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Screening for Eating Disorder Using Eating Attitudes Test-26 and its Association with Eating Habits in Undergraduate Male University Students

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ABSTRACT

Background: Students at colleges and universities are at a higher risk of developing an eating disorder. Insufficient data exist regarding the prevalence of eating disorders among male undergraduate university students.

Objective: To determine the frequency of eating disorders and its association with eating habits, junk food and Pica consumption among male undergraduates at the University of Sindh in Jamshoro.

Methods: This cross-sectional study was carried out between April 2018 and October 2018 at Sindh University in Jamshoro. Data was collected using the Eating Attitudes Test (EAT-26) after getting informed consent. A total of 403 undergraduate male students filled out the EAT-26 questionnaire. Items of disordered eating attitudes and behaviors were compared between the positive (having eating disorder) and negative EAT respondents using a chi-square test.

Results: With a cutoff value of 20 of the EAT-26, 40.9% of students were found to be at risk for an eating disorder (EAT positive). The majority of study participants (79%) reported eating junk food. Seven percent of the participants reported eating Pica (non-food particles) like sand and plastic. The eating disorder was significantly associated with all the subscales of EAT-26. However, Eating disorder was not significantly associated with junk food or with pica consumption.

Conclusion: A high number of male undergraduates are at risk of having an eating disorder. Regular screening of male students and awareness about eating disorders is the need of time.

KEY WORDS: EAT-26, Junk food, Eating disorders, Pica.

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INTRODUCTION

The term "eating disorder" describes a spectrum of conditions defined by irregular food intake. Consuming too little or too much food can adversely affect a person's health.[1] Preoccupation with one's body, including weight, form, and eating habits, is a hallmark of several potentially fatal psychiatric disorders. Furthermore, mental health issues often co-occur with eating problems, including depression, substance addiction, and anxiety disorders.[2,3]

Eating disorders are not only a problem for individuals but also a concern for physicians. Nowadays, there is an extended prevalence of eating disorders in a thin-obsessed society, which

is the primary cause of medico-psychological disorders in both men and women. It has been reported that the media images regarding society's thin ideal are the central stimulants for promoting such disorders in the population. Females are more dissatisfied with their body image in their teen years than males.[4] However, in a recent survey of teenage boys and girls, 19.8% of males were moderately dissatisfied with the figure compared to 12.6% of teen girls. Moreover, 6.4% of teen males were extremely dissatisfied with their figure compared to 1.7% of teen girls.[5]

Results of a recent study reveal the lifetime prevalence of eating disorders as 6.1%.2 Anorexia nervosa, bulimia nervosa, and binge eating disorder are each estimated to have a lifetime prevalence of 0.9%, 1.5%, and 3.5% in females.[6] Nineteen different cross-sectional studies were conducted in nine countries which document eating disorders prevalence ranging from 2.2 to 29.1%. Meta-analysis of these studies revealed the pooled prevalence of eating disorders as 10.4% (n = 5722).[7]

A transition in lifestyle occurs when an individual enters university life. High life expectations, personal connections, social engagement, academic stress, peer pressure, and living in dorms are some of the risk factors that university students face that enhance their likelihood of developing an eating disorder.[8] Several studies have demonstrated that full recovery is possible with early recognition and treatment of eating disorders.[9] As a result, screening university students for eating disorders utilizing precise and reliable scales would enable early diagnosis and prompt management.

Consumption of indigestible foods is a hallmark of the pica condition. Multiple factors, including the limited availability of key materials like zinc and iron, contribute to this. Although Pica can have a detrimental effect on physical functioning, it is more likely to impede social performance when combined with other diseases.[10]

Pica is a developmental disorder that typically manifests in toddlerhood and early elementary school in children between 18 and 24 months. The most common type of Pica is characterized by eating dirt, although other types include eating paint, plaster, string, hair, and cloth. The prevalence of Pica is 20% in adolescents and 25%-33% in younger children. Incidence rates of Pica during pregnancy and breastfeeding were 27.8 percent worldwide.[11,12]

Many teenagers worldwide are opting to eat at fast food restaurants. Teenagers in college have an abnormal fondness for fast food. Sixty-four percent of the people who took the survey regularly ate fast food.[13] Consumption of fast food is associated with psychological distress.[14] Scales such as the Eating Attitudes Test-26 (EAT-26) and Sick, Control, One stone, Fat, Food (SCOFF) are helpful tools for detecting eating disorders. These scales can screen and detect eating disorders among college students at an early stage.[15,16]

EAT–26 is a self-administered questionnaire designed to assess the presence of eating disorders. It has 26 questions on a 6-point scale ranging from "always" to "never." EAT-26 has three subscales, dieting subscale, bulimia nervosa and food preoccupation subscale and oral control subscale. The EAT-26 cumulative scores might be any number between 0 and 78. Twenty or more than twenty scores indicate the presence of abnormal eating attitudes and behavior.[17] Though eating disorders occur in all students regardless of gender, most studies on eating disorders are conducted on female students.

