

*Original Article*

Prevalence Of At Risk Of Developing an Eating Disorder Disease Among Nursing Students and Their Knowledge of Anorexia Nervosa at Faculty of Nursing Science –Khartoum University, Sudan -2021

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**Abstract**

**Background:** Eating disorders are characterized by severe disturbances in eating behavior that affect physical, psychological, and social functions including anorexia nervosa, bulimia nervosa, binge-eating disorder, and avoidant/restrictive food intake disorder. Anorexia nervosa was characterized by self-starvation and weight loss resulting in low weight for height and age.

**Objective:** This study aimed to determine the prevalence of at risk of developing eating disorders among female nursing students and to assess their knowledge regarding anorexia nervosa.

**Methods** descriptive cross-sectional institutional-based study was conducted at Faculty of nursing science - Khartoum University. A total of 208 females aged 18-26 years old was selected by systematic random sampling. Data was collected using a modified self-administered questionnaire which contain 5 parts (Socio-demographic data, diet habit, eating attitude test -26, level of knowledge of student toward anorexia nervosa and behavior), and measuring of height and weighting of participants.

**Results:** The study sample was 220 with a responding rate 94.5%(208). more than one quarter of the participants were in the normal range of body weight 57(27.40%), participants overweight 25(12.01%) and 126(60.5%) were underweight, 18(8.7%) of the

participants height were 160 cm, most of participants economic status were moderate 187(89.9%). Almost half of participant families have a size of more than 6 people 110(52.9%). More than one-third 77(37.02%) of them were in the third class, and more than half had good knowledge about anorexia nervosa 117(56.3%). Most of them agree that anorexia nervosa harmful and has a negative impact on health 201(96.60%), can cause severe weight gain 203(97.60%), anemia 203(93.30%), menstrual period problem 193(92.80%). Surrounding people can be one of the causes of anorexia nervosa 187(89.90%). Participants at risk to develop eating disorders 145(69.7%). Vegetarian participant 8(3.85%), half of them 4(50%) of them at risk to develop eating disorders. High proportion of participants 192(92.30%) don't follow specific diet habit, don't have any fasting or purging behavior 165(92.30%), don't use any diet pills to reduce their weight 206(99.00%), don't use any diet pills to increase their weight 196(94.20%). Participants use diet pills to increase the weight 12(5.8%) higher than decrease weight 2(1.0%). Responses of participants to Eating Attitude Test, the highest proportion of participants was never terrified about being overweight, 80(38.5%), never avoid eating when hungry 115(55.3%), never preoccupied with food 62(29.8%), and usually display self-control around food 164(78.8). Behavior of participants high proportion disagree with eating much more than most people would eat under the same circumstances 202(97.1%), ever use laxatives, diet pills or diuretics to control their weight or shape 203(97.6%), ever made them self-sick to control their weight or shape 189(90.9%), ever been treated for an eating disorder 188(90.4%). **Conclusion:** The study concludes that total prevalence of participants who are at risk of developing an eating disorder 145(69.71%). by score 59(28.37%), BMI 44(21.15%), and behavior 42(20.19%) respectively. And more than half of them had good knowledge about anorexia nervosa 117(56.3%).

**Keywords:** eating disorder, anorexia nervosa, body mass index, nursing students



## Introduction

Eating disorders are behavioral conditions characterized by disturbance in eating behaviors affecting physical, psychological, and social function <sup>(1)</sup>. Globally, eating disorders affect 2% to 5% of individuals during their lifetime and more common in females than males <sup>(2)</sup>. Eating disorders are characterized by "a persistent disturbance of eating or eating related behavior that results in the altered consumption or absorption of food and that significantly impairs physical health or psychosocial functioning" Three disorders are described in the Diagnostic and Statistical Manual of Mental Disorders–5 (DSM-5): anorexia nervosa, bulimia nervosa, and binge-eating disorder. Bulimia nervosa defined as an eating disorder (commonly called "the binge-and-purge syndrome") characterized by extreme overeating, followed by self - induced vomiting and abuse of laxatives and diuretic <sup>[1]</sup> According to the DSM5 criteria, binge

eating disorder (BED) involves repeated episodes of excessive food consumption or indulging in large quantities for an extended duration.<sup>[1]</sup> Individuals with BED often feel unable to control their consumption, eat rapidly resulting in excessive food intake in a relatively short period of time despite a lack of hunger which often results in discomfort. Individuals with BED also experience shame and guilt after a binge-eating episode, which can lead to further binge-eating episodes as a coping mechanism<sup>(3,4)</sup>.

