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DETECTION OF EATING DISORDERS IN UNIVERSITY STUDENTS USING SCOFF QUESTIONNAIRE

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ABSTRACT

Eating disorders are the group of conditions characterized by abnormal eating habits, EDs such as Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorders and Eating Disorders Not Otherwise Specified EDNOS are common both in western countries and non western countries. Recently, the prevalence of eating disorders has also been reported in several Asian countries including Pakistan. EDs are most common in students particularly University students. The purpose of this study is to screen the students of Sindh University for the likelihood of eating disorders using SCOFF test. A descriptive cross sectional study was carried out on the students of Sindh University Jamshoro. Data was collected using a five questions SCOFF questionnaire; the data was analyzed in SPSS software. SCOFF questionnaire detected 24.6% individuals at high risk of eating disorders. Female students and the students of younger age group (18-21 years) were significantly ($P < 0.001$) at higher risk than male students and the students of older age group (22-25 years). Likelihood of eating disorders was detected in all categories of BMI. Overall, the detection of SCOFF positive students was highest.

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INTRODUCTION

Eating disorders are the group of conditions characterized by clinical disturbances in body image and eating habits (Cohn, Adler et al., 1987; Hudson, Hiripi et al., 2007). The sufferers of eating disorders either take insufficient food or excessive food, which can cause physical and mental health problems (Hudson, Hiripi et al., 2007; Mond, Hay et al., 2011; Munsch and Herpertz 2011). The individuals with anorexia nervosa have fear of gaining weight even when they are already underweight (Mitchell and Crow 2006). Bulimia Nervosa is a cycle of binge eating accompanied by purging and fasting (Mitchell and Crow 2006). The Eating Disorders Not Otherwise Specified reflect the many cases of eating disorders, however, these do not meet the diagnostic criteria of anorexia nervosa and bulimia nervosa (Fairburn and Bohn 2005). The people with Binge Eating Disorders eat an uncontrollable large amount of food during

each episode of binge (Hudson, Lalonde et al., 2006). Prevalence of eating disorders in western countries continues to be a problem of concern, in these countries maintaining the shape and size is influenced by socio-cultural factors (Russell 1979; Garner and Garfinkel 1980; Preti, Girolamo et al., 2009). Recently, prevalence of eating disorders has also been reported in Asian countries including Pakistan (Gunewardene, Huon et al., 2001; Al-Adawi, Dorvlo et al., 2002; Memon, Adil et al., 2012). Eating disorders are common in males and females of all ages; however, most cases predominantly occur in young women (Dissing, Bak et al., 2011). The adolescents and young adults are considered at more risk for developing eating disorders (Dissing, Bak et al., 2011). Eating disorders is also the leading concern in Pakistan. Number of studies on EDs has been reported from various region of Pakistan, these studies report the prevalence of EDs from Lahore (Suhail and Zaib u 2002), Karachi (Memon, Adil et al., 2012), and Islamabad (Shaikh and Kayani 2014). Several studies around the world and particularly Pakistan report the higher prevalence of EDS in university students. This suggests that an

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increased prevalence of eating disorders in university students might be associated with higher level of stress, which is an important factor of eating disorders (Costarelli and Patsai 2012; Filaire, Treuvelot *et al.*, 2012). The purpose of this study is to screen the students of Sindh University, which represents both the urban and rural population of Sindh, using scoff test (Morgan, Reid *et al.*, 2000). SCOFF test is useful screen tool, and its translated version has been used in several studies conducted around the world (Leung, Lee *et al.*, 2009; Garcia, Grigioni *et al.*, 2011). For this study, we are using the English version of Scoff test.

MATERIAL AND METHODS

Study setting and sample

For this study, we randomly selected 1407 undergraduate students of Sindh University Jamshoro, This University is located at southern province of Pakistan, and in terms of race, ethnicity, gender and urban and rural setup, this University approximates the demographic characteristics of population of southern Pakistan. This study was conducted from January 2013 to June 2013. Participants were approached directly within the University timings. Informed consent was obtained from all the students who participated in this study. Out of 1407 students, 1384 completed the questionnaire giving the response rate of 98.36%. Out of these 1384, 702 were male students and 682 were female students. All the students were aged between 18-25 years. According to the living area 726 belonged to the urban set up and 658 belonged to the rural setup.

