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A Study on the Prevalence And Severity of Eating Disorders among the Young Population of Hail City in Saudi Arabia

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ABSTRACT

Context Eating disorders are severe conditions, but little is known about the prevalence or correlates of these disorders from population-based surveys of Young people.

Objectives The objectives of the present study was to examine the prevalence and severity of eating disorders in a representative sample of Saudi adolescents and young adults.

Design Cross-sectional survey of adolescents with face-to-face interviews using a modified version of the Eating Attitude Test (EAT-26).

Setting Combined household and University adolescent and young adult samples.

Participants Nationally representative sample of 100 young people aged 18 to 25 years.

Results The overall prevalence estimates of eating disorder were 2% and 24% for males and females respectively. Important differences were observed between eating disorder subtypes concerning behavioral questions as well as eating attitude questions. Analyses of 2 related subthreshold conditions suggest that these conditions are often clinically significant.

Conclusions Eating disorders and disordered eating attitudes are prevalent in the general adolescent an adult population , showing more prevalence in females as compared to the males. The unmet treatment needs in the adolescent population place these disorders as important public health concerns.

KEYWORDS: Eating disorder, Adolescence, Anorexia nervosa, Bulimia Nervosa, Binge eating.

INTRODUCTION

Eating disorders refer to a group of conditions defined by abnormal eating habits that may involve either insufficient or excessive food intake to the detriment of an individual's physical and mental health. Bulimia nervosa, anorexia nervosa, and binge eating disorder are the most common specific forms in the United Kingdom.1 Though primarily thought of as affecting females (an estimated 5–10 million being affected in the U.K.), eating disorders affect males as well. An estimated 10 – 15% of people with eating disorders are males (Gorgan, 1999). (an estimated 1 million U.K. males being affected).2,3,4 Although eating disorders are increasing all over the world among both men and women, there is evidence to suggest that it is women in the Western world who are at the highest risk of developing them and the degree of westernization increases the risk.5 Nearly half of all Americans personally know someone with an eating disorder.

The precise cause of eating disorders is not entirely understood, but there is evidence that it may be linked to other medical conditions and situations. Cultural idealization of thinness and youthfulness have contributed to eating disorders affecting diverse populations[6]. One study showed that girls with ADHD (Attention deficit hyperactivity disorder) have a greater chance of getting an eating disorder than those not affected by ADHD[7]. Some think that peer pressure and idealized bodytypes seen in the media are also a significant factor. Some research show that for certain people there are genetic reasons why they may be prone to developing an eating disorder.[8]

Eating disorders in young women are common and associated with significant mortality and morbidity[9] . Lifetime risks in women have been estimated at 8% for bulimic syndromes and around 3% for anorexic syndromes[10,11]. The features of eating disorders most commonly emerge in mid-adolescence, before the development of full syndromes[12]. Cross sectional surveys have confirmed that eating disorders are common in adolescent women; around 0.5% have anorexia nervosa, 1% have bulimia nervosa, and 3% to 5% have subclinical syndromes[12,13,14].

The consequences of eating disorders can be severe, with 1 in 10 cases leading to death from starvation, cardiac arrest, or suicide. Fortunately, increasing awareness of the dangers of eating disorders--sparked by medical studies and extensive media coverage of the illness has led many people to seek help. Nevertheless, some people with eating disorders refuse to admit that they have a problem and do not get treatment. Family members and friends can help them recognize the problem and encourage the person to seek treatment.[15]

Anorexia Nervosa

People who intentionally starve themselves suffer from an eating disorder called anorexia nervosa. The disorder, which usually begins in young people around the time of puberty, involves extreme weight loss--at least 15 percent below the individual's normal body weight. Many people with the disorder look emaciated but are convinced they are overweight. Sometimes they must be hospitalized to prevent starvation.

One of the most frightening aspects of the disorder is that people with anorexia continue to think they are overweight even when they are bone-thin.

Bulimia Nervosa

People with bulimia nervosa consume large amounts of food and then rid their bodies of the excess calories by vomiting, abusing laxatives or diuretics, taking enemas, or exercising obsessively. Some use a combination of all these forms of purging.

As with anorexia, bulimia typically begins during adolescence. The condition occurs most often in women but is also found in men. Many individuals with bulimia, ashamed of their strange habits, do not seek help until they reach their thirties or forties. By this time, their eating behavior is deeply ingrained and more difficult to change.2,3

Binge Eating Disorder

An illness that resembles bulimia nervosa is binge eating disorder. Like bulimia, the disorder is characterized by episodes of uncontrolled eating or bingeing. However, binge eating disorder differs from bulimia

because its sufferers do not purge their bodies of excess food.