Avoidant/restrictive food intake Disorder (ARFID) is a new diagnosis in the DSM-5, and represents a formulation of what used to be called "feeding disorder of infancy or early childhood" Individuals with ARFID limit the volume and variety of foods they consume, but unlike the other eating disorders, food avoidance or restriction is not related to fears of fatness or distress about body shape, size or weight.

Anorexia nervosa is a clinical syndrome in which the person has a morbid fear of obesity. It is characterized by the individual's gross distortion of body image, preoccupation with food, and refusal to eat. The disorder occurs predominantly in females 12 to 30 years of age. Without intervention, death from starvation can occur (1).

In Italy, only 22.8% correctly knew both the definition of anorexia and bulimia nervosa (6). study done in US college students the prevalence of ED risk increased significantly from 15% to 28% (7). Eating disorders lead to multiple psychiatric and somatic complications so, it constitutes major public health concern, most of recent studies confirm that eating disorders are highly prevalent worldwide, especially in women (8). The prevalence of eating disorders increased over the study period from 3.5% for the 2000-2006 period to 7.8% for the 2013-2018 period, which makes it a real challenge for

healthcare providers and public health (8). By mid-life, a significant proportion of women will experience an eating disorder, and few women accesses health care. Active eating disorders are common in mid-life due to new onset and chronic disorders, so it is important to increase awareness of eating disorder and provide adequate service provision in this stage of life (9). With industrialization and globalization, many regions reported increasing incidence rate of eating disorder (10). Reported show that COVID 19 pandemic worsen symptoms in patients previously diagnosed with eating disorder through factors including life style changes, mood changes and lack of social support, and in study done to investigate the effect of pandemic on the Prevalence of eating disorder in Japan suggest that the pandemic may increase the prevalence of eating disorders (11). Recent reports suggest that 14% of university students in Malaysia are at risk for developing an eating disorder (12).

Sharjah, UAE study indicated that eating disorder (ED) and body shape concerns are highly prevalent among the university student sample, and highlight the strong influence that both the media and families exert on the development of ED among young adults<sup>(13)</sup>.

In Egypt, where the study is conducted into the University of Tanta found that the risk to developing an eating disorder is 33%<sup>(14)</sup>. Also, study done in one of the universities in Saudi Arabia shows relatively high rate of abnormal eating attitude in the faculty of medical<sup>(15)</sup>. According to study done at University of Khartoum faculty of Dentistry, Pharmacy and Medicine 37(12.4%) were at risk to develop eating disorder, and the percentage of medical students victimized by eating disorder was found to be relatively high<sup>(15)</sup>.

**Justification: -**

We have noticed the spread of some wrong eating behaviors, especially those related to

weight loss, where girls tend to follow harmful methods to reach the weight they want and others to gain weight in a wrong way. The objective of this study is to evaluate the prevalence of various eating disorders and assess knowledge in this aspect among nursing students in our college

According to researchers view eating disorder affect a sensitive group in society ;because maintaining health leads to an increase in individual productivity , which leads to the growth and development of society; and because it negatively affects young people, especially women ,who have a leading role in society (nurse), and it can cause poor concentration ,fatigue and isonomic and this can have a negative impact on student level.

**Materials and Methods:**

**Study design:** This is an observational cross-sectional institutional based study.

**Study population:** Female undergraduate Students Age (18- 26) in the faculty of nursing sciences, university of Khartoum, who accepted to participate in this study were targeted. Fifth grade students were excluded because of logistic reasons.

**Variables:** Socio demographic data, Prevalence of at risk of eating disorders and Knowledge about anorexia nervosa.

**Sampling methods:** The sample was obtained by systematic random sampling, all female students in university of Khartoum faculty of nursing science - except fifth grade students - were listed, and the sample fraction was measured by divided number of populations by the sample size. By using flip-coin, the first student was selected, and the others selected according to the interval. Female students at the first level were 96, in the second level were 113, in the third level were 195, and in the fourth level were 78. Total number of students (N) is 482.

