How to Cite:
Malik, M., Arshad, A., Hussain, A., & Hashmi, A. (2023). Screening of eating disorders among adolescents: A study from Pakistan. *International Journal of Health Sciences*, *7*(S1), 1881–1900. https://doi.org/10.53730/ijhs.v7nS1.14312

Screening of eating disorders among adolescents: A study from Pakistan

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***Abstract*---**Background: Eating Disorders is a common chronic condition among adolescents which ranks at third position after obesity and asthma and is more than thrice as prevalent in females as compared to males. Objective: The objective of the present study was to screen adolescencts for eating disorders and anxiety in Pakistan. Methodology: A sample of 382 adolescent respondents was selected from high schools (both public and private) located in twin cities (Rawalpindi and Islamabad) of Punjab Pakistan and Mirpur (Azad Kashmir). Four pre-validated data collection tools i.e. Sick Control One Fat Food (SCOFF) questionnaire, EDE-A (Eating Disorder Examination Questionnaire), CIA (Clinical impairment assessment) and STAI (state trait anxiety inventory) were used for screening of eating disorders and anxiety among conveniently selected adolescents. All the data was coded, entered and analyzed using SPSS 21. Results: The results of the current study showed that among adolescent respondents the prevalence of Eating Disorders was 57.6 % (n=220) after screening. ED was more common among early aged adolescents, of 13 years 30% (n=15) and 14 years 26% (n=13) age. Females were

Manuscript submitted: 27 March 2023, Manuscript revised: 09 May 2023, Accepted for publication: 18 June 2023

more prone to ED 80% (n=40), than males 20% (n=10). Anxiety levels were quite high 30.6% (n=117) among adolescents. Conclusion: The study concluded high prevalence of eating disorders and anxiety among adolescents. Anorexia and Bulimia nervosa were the most commonly identified eating disorders among adolescents. Educational programs should be arranged in high schools and at the community level to improve the knowledge and awareness regarding eating disorders among adolescents and their parents. Healthcare workers should also focus on early screening and treatment of adolescents diagnosed with eating disorders.

***Keywords*---**Eating Disorders, Screening, Anxiety, SCOFF, Pakistan.

Introduction

Eating disorders in adolescents and children is a considerable challenge, which may results in seeking life-long medical and psychosocial assistance (Vale et al., 2014). The etiology of eating disorders include, poor nutrition intake, sedentary and inactive life style, hereditary, socioeconomic status (SES) and lack of nutrition knowledge (Egg et al., 2020). Psychosocial factors associated with these disorders include negative effects, socio-cultural pressure and perceived beauty (Feng & Abebe, 2017) other factors include low self-esteem, fear of weight gain, stress and anxiety (Ng et al., 2018). Adolescence founds to be an acute stage of multidimensional notion of body image, either perceived as healthy or unhealthy (Schuck et al., 2018). Various studies found that eating behaviors of adolescence comprise of high fat content and sugar intake, omission of dietary guidelines, low consumption of vegetables and fruits, and sedentary or inactive lifestyle with hours on TV, laptop or mobile phones (Cecon et al., 2017a; Egg et al., 2020).

Eating Disorders is a common chronic condition among adolescencts which ranks at third position after obesity and asthma and is more than thrice as prevalent in females as compared to males (Golden et al., 2016). By the age of 20 years 13% of adolescents develop disordered eating behaviors (Rienecke, 2017). Eating disorders might be more common among adolescents residing in developing countries as socio-cultural factors might be considered as prospective risk factor (Tuffa et al., 2020). Moreover, genetic and phenotypic factors are also associated with the onset of eating disorders and comorbid mental health issues among adolescents. (Robinson, Zhang, Jia, Bobou, Roach, Campbell, Irish, Quinlan, Tay, Barker, et al., 2020).

Development of eating disorders is associated with obesity and its chances increases by thirteen times among obese children and adolescents and often also correlates with body distortion and eating disorder triage (Cecon et al., 2017a). One third adolescents with suffering from eating disorders mostly have menstrual problems, most commonly amenorrhea (Vale et al., 2014). Other risk factors include diabetes and certain types of cancer (Leme et al., 2020). Clinical and epidemiological studies reported that people with type I and type II diabetes are more prone to developing eating disorders (Racicka & Bryńska, 2015). In patient with type II diabetes, 40% may be affected by eating disorders, most common

Binge eating disorders followed by Bulimia Nervosa (Dias Santana et al., 2019). Diabetic children and adolescents are more likely to develop problems with eating habits due to lifestyle changes, caloric restrictions, dietary restrains for blood glucose regulations, skipping food and binge eating attacks which might have serious impact on mental health and increase the chance of psychiatric disorder i.e. eating disorders (Luyckx et al., 2019; Troncone et al., 2020). Meta-analysis showed that probability of clinical eating disorder or disordered eating behavior is linked with $HbA_{1c,}$ with increase in every unit value of HbA1c the chances of developing eating disorders increases up to 63% and for every unit of skipped insulin it increases up to 36% (Dias Santana et al., 2019; Luyckx et al., 2019).

