Prevalence of Eating Disorders among Female College Students of Northern Broader University, Arar, Kingdom of Saudi Arabia

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Abstract: *Objective*: The study aimed at examining the prevalence and correlates of eating disorder among female college students of Northern Broader University, Arar city, Kingdom of Saudi Arabia.

Methods: A cross sectional survey was conducted among female college students. The total sample size was 160 (66.66% of total population of college) and stratified random sampling technique was used to select female students age ranged between 18 and 23 years from faculty of medical and faculty of applied medical science. Subjects were ask to fill pre tested questionnaire about socioeconomic status, age at menarche, body image and Eating attitude test 26 (EAT 26), there height and weight were measured and BMI was calculated.

Results: Out of 160 female college students only 120 (75%) returned completely filled questionnaires and they were considered for statistical analysis. It was found that, 32 (26.66%) of study population scored 20 or above, which is the cutoff point of EAT-26, indicating negative eating attitudes. There was significant difference found in prevalence of disordered eating attitudes in different BMI ranges. However, the association between student's age at menarche and abnormal eating attitude was not statistically significant.

Conclusion: The findings support our hypothesis of a relatively high rate of abnormal eating attitudes (as reflected by high EAT-26 score) in this population. The results have important implication for increasing awareness about an emerging clinical problem. The prevalence of eating disorder is the most useful measure for planning health care facilities, as it indicates the demand for care.

Keywords: Eating disorders, EAT -26, BMI, age at menarche, Female students.

INTRODUCTION

Eating disorders (ED) are one of the most common psychiatric problems, have the highest mortality rates of all mental disorders, and rank tenth among leading cause of disability among young females [1, 2]. These disorders characterized by chronicity and relapse along with disordered eating behavior where the patient's attitude towards weight and shape, as well as their perception of body shape, are disturbed [2]. Anorexia and Bulimia nervosa are the extreme sides of a broad range of disordered eating, which includes frequent dieting, binge eating and partial syndromes [3].

Although eating disorders were originally believed to occur mainly in affluent Western countries [4]. However, epidemiological data indicate eating disorders increasing dramatically worldwide in past two decades and occur across all ethnic, cultural, and socioeconomic groups [5] and the most vulnerable group for anorexia nervosa comprised girls and young women aged 15 to 24 years [6, 7]. Females students are more concern about their body weight and shape than males, and it may lead to disturbed eating and unhealthy weight control behavior such as starvation, fasting, frequently skipping meals, overeating and binge-eating followed by purging, also using of diet pills, laxatives, and diuretics and excessive exercising [8, 9]. Furthermore, eating pathology increases the risk for onset of obesity, substance abuse, deficiency diseases, anxiety disorder, cardiovascular symptoms, chronic fatigue and pain, depressive disorder, infectious diseases, insomnia, neurological symptoms, and suicidal attempts in their early adulthood [9].

Social and cultural variables, economic status, westernized weight loosing programs of the media and peer pressure also influence their eating behavior and give rise to many eating disorders among female students [10]. Many Arab countries, however, have recently undergone rapid social and economic changes, leading to a wide spread adoption of Western styles, habits and attitudes, mainly in young generation [11-14]. There is high prevalence of overweight and obesity in Arab population females [15] which, coupled with rapid socio-cultural changes puts them at risk for eating disorders [11, 16]. Recently, high prevalence of abnormal Eating attitude and behaviors is confirmed by nonclinical studies (scored >20, Eating Attitude Test (EAT 26) cutoff score for clinical significance) in several

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Arab countries like UAE, Iran, Jorden, Oman and Sudan was 36.2%, 24.2%, 42.7%, 33.33% and 21.2% respectively [14, 16-20]. Although, the prevalence of abnormal eating attitudes based on surveys with the 26-item EAT ranged from 19 to 36% in Saudi Arabia among female students [19, 21-24].

Despite of high prevalence there is limited numbers of studies on abnormal eating behavior that have been conducted Middle East Arab countries, particularly Saudi Arabia. Although there is no such study of abnormal eating behavior of female students that have been conducted in Arar so far. Therefore, keeping in view the seriousness of problem on one hand and lack of knowledge of eating attitude on the other, the present study carried out in Arar. KSA with following aim and objectives.

1. To determine the Prevalence of abnormal Eating attitude among female students of NBU, Arar, KSA.
2. To find out association of weight status and age at menarche with eating attitudes among study population.
3. To find out correlation between body dissatisfaction and eating attitude in female students.

METHODS

Research Design

Cross-sectional Survey design was used to conduct this study.

