

Assessment of eating disorders among early adolescents (10 – 15 years)

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Abstract

Introduction: Eating disorders are complex illnesses that affect people of all ages; the onset of eating disorders typically occurs during pre-adolescence or adolescence. **Aim of the study:** to assess eating disorders among early adolescents (10- 15years). **Subjects and method: Design:** Cross sectional descriptive design was utilized in this study. **Setting:** The study was conducted at all primary and preparatory schools in Dairout city, then selected randomly 10% from the total number of students in each preparatory schools as well as fifth and sixth grade of primary schools. **Sample:** The total number of sample are 843 students were included in this study. **Tools:** Two tools were used for this study. Eating habits questionnaire to assess adolescents eating habits and Body Mass Index (BMI) scale to assess body-weight and healthy body image. **Results:** findings in this study, cleared that more than half (53.0%) of the studied sample had eating disorders, 54.1% of them had anorexia and 45.9% of them had bulimia. **Conclusion:** Eating disorders have high prevalence among early adolescents, that characterized by a disturbance in eating habits and behavior. **Recommendation:** education program for preadolescents about eating disorders to increase their awareness.

Keywords: *Assessment, Eating Disorders & Early Adolescent.*

Introduction

The period of adolescence is one of intense change which can bring with it a great deal of stress, confusion and anxiety for many. The physical transformation that takes place during this time is enormous and often intertwined with feelings of self-consciousness, low self esteem and comparison with peers. (Rosen, 2014)

Adolescence is a time where many big changes take place in a seemingly short period of time whereby a person may feel tremendous pressure to find their place in the world despite a great deal of confusion, and a sense of feeling ill-equipped or welcome to the plethora of changes around them (Pearson, et al., 2010)

Although eating disorders are usually a result of a number of personal, environmental, psychological, biological and social factors, it seems that adolescents are the most at-risk group of people in developing an eating disorder, and this is due to a number of factors. (Melbye & Hansen, H, 2015).

Eating disorders describe illnesses that are characterized by irregular eating habits and severe distress or concern about body weight or shape. Eating disturbances may include inadequate or excessive food intake which can ultimately damage an individual's well-being (Abebe, et al., 2012).

The two most prominent eating disorders, anorexia nervosa and bulimia nervosa, have been identified in all age groups and both sexes, although 90% of cases are females and are most prevalent among adolescents (Tholking, et al., 2011)

The greatest risk factors for eating disorders include a disturbance in body image over-controlled or under-controlled eating, and lastly, taking extreme measures in order to control one's weight or shape. (Baker, et al., 2012)

Eating disorders result from a complicated interaction of biological, psychological, and social factors. There is no clear cause of eating disorders, but they can be a result of many things (Onozaka, et al., 2014)

Eating disorders can have lifelong effects on person health. They have long and short term effects. Examples of short term effects are malnutrition, dehydration, electrolyte imbalances, edema, dry hair and skin, bruising or swelling and hyperactivity. These are only a few of many short term effects of this life threatening disorder. Long term effects include hypotension or hypertension, thrombocytopenia, diabetes, osteoporosis, kidney or liver infection and failure, amenorrhea, slowed heart rate, paralysis, and eventually death. (combs, et al., 2013).

Therefore, prevention should not directly be associated with eating disorders, but with having a healthy lifestyle and accepting all people no matter what size they are. Since eating disorders usually develop in adolescents and children, schools can help prevent eating disorders. (Allen, et al., 2012)

Teachers and school councilors should have a general knowledge on eating disorders. Schools can also help with prevention of eating disorders by holding after school support groups. These support groups should encourage healthy lifestyle and eating habits, but not

dieting. These groups should also empower adolescents to feel good about their bodies no matter what size they are and also give adolescents a place where they can talk about the pressures to be thin that comes from peers and the media. (Duluth,2010)

It is essential to nurses to observe students' nutritional status as eating disorders can be life threatening. It is also important to ensure they maintain adequate nutrition and electrolyte balance. If an eating disorder has been identified, the nurse must monitor weight on a regular basis. (Cano et al., 2012).