However, further studies are needed to see eating disorders in male undergraduate university students. Moreover, the association of eating disorders with Pica and junk food consumption in male undergraduate students needs exploration.

METHODS

This cross-sectional study was performed in the department of Physiology at the University of Sindh, Jamshoro, from April 2018 to October 2018, after getting approval from the institutional ethical committee (No. Physiol/429). Taking into account the total number of male students enrolled at Sindh University, we calculated sample size, using the OpenEpi sample size calculator, with a margin of error of 5%, 95% confidence interval, and a response distribution of 50% to ensure maximum variance.

Using convenient purposive sampling, 403 undergraduate male students aged 17-25 were

included in the study after getting their consent. Those with preexisting medical conditions (such as diabetes, endocrinopathies, and hypertension, cardiovascular and gastrointestinal disease) were excluded. EAT-26 test was used for screening the students for eating disorders based on attitudes, feelings and behaviors related to eating.

Questions related to the consumption of junk food and Pica were also asked. EAT-26 test has three subscales to determine eating disorders. The first subscale is the dieting subscale, it has questions regarding their attitudes and behavior toward food intake. The second subscale has questions related to Bulimia nervosa and food preoccupation.

The third subscale was the oral control subscale. The students were interviewed and their responses were recorded. All participants were interviewed in a comfortable separate room at the same time of day at a comfortable room temperature, and special care was taken to ensure their comprehension of the questionnaire.

Statistical Analysis

All the recorded data were analyzed by using SPSS version 23. Qualitative data were presented as frequencies and percentages. A cumulative score of more than twenty on the EAT-26 questionnaire was considered as EAT Positive, indicating having the risk of the eating disorder. A cumulative score of less 20 was considered as EAT negative not having risk of the eating disorder.

The association of eating disorders with subscales of EAT-26, junk food usage, doing breakfast, and pica consumption was determined by applying the chi-square test.

Odd ratio and Confidence interval were also calculated. The p-value of <0.05 was considered statistically significant.

RESULTS

A total of 403 participants were included in the study. All individuals filled out all questions and the response rate was 100%. The mean age of the study participants was 20.4±1.6 years. The mean score of EAT-26 score was 19.02±8.7. Among these 403 participants, 165 (40.9%) had an eating disorder with a mean score of 27.3±6.7 while 238 (59.1%) participants did not have an eating disorder with a mean EAT-26 score of 13.2 ± 3.9. A significant difference occurs in the EAT-26 score among participants suffering from eating disorders (EAT-Positive) and those not suffering (EAT-Negative) from eating disorders (p-value< 0.000) as shown in Table 1.

Among 165 individuals with eating disorders, 65% (n=108) avoid food with high carbohydrate content. 84.2% (n=139) of individuals with eating disorders said they find themselves preoccupied with food, and 90% (n=149) of individuals with eating disorders cut their food into smaller pieces (Table 2).

59.3% of EAT positive said they avoid eating when they are hungry, whereas 90% of said they cut their food into small pieces (Table 3).

Eating disorder was significantly associated with all the subscales of EAT-26 (Table 1, Table 2, and Table 3).

77.9% (n=314) of all the study participants were using junk food, and 82.64% (n=333) were having breakfast. However, no significant association has been found between the risk of developing an eating disorder with either junk food consumption or having breakfast (p-value 0.45 & 0.96, respectively) as shown in Table 4.

Eating non-food particles (PICA) like sand and plastics was positive in (7.2% n = 29) of the participants. No association was found between eating disorders and Pica as shown in Table 5.

