

*Original Research Article*

# Prevalence of Eating Disorders among Students of Quest University, Nawabshah, Pakistan

Yasir Akbar Jamali<sup>1</sup>, Salma Farrukh Memon<sup>2</sup>, Zulfiqar Ali Lagahri,  
Jamshed Warsi<sup>4</sup> and Ashique Ali Arain<sup>5\*</sup>

## Abstract

<sup>1</sup>Teaching Assistant, Institute of Microbiology, Shah Abdul Latif University, Khairpur

<sup>2</sup>Associate Professor, Department of Physiology, LUMHS

<sup>3</sup>Professor Physiology Department of Physiology, University of Sindh Jamshoro

<sup>4</sup>Associate Professor, Department of Physiology, University of Sindh Jamshoro

<sup>5</sup>Consultant Family Physician, Assistant Professor, Department of Pharmacology, Muhammad Medical College, MirpurKhas, Sindh, Pakistan

\*Corresponding Author E-mail: [ashiquepcmd77@yahoo.com](mailto:ashiquepcmd77@yahoo.com)

This worked was aimed at evaluating the increased risk of engineering students with eating disorders at the University of QUEST Nawab Shah, Sindh, Pakistan, using self-administered questionnaires. If this disorder is early diagnosed, evaluated and better treatment is provided, chances of full recovery are better. We planned to conduct a survey to identify the frequency of such disturbances among engineering students and address various strategies. A cross-sectional, descriptive study was conducted among 427 QUEST University engineering students. Data were collected using two renowned self-administered questionnaires on eating disorders. One is SCOFF and the other is Eating Attitude Test (EAT) – 26 Questionnaire. Body Mass Index (BMI) of subjects was also measured. The data was sorted and analyzed in SPSS version 16. According to the Eating Attitude Test (EAT-26), 35.9% of participants were found to be at the high-risk of Eds. According to the SCOFF, 48.9% of participants were found to be at the high-risk of Eds. Eds risk more detected in female participants than male participants. Risk of Eds also present in Participants with normal BMI. Our findings highlight the prevalence of eating disorder very high in engineering students. It is concluded that a significant number of students, particularly women and underage persons, are more likely to develop eating disorders. It has been suggested that strategies should be advised to prevent the occurrence of such diseases among students.

**Keywords:** SCOFF, EAT-26, Anxiety Nervosa, Teen Age, Binge Eating

## INTRODUCTION

Eating disorders (Eds) are a chronic mental health problem associated with serious consequences and a very high mortality among mental illnesses (Field AE et al., 2012; Hudson JI et al., 2007). Two major types of Eds are Anorexia nervosa (AN) and Bulimia nervosa (BN) both Eds mostly noticeable in teens (Van Son GE et al., 2006). A life-threatening type of ED is AN regarded as the deep worry to become obese, amenorrhea and irregular body shape (Lucas AR et al., 1991; Von Ranson KM et al., 2002). AN frequently starts during the teenage years (14.5 – 18 years bimodal distribution) (Halmi KA et

al., 1979). During these years major changing occur in teenagers such as psychological and physical growth (Mehler PS et al., 2001). BN another type of ED related with serious illness recognize by the recurrent episodes of Binge eating (BED) and person use the laxatives pills and self-induced vomiting for reducing the effects of BED which may cause of becoming obese (Hudson JI et al., 2007). BED is a disorder people characterized by uncontrollable eating, during binges eat a huge quantity of food. The specific reason for Eds is mysterious (Shaikh et al., 2014). In Karachi, 21.7% of female

reported with the prevalence of AN these female students were enrolled in nursing and medical programs (Ilsrar SM et al., 2002). The prevalence of Eds were reported among female school and college is 64.3% of students (Shaikh Maet al.,2014) and 68.8% female students of the university have possible Eds and required for treatment (Shaikh et al., 2012). There is no previous study conducted on the prevalence of Eds among engineering students of engineering universities. This study was conducted to find out the prevalence of Eds among Engineering students of Quaid-e-Awam University of Engineering, Science and Technology (QUEST), Nawabshah, Pakistan.