Measurements and collection of data

Anthropometric measurements like height weight were performed by experienced and trained staff. SCOFF test questionnaire was distributed to volunteers. All the volunteers were non-smokers, non alcoholic and they were not on medication. Height was measured to the nearest 0.1cm without shoes with the help of stadiometer. Weight was measured twice to the nearest 0.1 kg with the individual wearing light cloths, without shoes using a mechanical beam balance. English version of SCOFF test questionnaire was distributed to the students with no limit of time to fill it in calm environment. SCOFF questionnaire is simple five question screening test. SCOFF questionnaire has been designed to suggest the likely case rather than to diagnose. However, 2 or more positive answers raise the likelihood of an individual suffering from eating disorders. More detailed history is taken to further diagnose the eating disorders. Scoff test has sensitivity of 100% and specificity of 90% for anorexia nervosa.

The SCOFF questionnaire*

- Do you make yourself Sick because you feel uncomfortably full?
- Do you worry that you have lost Control over how much you eat?
- Have you recently lost more than One stone (14 lb) in a 3-month period?
- Do you believe yourself to be Fat when others say you are too thin?
- Would you say that Food dominates your life?

*A score of ≥ 2 positive answers "Yes" indicate the likely case of eating disorders
Taken from Morgan *et al.* (2000)

Statistical analysis

We estimated the proportion of SCOFF positive test for whole group as well as separately, according to the age, sex, living

area and BMI. Statistical analyses were performed using the Statistical Package for the Social sciences, SPSS version 16. P-values were obtained by Pearson Chi Square Test to determine the significance of the results.

RESULTS

Out of 1407 1384 returned the completed questionnaire representing the response rate of 98.36%. Out of 1384 volunteers, 702 were males and 682 were females. The mean age of total participants was 20.6 ± 1.4 , and the mean BMI was 20.1 ± 3.2 . The mean age of male participants was slightly higher 20.8 ± 1.4 with mean BMI 20.2 ± 2.9 . The mean age of female participants was 20.6 ± 1.7 and the mean BMI was 20.4 ± 3.8 . Out of 1384 individuals, scoff questionnaire detected 341 (24.6%) individuals at high risk of eating disorders. Out of reported 341 individuals who scored 2 or above, 226 (66.3%) were females and 115 (33.7%) were males. Table 1 shows that female students were significantly ($P < 0.001$) at higher risk than male students.

Table 1. SCOFF results in relation to gender, age, living area and BMI

	SCOFF test Positive (n=341)	Negative (n=1043)	Total	P - values
Gender				
Male	115 (16.4)	587 (83.6)	702 (100)	< 0.0001
Female	226 (33.1)	456 (66.9)	682 (100)	
Age (years)				
18-21	248 (28.7)	617 (71.3)	865 (100)	< 0.0001
22-25	93 (17.9)	426 (82.1)	519 (100)	
Living area				
Urban	193 (26.6)	533 (73.4)	726 (100)	0.078
Rural	148 (22.5)	510 (77.5)	658 (100)	
BMI				
Severely Underweight	42 (18.5)	185 (81.5)	227 (100)	< 0.0001
Under weight	31 (9.7)	287 (90.3)	318 (100)	
Normal	255 (32.3)	535 (67.7)	790 (100)	
Over weight	9 (23.7)	29 (76.3)	38 (100)	
Obese Class1	4 (36.4)	7 (63.6)	11 (100)	

Those students who belong to the younger age group (18-21) were at more risk ($P < 0.001$) of eating disorders than older age group (22-25). Screening with SCOFF test found that the students who live in urban areas have slightly higher chances of eating disorders, however, it was not statistically significant ($P = 0.078$). Likelihood of eating disorders was detected in all categories of BMI, however, overweight and obese had higher percentage of SCOFF positive test. 18.5% of the severely underweight students screened positive for SCOFF test, and only 9.7% underweight students had SCOFF test positive results. Interestingly, students with normal BMI were also screened positive for SCOFF test, 32% of students having the BMI in normal range had likelihood of eating disorders. Statistically significant difference ($P < 0.001$) was observed according to BMI categorization.