Table 1: Association of eating disorders with a dieting subscale of EAT-26

EAT-26	Response of 165 EAT positive participants (Yes/No)	Response of 238 EAT negative participants (Yes/No)	95% Confidence Interval	Odds Ratio	χ^2	p-value
I am terrified about being overweight	42/123 (25.45%)	20/218 (8.4%)	2.1-6.6	3.7	20.5	0.0001
Aware of the calorie content of foods that I eat	55/110 (33.3%)	22/216 (9.2%)	2.8-8.5	4.9	35.0	0.0001
Particularly avoid foods with a high carbohydrate content i.e. bread, rice, potatoes etc	108/57 (65.45%)	54/184 (22.6%)	4.2-10.0	6.4	72.3	0.0001
Feel extremely guilty after eating	24/141 (14.5%)	02/236 (0.8%)	4.6-86.3	20.1	28.1	0.0001
Am preoccupied with a desire to be thinner	66/99 (40%)	50/188 (21%)	1.6-3.9	2.5	16.2	0.0001
Think about burning up calories when I exercise	81/84 (49.09%)	67/171 (28.1%)	1.6-3.7	2.4	17.5	0.0001
Am preoccupied with a thought of having fat on my body	79/86 (48%)	46/192 (19.3%)	2.4-5.9	3.8	35.8	0.0001
Avoid foods with sugar in them	86/79 (52.12%)	58/180 (24.3%)	2.2-5.1	3.4	31.4	0.0001
Eat diet foods	30/135 (18.2%)	30/208 (12.6%)	0.8-2.6	1.5	1.97	0.16
Feel uncomfortable after eating sweets	41/124 (25%)	12/226 (5%)	3.1-12.2	6.2	31.7	0.0001
Engage in dieting behavior	37/128 (22.4%)	15/223 (6.3%)	2.2-8.1	4.2	21.1	0.0001
Like my stomach to be empty	33/132 (20%)	16/222 (6.7%)	1.8-6.6	3.5	14.8	0.0001
Enjoy trying new rich foods	8/157 (4.8%)	04/234 (1.7%)	0.88-10.0	2.9	2.37	0.123

Chi-square test was applied, p-value <0.05 was considered statistically significant

Table 2: Association of eating disorder with bulimia nervosa and food preoccupation subscale of EAT-26

EAT-26	Response of 165 EAT Positive Participants (yes/no)	Response of 238 EAT Negative Participants (yes/no)	95% Confidence Interval	Odds Ratio	χ^2	p-value
Find myself preoccupied with food	139/26 (84.2%)	46/192 (18.9%)	13.1-37.8	22.3	162	0.0001
Have gone on eating binges where I feel that I may not be able to stop	71/94 (43%)	26/212 (10.92%)	3.6-10.2	6.1	53.2	0.0001
Vomit after I have eaten	14/151 (8.4%)	02/236 (0.75%)	2.4-48.4	10.9	13.0	0.0003
Feel that food controls my life	108/57 (65.45%)	78/160 (32.7%)	2.5-5.9	3.8	40.5	0.0001
Give too much time and thought to food	51/114 (31%)	29/209 (12.18%)	1.9-5.3	3.2	20.3	0.0001
Have the impulse to vomit after meals	109/56 (66%)	201/37 (84.45%)	0.22-0.57	0.3	17.5	0.0001

Chi square test applied; p-value <0.05 was considered statistically significant.

Table 3: Association of eating disorder with oral control subscale of EAT-26

EAT-26	Response of 165 EAT positive participants (yes/no)	Response of 238 EAT negative participants (yes/no)	95% Confidence Interval	Odds Ratio	χ^2	p-value
Avoid eating when I am hungry	98/67 (59.3%)	41/197 (17.22%)	4.4-11.1	7.0	74.8	0.0001
Cut my food into small pieces	149/16 (90.3%)	215/23 (90.33%)	0.5-1.9	0.9	0.02	0.81
Feel that others would prefer if I ate more	51/114 (31%)	22/216 (9.2%)	2.5-7.6	4.3	29.3	0.0001
Other people think that I am too thin	65/100 (39.3%)	77/161 (32.35%)	0.8-2.0	1.3	1.8	0.177
Take longer than others to eat my meal	116/49 (70.3%)	87/151 (36.55%)	2.6-6.2	4.1	43.0	0.0001
Display self-control around food	123/42 (74.5%)	154/84 (64.7%)	1.0-2.4	1.6	3.9	0.047
Feel that others pressure me to eat	41/124 (24.8%)	14/224 (5.88%)	2.7-10.0	5.2	28.1	0.0001

Chi-square test was applied. 95% CI was also calculated, p-value <0.05 was considered statistically significant

