

## Eating Disorders among Female Adolescents in Jeddah

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### Abstract

**Background:** Adolescence period defined as a transitional stage that falls between childhood and adulthood. The Nutritional requirements are one of the most important aspects in this stage comparing to all life span due to achieving the optimal level of growth and development. Adolescents' concern about their body weight and shape can lead to disturbed eating behaviors such as starvation, fasting, frequently skipping meals, overeating and binge-eating followed by purging, also using of diet pills, laxatives, diuretics and excessive exercising. Eating disorder behavior is contributing to some risk factors which include age, genetics, pubertal status, pubertal timing and body mass index as biological factors. In addition, body image dissatisfaction, negative mood states such as depression and stress, low self-esteem and personality traits are contributed to eating disorders as psychological factors. There are also sociocultural factors such as peer pressure and influences by media to conform to an unrealistic standard of thinness, eating disorders in the family and bullying. Physical and sexual abuse considered plays a role in developing eating disorder. There is no specified study mentioned prevalence rate for eating disorder among female adolescents in Jeddah or any other place in Kingdom Saudi Arabia.

**Objectives:** The aim of the study is to assess eating disorders among female adolescents of secondary schools in Jeddah.

**Methods:** The study was conducted in 3 secondary schools in Jeddah. Cross sectional design was used. Four hundred twenty five female adolescents were recruited using non probability "Quota" Sampling in order to obtain a representative sample from the 3 levels in the secondary schools. The Arabic version of a self report Eating Attitude Test 26 questionnaire (EAT-26) was used. Total score and three subscales (dieting, bulimia, and oral control) are generated and a score of 20 and above indicates the risk for eating disorders.

**Results:** The findings of the current study revealed that 32.9% of the entire sample scored of 20 and above using Eating Attitude Test (EAT-26). This indicates that they are at risk for eating disorders. A significant relationship was found between the mean of participants' body mass index and their Eating Attitude total scale and the three subscales (dieting, bulimia, and oral control). Furthermore, a negative significant relationship was found between the mean participants' age and their Eating Attitude total scale.

**Conclusion and Recommendation:** In conclusion, the current study highlights the importance of eating disorders screening among adolescents to identify who have disturbed eating attitude and at risk for eating disorders. Further studies are needed either to modify the current instrument or to develop a new culture specific instrument. Development of a community based preventive measures to help adolescent to have health eating attitude and habits is recommended.

**Key words:** Eating disorder, Female adolescents.

**Introduction:**

Adolescence period defined as a transitional stage that falls between childhood and adulthood. During this period, adolescents are undergoing of different dramatic changes and development of the physical, emotional and cognitive function. The Nutritional requirements are one of the most important aspects in this stage comparing to all life span due to achieving the optimal level of growth and development (Chin.Y and Mohod.N, 2009). It has been reported that irregular meals, snacking, eating out of homemade and following alternative dietary patterns happened frequently among adolescents (Washi S., Ageib M., 2010).

Unhealthy weight control behavior; such as fasting, vomiting on purpose after eating, taking diet pills, and use of laxatives can be used. (Gonsalves.D, Hawk.H, Goodenow.C, 2013). This kind of dieting behaviors may lead to develop a significant eating disorder which defined as anorexia nervosa, bulimia nervosa, binge-eating disorder (Gonsalves.D, Hawk.H, goodenow.C, 2013 and Coelho.G, Gomes.A, Ribeiro.B, Soaras.E, 2014). Adolescents' concern about their body weight and shape can lead to disturbed eating behaviors 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.

Eating disorder behavior is contributing to some risk factors which include age, genetics, pubertal status, pubertal timing and body mass index as biological factors. In addition, body image dissatisfaction, negative mood states such as depression and stress, low self-esteem and personality traits are contributed to eating disorders as psychological factors. There are also sociocultural factors such as peer pressure and influences by media to conform to an unrealistic standard of

thinness, eating disorders in the family and bullying. Physical and sexual abuse considered play a role in developing eating disorder (Coelho.G, Gomes.A, Ribeiro.B, Soaras.E, 2014).