This can be achieved by encouraging the supervision of patients during and after mealtimes in order to prevent vomiting after eating. Setting time limits for each meal will help to set realistic expectations and encourage a relaxed atmosphere at mealtimes that will, in turn, help to reduce stress and anxiety. (Hart et al., 2011)

Significance of the study

Nearly one in four (22 %) Egyptians is an adolescent (ages 10–19) and young adults as a whole (ages 10–24) make up about one-third of the population just over 20 million persons. According to study is applied on Egyptian schools; about 45.2% from students have eating disorders.(Taha&Marawan,2015). This is the first study in this geographical location which will be identifying eating disorders among early adolescents.

Aim of the study

The aim of this study was to assess eating disorders among early adolescents (10- 15years).

Research Question

The following research question was determined:

- What are eating disorders among early adolescents?
- What are adolescents' eating habits?
- Does the early adolescents aware about eating disorders?

Subjects & Method

Research design:

Cross sectional descriptive design was being utilized in this study.

Setting:

The study was conducted at all primary and preparatory schools in Dairout city at Assiut government, which selected by random sample.

Sample

The study subject included a convenient sample of primary and preparatory schools. The number of preparatory schools at Dairout city are 10, and primary schools are 15, then selected randomly 10% from the total number of students in each preparatory

schools as well as fifth and sixth grade of primary schools. The total number of sample are 843 students.

Tools of the study

Tools were used for collecting data of study, it was developed by researchers to collect the required data that included two parts.

Tool (1): Self-administered questionnaire: its divided into (2) parts:

Part (1): It included questions regarding personal data such as (name, sex, age,...etc), as well as questions to assess adolescent's knowledge about eating disorders such as definition, types ,and complications,...etc.

Part (2):Eating habits questionnaire: it designed to measure the student's eating habits .This questions was developed by (Gunes,et al.,2012),(Doyle, 2011), (Hardman& Richards, 2001), modified and translated to Arabic language by the researchers. Eating habits questionnaire: It is a likert like scale with four options that representing how often participants practiced eating habits with four options; (4=Often- 3=Sometimes- 2=Rarely- 1=Never). It consisted of two parts:

Part I: criteria of bulimia, Included 15 item of unhealthy eating habits that scored from 60. Scores of the studied participants are classified as the following:

- Scores ranged from 15 to 30 indicated neutral eating habits (means that eating habits are healthy).
- Scores ranged from 31 to 60 indicated bulimia.

Part II: criteria of anorexia, Included 23 item of unhealthy eating habits that scored from 92. Scores of the studied participants are classified as the following:

- Scores ranged from 23 to 46 indicated neutral eating habits (means that eating habits are healthy).
- Scores ranged from 47 to 92 indicated anorexia.

The total scores of eating habits questionnaire are 152 scores. Scores of the study participants are classified as the following:

- Scores ranged from 152 to 77 indicated unhealthy eating habits.
- Scores ranged from 76 to 38 indicated neutral eating habits (means that eating habits are healthy).

Tool (2): Body Mass Index (BMI) scale: It was used to assess body-weight and healthy body image. Body mass index (BMI) calculated according to (WHO, 2017), as ratio between weight in kilograms and height in meters squared and results recorded as (kg/m²). Participants categorized according to their Body Mass Index as the following:

Under weight: BMI is lower than 18.5 kg/m²

Normal weight: BMI ranged from 18.5 to 24.9 kg/m²

Over weight: BMI ranged from 25 to 29.9 kg/m²

Obese : BMI is more than 30 kg/m²

Reliability

Internal consistency for tool I (part two) were calculated using Cronbach's Alpha coefficient test and proved to be reliable ($\alpha = (0.7)$).

Validity

The tools were reviewed by jury (5 nursing experts) after translation from English to Arabic version to test validity of it.

Pilot study

Pilot study was done on 10% of students(84 students) to evaluate the clarity and understanding of the tools. It also helped in the estimation of the time needed to fill the form. The student who was tested in the pilot study was included in the main study sample.

Administrative design:

A written permission will be obtained from Dean of the Faculty of Nursing, Assuit University to the Ministry of Education; this letter will include a brief explanation of the objective of the study and permission to carry out the study.