Although, etiology for development of eating disorders is multifactorial and complex but early detection and treatment is necessary to retain optimal health and decrease the chances of further complications, either there is complexity managing diabetes along with Eating Disorders (Atik Altınok et al., 2017). Eating Disorders are common among Pakistani adolescents, but it is under-diagnosed, untreated and misunderstood due to lack of screening, knowledge and awareness. It is rarely considered as a mental illness. Weight and body appearance are seen as social taboos in the country. There is lack of specialized services for management of eating disorders along with unavailability of experts. Limited research data is available on the prevalence and issues associated with eating disorders. Early detection through screening can assist to develop evidence-based treatment strategies which can help the patients to recover at initial stages and prevent from further complications. Therefore, the present study was designed to screen adolescencts for eating disorders and anxiety in Pakistan.

Methodology

A descriptive cross-sectional study design was used. Study approval was acquired from the Ethical Committee of Hamdard University (Ref no.HU/ERB-089). Apart from this, the research team contacted the Principles of the chosen high schools for permission and participation. The participants for this study included the adolescents aged between 13-17 years registered in high schools (both public and private) located in of twin cities (Rawalpindi and Islamabad) of Punjab Pakistan and Mirpur (Azad Kashmir). The inclusion criteria for adolescents of age between 13 to 17 years, those able to give informed consent, able to read and understand English to answer the questionnaire. Those not previously diagnosed with any eating disorder or mental health issue and screened with eating disorder. While those not willing to participate or unable to read and write were excluded. Students were selected according to the age group of interest and both genders were included. Written/verbal consent was obtained from the student as well as parents of the children, through teachers as they were younger than 18 years of age. During the study, to ensure the confidentiality of the participants, the questionnaire was kept anonymous. The sample size for this study was calculated using Raosoft® sample size calculator. The minimum sample size needed for this study was 382 to achieve a 95% confidence interval, at 5% margin of error. Convenience sampling technique was used to select the schools and the respondents as well. Four pre-validated data collection tools i.e. Sick Control One Fat Food (SCOFF) questionnaire, EDE-A (Eating Disorder Examination Questionnaire), CIA (Clinical impairment assessment) and STAI (state trait

anxiety inventory) were used for screening of eating disorders and anxiety with the assistance of school teachers, during a pre-organized visit to each school. The SCOFF Questionnaire is a five-question screening tool designed to clarify suspicion that an eating disorder might exist rather than to make a diagnosis. Each "yes" response to the five yes/no questions on the SCOFF is summed for the total score. Scores of 2 or greater indicates chances of diagnosis of Anorexia or Bulimia. The Eating Disorder Examination Questionnaire (EDE-Q) is a 28-item self-reported questionnaire. A cut-off of 4 on the global score is generally used as clinically significant. The Clinical Impairment Assessment questionnaire (CIA) is a 16-item self-report measure of the severity of psychosocial impairment due to eating disorder features. Scores range from 0 to 48, with higher ratings indicate a higher level of impairment. STAI comprises separate self-report scales for measuring two distinct anxiety concepts: state anxiety and trait anxiety. STAI scores are commonly classified as "no or low anxiety" (20-37), "moderate anxiety" (38-44), and "high anxiety" (45-80). Students filled the questionnaire and gave it back at the same time. After data collection, data was coded and analyzed statistically using SPSS version 21.

Results

Out of 382 respondents, 28.8% (n =110) were males and 71.2% (n=272) were females. Majority of the adolescents 33% (n=126) and 26.2% (n=100) were from age group 17 and 13 years of age, respectively. Height range of adolescents was quite variable and majority 69.1% (n=264) of them were between 5.0 to 5.11 feet whereas a few 4.2% (n=16) had 2.5 to 3.11 feet height range. Regarding weight, only 1% (n=4) had weight ranging from 81 to 90 kg while major group 35.4% (n=135) fell under 41 to 50 kg. A detailed description is given (Table 1)

