ORIGINAL ARTICLE

A Cross-Sectional Study on Body Image Concerns Among Patients with Depressive Illness and Elevated Body Mass Index from the Psychiatry Outpatient Department, Islamabad

Kiran Aftab[1*], Anum Misbah Hasanat[1], Sara Zahid[1], Abeera Fatima[1], Rameesha Shah[2]

ABSTRACT

Objective: To determine the frequency and severity of body image concerns among adult patients with depressive disorder and raised BMI attending a Psychiatry Outpatient Department.

Study Design: A cross-sectional study.

Place and Duration of Study: This study was conducted at the Psychiatry Outpatient Department, KRL Hospital, Islamabad, Pakistan, from 22nd May 2025 to 22nd August 2025.

Methods: 100 adult patients (18–60 years) with Body Mass Index ≥25 kg/m² and a clinical diagnosis of depressive disorder were enrolled using convenience sampling from the Psychiatry Out Patient Department of Khan Research Laboratories, KRL Hospital, Islamabad. We used the Beck Depression Inventory-I (BDI-I) to assess the severity of depression. Body image concerns were assessed using the Body Shape Questionnaire (BSQ-16B). Descriptive statistics were computed, and non-parametric tests were used to assess the associations between body image concerns and various effect modifiers, i.e., age, gender, marital status, BMI, and BDI scores.

Results: Of 100 participants, 83% were female. Mean age was 38.3 ± 13.4 years, and mean BMI was 32.2 ± 5.6 kg/m². 63% of people reported having body image concerns overall. BSQ categories showed 20% mild, 22% moderate, and 21% marked concerns. Gender or BMI categories did not significantly influence body image concerns, but there was a significant trend with depression severity and marital status. Body Shape Questionnaire scores correlated with BDI scores ($P = 0.222$, $P = 0.026$). Age had a significant negative correlation with BSQ scores ($P = -0.353$, P-value < 0.01).

Conclusion: Body image concerns were common among depressed adults with raised BMI in this OPD cohort and showed a weak, non-significant positive relationship with Body Shape Questionnaire Scores, indicating that BMI alone was not a strong predictor of body image concerns.

Keywords: *Body Image, Body Mass Index, Depression.*

How to cite this: *Aftab K, Hasanat AM, Zahid S, Fatima A, Shah R. A Cross-Sectional Study on Body Image Concerns Among Patients with Depressive Illness and Elevated Body Mass Index from the Psychiatry Outpatient Department, Islamabad. Life and Science. 2026; 7(1): 25-32. doi: http://doi.org/10.37185/LnS.1.1.1015*

Introduction

The relationship between depression, obesity, and body image dissatisfaction is a significant but understudied topic in Pakistan, where both conditions are very common. A recent study from local population shows that higher body mass index (BMI) is associated with depressive symptoms.[1] Cultural ideals of appearance, particularly in South Asian societies, may place additional pressure on individuals to conform to socially constructed standards of beauty. Pressure from family, peers, and media has been shown to strongly correlate with body dissatisfaction and related behaviors.[2] These expectations are often reinforced by family and peer

[1]*Department of Psychiatry*
KRL Hospital, Islamabad, Pakistan
[2]*Department of Emergency Medicine*
The Hillingdon Hospitals
NHS Foundation Trust, England
Correspondence:
Dr. Kiran Aftab
Department of Psychiatry
KRL Hospital, Islamabad, Pakistan
E-mail: aftabkiran6700@gmail.com

Received: Sep 08, 2025; Revised: Nov 07, 2025
Accepted: Nov 11, 2025

interactions, which can magnify the emotional impact of weight gain or obesity. In addition, a lack of awareness about mental health issues in the general population may delay recognition and treatment, worsening the clinical course. By investigating this overlap in a psychiatric outpatient setting, the study adds evidence that is highly relevant to local clinicians who often manage depression as well as associated psychosocial problems. Understanding the magnitude of body image concerns among this subgroup has the potential to improve treatment planning, adherence to interventions, and patient outcomes.