Fieldwork

- Before conducted the study an official permission was obtained from the Dean of the faculty of nursing to proceed with study.
- The researcher introduced herself to the student and briefly explained the nature of the study.
- Formal consent was obtained from student orally before being involved in the study after explanation of the nature and purpose of the study and there are no risks or cost in participation, and there are voluntary participation and confidentiality of each subject who agrees to participate and to fill the questionnaire.
- Data collected by the researcher through self-administrating questionnaire to the students in classroom (each academic year alone).
- The filling of questionnaire took 10-15 minutes.
- The researcher collected the sample through three days, per week.
- The data collection took about four months (April, May, September and October 2016).

Ethical considerations

- Research proposal was being approved from ethical committee in the Faculty of Nursing, Assiut University.
- There is no risk for study subjects during application of the research.
- The study was following common ethical principles in clinical research.

- Written consent will be obtained from adolescents that are willing to participate in the study after explaining the nature and purpose of the study.
- Confidentiality and anonymity was being assured.
- Study subjects have the right to refuse to participate or withdraw from the study without any rational at any time.
- Study subjects privacy was being considered during collection of the data.

Statistical analysis

Data were analyzed using the statistical package for social science (SPSS) version 11.5 (Windows Microsoft). Continuous data were expressed as percentage; mean and SD. discrete data were expressed as percentage. Comparison between variables was done using chi-square test. Probability (p-value) less than 0.05 was considered significant.

Results

Table (1): Distribution of studied adolescents according to their personal data. (n = 843).

Items	No.	%
Age		
Range	11 – 15	47.9
Age group		
11-13 years	452	53.6
13-15 years	391	46.4
Mean \pm SD	13.3 \pm 1.4	
Sex		
Male	404	47.9
Female	439	52.1
Grade		
primary (fifth grade)	123	14.6
primary (sixth grade)	135	16.0
Preparatory (first grade)	193	22.9
Preparatory (second grade)	186	22.1
Preparatory (third grade)	206	24.4
Birth order		
First	251	29.7
Second	166	19.7
Third	175	20.8
Fourth	102	12.1
Fifth	94	11.2
more than fifth	55	6.5

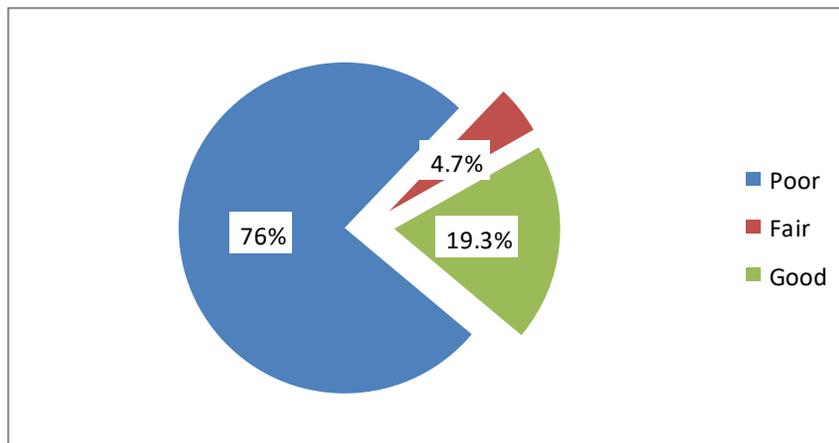


Fig (1): Total score of knowledge among studied adolescents about eating disorders.

Table(2): Distribution of eating disorders among studied adolescents (n=843).

Items	No.	%
Normal eating habits	396	47.0
Eating disorders	447	53.0
Types of eating disorders n= 447		
Bulimia	205	45.9
Anorexia	242	54.1

Table (3): Distribution of Body mass index among studied adolescents (n= 843).

Body mass index	NO.	%
Underweight	312	37.0
Normal	449	53.2
Overweight	52	6.2
Obese	30	3.6

Table (4): Relation between total score of knowledge among studied adolescents and their personal data (n = 843).