Table 1 Demographic Characteristic of Respondents

Characteristics	n (%)
Age	
13 years	100 (26.2)
14 years	57 (14.9)
15 years	54 (14.1)
16 years	44 (11.5)
17 years	126 (33)
Gender	
Male	110 (28.8)
Female	272 (71.2)
Height	
2.5-3.11	16 (4.2)
4.0-4.11	88 (23)
5.0-5.11	264 (69.1)
6.0-6.11	14 (3.7)
Weight	
21-30	28 (7.3)
31-40	101 (26.4)
41-50	135 (35.4)

51-60		68 (17.8)
61-70		36 (9.4)
71-80		10 (2.6)
81-90		4 (1.0)
City		
Rawalpindi		63 (16.5)
Islamabad		94 (24.6)
Mirpur		225 (58.9)
Setting		
Urban		258 (67.5)
Rural		124 (32.5)
Parents Qualification		
Matriculation		159 (41.6)
Intermediate		87 (22.8)
Undergraduate		59 (15.4)
Postgraduate		76 (19.9)
Parent Occupation		
Public		59 (15.4)
Private		323 (84.6)
Parents Income		
>10,000		58 (15.2)
10,000-20,000		66 (17.3)
21,000-30,000		47 (12.3)
31,000-40,000		47 (12.3)
41,000-50,000		49 (12.8)
<50,000		115 (30.1)
Parents Marital Status		
Married		370 (96.9)
Divorced		8 (2.1)
Widow		3 (0.8)
Are you suffering from any disease?	Yes	22 (5.8)
	No	360(4.2)

The results of the current study showed that majority of students 69.9% (n=267) never tried to cut down food to control their weight or body shape while a few 7.1% (n=27) daily tried to do so. On further investigations, some of them 2.9% (n=11) students claimed that they tried to go more than 8 hours a day without eating, while a good number of students 61.5% (n=235) denied such practice. Likewise, 64.7% (n=247) students never tried to skip their favorite meal whereas 3.4% (n=13) skipped their favorite meal. Some of the students 3.9% (n=15) tried to set some sort of restrictions to limit their weight and shape but majority 63.1% (n=241) did not practice such habits. A detailed description is given (Table 2).

Table 2 Screening of ED among Adolescents using eating disorder examination questionnaire

Indicator	Options	n (%)
Have you been trying to cut down on food to control your weight or shape?	No days	267 (69.9)
	1–2 days	49 (12.8)
	3–6 days	20 (5.2)
	7 days	8 (2.1)
	8–10 days	4 (1.0)
	12–13 days	7 (1.8)
	Every day	27 (7.1)
Have you gone for long periods of time (8 hours or more) without eating Anything to control your shape or weight?	No days	235 (61.5)
	1–2 days	70 (18.3)
	3–6 days	39 (10.2)
	7 days	17 (4.5)
	8–10 days	4 (1.0)
	12–13 days	6 (1.6)
	Every day	11 (2.9)
Have you tried not to eat any foods you like to control your weight and shape?	No days	247 (64.7)
	1–2 days	45 (11.8)
	3–6 days	46 (12.0)
	7 days	15 (3.9)
	8–10 days	8 (2.1)
	12–13 days	8 (2.1)
	Every day	13 (3.4)
Have you tried to keep to any strict rules about eating to control your shape or weight? For example, a calorie limits a set amount of food, or rules about what and when you should eat?	No days	241 (63.1)
	1–2 days	34 (8.9)
	3–6 days	39 (10.2)
	7 days	28 (7.3)
	8–10 days	15 (3.9)
	12–13 days	10 (2.6)
	Every day	15 (3.9)
Have you wanted your stomach to be empty?	No days	253 (66.2)
	1–2 days	32 (8.4)
	3–6 days	33 (8.6)
	7 days	21 (5.5)
	8–10 days	12 (3.1)
	12–13 days	10 (2.6)
	Every day	21 (5.5)
Has thinking about food or calories made it much harder to concentrate on things you are interested in; for example, reading, watching tv, or doing your homework?	No days	246 (64.4)
	1–2 days	34 (8.9)
	3–6 days	28 (7.3)
	7 days	19 (5.0)
	8–10 days	15 (3.9)
	12–13 days	8 (2.1)
	Every day	32 (8.4)