Table 4: Association of EAT-26 with junk food and breakfast habits

Junk Food Eaters	EAT-26 Positive	EAT-26 Negative	Total	Confidence Interval	Odds Ratio	χ^2	p-value
Yes	125 (31.02%)	189 (47.00%)	314 (77.91%)	0.503-1.303	0.18	0.55	0.45
No	40 (9.92%)	49 (12.16%)	89 (22.08%)				
Total	165 (40.94%	238 (59.06%)	403 (100%)				
Doing Breakfast	**EAT-26 Positive**	**EAT-26 Negative**	**Total**	**Confidence interval**	**Odds ratio**	**χ^2**	**p-value**
Yes	136 (33.75%)	197 (48.88%)	333 (82.64%)	0.578-1.647	0.98	0.001	0.96
No	29 (7.19%)	41 (10.17%)	70 (17.36%)				
Total	165 (40.94%)	238 (59.06%)	403 (100%)				

Chi-square test was applied. p-value <0.05 was considered statistically significant

Table 5: Association of eating disorders with pica (Eating of Non-food items)							
Eating Disorder	**Yes**	**No**	**Total**	**Confidence Interval**	**Odds Ratio**	**χ^2**	**p-value**
Pica Positive	13 (44.8%)	16 (55.2%)	29 (7.2%)				
Pica Negative	152 (40.6%)	222 (59.4%)	132 (32.75%)	0.55-2.58	1.18	0.19	0.659
Total	165 (40.9%)	238 (59.1%)	403 (100%)				

DISCUSSION

This study aimed to determine the prevalence of eating disorders among male undergraduate students. The study's results showed that a sizeable proportion of the male students attending Sindh University in Jamshoro, Pakistan had unhealthy eating attitudes. The current study found that 40.9% of the students had abnormal eating attitudes and behaviors. This percentage is significantly higher than the previous prevalence reported in Pakistan, which is 36.5%, 26.6%, 22.7%, and 21.7% by Khalid et al., Aslam et al., Memon et al., and Babar et al., respectively.[18-21] Such a high prevalence among our students is alarming. Students must be taught the value of healthy diets. Acrocyanosis, complicated diabetes, osteoporosis, hepatic dysfunction, and purpura are just some complications of anorexia nervosa. Crucially, anorexic patients often die at an early age due to one of the abovementioned complications.[22] Significant differences in all three EAT-26, i.e. dieting subscale, bulimia nervosa, food preoccupation subscale, and oral control subscale, were present among EAT positive and EAT negative participants, respectively, which are similar to the previously published data.[18-21]

Evidence from both Katzman et al. and Pope et al. showed that eating disorders were more prevalent in females.[23,24] However a study by Khalid et al. stated no statistically significant difference between the prevalence of disturbed eating attitudes among males and females, and they concluded that girls weren't the only ones with unhealthy eating attitudes.[18] Eating disorders among male students were reported as 37.2% by Khalid et al., and 12.1% by Memon et al., which is much less than the results of the present study. The mean EAT-26 score of current study participants was 19, which is more than the mean score of 16 & 13 reported by Khalid et al, and Memon respectivey [18,19.] One of the reasons may be the influence of media, as studies by Khalid et al., and Memon et al., were conducted in 2017 and 2012, respectively. With the advancement of time, more students have access to smartphones. More use of social media may influence eating habits. Hasan et al. found that eating disorders and body image issues are extremely common among college students. They demonstrated that a significant role is played by both the media and families in the onset of eating disorders in adolescents and young adults.[25]

According to our study findings, 77.9% of participants used junk food. Banik et al., reported the prevalence of junk food usage as 68.1% of their study participants.[13] Education of our students on healthy food consumption is a need of the hour because fast food intake is linked to an increased risk of depression and mental comorbidities.

Time and financial restraints limited the scope of this study. This research was limited to undergraduates at Sindh University, Jamshoro, and did not include female students. The result of our study does not reflect the prevalence of eating disorders among the general population.

In addition, the EAT-26 questionnaire was designed solely as a preliminary diagnostic instrument. Only a qualified medical professional can confirm a diagnosis of an eating disorder in a patient.

CONCLUSION

A considerable number of undergraduate university students are at risk of having eating disorders. Modifications in diet patterns may be an early warning sign of health problems. Finding out what causes eating disorders is crucial. It is highly desirable and recommended that regular screening should be conducted, and efforts should be made to raise awareness about eating disorders among students.

Conflict of Interest:
All authors declared no conflict of interest.

Contributors:
NS, JW, BM: Conceptualization of study, data collection, reviewing the draft for final approval. **TS, RM, AAB & AMM**: Conceptualization of study, data analysis, draft writing.

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

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The data that support the findings of this study are available from the corresponding author on reasonable request.

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