Adolescents with eating disorder have high risk to develop anxiety disorder, cardiovascular symptoms, chronic fatigue and pain, depressive disorder, limitation in activity related to poor health, infectious diseases, insomnia, neurological symptoms, and suicidal attempts in their early adulthood as consequences for the disease ( Johnson.J, Cohen.P, Kasen.S, Brook.J, 2002). There is no specified study mentioned prevalence rate for eating disorder among female adolescents in Jeddah or any other place in Kingdom Saudi Arabia so; the current study will assess eating disorders among female adolescents to set a base line data that will be used to build on in the future.

### **Aim of the Study:**

The aim of the current study is to assess eating disorders among female adolescents in secondary schools in Jeddah.

Specific objectives:

1. To describe the prevalence of eating disorders among secondary school female adolescents in Jeddah.
2. To correlate between eating disorders and age, BMI of the participants.

### **Research Question**

What is the prevalence of eating disorders in female adolescents in secondary schools in Jeddah?

## **Methods:**

### Study Setting:

This study was conducted at three females secondary school in Jeddah (the 55<sup>th</sup> secondary school, the 18<sup>th</sup> secondary school and 28<sup>th</sup>)

### Study Subjects/size:

The total sample of 425 female adolescents aged from, 15 – 18 years participated in the study. Female adolescents who have chronic diseases and those who are pregnant were excluded from the study.

### Study Design:

Cross sectional design was used to answer the research question. “A cross sectional study examines data at one point in time, that is, data collected on only one occasion with the same subjects rather than with the same subjects at several time points.”(LoBiondo-Wood and Haber, 2010).

### Sampling Technique:

Non probability “Quota” Sampling was used in order to obtain a representative sample from the 3 levels in the secondary schools. “Quota sampling refers to form of non-probability sampling in which knowledge about the population of interest is used to build some representative into the sample. A quota sample identifies the strata of the population and proportionally represents the strata in the sample” (LoBiondo-Wood &Harber 2010).

Each stratum of the population was proportionately represented in the sample. A proportional quota sampling strategy was used and 30% of a population of about 1415 female adolescents (i.e., 425). Based on the proportion of each stratum (each educational level) in the population, 156 female adolescents from educational level 1 in addition to 146 female adolescents from educational level 2 and 123 female adolescents from educational level 3 were the quotas for the three strata. The

researchers recruited subjects who met the criteria of the study until the quota for each stratum was filled.

#### Data Collection methods, instruments used, measurement

A self-administered questionnaire was utilized, the questioner includes two parts:-

Part I: includes age, level, weight, height, marital statues and BMI.

Part II: Eating Attitude Test 26 (EAT-26) was used. It is a widely used standardized self-report measure of symptoms and concerns characteristic of eating disorders. The original version of the EAT was published in 1979 (Garner &Garfinkel 1979). It was updated at 1982 by Garner and colleagues that describe a 26-item refinement of the original test (Garner DM. et al 1982). “The 26 items with three sub-scales including dieting scale items, bulimia & food preoccupation scale items and oral control scale items, Each item is responded to on a six-point Likert scale ranging. To calculate the score of each item from 1 to 26 it scored as follows: Always = 3; usually = 2; Often = 1; other answers include ‘Sometimes’, ‘Rarely’ and ‘Never’ = 0. Only the item 25 is scored in the opposite direction, Never =3, rarely =2, Sometimes =3 other answers includes ‘Always’, ‘usually’ and ‘often’ =0. A total score of 20 and above was classified as at-risk of eating disorders (disordered eating)” (Jalali-farahani S. et al 2014). The EAT-26 was proved to be highly reliable and valid (Garner DM. et al 1982). The Arabic version has been used and valid by (Al-Adawi S., etal 2002).

#### **Data Management:**

Statistical package for social science software (SPSS version 18) was used for statistical analysis. Descriptive statistics was conducted to describe the demographic characteristics of the participators. In addition to this, the relationship between eating disorders and demographic variables was done using t- test. The significance level was at  $P < 0.05$ .

**Ethical Considerations:**

The proposal and the questionnaire were submitted to the research committee of the college of nursing in Jeddah, for audit and to get composed consent to conduct the study.

Female adolescents were informed about the natural of the study. They indicated their willingness to participate in the study by signing the informed consent. Confidentiality was ensured.

