as one group. No comparison was made between eating disorders and others. The results cannot be generalized all over the country except after replication.

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Conflicts of interest

There are no conflicts of interest.

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الملخص العربي

معدل انتشار اضطرابات الأكل وبعض اتجاهاته في الممرضات
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 مجمع الأمل لصحة النفسية المدينة المنورة

الهدف من البحث : دراسة معدل انتشار اضطرابات الأكل وبعض خصائصه في الممرضات
 مادة البحث وطريقته : الممرضات الاتي تم تدريبهن خلال ثلاث سنوات في مجمع الأمل والطب النفسي بالمدينة المنورة في المملكة :
 العربية السعودية مثلوا مادة البحث.

قسمت الممرضات إلى قسمين : القسم الأول والذي حصل على درجة أقل من عشرين على مؤشر كتلة الجسم، والقسم الثاني والذي حصل على درجة عشرين أو أكثر على مؤشر كتلة الجسم. تم إخضاعهن إلى مرحلتين من مراحل البحث . في المرحلة الأولى تم استخدام مقياسين هما مقياس اتجاهات الأكل 26 والثاني مقياس شره الأكل العصبي. والممرضات اللاتي حصلن على الدرجة القطعية أو أكثر في أي من الاختبارين تم تطبيق المرحلة الثانية عليهن وهي عبارة عن مقابلة نفسية خاصة بتشخيص اضطرابات الأكل تبعاً للتقسيم الأمريكي الرابع للاضطرابات النفسية. نتائج البحث: وجد أنه لا توجد حالات فقدان عصبي للشهية (0)%. بينما شخصت اثنتا عشرة حالة من النهم العصبي ومثل هذا العدد نسبة 3.2%. وشخصت ثلاثة عشر حالة من اضطرابات الأكل بشراهة ومثل هذا العدد نسبة 3.5%. وشخصت خمس حالات من اضطرابات الأكل الغير محددة ومثل هذا العدد نسبة 1.4%. وجد أن المجموعة ذات الكتلة المنخفضة حصلت على درجة أكبر وذات دلالة إحصائية على اثنين من المقاييس الفرعية لمقياس اتجاهات الأكل وهما مقياس التغذية والنهم. أما بالنسبة لمقياس النهم فلم توجد فروق ذات دلالة إحصائية بين المجموعتين على أي من مقاييسه الفرعيين. التوصيات توصى الدراسة بسرعة تشخيص هذه الحالات و علاجها تفادياً للمضاعفات.