**Sample size:** - The sample size was determined using systematic random sampling following this equation

$$n = \frac{N}{1+N[d]^2}$$

Where n = sample size, N= population and d = degree of error [0.05]

The study sample size (n) was calculated to be 220 participants.

#### **Data collection technique and tools:**

Data was collected through using a modified self-administered questionnaire which has 5 parts (sociodemographic data, diet habits, eating attitude test -26 (EAT-26), level of knowledge of students toward anorexia nervosa and behavior). the questionnaire contains close end questions. Body mass index (BMI) was calculated for all participants, and 6-point Likert type scale ranges from always to never was used in the EAT 26 test.

**Data analysis:** Data analyzed by the statistical package of social science (SPSS) version 26.

**Ethical consideration:** Approval was taken from the University of Khartoum faculty of nursing science; an oral informed consent was obtained from each participant. The

purpose of the study was explained before administration of the questionnaire. Only volunteers who approved to be a part of the study were included and assured that all information was used confidentially just for research purposes.

**Results**

The study sample was 219, 208 participants responded (95%) respond rate.

**1/ Diet habit: -**

**Table (1): - Diet habit of participants**

	Do you follow specific diet habit?		Do you have any fasting or purging behavior?		Do you use any of diet pills to reduce your weight?		Do you use any of diet pills to increase your weight?		are you vegetarian?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>n</b>	16	192	43	165	2	206	12	196	8	200
<b>%</b>	7.70%	92.30%	20.70%	79.30%	1.00%	99.00%	5.80%	94.20%	3.85%	96.15%

Table 1 showed the diet habit of participants, the high proportion of them (don't follow specific diet habit 192 (92.30%), don't have any fasting or purging behavior is 165(79.30%), don't use any of diet pills to reduce their weight 206(99.00%), don't use any of diet pills to increase their weight 196(94.20%), and are not vegetarian 200 (96.15%).

**2/ Knowledge of participants: -****Table (2):- The Knowledge of participants**

	Did you know anorexia nervosa?		Is anorexia nervosa harmful and has a negative impact on health?		Can the surrounding people can be one of the causes of anorexia nervosa?		Can anorexia nervosa cause severe weight gain?		Can anorexia nervosa cause anemia?		Can anorexia nervosa cause menstrual period problem?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
<b>n</b>	117	91	201	7	187	21	203	5	194	14	193	15
<b>%</b>	56.30%	43.80%	96.60%	3.40%	89.90%	10.10%	97.60%	2.40%	93.30%	6.70%	92.80%	7.20%

Table 2 showed the Knowledge of participants related to anorexia nervosa, more than half had good knowledge about anorexia nervosa 117 (56.3%), most of them agree that anorexia nervosa is harmful and has a negative impact on health 201 (96.60%), can cause severe weight gain 203 (97.60%), anemia 203(93.30%), menstrual period problem 193 (92.80%). Surrounding people can be one of the causes of anorexia nervosa 187 (89.90%).

**3/Eating Attitude Test:****Responses of participants on Eating Attitude Test**

Responses of participants on Eating Attitude Test, high proportion of participants were never terrified about being overweight 80 (38.5%), never avoid eating when hungry 115 (55.3%), never preoccupied with food 62 (29.8%), and usually display self-control around food 164 (78.8). Most of the participants showed normal scores at the test