Individuals with binge eating disorder feel that they lose control of themselves when eating. They eat large quantities of food and do not stop until they are uncomfortably full. Recent research shows that binge eating disorder occurs in about 30 percent of people participating in medically supervised weight control programs.[1, 16,17]

Medical Complications

Eating disorders have among the highest mortality rates of all mental disorders, killing up to 10 percent of their victims. Individuals with eating disorders who use drugs to stimulate vomiting, bowel movement, or urination are in the most danger, as this practice increases the risk of heart failure.

In patients with anorexia, starvation can damage vital organs such as the heart and brain. To protect itself, the body shifts into "slow gear": monthly menstrual periods stop, breathing, pulse, and blood pressure rates drop, and thyroid function slows. Nails and hair become brittle; the skin dries, yellows, and becomes covered with soft hair called lanugo. Excessive thirst and frequent urination may occur. Dehydration contributes to constipation, and reduced body fat leads to lowered body temperature and the inability to withstand cold. Mild anemia, swollen joints, reduced muscle mass, and light-headedness also commonly occur in anorexia.

Bulimia nervosa patients--even those of normal weight--can severely damage their bodies by frequent binge eating and purging. In rare instances, binge eating causes the stomach to rupture; purging may result in heart failure due to loss of vital minerals, such as potassium. Further, the esophagus becomes inflamed and the glands near the cheeks become swollen. As in anorexia, bulimia may lead to irregular menstrual periods.

People with binge eating disorder are usually overweight, so they are prone to the serious medical problems associated with obesity, such as high cholesterol, high blood pressure, and diabetes. Obese individuals also have a higher risk for gallbladder disease, heart disease, and some types of cancer. Research at NIMH and elsewhere has shown that individuals with binge eating disorder have high rates of co-occurring psychiatric illnesses--especially depression.[2,3,15-17]

Causes of Eating Disorders

In trying to understand the causes of eating disorders, scientists have studied the personalities, genetics, environments, and biochemistry of people with these illnesses. As is often the case, the more that is learned, the more complex the roots of eating disorders appear.

Most people with eating disorders share certain personality traits: low self-esteem, feelings of helplessness, and a fear of becoming fat. In anorexia, bulimia, and binge eating disorder, eating behaviors seem to develop as a way of handling stress and anxieties.

Eating disorders appear to run in families with female relatives most often affected. This finding suggests that genetic factors may predispose some people to eating disorders, however, other influences both behavioral and environmental may also play a role.

In an attempt to understand eating disorders, scientists have studied the biochemical functions of people with the illnesses. They have focused recently on the neuro endocrine system a combination of the central nervous and hormonal systems. Many of these regulatory mechanisms are seriously disturbed in people with eating disorders.[15]

Treatment

Eating disorders are most successfully treated when diagnosed early. Unfortunately, even when family members confront the ill person about his or her behavior, or physicians make a diagnosis, individuals with eating disorders may deny that they have a problem. Thus, people with anorexia may not receive medical or psychological attention until they have already become dangerously thin and malnourished. People with bulimia are often normal weight and are able to hide their illness from others for years. Eating disorders in males may be overlooked because anorexia and bulimia are relatively rare in boys and men. Consequently, getting-and keeping-people with these disorders into treatment can be extremely difficult.

In any case, it cannot be overemphasized how important treatment is -- the sooner, the better. The efforts of mental health professionals need to be combined with those of other health professionals to obtain the best treatment. Physicians treat any medical complications, and nutritionists advise on diet and eating regimens.[2,3]

Methodology

The study was done through Cross-sectional survey of adolescents with face-to-face interviews using a modified version of the Eating Attitude Test (EAT-26).

Nationally representative sample of 100 young people aged 18 to 25 years from Combined household and University adolescent and young adult samples were randomly selected for the purpose of this study.

The Eating Attitudes Test (EAT-26) was used to assess criteria for eating disorders. The EAT-26 has been reproduced with permission {(Garner et al.;1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878}

The EAT-26 is a refinement of the original EAT-40 that was first published in 1979 and used in one of the first studies to examine socio-cultural factors in the development and maintenance of eating disorders. Since that time, the test has been translated into many different languages and used in hundreds of studies. The original publication (Garner, D.M. & Garfinkel, P.E., 1979, *Psychological Medicine*, *9*, 273-279.)[3] and the subsequent publication describing the refinement of the test (Garner et al., 1982,) are the 3rd and 4th on the list of the 10 most cited articles in the history of the Journal Psychological Medicine.