**Results:**

Table (1) presents the demographic characteristics of participants; four hundred and twenty five female adolescents participated in the current study, their age ranged from 15 to 18 with mean age of  $2.5741 \pm .97844$ , their weight ranged from 32.60-108.3 Kg with the mean weight of  $52.37 \pm 11.1835$  and their height ranged from 1.39-1.72 m with the mean height of  $1.553 \pm .0535$ . Furthermore, Participants' body mass index ranged from 13.76-40.76 with mean BMI is  $21.6824 \pm 4.26108$ . As regards participants' educational level, 36.7 % of them from level 1 while 34.4 % of them from level 2 and 28.9 % of them from level 3 as in figure 1.

Table (2) presents the mean score of the first subscale: dieting subscale items. It was found that the highest mean ( $1.505 \pm 1.2759$ ) was for "I Am terrified about being overweight" followed by "Think about burning up calories when I exercise" which has mean of  $1.4753 \pm 1.3139$  while the lowest mean ( $.2294 \pm .6403$ ) was for "I Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)".

Table (3) presents the mean score of the second subscale: bulimia & food preoccupation scale items. It was found the highest mean ( $.7647 \pm 1.0777$ ) was for "I

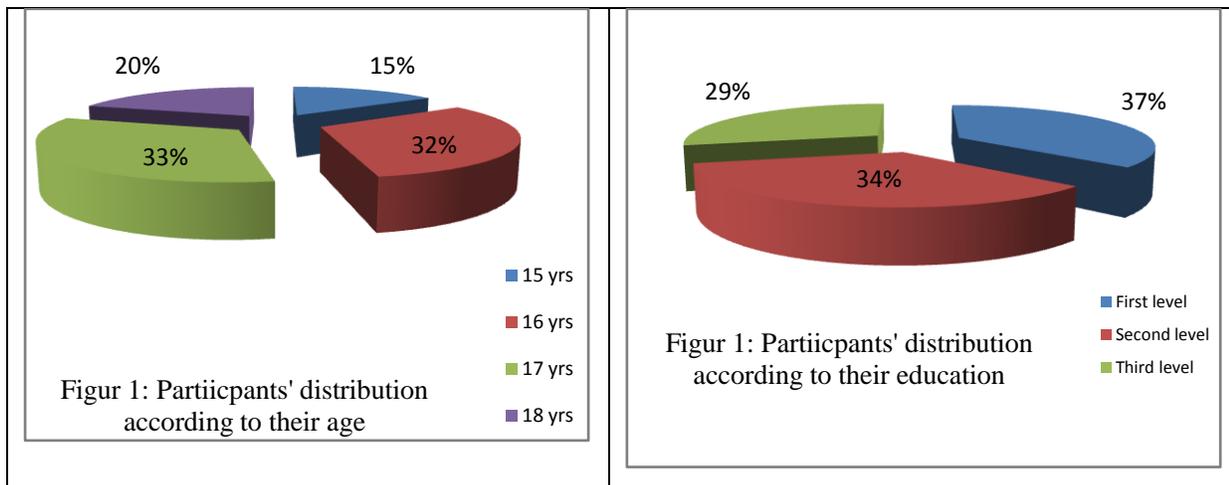
Have gone on eating binges where I feel that I may not be able to stop” while the lowest mean ( $.0941 \pm .43501$ ) was for “I Enjoy trying new rich foods” .

The mean score of oral control subscale items was presented in table 3. It found that the highest mean ( $1.718 \pm 1.2461$ ) was for “Other people think that I am too thin” While the lowest mean ( $.2306 \pm .5936$ ) was for “I Avoid eating when I am hungry”

Table (5) presents the participants’ total score of EAT-26. It was found that 32.9% get score of 20 and above while 67.1% get score lower than 20 with total mean score of  $17.98 \pm 9.29$ . The relationship between BMI and mean score of EAT-26 was presented in table 6. It shows that there is a positive significant relationship between Body Mass Index and EAT-26 score. Furthermore, there is a negative significant relationship between participants’ mean age and their mean score of EAT-26 scale and subscales of dieting and oral control as presented in table 7.