Items	Knowledge level						X ²	P. value
	Poor (n=641)		Fair (n=40)		Good (n=162)			
	No.	%	No.	%	No.	%		
Age								
Mean±SD	13±1.4		14.4±0.7		14.1±0.9		F= 66.889	0.000**
Range	11 -15		13 – 15		13 – 15			
Sex								
Male	275	42.9	22	55	107	66	28.606	0.000**
Female	366	57.1	18	45	55	34		
Grade								
Primary (fifth grade)	123	19.2	0	0	0	0	163.187	0.000**
Primary (sixth grade)	135	21.1	0	0	0	0		
Preparatory (first grade)	132	20.6	4	10	57	35.2		
Preparatory (second grade)	140	21.8	18	45	28	17.3		
Preparatory (third grade)	111	17.3	18	45	77	47.5		
Birth order								
Premier	177	27.6	9	22.5	65	40.1	47.514	0.000**
Second	108	16.8	6	15	52	32.1		
Third	149	23.2	8	20	18	11.1		
Fourth	86	13.4	5	12.5	11	6.8		
Fifth	75	11.7	7	17.5	12	7.4		
More than fifth	46	7.2	5	12.5	4	2.5		
practice sport								
Yes	236	36.8	27	67.5	104	64.2	49.248	0.000**
No	405	63.2	13	32.5	58	35.8		

** Mean there is statistically significant difference

Table (5):Relation between types of eating disorders among studied adolescents and their personal data. (n = 843).

Items	Eating disorders						X ²	P. value
	Bulimia (n=205)		Anorexia (n=242)		Normal (n=396)			
	No.	%	No.	%	No.	%		
Age								
Mean±SD	13.9±1.1		13.6±1.4		12.7±1.3		F=75.419	0.000**
Range	11-15		11 – 15		11 – 15			
Sex								
Male	119	58	118	48.8	167	42.2	13.739	0.001**
Female	86	42	124	51.2	229	57.8		
Grade								
Primary (fifth grade)	13	6.3	26	10.7	84	21.2	190.253	0.000**
Primary (sixth grade)	8	3.9	19	7.9	108	27.3		
Preparatory (first grade)	33	16.1	72	29.8	88	22.2		
Preparatory (second grade)	78	38	32	13.2	76	19.2		
Preparatory (third grade)	73	35.6	93	38.4	40	10.1		
Birth order								
Premier	42	20.5	77	31.8	132	33.3	26.346	0.003**
Second	41	20	55	22.7	70	17.7		
Third	39	19	54	22.3	82	20.7		
Fourth	35	17.1	20	8.3	47	11.9		
Fifth	31	15.1	27	11.2	36	9.1		
More than fifth	17	8.3	9	3.7	29	7.3		
practice sport								
Yes	107	52.2	116	47.9	144	36.4	16.444	0.000**
No	98	47.8	126	52.1	252	63.6		

** Mean there is statistically significant difference

Table 6: Relation between eating disorders among studied adolescents and their body mass index. (n = 843).

Body mass index.	Eating disorders						X ²	P. value
	Bulimia(n=205)		Anorexia(n=242)		Normal(n=396)			
	No.	%	No.	%	No.	%		
Underweight	30	14.6	89	36.8	193	48.7	199.86	<0.001**
Normal	108	52.7	142	58.7	199	50.3		
Over weight	44	21.5	5	2.1	3	0.8		
Obese	23	11.2	6	2.5	1	0.3		

**Mean there is statistically significant difference

Table (1): Illustrates distribution of studied sample according to their personal data. It was noticed that; more than half of the studied adolescents were female (52.1%). Also it shows that **29.7%** of them were being first birth order.

Figure (1): Shows that more than three quarters of studied sample (76.0%) had poor score of knowledge as regarding eating disorder. While less than one fifth of them (19.3%) had good score of knowledge as regarding eating disorders.

Table(2): Explains the types of eating disorders among studied adolescents .It was observed that more than half (53.0%) of the studied sample were had eating disorders, 54.1% of them had anorexia and 45.9% of them had bulimia.

Table (3): Demonstrates the body mass index among studied adolescents. It was observed that more than half of adolescents (53.2%) were normal weight. While more than one third of them(37.0) were underweight; and the minority of them(3.6%) were obese.

