https://doi.org/10.35845/kmuj.2024.23315

ORIGINAL ARTICLE

Exploring disordered eating behaviours among adolescent girls in Islamabad, Pakistan

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ABSTRACT

OBJECTIVES: To study the frequency of disordered eating (DE) behaviors and associated factors among Pakistani adolescent female students residing in Islamabad.

METHODS: This cross-sectional study was conducted from May 2022 to August 2022. A total of 411 adolescent females aged 13 to 18 were recruited using purposive sampling from schools and colleges in Islamabad, the capital city of Pakistan. Data was collected using the Eating Disorder Examination Questionnaire – Short Form (EDE-Q-SF) and a background characteristics sheet. Out of 411 initially recruited participants, 381 female students remained after removing incomplete questionnaires and outliers for the study. Statistical analysis was performed using SPSS (version 20), including Pearson's product-moment correlation, independent samples t-test, Chi-square tests, and one-way ANOVA to examine the relationship between disordered eating and BMI.

RESULTS: Mean age of the participants was 15.31±1.66 years. Among the 381 adolescent females, 19% reported moderate levels of DE, and 43.8% were underweight. Significant correlations were found between BMI and DE (α=0.323). Bivariate analysis indicated that the father's occupation (t=4.59), physical illness (t=3.10), mental illness (t=2.48), and daily hours spent on social media (F=7.57) significantly impacted DE scores. None of the background characteristics significantly impacted BMI scores.

CONCLUSION: Approximately one fifth of the study population reported moderate levels of DE, with 43.8% classified as underweight. Significant correlations between BMI and DE, along with the impact of various factors like parental occupation, mental illness, and social media usage, highlight the need for targeted interventions to reduce body image concerns and associated health risks in this population.

KEYWORDS: Feeding and Eating Disorders (MeSH); Body Mass Index (MeSH); Prevalence (MeSH); Adolescents (MeSH); Pakistan (MeSH).

THIS ARTICLE MAY BE CITED AS: Malik RZ, Hassan SMU, Bajwa RS. Exploring disordered eating behaviours among adolescent girls in Islamabad, Pakistan. Khyber Med Univ J 2024;16(2):91-6. https://doi.org/10.35845/kmuj.2024.23315

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Date Submitted: February 04, 2023

Date Revised: May 14, 2024

Date Accepted: May 27, 2024

INTRODUCTION

Eating disorders are among the most severe psychiatric conditions, characterized by high mortality rates.[1] According to the Global Burden of Disease study, [2] 55.5 million people worldwide suffered from eating disorders in 2019. Previously, eating-related pathology was thought to be a Western phenomenon, more commonly reported in individualistic societies. However, in recent years, an upsurge in eating-related issues in Asian countries has revealed that these issues are no longer limited to Western cultures. In a Pakistani cultural context, Disordered Eating (DE) has become increasingly common, specifically among adolescent females. One study found that 22.75% of the sample was at high risk for developing an eating disorder, with over 85% being females.[3] These alarming findings suggest a growing trend of eating-related issues in the country.

An eating disorder is a chronic condition that seriously jeopardizes one's physical or mental health by affecting how food is ingested or absorbed. In contrast, behaviours that are recognized as eating disorder symptoms, including those that do not meet the criteria for an eating disorder, are referred to as "disordered eating".[4] Eating-related pathologies have been found to generally develop in adolescence,[5] with the majority of the current literature focusing on female adolescents.[6]

The etiology of eating pathology is a well-studied area, with biological, psychological, and social factors studied in association with DE. Extant literature has corroborated the link between biopsychosocial factors and eating disorders. These associations include a higher body mass index (BMI),[7] body dissatisfaction/shame,[8] and personality traits such as perfectionism[9] with eating disorders.

However, despite its potential severity and implications for individual well-being, there exists a notable gap in research addressing this issue within the Pakistani context. Most studies focus on eating disorders and not DE, which, if left untreated, may evolve into an eating disorder.[10] To understand the mechanism underlying eating pathologies in a Pakistani context, a prevalence study is first needed to scope out the seriousness of the issue. Currently, there is a dearth of studies conducted in Pakistan that measure the prevalence of disordered eating among adolescent girls. This study seeks to fill this crucial gap in the literature and contribute to a more comprehensive understanding of eating disorders in diverse cultural settings. Furthermore, it aims to help relevant stakeholders, such as mental health professionals, educators, parents, and policymakers,

introduce preventative and curative measures regarding eating pathology.