## METHODOLOGY

### Study setting and Participants

This was a descriptive cross sectional study, carried out in the Quaid-e-Awam University of Engineering, Science and Technology, Nawabshah, Pakistan. Approache the students during lectures at the campus and requested for their voluntary participation. Undergraduate engineering students of first to final semester were included in the study. Age of the students was range from 18 to 25 years. Engineering students who have any disorder were excluded from the study.

### Procedure and Measures

For this study, we combined the SCOFF questionnaire (Morgan JF et al.,1999) and the EAT-26 (Garner DM et al.,1982), along with demographic and body mass index (BMI) questions, which comprised a 2-pages, 31-questions survey. Our both questionnaires SCOFF and EAT-26 fulfill the diagnostic criteria of Diagnostic and Statistical Manual of Mental Disorders, fifth Edition, 2013 for the AN, BED and BN disorders. Demographic information included age, sex, height (in meters), and weight (in kilograms). A valid and self-administered questionnaire is used for the detection of Eds named The Eating Attitude Test-26 (EAT-26). It consists of 26 questions for which scoring was done on a 6-point liker scale from always to never. EAT-26 have 2range of 0-78 which is the total sum of 26 questions score. It consists of 26 questions in which scores are scored on a 6-point scale from never to always. EAT-26 has a range of 0-78 which is a total of 26 questions). A person who gets more than 20 scores should contact with a health professional for the assessment of a possible Eds, according to methodology (Garner DM et al., 1982). SCOFF Questionnaire is also a self-administered questionnaire that is used to determine Eds. The answer is 'No' to every question, the test shows no food problem. The answer is "Yes" to 2 questions, the test shows that it is

more likely than Anorexia Nervosa or Bulimia Nervosa. While the answer is the subject of the question 'Yes' to 1, and the other is 'No', the test indicates that it has no eating disorders (Morgan JF et al.,1999). Body Mass Index (BMI: bodyweight {kg} / height {m<sup>2</sup>}) as a useful indicator for measuring body weight as a measure of belly fat accumulation, that is, an indicator of central obesity (WHO., 2000). BMI references range below 18.5, 18.5-24.9, 25.0-29.9, and 30.0 or higher. The NHLBI labels these as lowly, normal weight, obesity and obesity (Adams KF et al., 2006).

### Statistical Analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 16. Correct frequency and percentages were calculated by variance of fit while means that the standard deviation is calculated by variance of the quantity. P values were also obtained by the Pearson Chi Square Test to determine the significance of the results.

## RESULTS

The total number of participants were 427, returned 95.3% N=407. All participants were completed EAT-26 and SCOFF Questionnaire. The population of female participants was 36.9% (N=150) with mean age of 19.9+1.3years, BMI 19.1+2.9 and the population of male participants was 63.1% (N=257) with mean age of 21.1+1.4, BMI 22.4+4.6 (kg/m<sup>2</sup>), SCOFF score was 1.7+1.3 in males and 1.7+1.6 in females while the EAT-26 score was 16.4+8.8 and 17.6+11.2 in males and females respectively. Mean population age was 20.7(1.5) years and BMI was 21.2+4.4 (kg/m<sup>2</sup>), Mean SCOFF and EAT-26 were 1.44+1.1(5) and 16.9+9.7(65) respectively.

### EAT-26 Findings

According to EAT-26 findings, 35.9% participants were found to be at the high-risk of EDs. Male participants 35.0% were at the lower rate of risk of EDs as compared to female participants 37.3% at risk of EDs. The age group of 18-21 years was found more affected, 52.4% participants than the age group of 22-25, 41.7% participants (Table 3). BMI results of EAT-26 showed that 30.6% participants belong to normal BMI while these participants also found with risk of EDs. 56.8% subjects were worried for thinness, 36.3% were scared of obese, and 37.7% were involved in dieting behavior. Although, 63.7% were showed control on eating food and nearly 15.1% vomiting after a meal (Table 3). The response of all questions of positive and negative participants for EAT-26 were represented in Table 2. Demographic