Have you been scared of losing control over eating?	No days	231 (60.5)
	1–2 days	45 (11.8)
	3–6 days	32 (8.4)
	7 days	28 (7.3)
	8–10 days	10 (2.6)
	12–13 days	5 (1.3)
	Every day	31 (8.1)
Have you had eating binges?	No days	221 (57.9)
	1–2 days	38 (9.9)
	3–6 days	44 (11.5)
	7 days	25 (6.5)
	8–10 days	14 (3.7)
	12–13 days	11 (2.9)
	Every day	29 (7.6)
Have you eaten in secret? (Do not count binges.)	No days	221 (57.9)
	1–2 days	43 (11.3)
	3–6 days	30 (7.9)
	7 days	32 (8.4)
	8–10 days	18 (4.7)
	12–13 days	13 (3.40
	Every day	25 (6.5)
Have you really wanted your stomach to be flat?	No days	183 (47.9)
	1–2 days	36 (9.4)
	3–6 days	33 (8.6)
	7 days	18 (4.7)
	8–10 days	11 (2.9)
	12–13 days	9 (2.4)
	Every day	92 (24.1)
Has thinking about shape or weight made it much harder to concentrate on things you are interested in; for example, reading, watching TV, or doing your homework?	No days	284 (74.3)
	1–2 days	32 (8.4)
	3–6 days	28 (7.3)
	7 days	18 (4.7)
	8–10 days	6 (1.6)
	12–13 days	0 (0)
	Every day	14 (3.7)
Have you been really scared that you might put on weight and get fat?	No days	204 (53.4)
	1–2 days	58 (15.2)
	3–6 days	41 (10.7)
	7 days	25 (6.5)
	8–10 days	6 (1.6)
	12–13 days	6 (1.6)
	Every day	42 (11.0)
Have you felt fat?	No days	215 (56.3)
	1–2 days	47 (12.3)
	3–6 days	22 (5.8)
	7 days	26 (6.8)

	8–10 days	8 (2.1)
	12–13 days	11 (2.9)
	Every day	53 (13.9)
Have you had a strong wish to lose weight?	No days	199 (52.1)
	1–2 days	30 (7.9)
	3–6 days	21 (5.5)
	7 days	26 (6.8)
	8–10 days	14 (3.7)
	12–13 days	7 (1.8)
	Every day	85 (22.3)
How often have you felt guilty after eating because of the effect on your shape and weight?	No days	224 (58.6)
	1–2 days	58 (15.2)
	3–6 days	18 (4.7)
	7 days	30 (7.9)
	8–10 days	11 (2.9)
	Every day	26 (6.8)
Over the past two weeks (14 days), have there been any times when you have felt that you ate what other people would think was a very large amount of food given the situation?	No	247 (64.7)
	Yes	135 (35.3)
How many such times have you done this over the past two weeks?	No days	251 (65.7)
	1–2 days	70 (18.3)
	3–6 days	46 (12)
	7 days	10 (2.6)
	8–10 days	3 (0.8)
	12–13 days	0
	Every day	2 (0.5)
During how many of these episodes of overeating did you have a sense of having lost control?	No days	291 (76.2)
	1–2 days	43 (11.3)
	3–6 days	33 (8.6)
	7 days	8 (2.1)
	8–10 days	2 (0.5)
	12–13 days	3 (0.8)
	Every day	2 (0.5)
Have there been other times when you felt that you lost control and felt you ate too much, but did NOT eat a very large amount of food given the situation?	No	251 (65.7)
	Yes	131 (34.3)
How many times has this happened over the past two weeks?	No days	254 (66.5)
	1–2 days	60 (15.7)
	3–6 days	43 (11.3)
	7 days	8 (2.1)
	8–10 days	7 (1.8)
	12–13 days	2 (0.5)
	Every day	8 (2.1)
Over the past two weeks have you made	No	304 (79.6)

yourself sick (vomit) to control your shape or weight?	Yes	78 (20.4)
How many such times have you done this over the past two weeks?	No days	307 (80.4)
	1–2 days	61 (16)
	3–6 days	4 (1.0)
	7 days	5 (1.3)
	8–10 days	2 (0.5)
	12–13 days	0 (0)
	Every day	3 (0.8)
Have you taken laxatives to control your shape or weight?	No	317 (83)
	Yes	65 (17)
How many times have you done this over the past two weeks?	No days	320 (83.8)
	1–2 days	47 (12.3)
	3–6 days	7 (1.8)
	7 days	2 (0.5)
	8–10 days	2 (0.5)
	12–13 days	2 (0.5)
	Every day	2 (0.5)
Have you taken diuretics to control your shape or weight?	No	318 (83.2)
	Yes	64 (16.8)
How many times have you done this over the past two weeks?	No days	323 (84.6)
	1–2 days	45 (11.8)
	3–6 days	7 (1.8)
	7 days	5 (1.3)
	8–10 days	1 (0.3)
	12–13 days	0 (0)
	Every day	1 (0.3)
Have you exercised hard to control your shape or weight?	No	261 (68.3)
	Yes	121 (31.7)
How many times have you done this over the past two weeks?	No days	269 (70.4)
	1–2 days	54 (14.1)
	3–6 days	41 (10.7)
	7 days	9 (2.4)
	8–10 days	3 (0.8)
	12–13 days	3 (0.8)
	Every day	3 (0.8)
Has your weight affected how you think about (judge) yourself as a person?	Not At All	239 (62.6)
	Slightly	90 (23.6)
	Moderately	33 (8.6)
	Markedly	20 (5.2)
Has your shape affected how you think	Not At All	221 (57.9)
overeating did you have a sense of having lost control?	1–2 days	43 (11.3)
	3–6 days	33 (8.6)
	7 days	8 (2.1)
	8–10 days	2 (0.5)
	12–13 days	3 (0.8)
	Every day	2 (0.5)
Have there been other times when you	No	251 (65.7)