METHODS

This cross-sectional research was conducted at various English-medium schools and colleges in Islamabad from May 2022 to August 2022. A total of 13 schools and colleges were visited for data collection, and 411 students were recruited through purposive convenience sampling. With a 5% margin of error, a 95% confidence level, and a 50% response distribution, the minimum recommended size of the sample was 380.[11] Participants were included in the study if they were female, within the age bracket of 13 to 18 years, resided in Islamabad, and studied at an English-medium school in the capital city. English-medium schools, in particular, were chosen based on the convenience of the researcher. Participants were excluded from the study if they did not fit the age bracket of 13–18 years or were not currently enrolled at an English-medium school in Islamabad. After accounting for missing items and outliers, a total of 381 participants were included in the study.

Approval to conduct this study was obtained from the ethical committee at the Department of Behavioral Sciences, NUST. Visits to schools and colleges in Islamabad were conducted, where the students were briefed about the nature of the study, and informed consent was obtained from both the students and the school administration. The questionnaire and the background characteristics sheet were distributed manually to the students.

A set of questions was developed, inquiring about the participants' background characteristics. The Eating Disorder Examination Questionnaire—Short Form (EDE-Q-SF), a 12-item, 4-point Likert scale questionnaire, a briefer version of the EDE-Q, was used in this study[12] to measure disordered eating. The EDE-Q-SF and other scales that had not been previously validated in a Pakistani context were culturally validated by the author. Three subject-matter experts first looked over the scales to ensure content validity. Then, exploratory factor analysis was employed to establish construct validity.

For the current study, the reliability of the EDE-Q-SF was 0.84. The EDE-Q-SF was administered in the English language; however, during pilot testing, Item 7 of the questionnaire was slightly modified to accommodate cultural differences in language expression ("Have you tried to control your weight or shape by making yourself sick or taking medications?" The word 'sick' was replaced with 'vomit'). Three categories were created (low, moderate, and high) based on the scale's minimum possible summated score and the maximum possible summated score. To calculate BMI, each participant's weight (kg) and height (cm) were measured and then calculated through the formula BMI = kg /m^2. The participants were categorized according to NIH guidelines,[13] where a BMI below 18.5 kg/m^2 classifies as underweight, between 18.5 kg/m^2 and 24.9 kg /m^2 classifies as normal, between 25.0 kg/m^2 and 29.9 kg/m^2 classifies as overweight, and a BMI exceeding 30.0 kg/m^2 is categorized as obese.

SPSS (version 20) was used for data analysis, and Pearson's product-moment correlation was run to study the strength and direction of the relationship between DE and BMI. Bivariate analysis, including independent samples t-test, chi-square test for independence, and one-way ANOVA, was conducted to identify differences in the levels of study variables (i.e., DE, BMI) according to background characteristics (i.e., age, level of education, family's monthly income, father's and mother's occupational status, number of siblings, birth order, physical and mental illness, family mental illness, and number of hours spent per day on social media). A p-value of 0.05 or less was taken to indicate significant results.

RESULTS

A total sample of 411 participants was recruited for this study. After removing incomplete questionnaires and outliers, a final sample of 381 female students was studied (Mean age= 15.31, SD= 1.66). Approximately, 18.4% of the participants were enrolled at school in between 6th to 8th grade, 43.6% were currently in Matriculation/O Levels and 38.1% were in Intermediate/A Levels. Further demographic details of the participants included their family incomes where 21.5% of the participants belonged to families with an average monthly income less than 50,000 rupees, 41.5% between 50,000 to 100,000 rupees and 37.0% belonged to families where the average monthly income was more than 100,000 rupees.

Based on the descriptive statistics found for the current sample, a low level of disordered eating was found in 79.02% of the sample. A moderate level of disordered eating was found in 19% of the sample and a high level in 1.57%. Concerning BMI, 43.8% were underweight, 48.8% of the participants were normal weight, 6.8% were overweight, and only 0.52% were obese. Table I elaborates further on both variables' frequencies, means, and standard deviations.