DISCUSSION

Our results show that significant proportions of undergraduate students are at risk of eating disorders. This percentage (24.6%) is even higher than the study (17%) carried out in Karachi (Memon, Adil *et al.*, 2012), which is fully urbanized city. However, the prevalence of SCOFF positive cases was higher (64.9%) in the study carried out in female school and college students of Islamabad (Shaikh and Kayani 2014). This higher percentage might be due to stress associated with university students (Dissing, Bak *et al.*, 2011; Memon, Adil *et al.*, 2012; Shaikh and Kayani 2014). This study also indicates that Pakistan is rapidly undergoing social economic changes due increased media exposure and internet. The data we collect suggest that likelihood of eating disorders is significantly higher in female students. This is consistent with available literature; number of reports around the world suggests that females have higher prevalence of eating disorders (Shaikh and Kayani 2014). The study conducted on medical university of Karachi students also indicated the higher proportion of female students had likelihood of eating disorders (Memon, Adil *et al.*, 2012). Females are often more conscious about their body shape and size, which is influenced by the socio-cultural habits and media exposure (Stice, Schupak-Neuberg *et al.*, 1994). This study confirms that the concept of beauty in female is changed, and struggling to be slim in female students putting them at more risk of eating disorders like anorexia nervosa. To our knowledge, this is the first study which addresses the comparison of students from urban and rural communities of Pakistan. We do not find any significant difference between urban and rural students. However, urban students have slightly higher chances of developing eating disorders, this finding is in agreement with other published studies (Jackson, Rashed *et al.*, 2003; van Son, van Hoeken *et al.*, 2006). The students from urban set up are more prone to the media exposure (Hogan and Strasburger 2008), this might be the reason that students from urban set up are at slightly higher risk than students from rural set. However, this finding needs confirmation in a study on generalized population of urban and rural setup. Eating disorders are higher in adolescent and young groups (Shaikh and Kayani 2014). However, we have found the age group 18-21 students have higher scoff positive than the students having the age group from 22-25. The difference between this age group was statistically significant. The study conducted on medical students of Karachi showed no difference in these age groups (Memon, Adil *et al.*, 2012). This confirms that adolescents and young adults are at more risk of eating disorders.

The data we present here shows higher prevalence of eating disorders in underweight and severely underweight subjects than the study conducted in Karachi on medical students (Memon, Adil *et al.*, 2012). Our study finds highest number of individual with BMI less than 18.5; this might be due to under nutrition. Previous studies from Pakistan have reported higher prevalence of underweight individuals (Warraich, Javed *et al.*, 2009). However, it is necessary to redefine the BMI cut-off points in Pakistan population, since using the Asian specific cut off point puts the more population on overweight (Jafar 2006). Over weight and obese students have higher SCOFF test positive results this is consistent with already published results (Memon, Adil *et al.*, 2012). Even the individuals with

normal BMI have likelihood of eating disorders. This indicates the EDs are prevalent in all categories of BMI. This study is limited only to the university students, and it does not address the general population. Moreover this study also not addresses association of EDs with socio-economic conditions and ethnicity of the students. Study must be conducted in future to find out the association of BMI with EDs using Asian specific BMI cut off points.

Conclusion

Overall, we have found the highest SCOFF positive cases compared with studies published globally. Surprisingly, no student knew that he suffers from possible EDs, and no student has contacted the psychiatrist or any health consultant for treatment. EDs are becoming the problem of concern in Pakistan; early detection of EDs can help in treatment of EDs at the earlier stage.

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