

## Appraisal of Eating Disorders in Females of Reproductive Age by Using Scoff Questionnaire

Shamaila Hassnain<sup>1</sup>, Tahseen Kazmi<sup>2</sup>, Noor Shahid<sup>3</sup>, Shehnaz Khan<sup>4</sup>

Department of Community Medicine, Central Park Medical College, Lahore, Pakistan <sup>1,2,3,4</sup>

### ABSTRACT

**Background:** Unhealthy, jumbled eating habits and irregular eating behavior, often associated with body image and weight concerns, are known as abnormal eating behaviors. Anorexia nervosa, bulimia nervosa, and binge eating disorders are common disordered eating behaviors. Females are more likely than males to experience eating disorders.

**Objective:** The research was conducted to determine the frequency of eating disorders in women of reproductive age group and identify the factors associated with it.

**Methods:** It was a cross-sectional study carried out at Central Park Medical College, Lahore. Non-probability convenient sampling technique was used to collect data from 196 females of the reproductive age group (15-49 years) using the Scoff Questionnaire. Binary logistic regression was applied to observe the association of eating disorders with non-communicable diseases (NCDs). SPSS version 26 was used for data analysis.

**Results:** About 82.8% of the females belonged to urban areas and out of those 44.5% had an eating disorder. Binary logistic regression analysis indicated that the odds of developing eating disorders were 85% high for obese women. Approximately 12.6% of the females agreed or strongly agreed that they overeat. Overeating was observed as a statistically significant associated factor with eating disorder (p value=0.048).

**Conclusion:** Approximately 45.5% of the females were identified as either having anorexia nervosa or bulimia. Females living in cities and nuclear family systems had a higher percentage of eating disorders.

**Key Words:** Eating disorders, SCOFF, Screening, Anorexia nervosa

**Doi:** <https://doi.org/10.53685/jshmdc.v4i1.141>

#### Corresponding Author:

Prof Tahseen Kazmi

Community Medicine Department  
Central Park Medical College, Lahore

**Email address:** tahseenkazmi@gmail.com

Received 17.01.2023, Revised 16.05.2023,

Accepted 31.05.2023

**How to cite this article:** Hassnain S, Kazmi T, Shahid N, Khan S. Assessment of eating disorders in females of reproductive age by using SCOFF Questionnaire. J Shalamar Med Dent Coll. 2023. 4(1): 4-10. doi: 10.53685/jshmdc.v4i1.141



This is an Open Access article distributed under the terms of a Creative Commons Attribution-Noncommercial 4.0 International license.

### INTRODUCTION

Eating disorders are among the top five major mental health problems in young adults according to World Health Organization.<sup>1</sup> They are mainly characterized by unhealthy and disorganized eating habits and involve abnormal eating behavior, mostly associated with concerns related to body shape and weight.<sup>2</sup> Typical eating disorders include binge eating disorder, bulimia nervosa, and anorexia nervosa. Among these anorexia nervosa has higher mortality and can lead to premature death.<sup>3</sup> Eating problems are commonly seen in females as compared to males.<sup>4</sup> In recent years, several researchers also suggested that the ratio of men having eating problems is at increase. Now, these eating

problems are considered serious and life-threatening conditions.<sup>5</sup> Therefore, early detection and intervention related to these symptoms appear more promising rather to make symptoms worse and chronic.

There are plenty of measures available for screening, diagnosing, and/or confirming the type of eating disorder based on symptomatology and its manifestation. The 5-item SCOFF questionnaire, developed in 1999 by Morgan and colleagues, is the most widely used screening measure for eating disorders. To date, the SCOFF has been the recommended screening tool across numerous validation studies. It is concise, memorable, simple to use, and quick to score.<sup>6</sup> It consists of five simple questions. A probability of an eating disorder is indicated by two or more affirmative responses.

A study conducted in Karachi among medical students using the SCOFF questionnaire found 17% of individuals who were at high risk and among those 78.4% were females and 21.6% were males.<sup>7</sup> Reducing food intake, being underweight, a fear of gaining weight, and a disturbed body image are all characteristics of eating disorders like anorexia nervosa. The hallmarks of bulimia nervosa include bingeing followed by a sense of being out of control and coping mechanisms like inordinate vigorous exercise or taking laxatives.<sup>8</sup> In this study, we used the SCOFF questionnaire to assess eating disorders in females. Eating disorders are quite common and they are associated with mental health problems.