felt that you lost control and felt you ate too much, but did NOT eat a very large amount of food given the situation?	Yes	131 (34.3)
How many times has this happened over the past two weeks?	No days	254 (66.5)
	1–2 days	60 (15.7)
	3–6 days	43 (11.3)
	7 days	8 (2.1)
	8–10 days	7 (1.8)
	12–13 days	2 (0.5)
	Every day	8 (2.1)
Over the past two weeks have you made yourself sick (vomit) to control your shape or weight?	No	304 (79.6)
	Yes	78 (20.4)
How many such times have you done this over the past two weeks?	No days	307 (80.4)
	1–2 days	61 (16)
	3–6 days	4 (1.0)
	7 days	5 (1.3)
	8–10 days	2 (0.5)
	12–13 days	0 (0)
	Every day	3 (0.8)
Have you taken laxatives to control your shape or weight?	No	317 (83)
	Yes	65 (17)
How many times have you done this over the past two weeks?	No days	320 (83.8)
	1–2 days	47 (12.3)
	3–6 days	7 (1.8)
	7 days	2 (0.5)
	8–10 days	2 (0.5)
	12–13 days	2 (0.5)
	Every day	2 (0.5)
Have you taken diuretics to control your shape or weight?	No	318 (83.2)
	Yes	64 (16.8)
How many times have you done this over the past two weeks?	No days	323 (84.6)
	1–2 days	45 (11.8)
	3–6 days	7 (1.8)
	7 days	5 (1.3)
	8–10 days	1 (0.3)
	12–13 days	0 (0)
	Every day	1 (0.3)
Have you exercised hard to control your shape or weight?	No	261 (68.3)
	Yes	121 (31.7)
How many times have you done this over the past two weeks?	No days	269 (70.4)
	1–2 days	54 (14.1)
	3–6 days	41 (10.7)
	7 days	9 (2.4)
	8–10 days	3 (0.8)
	12–13 days	3 (0.8)
	Every day	3 (0.8)
Has your weight affected how you think	Not At All	239 (62.6)

about (judge) yourself as a person?	Slightly	90 (23.6)
	Moderately	33 (8.6)
	Markedly	20 (5.2)
Has your shape affected how you think about (judge) yourself as a person?	Not At All	221 (57.9)
	Slightly	105 (27.5)
	Moderately	34 (8.9)
	Markedly	22 (5.8)
How much would it upset you if you had to weigh yourself once a week for the next four weeks?	Not At All	211 (55.2)
	Slightly	111 (29.1)
	Moderately	40 (10.5)
	Markedly	20 (5.2)
How unhappy have you felt about your weight?	Not At All	193 (50.5)
	Slightly	93 (24.3)
	Moderately	54 (14.1)
	Markedly	42 (11)
How unhappy have you felt about your shape?	Not At All	198 (51.8)
	Slightly	103 (26.9)
	Moderately	45 (11.8)
	Markedly	36 (9.4)
How worried have you been about other people seeing you eat?	Not At All	204 (53.4)
	Slightly	86 (22.5)
	Moderately	63 (16.5)
	Markedly	29 (7.6)
How uncomfortable have you felt seeing your body: for example, in the mirror, in shop windows, when you undress or when you have a bath or shower?	Not At All	190 (49.7)
	Slightly	98 (25.7)
	Moderately	60 (15.7)
	Markedly	34 (8.9)
How uncomfortable have you felt about others seeing your body; for example, in shared changing rooms, when swimming or wearing tight clothes?	Not At All	225 (58.9)
	Slightly	73 (19.1)
	Moderately	51 (13.4)
	Markedly	33 (8.6)

While taking in account various indictors to assess the Eating Habits and Body positivity perceptions, certain facts were discovered. Only 3.9% (n=15) adolescents were not able to concentrate while a significant number of students 67.8% (n=259) did not feel any difficulty and 5.2% (n=20) students started feeling critical about themselves whereas 57.1% (n=218) had no such feeling in their minds. 3.9% (n=15) students stopped going out with others however these factors did not affect outings of majority i.e. 70.7% (n=270) adolescents. Work performance of 6.5% (n=25) students declined while there was no effect on 63.1% (n=281) of the adolescents. These factors made 5.5% (n=21) students forgetful, although not much influence was seen on majority 62.5% (n=239). Ability to take everyday decisions was affected in 5.8% (n=22) adolescents while 60.7% (n=232) students were able to take their decisions normally. A detailed description is given (Table 3).