**Table (1) participants' distribution according to their demographic characteristics**

	<b>N= 425</b>
<b>Age : Min-Max</b>	15-18
<b>Mean±SD</b>	16.5741±.97844
<b>Weight: Min-Max</b>	32.60-108.3
<b>Mean±SD</b>	52.37±11.1835
<b>Height: Min-Max</b>	1.39-1.72
<b>Mean±SD</b>	1.553±.0535
<b>BMI: Min-Max</b>	13.75-40.76
<b>Mean±SD</b>	21.6821±4.26108



**Table (2) Participants' distribution according to dieting scale items**

<b>Dieting scale items</b>	<b>Mean±SD</b>
I am terrified about being overweight.	1.505±1.2759
I aware of the calorie content of foods that I eat.	.2824±.7862
I particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	.2294±.6403
I feel extremely guilty after eating.	.5388±.9995
I am occupied with a desire to be thinner.	1.2306±1.3294
I think about burning up calories when I exercise.	1.4753±1.3139
I am preoccupied with the thought of having fat on my body.	.6659±1.0646
I avoid foods with sugar in them.	.2494±.6860
I eat diet foods.	.3035±.7167
I feel uncomfortable after eating sweets.	.4894±.9294
I engage in dieting behavior.	.8071±1.1182
I like my stomach to be empty.	.5388±.9948
I have the impulse to vomit after meals.	1.0635±1.1088
<b>Total mean</b>	<b>9.3823 ± 7.045</b>

**Table (3) Participants' distribution according to Bulimia & food preoccupation scale items**

<b>Bulimia &amp; food preoccupation scale items</b>	<b>Mean±SD</b>
I find myself preoccupied with food.	.5600±.94759
I have gone on eating binges where I feel that I may not be able to stop.	.7647±1.0777
I vomit after I have eaten.	.0847±.4032
I feel that food controls my life.	.5247±.98334
I give too much time and thought to food.	.4024±.82445
I enjoy trying new rich foods.	.0941±.43501
<b>Total mean</b>	<b>2.4304±3.0738</b>

**Table (4) Participants' distribution according to oral control subscale items**

<b>Oral control subscale items</b>	<b>Mean±SD</b>
I avoid eating when I am hungry.	.2306±.5936
I cut my food into small pieces.	.8800±1.1252
I feel that others would prefer if I ate more.	.9412±1.2733
Other people think that I am too thin.	1.718±1.2461
I take longer than others to eat my meals.	.7435±1.0805
I display self-control around food.	1.1647±1.4766
I feel that others pressure me to eat.	1.0353±1.16804
<b>Total mean</b>	<b>6.1671±4.3424</b>

**Table (5) Participants' total score of EAT-26**

<b>Participants' total score</b>	<b>N=425</b>	<b>%</b>
<b>Total score of 20 and above</b>	140	32.9%
<b>Total score of less than 20</b>	285	67.1%
<b>Total mean score of EAT -26</b>		
<b>Mean <math>\pm</math> SD</b>	17.98 $\pm$ 9.29	

**Tables (6) Relationship between BMI and mean EAT-26**

<b>Mean EAT-26</b>	<b>t-test</b>	<b>P value</b>
<b>Dieting subscale</b>	-19.598	< 0.0001
<b>Bulimia &amp; food preoccupation subscale</b>	.917	.360
<b>Oral control subscale</b>	-16.733	< 0.0001
<b>Total Scale</b>	-3.095	0.002

**Tables (7) Relationship between age and mean EAT-26**

<b>Mean EAT-26</b>	<b>t-test</b>	<b>P value</b>
<b>Dieting subscale</b>	37.948	< 0.0001
<b>Bulimia &amp; food preoccupation subscale</b>	77.104	<0.0001
<b>Oral control subscale</b>	44.409	<0.0001
<b>Total Scale</b>	7.826	<0.0001

**Discussion:**

Adolescence is a period of rapid growth in which the metabolic rate and the need for nutrients are increase (Stanfield, P. &Hui, YH. 2009). In this period, the adolescents make their food choices and their dietary attitude get affected by peer pressure (Dudek, 2010). Female adolescents especially are highly conscious about their weight that make them at risk for developing eating disorders (Wong et al., 2014). They have the desire to be thin and in order to be socially acceptable, they will resort to meal skipping which may lead to minerals deficiency, hair and skin problems and eventually eating disorders (Stanfield, P &Hui, 2009). So, the current study assesses the eating disorders among female adolescents.