It can be administered in group or individual settings and is designed to be administered by mental health professionals, school counselors, coaches, camp counselors, and others with interest in gathering information to determine if an individual should be referred to a specialist for evaluation for an eating disorder. It is ideally suited for school settings, athletic programs, fitness centers, infertility clinics, pediatric practices, general practice settings, and outpatient psychiatric departments. It is intended primarily for adolescents and adults.

The EAT-26 is the most widely used screening measure that may be able to help you determine if you have an eating disorder that needs professional attention. The EAT-26 is not designed to make a diagnosis of an eating disorder or to take the place of a professional diagnosis or consultation. The subjects were asked to answer each question as accurately, honestly, and completely as possible. All the subjects were assured that the results will be kept completely confidential.

Weight and height— Weight was measured to the nearest 0.5 kg with subjects in minimal college or house clothes. Height was measured with a stadiometer to the nearest centimeter, with shoes removed. Self reported weights were used for those subjects who had left school.

SCORING OF EATING DISORDER TEST

Test Items and Total Test Score:

•	Items 1-25 are scored as follows: Always = 3; Usually = 2; Often = 1; Other answers = 0
•	Item 26 is scored in the opposite direction (Never = 3 etc.)
•	Total Test Score: Add item scores for a "total test score."

•	Is the total 20 or more? ☐ No ☐ Yes, make a referral

• Behavioral Questions:

•	Did the responder ck of the boxes as shown below? No Yes, make a referral

	Never	Once a month or less	2-3 times a month	Once a week	2-6 times a week	Once a day or more
A) Binge			√	√	√	√
B) Vomit		√	√	√	√	√
C) Laxatives, diuretics		√	√	√	√	√
D) Exercise						√
Lost 20 pounds or more	Yes √		No			

- Underweight:

Determine Body Mass Index (BMI) to determine if the respondent is underweight.

INTERPRETATION of EATIING DISORDER TEST

The interpretation of the Eating Attitudes Test (EAT-26) is based on three "referral criteria" that determine if the respondent should seek further evaluation of your risk of having an eating disorder. These are:
1) The total score on the actual EAT test items;
2) Behavioral questions indicating possible eating disorder symptoms or recent significant weight loss;
3) Low body weight compared to age-matched norms.
If the respondent meets one or more of these criteria, they you should seek an evaluation by a professional who specializes in the treatment of eating disorders.

Additional Interpretive Information:

- **EAT-26 scores:**

A score at or above 20 on the EAT-26 indicates a high level of concern about dieting, body weight or problematic eating behaviors. If your score is above 20, you should seek an evaluation by a qualified health professional to determine if your score reflects a problem that warrants clinical attention. However, please keep in mind that high scores do not always reflect over-concern about body weight, body shape, and eating. Screening studies have shown that some people with high scores do not have eating disorders. Regardless of your score, if you are suffering from feelings which are causing you concern or interfering with your daily functioning, you should seek an evaluation from a trained mental health professional.

- **Behavioral Questions:**

If you answered affirmatively to any of the behavioral questions, you should seek an evaluation from a trained mental health professional specializing in the treatment of eating disorders. It is important to consider the frequency and the context of the behaviors needs to determine the degree of medical risk they represent. For example, both vomiting and using laxatives for weight control confer serious medical dangers in direct relationship to their frequency. However, less frequent use of these behaviors is still a serious reason for concern since these behaviors tend to escalate over time.

- **BMI:**

The EAT-26 includes specific questions on height, weight and gender that can be used to compute Body Mass Index (BMI) for the purpose of determining if you are "at risk" for an eating disorder because your body weight is extremely underweight according to age-matched population norms. BMI is a formula for estimating body mass that takes both height and weight into account. It is calculated by dividing weight (in kilograms) by height in meters, and then divided again by height in meters (kg/m2). It is recommended that you seek a professional evaluation for a possible eating disorder if your body weight is "extremely underweight" according to age-matched population norms.

Although BMI is a convenient and useful weight classification tool, it does have limitations. For example, BMI can overestimate fatness for people who are athletic. Also, some races, ethnic groups, and nationalities have different body fat distributions and body compositions; therefore, the norms used are not appropriate for all groups.