Body image refers to a person's thoughts, feelings, and perceptions regarding their physical appearance and body form. It is a multidimensional construct influenced by biological, psychological, and sociocultural factors. A cross-sectional study conducted on college students indicated that body dissatisfaction is strongly associated with elevated body mass index (BMI) and higher psychological distress, with younger individuals particularly vulnerable due to sociocultural pressures and media exposure.[3]

Global trends indicate a sharp rise in overweight and obesity rates. The Global Burden of Disease Study 2021 reported that approximately 1.11 billion adult males and an equal number of females were overweight or obese in 2021, with projections showing further increases by 2050. Individuals with higher BMI are significantly more likely to perceive themselves negatively, regardless of their actual physical health status. A recent analysis of NHA NES data demonstrated that regional fat distribution, regardless of total BMI, is associated with increased depressive symptoms.[4]

Depression and dissatisfaction with body image frequently occur together and may influence each other mutually. Body dissatisfaction can precipitate or exacerbate depressive symptoms, while depression may heighten negative self-perceptions and critical body evaluation. Evidence from Asian and Western populations indicates that individuals with comorbid obesity and depression face poorer quality of life, reduced social functioning, and lower treatment adherence compared to those with either condition alone.[5]

Sociocultural influences, including media exposure and prevailing beauty ideals, further amplify body image concerns. Recent multivariate analysis highlights that gender and BMI interact to influence body dissatisfaction, disordered eating, and psychological well-being in complex ways.[6]

Obesity and depression frequently coexist, and body image dissatisfaction may represent a key psychosocial link between them. Despite the high prevalence of both conditions, their interaction, especially in the clinical population, remains underexplored in Pakistan. Such evidence can guide clinicians and policymakers in designing targeted interventions that address both psychological well-being and weight management. The present study aimed to determine the frequency and severity of body image concerns among depressed patients with raised BMI, using validated assessment tools. By focusing on this clinical subgroup, the study seeks to contribute to the limited local literature and provide data that may inform preventive and therapeutic strategies.

Methods

This cross-sectional study was conducted at the Psychiatry Outpatient Department of KRL Hospital, Islamabad, over three months from 22nd May 2025 to 22nd August 2025, following the Institutional Review Board's ethical approval on 27th March 2025, vide letter no. KRL-HI-PUB-ERC/Mar25/64. All participants gave their informed consent, confidentiality was assured, and patients were informed that refusal to participate would not affect their clinical care. These steps ensured compliance with ethical principles and enhanced the validity of responses. The tools used have been internationally validated; both the BDI and BSQ have demonstrated consistent reliability across diverse cultural groups, supporting their use in the Pakistani context.[7-9]

Participants were adults aged 18–60 years with a body mass index (BMI) ≥25 kg/m² and a clinical diagnosis of depressive disorder according to the ICD-11 criteria. Convenience sampling was used to select psychiatric patients. Although this may introduce selection bias, it reflects the real-world scenario of patients presenting to OPD. Individuals with physical disabilities, body dysmorphic disorder, eating disorders (anorexia nervosa or bulimia nervosa), psychotic disorders, or substance use disorders were excluded.

Depression severity was assessed using the Beck Depression Inventory-I (BDI-I), a widely used 21-item self-report instrument developed to evaluate the presence and intensity of depressive symptoms. Each item is rated on a 0–3 scale, yielding a total score range of 0–63. Values between 11 and 16 were defined as mild mood disturbance, those between 17 and 20 as borderline clinical depression, those between 21 and 30 as moderate depression, those between 31 and 40 as major depression, and scores more than 40 as extreme depression. The BDI-I has shown strong internal consistency and validity in both clinical and nonclinical populations in recent studies.[7,8]