Four hundred and twenty five female adolescents participated in the current study. It was found that 32.9% of participants scored above the cut off 20 and this indicated that they have a risk for eating disorders. This prevalence is higher than the prevalence of eating disorders in other countries using the same eating attitude test 26 (EAT 26). The result of study done in United Arab Emirates by Thomas,J., et al (2010) showed that 24.6% of respondents scored above the cut off 20. In addition, another study using the same scale (EAT-26) done by Jalali-Farahani,S., et al (2014) demonstrated that the prevalence of eating disorders in female adolescents was 26.4% and the sample age range was between 14-17 years old male and female adolescents. Furthermore, the result of study done in seven Arab countries which are Algeria, Jordan, Kuwait, Libya, Palestine, Syria and Sharijah, using EAT-2 by Musaiger,A., et al.(2013) showed that the prevalence of eating disorders was ranged from 16.2% to 42.7% in female adolescents aged form 15 to 18 years old. The study showed that the female Kuwaiti adolescents have a significantly high prevalence for eating disorders more than their peers in the other six countries.

The results of the current study revealed that the highest mean ( $1.505 \pm 1.2759$ ) was for the item "I am terrified about being overweight" which is under dieting subscale. This indicates that female adolescents are highly conscious about their body weight. There are several reasons to justify why dieting concerns among female was the highest. Also, media shows the ideal body of female models "the thinner the prettier" and the pressure to be accepted socially especially among peer group. This is supported by a study in South Africa that adolescents become conscious about their bodies and may perceive their weight in a negative way (Gitau et al., 2014). Another study had suggested that female adolescents are sensitive about their body size and may face a social pressure and associated body dissatisfaction with risk for eating disorders (Wong et al., 2014). The findings of another study by Tsai et. al. (2011) showed that there is association between adolescents being teased and disturbed eating behaviors.

In bulimia & food preoccupation subscale items, the current study revealed that the highest mean ( $.7647 \pm 1.0777$ ) was for "I Have gone on eating binges where I feel that I may not be able to stop". This could be contributed to the attractive advertisement of food during the female adolescents favorite television show. In addition to food flavors in restaurants that hard to be obtained in the house which results into visiting the restaurant multiple times. Also, the psychological condition of adolescents can have an impact on their eating attitudes. This supported by a study revealed that disordered eating behavior was higher among female adolescents with depressive symptoms (Fortes et al., 2014).

It was found that the highest mean ( $1.718 \pm 1.2461$ ) was for "other people think that I am too thin" under oral control subscale items. The findings suggest that female adolescents are under social pressure especially that they are maturing

and nearing from marriage age. Parents especially will pressure their adolescent daughter to eat and comment about her body weight and shape. Also, societal pressure especially by the older generation who has an idea that the girl with thin body will not get married and the chubbier the girl the more beautiful the girl is.

There is a positive significant relationship between Body Mass Index and the mean of EAT-26 total scale and the three subscales. Similarly, high BMI of female adolescents was associated with risk for eating disorders in Brazil (Fortes et al., 2014). Another study, revealed that there is an association between obesity and eating disorders among adolescents (Musaiger et al., 2013) & (Tsai et al., 2011). The findings of previous studies had associated overweight with risk for eating disorders (Wong et al., 2014 & Tam et al., 2007).

The current study found a significant negative relationship between the mean participants' age and the mean of dieting subscale and oral control subscale. It means the younger participants are more at risk for eating disorders. On the other hand, Tam et al., (2007) found that eating disorders and age had no significant relationship and Wong et al., (2014) reported that age was not a causing factor for abnormal eating behaviors.

### **Conclusion / Recommendations:**

In conclusion, the current study highlights the importance of eating disorders screening among adolescents to identify who have disturbed eating attitude and at risk for eating disorders. Further studies are needed either to modify the current instrument or to develop a new culture specific instrument. Development of a community based preventive measures to help adolescent to have health eating attitude and habits is recommended.

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