STATISTICAL ANALYSIS

Statistical analysis was done to compare the scores of male and female population on different aspects of EAT-26 by using McNemar test, Pearson's correlation and ANOVA, and also to compare the means of height, weight and BMI of both population group. All the results were calculated and judged according to SPSS – 17.0 Software at 0.05 level of significance.

RESULTS

One hundred young people (66 females, 34 males) were administered the eating disorder examination.

Table 1 shows the BMI distribution of the population group according to the gender. To sum up, a total of 37% subjects were found with normal BMI, 5% were underweight and a fairly high percentage (58%) of the sample was found with above normal BMI. However, the difference in the BMI of male and females was found to be statistically insignificant (Pearson's χ^2 =6.3 at df 3, P>0.05)

Table 2 shows the mean height , weight and BMI of the two population groups. On applying analysis of variance test ANOVA, the differences were found to be significant with respect to height and weight (F= 24.04 and 15.6 respectively at df 1, P<0.05). On the other hand the difference in the mean BMI was found insignificant (F=2.05, df 1, P>0.05).

According to Table 3 on the mean Scores of the self report eating attitudes test , it was analysed that the mean scores were significantly higher in females (16.89 vs 9.88; F=8.3, df= 1, p<0.01) than in the male population.

Table 4 presents the actual number and percentage of the two population groups identified with the problems in eating behavior. According to the diagnostic criteria of EAT 26, A score at or above 20 on the EAT-26 indicates a high level of concern about dieting, body weight or problematic eating behaviors.

In the present study only 6% (N=2) of the males were found with above 20 score in the eating attitude test as against 36% (N=24) of the females. The overall percentage of the population who met the criteria of eating problems according to the EAT was 26%. On applying the McNemar test it was found that the difference in this aspect between the male and female population was highly significant. (χ^2 = 34.57; P= 0.000).

Apart from episodes of objective eating problem, 38% of the males reported to have behaviour characteristic of people with eating disorders vs 83% of the female group (Table 5). Chi square test showed a significant correlation between the scores of male and female population (χ^2 = 22.01 at df 6 ; P = 0.001). Results of ANOVA for the mean scores on behavioral questions also showed a significant correlation between the two study groups (Table 6; F= 16.6 at df 1; P = 0.000)

Table 7 depicts the responses of the participants on different behavioral questions included in the Eating Attitude Test. For each question the number of subjects giving affirmative response was found to be higher in females as compared to the males. As judged by the McNemar test the correlation between the responses of both male and female respondents was found to be statistically significant for Binge eating (χ^2 =15.4, df 5; P=0.009); use of laxatives or diuretics to control weight (χ^2 =13.57, df 5; P= 0.019); loss of 20 pounds or more weight in past 6 months (χ^2 = 4.89, P = 0.027) and getting treatment for any past eating disorder problem (χ^2 = 10.26; P = 0.001).

DISCUSSION

''Eating disorders are a serious public health problem," says researcher Kathleen Merikangas, PhD, senior investigator at the intramural research program at the National Institute of Mental Health.

In the last decade or so, Merikangas tells WebMD, "it seems to me there has not been much research attention" on the topic. Likewise, in the country of Saudi Arabia this topic is least explored.

In the present study the prevalence of disordered eating attitude was found to be 2% for males and 24% for the females. Results from other studies on eating disorder had shown similar results with high prevalence among females ranging from 3 – 20 %, as compared to the males. [4-10]

The prevalence of clinical eating disorders in Young adults as well as adolescents is important, as disturbed eating is common problem among young men and women' and is potentially hazardous for those people in growing and reproductive age. According to another study by Kathleen Doheny for bulimia and binge eating, many more girls than

boys were affected. Most with an eating disorder also had some other mental health problem, with 55% to 88% of those with an eating disorder also reporting such problems as anxiety, depression, or a behavioral disorder18. Dieting by children and adolescents, rather than other means of weight control, is likely to remain a much debated issue as obesity in young people increases.19,20

CONCLUSION

The diagnosis of eating disorder should be considered when the person engages in potentially unhealthy weight control practices, demonstrates obsessive thinking about food, weight, shape or exercise, or fails to attain or maintain a healthy weight, height or body composition, or stage for sexual maturation for gender and age. An eating disorder may still be present in the absence of established diagnostic criteria.20,21

The evaluation and management of in nutritional disturbances in young adults with eating disorders should take into account the nutritional requirements in the context of their age, maturation and physical activity level. In addition, treatment should be provided by health care providers who have expertise in managing young adults and adolescents with eating disorders and who are knowledgeable about normal adults physical and psychological growth and development. Hospitalization of the person with eating disorder is necessary in the presence of severe malnutrition, physiological instability, severe mental health disturbances or failure of outpatient treatment.