Study Site

For the purpose of study Arar city in Kingdom Saudi Arabia was selected. Arar is located to the north-east of Saudi Arabia on the Iraqi border.

Research Setting

The study was conducted at female college of northern border university. Arar KSA

Population

Females students of faculty of medical and applied medical science of university.

Sampling Technique

Stratified Random Sampling Technique.

Sample Size

160 students (66.66% of total population of college) were selected but 40 subjects did not give response, therefore sample of 120 female students were interviewed, with response rate of 75%.

Data Collection Period

4 weeks, from September 2016 to October 2016.

Exclusion Criteria

Students who have chronic diseases, obesity other than exogenous dietetic and those who are pregnant will be excluded from the study.

Inclusion Criteria

Females students (18 to 23 years).

Pilot Study

All the techniques for measurement was piloted on a set of 18 students of applied medical science, to test the efficiency of the questionnaire. Consequently, the content of the questionnaire can be modified and minor changes was made in the method of gathering information about various variables of the study.

Ethical Consideration

At the beginning, consents will be taken from the all students according to the World Medical Association (WMA) Declaration of Helsinki Sixth revision guide lines (Schmidt H, *et al.* 2010) and following the guidelines of ethical research committee in Northern Borders University.

Data Collection Process

The researchers introduce themselves and briefly explain the study objectives to participants. Then, the participants asked to proceed to fill in the questionnaires under the supervision of the researchers. All information gathered kept confidentially. Data was collected in general activity time of university on Tuesday between 10-12 am.

Tools of Data Collection

Two types data collection tools was used:

1. Questionnaire,
2. Anthropometric measurements (height and weight),

Firstly, students was provided with the pretested questionnaire then anthropometric measurements was taken.

1. Questionnaire

Questionnaire was translated in Arabic language and two Arabic professor double check it to understand eating behaviors and disorders that consequently could affect their nutritional status. Questionnaire divided into three section: Section (A) collect general information

Factors such as socio-demographic characteristics, education level, nationality, their family size, household type, parent's educational and employment status, pubertal status, health status etc. Section (B) consist of dietary intake and food habits which collected information on meal patterns such as skipping meals, snack consumption, breakfast eating habits, eating out and fast food consumption. Section (C) consist of EAT 26 The Eating Attitudes Test (EAT-26) was used to measure those at risk of disordered eating attitudes and it consists of 26 statements refer ring to various eating attitudes [25, 26]. Each statement uses a six-point Likert-type scale ranging from 'always' to 'never'. A score of 3 points was given for 'always', 2 for 'usually', 1 for 'often', and 0 for 'sometimes', 'rarely' and 'never'. The responses of all the 26 items were summed at the end and the respondents, who score exactly at, or above, the cut off score of 20, considered at risk of disordered eating attitudes and behaviors. The 26 items are classified under the following three separate subscales: 1) 'Dieting', 2) 'Bulimia and Food Preoccupation' and 3) 'Oral control'.

Validity of the Study's Questionnaire

To ensure the validity of the discussion was conducted with an expert panel from northern border university to review, edit, and double-check the questionnaire. EAT 26 has high internal consistency (α = 0.90) and acceptable criterion-related validity, being highly accurate in classifying eating disordered and non-eating disordered individuals [25]. EAT-26 was validated by Al-Subaie *et al*. (1996 and 1998) in Arabic language [22, 27].

2. Anthropometric Measurements

The weight of student was recorded with the help of platform spring balance zero error checked and remove it if present every day prior to start data collection. The students remain in college uniform without shoes. The weight measure up to accurately of 500 gram and nearest reading was recorded. The same weighing machine was used in whole study.

Height measured in centimeters by using standard stediometer. The student asked to stand erect without shoes with the support to the wall with erect head eyes straight and head, buttocks, heels, shoulder and back touching with the stediometer scale. The height recorded up to nearest 1 cm when the metallic scale brought down on the head, pressing the hair and touching the head. BMI was calculated as weight/height^2, with weight being in kilograms and height being in meters.

Data Analyses

SPSS 22 (2017) Statistics for Windows was used in entering, managing survey data and in generating the statistics in this study. Mean, SD, percentages, independent t-test, ANOVA and chi square was applied at the 0.05 level of significance.