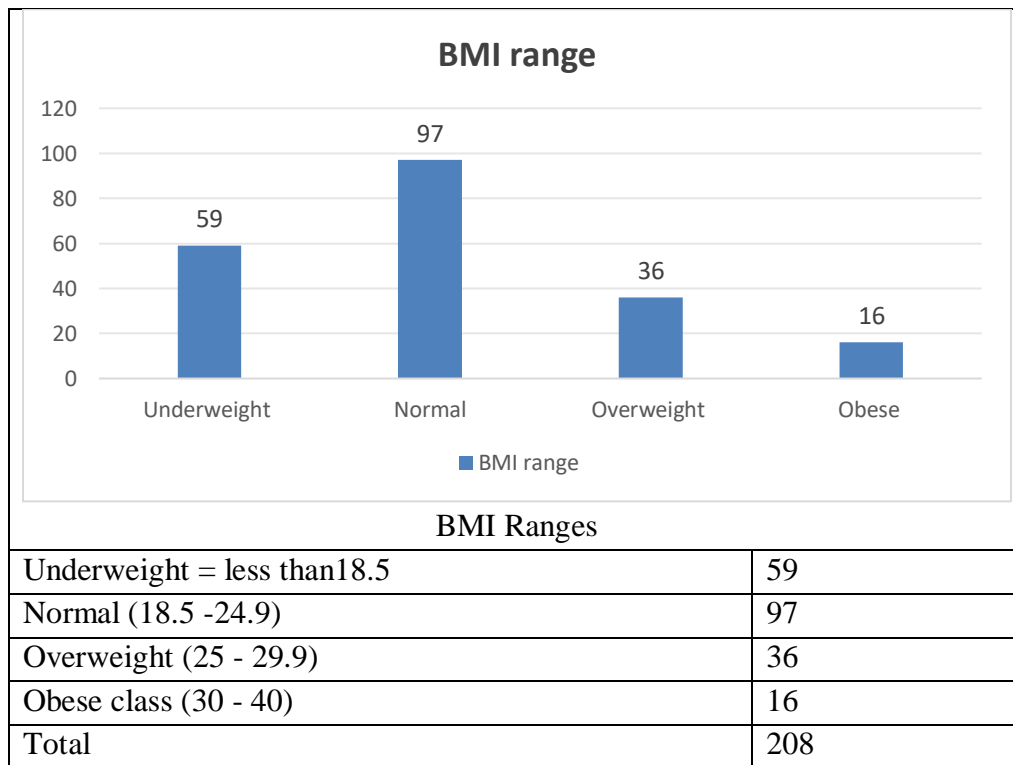
**4/ Behavior: -**

**Table (3):- Behavior of participants:**

have you gone on eating binges where you feel that you may not be able to stop? (Eating much more than most people would eat under the same circumstances)		Have you ever used laxatives, diet pills or diuretics [water pills] to control your weight or shape?		Have you ever made yourself sick [vomit] to control your weight or shape?		Have you ever been treated for an eating disorder?		
	Yes	No	Yes	No	Yes	No	Yes	No
<b>n</b>	6	202	5	203	19	189	20	188
<b>%</b>	2.9%	97.1%	2.4%	97.6%	9.1%	90.9%	9.6%	90.4%

Table 3 showsthat high proportion disagree with eating much more than most people would eat under the same circumstances 202 (97.1%), Ever use laxatives, diet pills or diuretics to control their weight or shape 203 (97.6%).

**5/Body mass index: -**



**Figure (1): - Distribution of body mass index among participants**

Figure 1 shows the distribution of body mass index among participants. The high proportion is (21.00) 25 participants. More than one quarter of the participants were in the normal range of body weight 57 (27.40%), participants overweight 25 (12.01%) and 126 (60.5%) were underweight, 13 (6.28% of participants weigh 50 kg.

**6/Participants at risk to develop eating disorder: -****Table (4):- the participants at risk**

	<b>Total participant</b>	<b>Participant at risk by score</b>	<b>Participant at risk by BMI</b>	<b>Participant at risk by behavior</b>	<b>Total of participant at risk</b>
<b>n</b>	208	59	44	42	145
<b>%</b>	100%	28.37%	21.15%	20.19%	69.71%

Table 4 showed the total participants at risk of developing an eating disorder as 145(69.71%), including participant at risk by score 59(28.37%), BMI 44 (21.15%), behavior 42(20.19%)

**7/vegetarian at risk: -****Table (5): - vegetarian at risk**

<b>Total vegetarian</b>		<b>vegetarian at risk</b>
<b>n</b>	8	4
<b>%</b>	100%	50%

Table 5 shows total vegetarian 8 participants, and vegetarian at risk of developing an eating disorder are 4(50%).