Table (4): Illustrates that there is statistical significant relation between total score of knowledge among studied adolescents and their personal data ($P=0.000$). The poor knowledge score being more frequently among females 57.1%; while good knowledge score being more frequently among males 66%. Also there are 63.2% of studied pupils who had poor knowledge score were not practicing sport, but 64.2% of studied pupils who had good knowledge score were practicing sport.

Table (5): Clears that there is statistical significant difference between types of eating disorders and adolescents' socio- demographic characteristics. There are 58.0% of studied adolescents who had bulimia were males. While 51.2% of adolescents who had anorexia were females. Also 38.0% of adolescents who had bulimia were in second grade of preparatory school, although 38.4% of adolescents who had anorexia were in third grade of preparatory school. In addition to this table shows that 52.2% of studied pupils who had bulimia were practicing sport.

Table (6): Presents that, there is statistical significant difference between eating disorders and BMI of the studied adolescents ($P<0.001$). There are 14.6% of adolescents who had bulimia were underweight, but 11.2% of them were being obese. While 58.7% of adolescents who had anorexia were being normal body weight, and 2.5% of them were being obese. Also 50.3% of adolescents who had normal eating habits were being normal body weight.

Discussion

The present study aimed to assess eating disorders among early adolescents. Eating disorders describe

illnesses that are characterized by irregular eating habits and severe distress or concern about body weight or shape.

the present study Illustrated that more than half of the studied adolescents were females. This result agree with **Nur Syuhada Zofiran (2011)**, who conducted study about " Relation between eating habits and a high Body Mass Index among Freshman Students ", who found that more than half of the study subjects were female students. As well as **El Sayed, et al., (2015)**, in their study about " Influence of dietary habits of University Students on Body Mass Index, found that more than half of the study participants were female students.

As regarding adolescents' knowledge about eating disorders the present study demonstrate that more than three quarters of studied sample had poor score of knowledge as regarding eating disorder. While less than one fifth of them had good score of knowledge as regarding eating disorders. These results agreed with **Torres-McGhee, et.,al (2011)**, who studied about Knowledge of Eating Disorders Among Collegiate Administrators, and found that more than half of participates had poor score of knowledge as regarding eating disorder.

While this results disagree with **Marcia & Winer, (2014)** who conducted study in knowledge and attitudes towards eating disorders of undergraduates nutrition majors at three Colorado Universities, Department of Food Science and Human Nutrition, who stated that students from the three schools have similar knowledge and attitudes, they scored higher for knowledge of eating disorders and their types (anorexia nervosa and bulimia nervosa).

As regard distribution of eating disorders among studied adolescents the present study observed that more than half of the studied sample were had eating disorders, more than half of them had anorexia and less than half of them had bulimia. This result in the same line with **Pearson& Carolyn, (2014)**, who found in their study about eating disorders onset in young girls, there more than half of participates suffered from eating disorders. This might be attributed to the high level of concern about body shape that is reinforced by ideas about perfectionism that considered thin-ideal body as a standard of feminine beauty. In recent studies in Egypt revealed that less than two thirds (65.0%) of the patients attending the weight management centers in Tanta were complaining of eating disorders **Eladawi, (2017)**.

On other hand, In Egypt, **Fawzi, et al., (2010)** detected that 11.2% of secondary schoolgirls in Sharkia Governorate had eating disorders. Also a previous study of 432 Jordanian schoolgirls found

that one-third of the participants had eating disorders. (Mousa, et al., 2010).

Regarding body mass index among studied adolescents the present study cleared that more than half of adolescents had normal weight. While more than one third of them had underweight; and the minority of them had obese. These results agree with **Mahmoud, (2018)**, who conducted study about the association between eating habits and body mass index among nursing students in Benha university, who stated that, the majority of students were in normal weight category, while about one fourth of them were in overweight category and the remnant were in underweight and obese categories. These results going in line with the similar studies; **Ayranci, et al., (2010)** & **Al-Muammar, et al., (2014)**, represented that, about half the students were within normal weight, while more than one fourth of them were underweight.