The objective of this study was to observe the frequency of eating disorders in women of reproductive age (15-49 years) using SCOFF Questionnaire. Moreover, it also aimed to determine the association of eating disorders with demographic variables and how these disorders increase the odds of other non-communicable diseases (NCDs).

## **METHODS**

It was a cross-sectional study conducted at Central Park Medical College, after taking approval from the ethical board (CPMC/IRB-No/1317) of Central Park Medical College. The data was collected using a non-probability convenient sampling technique from females of reproductive age group 15-49 years. The data

were collected from 198 females fulfilling the eligibility criteria of age. The sample size was calculated by using the WHO sample size calculator. The minimum sample size calculated was 196 by taking 95% confidence, 95% power of the test, and 15% as the frequency of eating disorders.<sup>9</sup> SCOFF questionnaire for eating disorders was used.

SCOFF questionnaire was based on five statements whose responses can be measured as either yes or no. For a “yes” response, a score of 1 was given, and for a “no”, a score of 0. The individual scores were calculated for each participant. Anorexia nervosa or bulimia was considered to be present in respondents with a score of 2 or higher. Consent was obtained from each participant. A section based on socio-economic and demographic factors, health issues such as common non-communicable diseases (NCDs), and eating habits was added to the SCOFF questionnaire. The study received approval from the Institutional Review Board of Central Park Medical College.

## **Inclusion and Exclusion Criteria:**

Females in the reproductive age group (15-49 years) were included in the study. Females with known diabetes mellitus, malignancy, or any other serious illness were excluded from the study.

## **Statistical Analysis**

SPSS version 26 was used for data analysis. Frequencies and percentages were calculated for categorical variables. The chi-square test of association was applied to observe the association of eating disorders with socioeconomic and demographic factors and with various NCDs. The binary logistic regression test was applied to observe the relationship of eating disorders with various health problems.

## **RESULTS**

The data were collected from 198 females of the 15-49 years age-group. The average age of the study participants was 24.21±4.68 years. SCOFF questionnaire was used to observe the eating disorder.

Approximately 45.5% of the females were identified as either having anorexia nervosa or bulimia. Socioeconomic and demographic

variables were insignificantly associated with eating disorders except occupation (Table 1).

Most of the participants who were found to have any eating disorders had a graduate level of qualification or above. About 82.8% of the females lived in urban areas and out of those 44.5% had an eating disorder. The frequency rate of abnormal eating behaviors was higher among females living in urban areas. The proportion of abnormal eating behaviors was higher among females with a monthly family income of less than 50,000 PKR followed by females with a monthly family income of more than 100,000 PKR. Most of the participants lived in a nuclear family system. The frequency of eating disorders was comparatively high among females who lived in a nuclear family system.

Relationship of eating disorders with common health problems such as hypertension, diabetes, ischemic heart disease, obesity, anemia, muscular or joint pain, and irregular menstruation are shown in Table 2. No significantly association was observed of eating disorders with hypertension, diabetes, ischemic heart disease, anemia and muscular or joint diseases.

Obesity was significantly associated with eating disorders (p-value=0.00). The reference category was “yes” for obesity. A negative coefficient indicated that the odds of developing eating disorders are 85% high for obese people. Approximately 12.6% of the females either agreed or strongly agreed that they overeat. Overeating was observed as a statistically significant associated factor with eating disorders (p-value=0.048). Approximately 46.5% of the females reported that they restrict food intake from fear of weight gain and disturbance in body image.

Out of the total females identified with eating disorders, 63.3% of them were found cutting down their food intake because of the stress of gaining weight and having a bad body image. Approximately 53% of the females were worried about their body image, and nearly 59% of those had eating disorders.

Out of the total females who participated, 31.3% were identified as having an eating disorder and worried about their body image. The eating disorder was significantly related to worrying about body image (p-value=0.00).