**Table 1.** EAT-26 results in relation to Gender, Age group and BMI ratios

Variables	Positive (n=146)	Negative (n=261)	Total 407	P – value
<b>Gender</b>				
Male	90 (35.0%)	167 (65.0%)	257 (100%)	>.05
Female	56 (37.3%)	94 (62.7%)	150 (100%)	
<b>Age group</b>				
18-21 years	96 (34.9%)	179 (65.1%)	275 (100%)	>.05
22-25 years	55 (41.7%)	77 (58.3%)	132 (100%)	
<b>BMI kg/m<sup>2</sup></b>				
Underweight	41 (47.1%)	46 (52.9%)	87 (100%)	<.05
Normal	75 (30.6%)	170 (69.4%)	245 (100%)	
Overweight	19 (33.3%)	38 (66.7%)	57 (100%)	
Obese class I	11 (61.1%)	7 (38.9%)	18 (100%)	

**Table 2.** Analysis of EAT-26 Questionnaire

S.No	Questions from EAT-26	Frequency of response of 146 High-Risk Individuals (YES/NO)	Frequency of response of 261 negative Individuals (YES/NO)	P– value
1	Am terrified about being overweight	53/93	54/207	<.05
2	Avoid eating when I am hungry.	69/77	34/227	<.05
3	Find myself preoccupied with food.	62/84	45/216	<.05
4	Have gone on eating binges where.....	70/76	85/176	<.05
5	Cut my food into small pieces.	94/52	111/150	<.05
6	Aware of the calorie content of.....	67/79	28/233	<.05
7	Particularly avoid food with a high.....	57/89	49/212	<.05
8	Feel that others would prefer if.....	45/101	36/225	<.05
9	Vomit after I have eaten.	22/124	10/251	<.05
10	Feel uncomfortable after eating.....	54/92	35/226	<.05
11	Am preoccupied with a desire.....	83/63	93/168	<.05
12	Think about burning up calories.....	100/46	87/174	<.05
13	Other people think that I am.....	71/75	71/190	<.05
14	Am preoccupied with the thought.....	84/62	62/199	<.05
15	Take longer than others to eat my meals.	57/89	59/202	<.05
16	Avoid foods with sugar in them.	53/93	44/217	<.05
17	Eat diet foods.	85/61	76/185	<.05
18	Feel that food controls my life.	88/58	115/146	<.05
19	Display self-control around food.	93/53	106/155	<.05
20	Feel that others pressure me to eat.	71/75	56/205	<.05
21	Give too much time and thought.....	74/72	44/217	<.05
22	Feel uncomfortable after eating.....	53/93	38/224	<.05
23	Engage in dieting behavior.	55/91	27/234	<.05
24	Like my stomach to be empty.	37/109	29/232	<.05
25	Have the impulse to vomit after meals.	24/122	11/250	<.05
26	Enjoy trying new rich foods.	44/102	53/208	<.05

**Table 3.** SCOFF Results in Relation to gender, Age group, and BMI Ratio

Variables	Positives (N=199)	Negative (N=208)	Total (N=407)	P – value
<b>Gender</b>				
Male	124 (48.2%)	133 (51.8%)	257 (100%)	>.05
Female	75 (50.0%)	75 (50.0%)	150 (100%)	
<b>Age group</b>				
18-21 years	144 (52.4%)	131 (47.6%)	275 (100%)	<.05
22-25 years	55 (41.7%)	77 (58.3%)	132 (100%)	
<b>BMI kg/m<sup>2</sup></b>				
Underweight	33 (37.9%)	54 (62.1%)	87 (100%)	<.05
Normal	122 (49.8%)	123 (50.2%)	245 (100%)	
Overweight	28 (49.1%)	29 (50.9%)	57 (100%)	
Obese class I	16 (88.9%)	2 (11.1%)	18 (100%)	