Table 3 Screening of ED among Adolescents using Clinical Impairment Assessment questionnaire (CIA)

Indicator	Options	n (%)
Made it difficult to concentrate?	Not at all	259 (67.8)
	A little	87 (22.8)
	Quite a bit	21 (5.5)
	A lot	15 (3.9)
Made you feel critical of yourself?	Not at all	218 (57.1)
	A little	109 (28.5)
	Quite a bit	34 (8.9)
	A lot	20 (5.2)
Stopped you going out with others?	Not at all	270 (70.7)
	A little	53 (13.9)
	Quite a bit	44 (11.5)
	A lot	15 (3.9)
Affected your work performance?	Not at all	241 (63.1)
	A little	78 (20.4)
	Quite a bit	38 (9.9)
	A lot	25 (6.5)
Made you forgetful?	Not at all	239 (62.5)
	A little	89 (23.3)
	Quite a bit	33 (8.6)
	A lot	21(5.5)
Affected your ability to make everyday decision	Not at all	232 (60.7)
	A little	86 (22.5)
	Quite a bit	42 (11)
	A lot	22 (5.8)
Interfered with meal with family or friends?	Not at all	216 (56.5)
	A little	66 (17.3)
	Quite a bit	47 (12.3)
	A lot	53 (13.9)
Made you upset?	Not at all	208 (54.5)
	A little	76 (19.9)
	Quite a bit	40 (10.5)
	A lot	57 (14.9)
Made you feel ashamed of yourself?	Not at all	254 (66.5)
	A little	74 (19.4)
	Quite a bit	23 (6)
	A lot	31 ((8.1)
Made it difficult to eat out with	Not at all	207 (54.2)
Stopped you going out with others?	Not at all	270 (70.7)
	A little	53 (13.9)
	Quite a bit	44 (11.5)
	A lot	15 (3.9)
Affected your work performance?	Not at all	241 (63.1)
	A little	78 (20.4)
	Quite a bit	38 (9.9)
	A lot	25 (6.5)
Made you forgetful?	Not at all	239 (62.5)

	A little	89 (23.3)
	Quite a bit	33 (8.6)
	A lot	21(5.5)
Affected your ability to make everyday decision	Not at all	232 (60.7)
	A little	86 (22.5)
	Quite a bit	42 (11)
	A lot	22 (5.8)
Interfered with meal with family or friends?	Not at all	216 (56.5)
	A little	66 (17.3)
	Quite a bit	47 (12.3)
	A lot	53 (13.9)
Made you upset?	Not at all	208 (54.5)
	A little	76 (19.9)
	Quite a bit	40 (10.5)
	A lot	57 (14.9)
Made you feel ashamed of yourself?	Not at all	254 (66.5)
	A little	74 (19.4)
	Quite a bit	23 (6)
	A lot	31 ((8.1)
Made it difficult to eat out with others?	Not at all	207 (54.2)
	A little	89 (23.3)
	Quite a bit	49 (12.8)
	A lot	37 (9.7)
Made you feel guilty?	Not at all	238 (62.3)
	A little	76 (19.9)
	Quite a bit	43 (11.3)
	A lot	25 (6.5)
Interfered with you doing things you used to enjoy?	Not at all	240 (62.8)
	A little	71 (18.6)
	Quite a bit	41 (10.7)
	A lot	30 (7.9)
Made you absent minded?	Not at all	248 (68.6)
	A little	68 (17.8)
	Quite a bit	33 (8.6)
	A lot	33 (8.6)
Made you feel a failure?	Not at all	262 (68.6)
	A little	69 (18.1)
	Quite a bit	30 (7.9)
	A lot	21 (5.5)
Interfered with your relationship with others?	Not at all	253 (66.6)
	A little	58 (15.2)
	Quite a bit	41 (10.7)
	A lot	30 (7.9)
Made you worry?	Not at all	213 (55.8)
	A little	15 (19.5)
	Quite a bit	40 (10.5)
	A lot	54 (14.1)

The results of the current study showed that 40.8% (n=156) of adolescents made themselves sick (vomit) because being full made them uncomfortable however,

59.2% (n=226) negated such practice. Out of 382 adolescents 40.3% (n=154) were worried about losing control over eating whereas 59.7% (n=228) students did not bother it. While inquiring about recent weight loss, 22.8% (n=87) revealed that they have lost more than one stone (14 lb.) during last three months whereas, majority 77.2% (n=295) did not had. 42.4% (n=162) students believed that they were fat when people said they were thin although, 57.6% (n=220) replied in negative. 52.6% (n=201) revealed that food dominates their lives whereas 47.4% (n=181) adolescents had opposite believes (Table 4).