**Table 1: Association of eating disorders with socioeconomic and demographic variables**

Variables	Categories	Eating Disorder		p-value
		No	Yes	
<b>Education</b>	Illiterate	0	01	0.32
	Matric or less	03	06	
	Intermediate or equivalent	11	09	
	Graduation or equivalent	72	50	
	Post-Graduation or above	22	24	
<b>Residence</b>	Rural	17	17	0.58
	Urban	91	73	
<b>Income</b>	<50,000 PKR	12	17	0.26
	50,000 PKR-100,000 PKR	49	34	
	>100,000 PKR	47	39	
<b>Occupation</b>	Student	64	41	0.05
	Non-working/ Housewife	13	11	
	Private Job	23	34	
	Government Job	05	0	
	Business	02	01	
	Daily wage/ Labor/ Maid	0	01	
	Other	01	02	
<b>Family System</b>	Nuclear	71	62	0.65
	Joint	37	28	

*The chi-square test was applied; p<0.05 was considered statistically significant*

**Table 2: Relationship of eating disorders with selected health problems**

Variables	B	p-value	OR	95% CI
Hypertension	-0.26	0.55	0.77	0.33-1.81
Diabetes	-0.97	0.45	0.38	0.03-4.66
Ischemic Heart Disease	0.05	0.96	1.05	0.12-9.63
Obesity	-1.88	0.01*	0.15	0.05-0.50
Anemia	-1.06	0.77	0.90	0.44-5.00
Joint Pain	-1.41	0.67	0.87	0.46-1.65
Irregular Menstruation	0.72	0.07	2.06	0.95-4.50

*Logistic Regression test was applied; \*Significant at 5% level*

## DISCUSSION

In the present research, we used the SCOFF questionnaire to observe the frequency of eating disorders among females. Galmiche M et al. conducted a meta-analysis in 2019 and reported that SCOFF is a useful screening tool for identifying females at risk of anorexia and bulimia.<sup>10</sup> Eating disorders are quite common in many countries and the frequency rate has been increasing to an alarming rate. Binge eating disorders have a high lifetime frequency as compared to anorexia and bulimia. Fear of weight gain and perception of being too fat was present in both anorexia and bulimia.<sup>11</sup> Bulimic disorders, such as binge eating disorder or bulimia nervosa, were characterized by risk-taking behaviors and feeling out of control.<sup>12</sup>

In the study under discussion, we observed the frequency of eating disorders among females of reproductive age because, in the past literature, it has been shown that male participants are at low risk of eating disorders. According to Hudson JI et al., lifetime rates of prevalence for binge eating disorder, bulimia nervosa, and anorexia nervosa in women are 0.9%, 1.5%, and 3.5%, respectively, while they are 0.3%, 0.5%, and 2.0% in men.<sup>13</sup> Similarly, different studies done in Pakistan also reported that in comparison to males, females were at more risk of developing eating disorders.<sup>14,15</sup>

It was observed in this study that there was an alarming increase in the frequency of eating disorders in females i.e. 45.5%. On the other hand, Reyes-Rodríguez et al. reported that the frequency of eating disorders was 9.59%.<sup>16</sup> Bizri et al. showed that 19% of those who took part were at risk of getting an eating disorder.<sup>17</sup> The study under discussion showed a high frequency of eating disorders among females of reproductive age. The participants living in urban areas were more prone to eating disorders. Likewise, other studies done on students showed that prevalence of eating disorders are more in students of urban area as compared to rural areas<sup>18,19</sup>.

In a 2019 study conducted to find out the relationship between binge eating and glycemic control in individuals having type II diabetes, a total of 70 patients were recruited in this study. The results of this study revealed that 77% of the sample subjects were females, and 50% of the participants were obese. Results also showed that 14 patients had eating disorders mostly binge eating disorder (BED) and it was found to be a predictor of both fasting blood sugar (beta coefficient = 47.4) (22.3; p = 0.037) and HbA1c (beta coefficient = 1.12) (0.57; p = 0.05) in a regression study. So, eating disorders are frequently observed in patients with type 2

diabetes mellitus, it was also observed that comorbid eating disorders is associated with a poorer glycemic control in the presence of a higher BMI.<sup>20</sup>