**Discussion**

The study addresses the prevalence of at risk of developing eating disorder among female nursing students and determine their

knowledge about anorexia nervosa. The sample was 208 females. The study found that 145 (69.7%) of participants were at risk to

develop eating disorders, with 59(28.3%) at risk by EAT-26 score above 20, 44 participants (21.1%) at risk by BMI (underweight) and 42 participants (20.1%) were at risk by behavior questions of the test. Similar to study done at Egypt Tanta University about one third (33.0%) of the studied students were at risk for eating disorder <sup>(14)</sup>. more than study done at University of Khartoum faculty of Dentistry, Pharmacy and Medicine only 37(12.4%) were at risk <sup>(15)</sup>. Similar to study done among Sharjah university students, UAE About 33% of the sample had EAT- 26 scores  $\geq 20$ <sup>(13)</sup>. Almost half of the participants age between 21–23-year-old, similar to study done in the Kingdom of Saudi Arabia and Italy, aged between 18 - 23 years <sup>(15)</sup>, 14–20 years <sup>(6)</sup> respectively. More than one third of students 77(37.02%) were in the third level which represent the highest percentage of students in nursing college, in contrast study done in

Alneelain University Faculty of Medicine 66% from the first grade.

The study showed higher variation of weight among students, and when the BMI calculated showed that more than one quarter of the participants were in the normal range of body weight 57(27.40%). Similar to study done at Alneelain University Faculty of Medicine, more than half of the students had normal BMI<sup>(17)</sup> . participants overweight 25(12.01%) and 126(60.5%) were underweight, these percentage can be attributed to many things e.g. the large family size, most of the participants' family size more than six members, 20.70% of the participants have fasting or purging behavior, 9.1% of participants vomit to control their weight, 9.6% treated for eating disorder, 5(2.4%) use laxatives, diet pills or diuretics (water pills) to control their weight or shape in spite of their good knowledge about ED, also 14(6.73%) low economic status and the majority 187(89.90) of the participants were

moderate economic status. Similar to study done in US college students, the prevalence of ED risk increased significantly from 15% to 28%.

Diet habit most of participants 192 [92.30%] don't follow specific diet, 165[79.30%] don't have fasting or purging behavior, don't use diet pills to reduce weight 206(99.00%), don't use any diet pills to increase weight 195(94.20%), and 8[3.8%] of participants are vegetarian. Participants use diet pills to increase weight {5.8% } higher than decrease weight {1.0% }.

About the Knowledge of participants, more than half 117(56.3%) knew anorexia nervosa correctly. In contrast to study conducted in Italy, only 22.8% correctly knew the definition of anorexia nervosa <sup>(6)</sup>, also opposite to study done in the UK knowledge was lacking (Students displayed poor awareness towards ED signs and symptoms, causes and help sources) <sup>(11)</sup>. The Birmingham University students show broad

awareness of EDs; however, knowledge of certain aspects of ED-MHL, including help sources and symptom recognition was, lacking <sup>(18)</sup>. And the majority of answers show that students know the negative impact of the behavior on the health and menstrual period.

According to the responses of participants on Eating Attitude (EAT-26), the majority of them have normal score. The high proportion of participants was never terrified about being overweight 80(38.5%), never Avoid eating when hungry 115(55.3), same as study done in Italy, Assessment of Knowledge, Attitudes, and Behaviors toward Eating Disorders among adolescents 40.8% were engaged in dieting behavior, more than one third (38.8%) had a fear of getting fat. 9.1% of participants vomit to control their weight, and 9.6% treated for eating disorder <sup>(6)</sup>. Behavior of participants high proportion disagree with Eating much more than most people would eat under the same

circumstances 202 (97.1%), Ever use laxatives, diet pills or diuretics to control their weight or shape 203 (97.6%), Ever made their self-sick to control their weight or shape 189(90.9%), Ever been treated for an eating disorder 188(90.4%). Opposite to study done among Sharjah university students, UAE 45% showed mild to marked concerns about their body shape<sup>(13)</sup>.

### Conclusion:

The study was done at the faculty of nursing science University of Khartoum, the total participants was 208 and the study revealed that total participant at risk of developing eating disorder among nursing students were 145(69.71%), Participant at risk by score 59(28.37%), Participant at risk by BMI 44 (21.15%), Participant at risk by behavior 42(20.19%) and participants not at risk 63(30.29%). And high proportion of participants had good knowledge about anorexia nervosa 117 (56.30%).

### Recommendation:

- 1- Follow up of at-risk students to develop eating disorders
- 2- periodic examination of student for ED
- 3- organization of awareness programs about eating disorders and their prevention.

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