Table 4 Screening of Eating Disorders among Adolescents using SCOFF

Indicators	Options	n (%)
Do you make yourself **Sick** (vomit) because you feel uncomfortably full?	Yes	156 (40.8)
	No	226 (59.2)
Do you worry that you have lost **Contro**l over how much you eat?	Yes	154 (40.3)
	No	228 (59.7)
Have you recently lost more than **One** stone (14 lb.) in a 3-month period?	Yes	87 (22.8)
	No	295 (77.2)
Do you believe yourself to be **Fat** when others say you are too thin?	Yes	162 (42.4)
	No	220 (57.6)
Would you say that **Food** dominates your life?	Yes	201 (52.6)
	No	181 (7.4)

The results of current study indicated that among the students of different schools 34.3% (n=131) were feeling calm while 30.6% (n=117) don't feel calm. 47.1% (n=180) considered themselves secure whereas 13.4% (n=51) found themselves insecure. Only 8.4% (n=32) were feeling tense whereas 52.6% (n=201) were not tense at all. If we look at the strained people they were around only 9.4% (n=36) however 48.4% (n=185) were not felt stained at all. 30.9% (n=118) students were feeling at ease and about 24.6% (n=94) were not. Likewise, 51.6% (n=197) students were not upset comparing 11.8% (n=45) who were upset. When we asked their feeling about any possible misfortunes only 12.6% (n=48) were worried about it while 51.6% (n=197) had no such worry. While focusing on satisfaction 42.7% (n=163) were very much satisfied while 14.1 (n=54) were not feeling satisfied (Table 5).

Table 5 Assessment of trait anxiety link to ED among Adolescents

Indicators	Options	n (%)
I feel calm	Not at all	117 (30.6)
	A little	78 (20.4)
	Somewhat	56 (14.7)
	Very much so	131 (34.3)
I feel secure	Not at all	51 (13.4)
	A little	82 (21.5)
	Somewhat	69 (18.1)
	Very much so	180 (47.1)
I feel tense	Not at all	201 (52.6)
	A little	106 (27.7)

	Somewhat	43 (11.3)
	Very much so	32 (8.4)
I feel strained	Not at all	185 (48.4)
	A little	113 (29.6)
	Somewhat	48 (12.6)
	Very much so	36 (9.4)
I feel at ease	Not at all	94 (24.6)
	A little	90 (23.6)
	Somewhat	80 (20.9)
	Very much so	118 (30.9)
I feel upset	Not at all	197 (51.6)
	A little	97 (25.4)
	Somewhat	43 (11.3)
	Very much so	45 (11.8)
I am presently worrying over possible misfortunes	Not at all	197 (51.6)
	A little	97 (25.4)
	Somewhat	40 (10.5)
	Very much so	48 (12.6)
I feel satisfied	Not at all	54 (14.1)
	A little	82 (21.5)
	Somewhat	83 (21.7)
	Very much so	163 (42.7)
I feel frightened	Not at all	215 (56.3)
	A little	92 (24.1)
	Somewhat	46 (12)
	Very much so	29 (7.6)
I feel uncomfortable	Not at all	195 (51)
	A little	93 (24.3)
	Somewhat	47 (12.3)
	Very much so	47 (12.3)
I feel self-confident	Not at all	82 (21.5)
	A little	81 (21.2)
	Somewhat	102 (26.7)
	Very much so	117 (30.6)
I feel nervous	Not at all	179(46.9)
	A little	103 (27)
	Somewhat	62 (16.2)
	Very much so	38 (9.9)
I feel jittery	Not at all	197 (51.6)
	A little	100 (26.3)
	Somewhat	48 (12.6)
	Very much so	37 (9.7)
I feel indecisive	Not at all	201 (52.6)
	A little	91 (23.8)
	Somewhat	47 (12.3)
	Very much so	43 (11.3)
I am relaxed	Not at all	63 (16.5)
	A little	81 (21.2)