Shaikh et al. observed the frequency of eating disorders among 16-20 years old female students. The observed 66.5% frequency among the age group 16-18 years and 62.6% among the age group 19-20 years using the SCOFF questionnaire. Compared to our findings, the overall frequency of eating disorders was quite higher as 64.9% of the participants showed a score of 2 or above, although the study was done in the public sector.<sup>21</sup> While in another study done in Nawabshah revealed that, according to the SCOFF, 48.9% of study participants were at greater risk for acquiring the disorder.<sup>18</sup>

Although the SCOFF questionnaire is a helpful tool, simple to apply, and helps to satisfy the required psychometric properties for the identification of eating disorders.<sup>22,23</sup> Therefore, use of the SCOFF questionnaire with the cut-off of score 2 or above may or may not overestimate the identification of the eating disorders that need clinical assessment and should suggest treatment for eating disorders if needed. Approaches for reducing the high risk of developing eating disorders should be recommended. The current study was a single-centered study conducted in one area of Lahore; however, the sample size was a good representative of the population.

## CONCLUSION

Approximately 45.5% of the females were identified as either having anorexia nervosa or bulimia. The frequency of eating disorders was high among females living in urban areas and in nuclear family systems. Obesity was significantly associated with and an independent risk factor for eating disorders.

A large proportion of females limited their dietary intake due to apprehensions about putting on weight and physical appearance.

More than half of the females were worried about their body image.

## Conflict of Interest:

All authors declared no conflict of interest.

## Data Sharing Statement:

The data are available from the corresponding author upon reasonable request.

## Grant Support and Financial Disclosure:

No specific grant was taken for this research from any funding agency in the public, commercial or not-for-profit sectors.

## Contributors:

**SH:** Conceived idea, manuscript writing, editing

**TK:** a critical review of the manuscript for final approval, statistical analysis

**NS:** Statistical analysis, data entry

**SK:** Literature search, drafting, and critical review of the draft.

All authors approved the final version and signed the agreement to be accountable for all aspects of the work.

## REFERENCES

1. Kessler RC, Berglund PA, Chiu WT, Deitz AC, Hudson JI, Shahly V, et al. The frequency and correlates of binge eating disorder in the World Health Organization World Mental Health Surveys. *Biol Psychiatry*. 2013;73(9):904-914.doi:10.1016/j.biopsych.2012.11.020
2. McCuen-Wurst C, Ruggieri M, Allison KC. Disordered eating and obesity: associations between binge-eating disorder, night-eating syndrome, and weight-related comorbidities. *Ann N Y Acad Sci*. 2018; 1411(1): 96-105. doi:10.1111/nyas.13467.
3. Petre LM. Psychological treatment of binge-eating disorder: a case study. *RAIS J Soc Sci*. 2019; 3(2):10-17.doi:10.5281/zenodo.3549452.
4. Qian J, Wu Y, Liu F, Zhu Y, Jin H, Zhang H, et al. An update on the frequency of eating disorders in the general population: a systematic review and meta-analysis. *Eat*