**Table 4.** Analysis of SCOFF Questionnaire

Questions from Bulimia and Anorexia of SCOFF	Frequency of response of positive 199 Individuals (YES/NO)	Frequency of response of Negative 208 Individuals (YES/NO)	P – values
Do you make .....	95/104	22/186	<.05
Do you worry.....	75/124	14/194	<.05
Have you recentl.....	66/133	26/182	<.05
Do you believe.....	114/85	23/185	<.05
Would you say.....	121/78	31/177	<.05

characteristics of EAT-26 positive and EAT-26 negative participants shows in Table-1. Most affected participants was 37.9% with high-risk of EDs belonged to the age group of 22-25 years than the age group of 18-21 participants, 34.9%. High-risk EDs participants were more present in obese class I 61.1% as compared to normal 30.6%, underweight 47.1% and overweight 33.3% Table-1. The response rate of the subjects was statistically significant ( $P<.05$ )

SCOFF findings According to SCOFF, 48.9% of participants were found to be at the high-risk of EDs. A greater number of 50% female participants were at risk of EDs than male participants 48.2% (Table 5). 52.4% participants of age group 18-21 were more at the risk of EDs than 41.7% participants of age group 22-25 years participants (Table 3). Participants 49.8% with normal BMI were also at the risk of EDs (Table 3). Demographic information of SCOFF positive and SCOFF negative participants showed in Table 3. An analysis of the SCOFF questionnaire shows that 47.7% of high-risk EDs participants gave an answer that they had vomited or felt ill from being dissatisfied, 37.7% gave an answer that they were worried about how much they were eating, 33.2% gave answers that they should have lost 6.5 kg in 3 months and 57.3% responded by saying that some mean your little one, while someone thinks of obesity. The difference was statistically significant ( $p<0.05$ ) Table-4.

## DISCUSSION

Previous study reported prevalence rate of 23.33% in EAT-26 and 10% in SCOFF in Business School of Karachi among students of MBA program and an other study showed 22.7% of students scored above 20 for Eating Attitude test-26 and 17% of students reported a score above 1 for SCOFF. The later study also reported that 65.6% of students were at risk of EDs for these groups of students from 18-21. Although 34.3% of students received EDs ranging in age from 22-23 years for medical students and the BMI values, 29.6% obese, 18.2% obese, and 15.6% lower still suffering from an eating disorder as diagnosed by EAT-26 while according to SCOFF, 23.5% is normal, 21.2% and 12.2% of low-risk individuals were suffering from EDs that was not consistent with our results (Mahmood et al., 2014;

Memon et al., 2012). Previous studies also reported that 25.4% of women in EAT-26 and 16.9% of women in SCOFF were at higher risk of eating disorders than men that is also inconsistent with our results (Mahmood et al., 2014; Memon et al., 2012). Another study showed that a larger proportion of women (1.0% -4.0%) with AN and 6.8% to 18.6% with BN) suffered from ED than male subjects (Pope Jr HG et al.,1984). Other studies have shown that 49% of women get binge eating disorder and 4% of women get BN, these results indicate a higher risk of EDs(Sample C et al.,1984). As can be seen in our research with universities located in urban centers, women in such a situation are more likely to develop effective media, especially EDs. Various studies in different settings have shown the role of media exposure and its effect on eating disorders, particularly with the development of body and women dissatisfaction (Stice et al., 1994). In a place like Pakistan, especially the drive for women to adopt European culture when viewed through the media has led to unhealthy diet and exercise (Choudry et al.,1999). Limitations in our study include that we focus more on medical students in colleges from established cities. Further studies will be conducted that will look at how to disturb food in rural areas. In addition, the most important limitation is the delivery and the inconsistency, which is the result of many studies with eating disorders. This is common in almost all studies related to eating disorders.

## CONCLUSION

Our findings highlight the increased incidence of eating disorders in engineering studies. It has been concluded that a large number of students, especially women and under age, may have eating disorders. It has been suggested that strategies should be developed to prevent the spread of EDs.