	Somewhat	89 (23.3)
	Very much so	149 (39)
I feel content	Not at all	94 (24.6)
	A little	124 (32.5)
	Somewhat	90 (23.6)
	Very much so	74 (19.4)
I am worried	Not at all	170 (44.5)
	A little	111 (39.1)
	Somewhat	64 (6.8)
	Very much so	37 (9.7)
I feel confused	Not at all	168 (44.6)
	A little	121 (31.7)
	Somewhat	51 (13.4)
	Very much so	42 (11)
I feel steady	Not at all	109 (28.5)
	A little	108 (28.3)
	Somewhat	91 (23.8)
	Very much so	74 (19.4)
I feel pleasant	Not at all	72 (18.8)
	A little	57 (14.9)
	Somewhat	71 (18.6)
	Very much so	181 (7.6)

The screening showed that the prevalence of Eating Disorders among adolescents was 57.6 % (n=220) while adolescents without any Eating Disorder was 42.4% (n=162). A detailed description is given (Table 6).

Table 6 Identification of ED among Adolescents

Indicator	n (%)
ED present	220 (57.6)
ED absent	162 (42.4)

Discussion

Eating is a deadly mental illness, characterized by disordered eating behaviors (Sahlan et al., 2021). Obesity is considered as a risk factor interconnected with ED triage and body image dissatisfaction, increasing the chances by more than 13 times in adolescence (Cecon et al., 2017b). Screening of Disordered Eating Behavior in children and adults, as transition to adolescence is age of body image concerns and weight control behaviors leads to Eating Disorders, associated with depressive symptoms, common in females (Luyckx et al., 2019). The results of the present study reported that the Eating Disorders were present in more than half of the adolescent respondents, with anorexia nervosa and bulimia nervosa as common types of Eating Disorders, present mostly in females' adolescents of age group 13 to 17 years. A similar finding of high prevalence of eating disorders was reported in a study which also suggested screening as an important tool to determine unhealthy eating attitudes. The healthcare workers and policy makers

need to focus on nutrition education, risk factors of DEB, mental health and wellbeing and body image concerns (Petisco-Rodríguez et al., 2020). There is a temporal association between obesity and ADHD behavior which increases the chances of ED, which further proceed to other mental health problems, dieting, purging or binging at early adulthood leads to depression and anxiety afterwards (Robinson, Zhang, Jia, Bobou, Roach, Campbell, Irish, Quinlan, Tay, & Barker, 2020). The results of the current study revealed moderate levels of stress and anxiety is present among the Adolescents suffering from any kind of Eating Disorder. Similar findings reported that adolescents with DEB are more anxious (Becker et al., 2017). Psychiatric illness comorbid with eating disorders have high centrality (Smith et al., 2019) and treating the symptoms linked to decrease risk of developing disordered eating in patients (Longo et al., 2020). The findings of the present study identified that a worrisome no. of adolescents have a strong wish to lose weight, they skip their favorite meals to control their weight and shape, gone for long periods of time without eating, wanted a flat stomach due to which they felt guilty after eating. The noticeable number of adolescents restricted taking meals with family and friends, feel critical and absent minded, which affect their work performance and relationship with others, make them worried and upset. Similar results were observed from a study which reported strong desire to lose weight, shape overvaluation, wanting an empty or flat stomach and feeling guilty after eating among adolescents as central node of ED symptoms (Smith et al., 2019). Another Evaluation of psychological aspects revealed that adolescents with wrong perception about their body weight were mentally distressed; outcomes were quite significant in applying intervention programs to reduce the trends which lead to DEB (Lee & Lee, 2015). An urgent requisite to inform adolescents about ED, as very few knew about anorexia, bulimia and binge eating disorders, and engaged in dieting behaviors because of weight influence was identified (Napolitano et al., 2019).

Limitations of Study

The limitations of the study include time constraints, permission from principal and teachers, and COVID-19 constraints, the schools become closed due to lockdown after few times when COVID cases increased. Principal investigator faced difficulty in follow up of the respondents. The study results may not be generalized to other cities of Pakistan, as it is conducted within twin cities and Mirpur (Azad Kashmir). The results of the current study revealed moderate levels of stress and anxiety is present among the Adolescents suffering from any kind of Eating Disorder.

Conclusion & Recommendation

The current study concluded high prevalence and risk of developing eating disorders among adolescent population especially female of younger age group, which might lead to anxiety and health issues. Common types of eating disorders identified among adolescents were bulimia nervosa and anorexia. Screening of eating disorders among adolescents should be part of health program and regularly conducted at schools. Healthcare workers should also focus on attitude and behaviors of adolescents for the sake of early screening and treatment.

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