RESULTS

Table **1** presents the BMI distribution of the participants and reveled that out of 120, 32female students (26.6%), age ranged between 18 and 23 years scored at or above the cutoff point of EAT-26 (>20), indicating negative eating attitude. Majority of them i.e. 95 (79.16%) were normal weight whereas

Table 1: BMI Distribution According to Disordered Eating Attitudes

Weight status	EAT 26 Score >20 N(%)	EAT 26 Score <20 N(%)	Total N(%)
Underweight	2(1.66%)	0(0%)	2(1.66%)
Normal weight	22(18.33%)	73(60%)	95(79.16%)
Overweight	6(5%)	15(12.5%)	21(17.5%)
Obese	2(1.66%)	0(0%)	2(1.66%)
TOTAL	32(26.66%)	88(73.33%)	120

Pearson chi sq= 11.63, df =3, p<0.05.

Table 2: Association between Students Weight Dissatisfaction and Disordered Eating Attitudes

Weight	EAT 26 Score >20 N(%)	EAT 26 Score <20 N(%)	Total N(%)
Desire to lose weight	28(23.33%)	61(50.83%)	89(74.16%)
Satisfied with current weight	2(1.66%)	24(20%)	26(21.66%)
Desire to gain weight	2(1.66%)	3(2.5%)	5(4.16%)

Pearson chi sq = 6.28, df =2, p<0.05.

underweight, overweight and obesity were observed among 2, 21and 2(1.66%, 17.5% and 1.66%) female students respectively. Both underweight and obese female student were at risk of developing eating disorder. Although, 73 female college students (60%) of study population have normal weight and were at not risk of developing eating disorder and there was significant difference found in prevalence of disordered eating attitudes in different BMI ranges (Pearson's χ 2 =11.63 at df 3, P<0.05).

Table **2** illustrated the beliefs of female students regarding their body weight, and found significant between female students who were at risk of developing eating disorder and those who have normal EAT 26 score. Most of students who have disordered eating want to lose weight.

As shown in Table **3** age of menarche, ranged between 11 and 16 years among study population. 67 students (55.83%) reported age of menarche at 12 and 13 (41and 26 girls at age 12 and 13 respectively) but non-significant association was found between age of menarche and disordered eating attitudes among study population.

Table **4** shows mean and SD of EAT-26 subgroups i.e dieting behavior, buluminia and oral control was 16.28(4.52), 40(2.16) and 6.59(2.84) respectively who have disordered eating attitude and 5.68(3.64), 1.88(1.82) and 3.20(2.77) respectively among study population who were not at risk of developing eating disorder and significantly different was found between these two groups in different EAT 26 subgroup.

DISCUSSION

The results of present study indicate Saudi female college students suffer from higher rates of eating disordered attitudes and behaviors similar to levels reported in other international literature, which also suggests that the prevalence of unhealthy weight

Table 3: Association between Age at Menarche and EAT 26 Score

Age at menarche	Eating disorder score		
	At risk (SCORE >20)(mean± SD)	Not At risk (SCORE <20)(mean± SD)	P value
11 (n=17)	25.85(5.01)	9.80(5.53)	0.58
12(n=41)	32.00(5.70)	12.64(4.96))	
13(n=26)	25.50(7.90)	12.67(5.62)	
14(n=19)	30.88(5.66)	11.36(5.50)	
15(n=14)	28.00(4.89)	9.10(3.72)	
16(n=1)	---	15.00	

Table 4: Mean and SD and EAT 26 Subgroup in Studied Population

EAT 26 sub group	EAT >20 (mean ± SD)	EAT<20 (mean ± SD)	P value
Dieting*	16.28±4.52	5.68± 3.64	.00
Bulimia**	4.40±2.16	1.88±1.82	.00
Oral control***	6.59±2.84	3.20±2.77	.00

*Dieting defines as sum of items 1,6,7,10,11,12,16,17,22,23,24,and 25.
**Bulimia defines as sum of items 3,4,9,18,21,26.
***oral control defines as sum of items 2,5,8,13,15,and 20.

control practices, such as dieting, fasting, purging (i.e. vomiting, laxatives and diuretics' use, diet pills), binge eating, have increased exponentially in the past two decades in all over the world [2, 4, 7, 15, 28].