## ACKNOWLEDGMENT

This research carried out with the support of Quaid-e-Awam University of Engineering Nawbshah and University of Sindh Jamshoro. This research did not receive any grant from any funding agencies.

**Conflict of Interest:** There is no any conflict of interest.

## REFERENCES

- Adams KF, Schatzkin A, Harris TB, Kipnis V, Mouw T, Ballard-Barbash R, et al. (2006). Overweight, obesity, and mortality in a large prospective cohort of persons 50 to 71 years old. *N Engl J Med* 355(8):763–778.
- Choudry IY, Mumford DB (1999). Eating behaviour and body dissatisfaction in slimming and fitness gyms in Lahore. *J Coll Physicians Surg Pak* 9(5):220–222.
- Consultation WHO (2000). OBESITY: PREVENTING AND MANAGING THE GLOBAL EPIDEMIC.
- Field AE, Sonneville KR, Micali N, Crosby RD, Swanson SA, Laird NM, et al. (2012). Common eating disorders predictive of adverse outcomes are missed by the DSM-IV and DSM-5 classifications. *Neuropsychiatr Enfance Adolesc* 60 (5S):65.
- Garner DM et al. (1982). The eating attitudes test: psychometric features and clinical correlates. *Psychol. Med.* 12(4): 871–878
- Halmi KA, Casper RC, Eckert ED, Goldberg SC, Davis JM (1979). Unique features associated with age of onset of anorexia nervosa. *Psychiatry Res.* 1(2):209–215.
- Hudson JI, Hiripi E, Pope Jr HG, Kessler RC (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol. Psychiatry.* 61(3):348–358.
- Israr SM (2002). Anorexic behaviour and attitudes among female medical and nursing students at a private university hospital.
- Lucas AR, Beard CM, O'fallon WM, Kurland LT (1991). 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: a population-based study. *Am J Psychiatry.* 148(7):917–22.
- Mahmood A, Bibi Z (2014). Eating disorders among MBA Students in a Business School of Karachi. *J Nutr Food Sci*4(6):1.
- Mehler PS (2001). Diagnosis and care of patients with anorexia nervosa in primary care settings. *Ann Intern Med*134(11): 1048–1059.
- Memon AA, Adil SE-R et al. (2012). Eating disorders in medical students of Karachi, Pakistan-a cross-sectional study. *BMC Res Notes.*5(1):84.
- Mitchell JE, Crow S (2006). Medical complications of anorexia nervosa and bulimia nervosa. *Curr. Opin. Psychiatry.* 19(4):438–443.
- Morgan JF et al (1999). The SCOFF questionnaire: assessment of a new screening tool for eating disorders. *Brmj.*319(7223):1467–1468.
- Olden K, White SL(2005). Health-related disparities: influence of environmental factors. *Med Clin.*89(4):721–738.
- Pope Jr HG, Hudson JI et al (1984) S. Prevalence of anorexia nervosa and bulimia in three student populations. *Int. J. Eat Disord.*3(3):45–51
- Sample C, Katzman MA et al (1984). The prevalence of frequent binge eating and bulimia in a nonclinical. *Int J Eat Disord.*3(3):53–62.
- Shaikh MA, Kayani A (2014). Detection of eating disorders in 16-20 year old female students-perspective from Islamabad, Pakistan. *J Pak Med Assoc.* 64(3):334–6.
- Shaikh MA, Shaikh IA et al. (2011). Eating disorders detection in female university students. *J Coll Physicians SurgJCPSP.*21(10):650–650.
- Stice E, Schupak-Neuberg E, Shaw HE, Stein RI (1994). Relation of media exposure to eating disorder symptomatology: an examination of mediating mechanisms. *J Abnorm. Psychol.* 103(4):836.
- Van Son GE et al (2006). Time trends in the incidence of eating disorders: a primary care study in the Netherlands. *Int J Eat Disord.*39(7):565–569.
- Von Ranson KM, Iacono WG, McGue M. Disordered eating and substance use in an epidemiological sample: I. Associations within individuals. *Int J Eat Disord.* 2002;31(4):389–403.