Body Mass Index (BMI) was positively, moderately, and significantly associated with disordered eating (DE) [r=.323, n=381, p.01], showing that DE is correlated with increasing BMI. The individuals were categorized into groups according to their background characteristics, and a bivariate analysis using independent samples t-tests, chi-square tests for independence and one-way ANOVA were performed (Table II). The mean DE and BMI ratings for each group were then compared.

Independent samples t-test was conducted to explore the impact of the parents' occupational status on DE. Additionally, a chi-square test for independence was conducted to study a potential effect of the parental occupation status on BMI. The participants were divided into two groups according to the occupational status of their parents (Group 1: Working; Group 2: Non-Working). Based on the father's occupational status, there was a statistically significant difference in DE scores for Group 1 (M=9.68, SD=6.35) and Group 2 (M=6.33, SD=3.17). There was no significant difference in DE based on the mother's occupational status. A chi-square test for independence (with Fisher's exact test) revealed that there was no significant difference in the scores of BMI based on the mother's (x^2=2.75, p=0.39) and father's

Table I: Descriptive characteristics of the study variables

Variables		f (%)	M	SD	Min	Max
Disordered Eating	Low (2-14)	302 (79.02)	9.47	6.25	2	30
	Moderate (15-26)	73 (19)				
	High (27-38)	6 (1.57)				
Body Mass Index (kg/m^2)	Underweight(<18.5)	167 (43.8)	19.52	3.49	12.1	30.8
	Normal Weight (18.5-24.9)	186 (48.8)				
	Overweight (25-29.9)	26 (6.8)				
	Obesity (>30)	2 (.52)				

(x^2=2.52, p=0.414) occupational status.

An independent samples t-test and chi-square test for independence were conducted to explore the impact of any current physical illness on DE and BMI, respectively (Group 1: Physical illness; Group 2: No Physical illness). There was a statistically significant difference in DE scores for Group 1 (M=12.16, SD=7.03) and Group 2 (M=9.11, SD=6.06). There was no significant difference in the scores of BMI (x^2=3.80, p=0.278).

Similarly, groups were created amongst the participants based on the presence of a current or previous mental illness (Group 1: Current mental illness; Group 2: Previous mental illness). There was a statistically significant difference in DE scores for Group 1 (M=12.17, SD=6.3) and Group 2 (M=9.24, SD=6.2). Fisher's exact test revealed that there was no significant difference in the scores of BMI (x^2=1.214, p=0.74).

A one-way ANOVA and chi-square test for independence were conducted to explore the possible impact of monthly family income on DE and BMI, respectively (Group 1: <50,000 rupees; Group 2: 50,000 to 100,000 rupees; Group 3: <100,000 rupees). For the three income groups, there was no statistically significant difference in DE or BMI.

A between-groups ANOVA was also run to study the possible impact of the number of hours spent on social media (per day) on DE (Group 1: <2 hours, Group 2: 2 to 4 hours, Group 3: >4 hours). There was a statistically significant difference for the three groups: F (2, 378) = 7.57, p = .001. There was no statistically significant difference in BMI for the three groups, based on Fisher's exact test: (x^2=9.338, p=0.108).

Level of education, age, family history of mental illness, birth order, or number of siblings had no discernible effect on the DE or BMI scores.

DISCUSSION

The results revealed that 48.8% of the participants fell under the normal category. BMI (between 18.5 and 24.9), and 43.8% fell in the 'Underweight' category (below 18.5). These alarming results suggest that a very high percentage of the sample is underweight, which may harm their physical and mental health.

Regarding the correlation analysis, a significant positive relationship was found between BMI and DE, consistent with previous literature. [14] People who are overweight often feel uneasy about being appraised by others and frequently have negative thoughts about their appearance.[15]

Regarding the correlation analysis, a significant positive relationship was found between BMI and DE, consistent with previous literature.[14] People who are overweight often feel uneasy about being judged by others and frequently have negative thoughts about their appearance.[15] A higher BMI indicates a greater tendency to compare oneself to others who better fit the ideal standard of appearance. The disparity between the cultural ideal and a person's BMI is typically the root of negative body image in females.[16] This conflict between current and ideal appearance prompts them to engage in DE behaviors.[17] These findings align with previous studies that show overweight and obese individuals tend to have lower levels of body admiration compared to those of normal weight.[18] Furthermore, several studies have identified overweight adolescents as a population at higher risk for developing DE.[19,20]