Musaiger *et al*., (2013) highlighted the magnitude of the risk of disordered eating attitudes among both male and female adolescents in seven Arab countries countries and found, risk of disordered eating attitude was twice as high among females as in males in Jordan, Libya, Palestine and Syria and risk of disordered eating attitude among obese adolescents was two to three times higher than that of non-obese, in both genders. Eapen V, *et al.* found that in 116 UAE females students (23.4%) scored above the recommended cut-off on EAT was associated with age, BMI and watching western TV programs [29]

Result of present study shows that female students with low and high BMI scores endorsed more risk factors for disordered eating than those with normal BMI scores. Similar study by Malak M. Allihaibi (2015) was reported in Makkah Al-Mukarramah a holy city of Saudi Arabia, highest rate of eating disorder (ED) among underweight students (29.4%) whereas the lowest rate was reported among obese students (7.1%) and found no significant association between any of studied students' baseline characteristics (age, nationality, family size, birth order, age of menarche, and BMI) and disordered eating attitudes [21]. This finding was also consistent with previous literature in different Arab countries, which found a significant relation between abnormal BMI and higher EAT scores [14, 20, 21, 23, 24, 30].

Consistent with the claimed hypothesis that elevated body dissatisfaction emerged as the most potent predictor of eating pathology. Our finding that weight and body dissatisfaction of study population lead to abnormal eating behaviour also consistent with many studies suggest eating disorders related body image concerns. Body dissatisfaction could be fostered from internalized body ideal and perceived socio-cultural pressure. An Exploratory studies in Emirati female university student using EAT 26 questionnaire reported eating disorder 24%, additionally 74.8% of participant were dissatisfied with their current body image and positively correlated with body image dissatisfaction [31]. Another research indicated that 21.2% of 340 students of university of medical science and technology of Sudan were at risk of developing eating disorder and 44% of the sample were dissatisfied with their body shape whereas 67% of them were dissatisfied with their body weight and desired to lose weight [14].

Nasser, 1986 and Al-Adawi, 2002 have shown that young people exposed to Westernization in Arab countries are more at risk of disordered eating than those who are not exposed, despite their cultural background [20, 32]. These results are consistent with the assumption that cultural changes in Arab countries have involved identification with Western norms of body shape and weight contributing to eating disorder development in young female's students.

IMPLICATIONS FOR FUTURE RESEARCH AND PREVENTION

Eating disorders can lead to morbidity and mortality for which early detection is crucial through institutional-based screening can help to identify population who are at risk of developing eating disorder. Findings of the present study would provide researchers with fundamental information about eating disorders and the prevalence of eating disorder among female college student of Arar city. Further research is essential to address the unanswered questions in the field of eating disorder research. Research priorities should include prevention and early intervention, improvement of the current diagnostic classification system to develop effective treatment for eating disorders.

On the basis of the findings of this study we have identified a need for screening and health intervention related to disordered eating in Saudi Arabia. The eating disorders comprise a significant health concern among college students and health programs should be included for educational services on campuses in an effort to alleviate potential risk factors and unhealthy behaviors and attitudes. Overall, these findings suggest a need for appropriate preventive interventions that will promote body size acceptance and healthy lifestyle behaviors and prevent distorted eating behaviors in the future. A finer understanding of similarities and differences across populations will assist in the creation of valuable strategies that will effective in all part of world. Moreover, health care professionals need to be sensitive to gender differences in eating disorders so males are not being overlooked or undertreated.

For accurate assessment of eating disorders and disordered eating behaviors and attitudes, their impact and factors that might increase the risk for eating disorders and disordered eating, need more psychometrically sound instruments that can accurately measure the variables or risk

factors. There is a need for longitudinal study in to isolate the risk factors and evaluate the possible relationship between demanding environments and psychosomatic vulnerability.

LIMITATIONS OF CURRENT STUDY

Several limitations of this study should be noted. First, its cross-sectional design does not allow the assessment of the progression of symptoms over time other distinction between causes and effects. Participants were taken from college, having more or less same socioeconomic status and cultural environment, which may reduce the generalizability of our findings, and present study may not be representative of all of the Saudi female student. Second, the study population consisted of female college students only because co-education is not allowed in Saudi Arabia .Third, another limitation is the use of anonymous self-report questionnaires to collect data, relying upon the honesty of the students. It is possible that biased answers were collected, in which case the prevalence rate may have been under- or overestimated and self-report measures can threaten the project's internal validity. Fourth, no structural interviews were performed to diagnose eating disorders, may have overestimated eating psychopathology among population. Finally, although established Arabic translated questionnaires were used, the utility of the translated items could have been compromised by subtle linguistic and conceptual misunderstandings.

CONCLUSION

Still, taken together, these results provide important information for clinical practice. The results of this study suggest that the prevalence of disordered eating n is high, Moreover, body image disturbance is suggested to be listed as the most robust factor in the development and maintenance of eating disordered behaviors. Future prospective and experimental studies are warranted to advance our understanding of the risk factors to enable better preventive programme planning.

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