People with an eating disorder should not be denied access to care because of absent or inadequate coverage. Further research is essential to address the unanswered questions in the field of eating disorder research. Research priorities will include prevention and early intervention, improvement of the current diagnostic classification system to develop effective treatment for eating disorders.

Table 1 - BMI distribution according to gender of the subject

GENDER	BMI				TOTAL
	UNDER WEIGHT	NORMAL	OVER WEIGHT	OBESE	
MALE	0	9	13	12	34
FEMALE	5	28	16	17	66
TOTAL	5	37	29	29	100
	$\chi^2 = 6.3$ at df 3 P> 0.05 (NS)				

Table 2 – Correlation of mean height , weight and BMI and gender

GENDER	MEAN HEIGHT	MEAN WEIGHT	MEAN BMI
MALE	163 cm	78±17.5	28.13±5.6
FEMALE	152 cm	64.7±15.1	26.3±6.2
ANOVA	F= 24.04***	F= 15.6***	F=2.05

Table 3 – Distribution of mean scores of part B of EAT -26 according to gender

GENDER	MEAN SCORES OF QUESTIONS RELATED TO DIETING	SD
MALE	9.88	±13.26
FEMALE	16.89	±10.52
ANOVA	F = 8.3***	

Table 4 – Correlation of EAT -26 score category and gender

GENDER	Problem category scores of part B of EAT-26		
	Below 20	Above 20	Total
MALE	32 (94%)	2 (6%)	34 (100%)
FEMALE	42 (63%) 24 (37%)		66(100%)
TOTAL	74	26	100
McNemar Test $\chi^2 = 34.568$***			

Graph 1 – correlation of EAT 26 Score category and gender

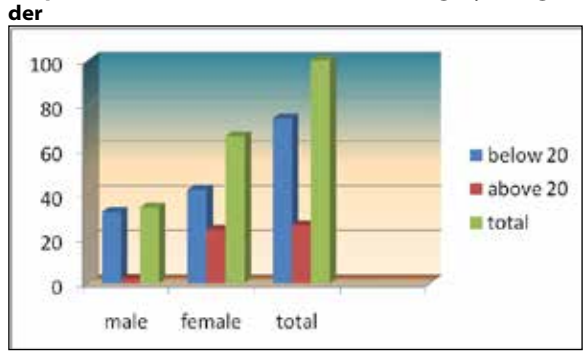

TABLE 5 – Correlation of total scores of behavioral questions and gender

	Total scores of behavioral questions								TOTAL
SCORES → PERCENTAGE %	0	1	2	3	4	5	6	TOTAL AFFIRMATIVE ANSWERS	
	0.00	16.6	33.3	50	66.6	83	100		
GENDER ↓									
MALE	21	5	7	1	0	0	0	13 (38%)	34
FEMALE	11	21	23	7	1	2	1	55 (83%)	66
TOTAL	32	26	30	8	1	2	1	68 (68%)	100
	Pearson's correlation $\chi^2 = 22.01$**								

Table 6 – Distribution of mean scores of part c of EAT 26 According to gender

GENDER	Mean scores	SD
MALE	0.64	±0.91
FEMALE	1.63	±1.25
ANOVA	F= 16.6 ***	

Table 7 – Correlation of the responses on behavioral questions according to the gender

BEHAVIORAL QUESTIONS	RESPONSE	MALE	FEMALE	Mc NEMAR TEST
Gone on Binge when you feel you are unable to stop	YES	1	26	$\chi^2 = 15.4$**
	NO	33	40	
Ever made yourself sick to control weight or shape	YES 2		11	$\chi^2 = 3.8$
	NO	32	55	
Ever used laxatives, pills or diuretics to control weight	YES	3	26	$\chi^2 = 13.57$**
	NO	31	40	
Exercise more than 60 minutes a day to lose weight	YES	8	23	$\chi^2 = 7.45$
	NO	26	43	
Lost 20 pounds or more in past 6 months	YES	3	15	$\chi^2 = 4.891$*
	NO	31	51	
Have you ever been treated for an eating disorder	YES	4	9	$\chi^2 = 10.256$***
	NO	30	57	

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