As well, **Benazeera, (2014)**, explored that more than half of the students were of normal weight; more than one-fourth were underweight; and few percentage of them were overweight/obese students. This is consistent with **Hemati, et al., (2014)**, who stated that, the overall prevalence of normal weight represents the majority of the students, and two fifth of them were overweight and underweight while fewer percentage of them was obese. On the other hand, these findings are disagree with **Waweru, et al.,(2016)**, who demonstrated that, almost of students had normal weight but there is a reasonably high occurrence of overweight among the students.

Regarding Relation between total score of knowledge about eating disorders among studied adolescents and their personal data, this study found the poor knowledge score being more frequently among females, while good knowledge score being more frequently among males, this results contradicted with **Marcia & Winer (2014)** who found in females were more likely to correctly identify of eating disorders than males.

Based on Relation between types of eating disorders and adolescents' personal data. The present study cleared that there is statistical significant difference between types of eating disorders and adolescents' personal data. There are more than half of studied adolescents who had bulimia were males. While slightly more than half of studied adolescents who had anorexia were females. These results agreed with **Francoise, (2010)** who conducted study in early attachment and eating disorders: A comparative study between anorexia nervosa and bulimia nervosa, found that the two main eating disorder categories were anorexia nervosa and bulimia nervosa. Twenty-six participants (41.9%) were currently suffering from bulimia nervosa and 36

females(58.1%) from anorexia nervosa. The results of the current study revealed that more than one third of adolescents who had bulimia were in second grade of preparatory school, although more than one third of adolescents who had anorexia were in third grade of preparatory school. This means that eating disorders either anorexia or bulimia were high incidence in second and third grade of preparatory school, these result may associated with rapidly body growth and development in this stage as physically maturation and sexually developing as well as age of menarche in females. These results similar to **Swanson, et al., (2011)** who estimated that high incidence of eating disorders between the ages of 12 to 15 years.

In addition this study shows that more than half of studied adolescents who had bulimia were practicing sport. This result agree with **Ackerman & Nazem, (2012)** who found in their studies that there are most significant traits between sports practice eating disorders, and reported that Adolescents who participate in high level competitive sports which involve intense training are particularly at risk and more than half of them had eating disorders. These result may attributed to most of adolescents were striving for an ideal body shape often driven by a desire for positive perceptions by others.

Regarding Relation between eating disorders among studied adolescents and their body mass index. The present study revealed that, there is statistical significant between eating disorders and BMI of studied adolescents ($P < 0.001$). These finding similar to **Wong, (2014)**; who conducted study about body satisfaction, emotional intelligence, and the development of disturbed eating: a survey of Taiwanese students, and also found significant differences between eating disorders and body mass index among participated students ($p < 0.001$). Also there are less than one fifth of adolescents who had bulimia were underweight, but 11.2% of them were being obese. While more than half of adolescents who had anorexia were being normal body weight, and minority of them were being obese. Also half of adolescents who had normal eating habits were being normal body weight. These results contradicted with **Wong, (2014)**; who stated that , the proportion of obese and overweight students with abnormal eating attitudes (21.4%) was higher than of those among underweight and normal weight adolescents (13.5%). In addition, this results disagreed with **Eladawi, (2017)**, who found in their studies more than half of the obese individuals suffered from eating disorders.

Conclusion

Based on the results of the current study, it stated that there are more than half of studied adolescents are suffering from eating disorders, that characterized by a disturbance in eating habits and behavior. As well as this study confirmed that most widely recognized eating disorders of adolescence and young childhood are anorexia nervosa and bulimia nervosa. This study revealed the lack of knowledge about eating disorders among adolescents may considering the main factor for developing eating disorders among them.

Recommendations

Based on the results of the current study, it recommended that:

- Education program about eating disorders for preadolescents and adolescents to increase their awareness and encourage health eating habits.
- Education program about eating disorders for school nurses to recognize conditions of eating disorders among students.
- Health information about eating disorders should be introduced into the curriculum of the primary and preparatory schools to highlight some aspect of eating disorders as symptoms, warning signs and prevention.
- Moreover further studies can be carried out to explore factors affecting eating disorders and the relation between eating disorders and academic achievement among students.

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