The results of the t-tests, chi-square and ANOVA revealed significant differences in the mean scores of BMI and DE based on selected background characteristics. Disturbances in eating behaviors are linked to biological, psychological, and social factors. Extensive literature supports the relationship between physical illness and eating behavior issues.[21] Furthermore, mental illnesses such as depression[22] and anxiety[23] may be associated with DE. This association may be explained through the etiology of DE, which is well established in the literature to stem from low self-esteem issues[24] and family dysfunction.[25] The link between social media exposure and DE behaviors is well documented in past research. Increased social media usage may lead to greater exposure to beauty and fashion-related content that promotes unrealistic beauty standards.[26] Such content may lead to comparing appearance and body dissatisfaction, which are strongly associated with DE.

The current study explored the background characteristics of the participants along with the study variables and found through bivariate analyses that certain groups of individuals were more vulnerable to developing DE. These findings can help mental health professionals, policymakers, and stakeholders in children's education, such as teachers, parents, and educationists, develop programs that may counter and prevent student teasing. Understanding which groups are most vulnerable may help these stakeholders in specifically targeting those populations and utilizing their resources to develop programs that best suit their ages and address their needs and concerns. Awareness campaigns related to the dangers of comparison and peer-weight shaming may be initiated to help create a

Table II: Demographic and psychosocial characteristics of participants and their association with disordered eating and body mass index

Variable		F (N=381)	Percentage	Disordered Eating (t)	Disordered Eating (f)	Body Mass Index (X^2)
Age (years)	13-14	142	37.2		.52	7.48
	15-16	131	34.3			
	17-18	108	28.3			
Level of Education	6th to 8th Grade	70	18.4		.52	5.60
	Matric/O Level	166	43.6			
	Intermediate/A Level	145	38.1			
Father's employment status	Working	357	93.7	4.59**		2.52
	Non-Working	24	6.3			
Mother's employment status	Working	90	23.6	-.121		2.75
	Non-Working	291	76.4			
Family Income (per month)	Less than 50,000	82	21.5		.44	3.95
	50,000 to 100,000	158	41.5			
	More than 100,000	141	37			
Number of Siblings	0-2	123	32.2		1.05	5.77
	3-5	233	61.1			
	6<	25	6.5			
Birth Order	First Born	117	30.7		.75	6.63
	Middle Child	158	41.5			
	Youngest Child	99	26.0			
	Only Child	7	1.8			
Physical Illness	Yes	45	11.8	3.10**		3.80
	No	336	88.2			
Physical Illness	Yes	30	7.9	2.48**		1.21
	No	351	92.1			
Family Mental Illness	Yes	65	17.1	1.45		4.31
	No	316	82.9			
Number of hours spent on social media (daily)	< 2 hours	140	36.7		7.57**	9.34
	2 to 4 hours	139	36.5			
	> 4 hours	102	26.8			

Note: *p< .05, **p<.001

discussion around body shame and eating-related issues, which are so widespread in society but are rarely discussed in educational settings.

CONCLUSION

The study reveals a concerning prevalence of disordered eating among adolescent females in Islamabad, Pakistan, with nearly one-fifth reporting moderate eating issues and 43.8% being underweight. Significant correlations between BMI and DE, along with the influence of factors such

as parental occupation, mental illness, and social media usage, highlight the need for targeted interventions to address body image concerns and associated health risks. This emphasizes the importance of addressing body and weight satisfaction issues among teenage girls, urging stakeholders to recognize and mitigate the harmful consequences.

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AUTHORS' CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

RZM: Concept and study design, acquisition, analysis and interpretation of data, drafting the manuscript, approval of the final version to be published

SMUH & RSB: Concept and study design, drafting the manuscript, critical revision, approval of the final version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declared no conflict of interest, whether financial or otherwise, that could influence the integrity, objectivity, or validity of their research work.

GRANT SUPPORT AND FINANCIAL DISCLOSURE

Authors declared no specific grant for this research from any funding agency in the public, commercial or non-profit sectors

DATA SHARING STATEMENT

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

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