- Weight Disord. 2022; 27(2):415-428.doi:10.1007/s40519-021-01162-z.
5. Fauconnier M, Rousselet M, Brunault P, Thiabaud E, Lambert S, Rocher B, et al. Food addiction among female patients seeking treatment for an eating disorder: prevalence and associated Factors. *Nutrients*. 2020; 12(6):1897.doi:10.3390/n120618976.
  6. Morgan JF, Reid F, Lacey JH. The SCOFF questionnaire: assessment of a new screening tool for eating disorders. *BMJ*. 1999; 319(7223): 1467-1468.doi:10.1136/bmj.319.7223.14677.
  7. Muazzam A, Khalid R. Disordered eating behaviors: An overview of Asian cultures. *J Pak Psychiatr Soc*. 2008; 5(2): 76-80.
  8. Memon AA, Adil SE, Siddiqui EU, Naeem SS, Ali SA, Mehmood K. Eating disorders in medical students of Karachi, Pakistan-a cross-sectional study. *BMC Res Notes*. 2012; 5: 84. doi 10.1186/1756-0500-5-849.
  9. Kutz AM, Marsh AG, Gunderson CG, Maguen S, Masheb RM. Eating disorder screening: a systematic review and meta-analysis of diagnostic test characteristics of the SCOFF. *J Gen Intern Med*. 2020; 35(3): 885-893. doi: 10.1007/s11606-019-05478-6.
  10. Galmiche M, Déchelotte P, Lambert G, Tavolacci MP. Frequency of eating disorders over the 2000-2018 period: a systematic literature review. *Am J Clin Nutr*. 2019;109(5):1402-1413.doi:10.1093/ajcn/nq342 11.
  11. Kazén M, Baumann N, Twenhöfel JF, Kuhl J. When do anorexic patients perceive their bodies as too fat? Aggravating and ameliorating factors. *PLoS One*. 2019; 14(2):e0212612.doi:10.1371/journal.pone.0212612.
  12. Bénard M, Bellisle F, Kesse-Guyot E, Julia C, Andreeva VA, Etilé F, et al. Impulsivity is associated with food intake, snacking, and eating disorders in a general population. *Am J Clin Nutr*. 2019; 109(1): 117-126.doi:10.1093/ajcn/nqy255.
  13. Hudson JI, Hiripi E, Pope HG Jr, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007; 61(3): 348-58.doi:10.1016/j.biopsych.2006.03.040.
  14. Jamali YA, Memon SF, Lagahri ZA, Shaikh SA, Warsi J, Arain AA. Prevalence of eating disorders among students of Quest University, Nawabshah, Pakistan. *Merit Res J Med Med Sci*. 2020; 8(4):81-84.doi:10.5281/zenodo.3764134
  15. Zahra SM, Jha RP, Safdar M, Khalid MZ, Khalid W, Ranjha MM. Trends in the burden of eating disorders in Pakistan over the past three decades: A joint point regression analysis. *Ann Indian Psychiatry*. 2022; 22(22);1-12.doi:10.4103/aip.aip\_8\_22
  16. Reyes-Rodríguez ML, Franko DL, Matos-Lamour A, Bulik CM, Von Holle A, Cámara-Fuentes LR, et al. Eating disorder symptomatology: frequency among Latino college freshmen students. *J Clin Psychol*. 2010; 66(6):666-679.doi10.1002/jclp.20684
  17. Bizri M, Geagea L, Kobeissy F, Talih F. Frequency of Eating Disorders Among Medical Students in a Lebanese Medical School: A Cross-Sectional Study. *Neuropsychiatr Dis Treat*. 2020; 16:1879-1887.doi:10.2147/NDT.S266241.
  18. Preti A, Pinna C, Nocco S, Pilia S, Mulliri E, Micheli V, et al. Rural/urban differences in the distribution of eating disorder symptoms among adolescents from community samples. *Aust N Z J Psychiatry*. 2007; 41(6): 525-535.doi:10.1080/00048670701332292.
  19. Fawzi MM, Hashim HM, Fouad AA, Abdel-Fattah NR. Prevalence of eating disorders in a sample of rural and urban secondary school-girls in Sharkia, Egypt. *Curr Psychiatry*. 2010; 17: 1-2.
  20. Papelbaum M, Moreira OR, Coutinho W.F, Kupfer R, Freitas S, Luz RR, et al. Does binge-eating matter for glycemic control in

- type 2 diabetes patients?. *J Eat Disord.* 2019; 7:30.doi:10.1186/s40337-019-0260-4.
21. Shaikh MA, Kayani A. Detection of eating disorders in 16-20-year-old female students- perspective from Islamabad, Pakistan. *J Pak Med Assoc.* 2014; 64(3): 334-336.
22. Lichtenstein MB, Hemmingsen SD, Støving RK. Identification of eating disorder symptoms in Danish adolescents with the SCOFF questionnaire. *Nord J Psychiatry.* 2017; 71(5):340-347.doi:10.1080/08039488.2017.1300322.
23. Tavoracci MP, Gillibert A, Zhu Soubise A, Grigioni S, Déchelotte P. Screening four broad categories of eating disorders: suitability of a clinical algorithm adapted from the SCOFF questionnaire. *BMC Psychiatry.* 2019; 19(1):366.doi10.1186/s12888-019-2338-23 46.