Body image concerns were measured using the Body Shape Questionnaire – Short Form (BSQ-16B), a 16-item version of the original 34-item BSQ that assesses concerns about body shape and weight. With 16 items assessed on a 6-point Likert scale, the BSQ-16B has a total score range of 16 to 96. To maintain comparability with the original BSQ-34, cutoffs for the 16-item version were derived proportionally by the formula cutoff; (BSQ-16B) = cutoff (BSQ-34) × 16/34, as recommended in validation studies. Accordingly, scores <38 indicated no concern, 38–51 mild concern, 52–66 moderate concern, and >66 marked concern. Recent validations of the BSQ-short form confirm its reliability and efficacy, showing high internal consistency and strong correlation with the full version.[9]

BMI was calculated by dividing weight in kilograms by height in meters squared (kg/m²) and classified according to World Health Organization (WHO) criteria as overweight (25–29.9), obese class I (30–34.9), obese category II (35–39.9), and obese category III (≥40).

Results

Data were analyzed using SPSS version 27, and the normality of continuous variables was assessed using the Shapiro-Wilk test. Since the BSQ scores were not normally distributed, non-parametric statistics were applied. Spearman's rank-order correlation coefficient (*P*) was used to assess associations between BSQ scores and continuous variables (Age, BDI scores, BMI). Group differences in BSQ scores were examined using the Mann-Whitney U test for two-group comparison (BMI categories and gender) and the Kruskal-Wallis test for variables with more than two categories (education, marital status). A *P*-value of <0.05 was considered statistically significant. The categorical variables were summarized using frequencies and percentages. The study sample consisted of 100 participants, with a mean age of 38.33 ± 13.42 years. Of the total participants, 83% (N=83) were female, and 17% (N=17) were male. The mean Body Mass Index (BMI) was 32.20 ± 5.56 kg/m².

Based on BMI classification, 41% of participants were overweight, 33% were obese class I, 16% were obese class II, and 10% were obese class III. Depression severity, assessed using the Beck Depression Inventory (BDI), revealed varying levels of depression. Approximately 9% of participants reported extreme depression (BDI ≥ 40), 23% severe depression (BDI 31–40), 28% moderate depression (BDI 21–30), and 22% mild mood disturbance (BDI 11–16). (Table 1).

Educational attainment varied across the sample: 10% were uneducated, 5% had completed primary education, 39% had matriculation-level education, 30% held a university degree, and 16% had completed a master's degree. Regarding marital status, 27% of respondents were single, 70% were married, and 3% were widowed.

With respect to body image, 63% of participants reported concerns. Specifically, 20% had mild concerns, 22% moderate concerns, and 21% marked concerns, while 37% did not report any body image dissatisfaction. The mean BSQ score was 49.52 ± 18.21, with a median of 48 (IQR: 29–63) and a range of 16–93, indicating wide variability in body image concerns. Tests of normality confirmed a significant deviation from the normal distribution (Shapiro–Wilk $P < 0.05$). This non-normal distribution suggests that body image dissatisfaction was not evenly distributed but rather clustered around moderate-to-high concern levels. These findings highlight the considerable prevalence of body image concerns in this population, consistent with existing literature linking obesity and depression with negative body image.

Given the non-normal distribution of BSQ scores, non-parametric tests were applied to examine associations with demographic and clinical effect modifiers. Spearman's correlation revealed a

Table 1: Demographic details of sample population

Variable	Mean (SD)	Frequencies (%)
Age (years)	38.33 (13.42)	
Gender Male: 17 (17.0%), Female: 83 (83.0%)	-	-
Marital Status Unmarried: 27 (27.0%) Married: 70 (70.0%) Widowed: 3 (3.0%)	-	-
Education Uneducated: 10 (10.0%) Primary: 5 (5.0%) Matric: 39 (39.0%) Graduation: 30 (30.0%) Masters: 16 (16.0%)	-	
BSQ Score	47.73 (20.54) 48 (29-63) Median(IQR) 16-93 (Range)	No Concern: 37 (37.0%) Mild: 20 (20.0%) Moderate: 22 (22.0%) Marked: 21 (21.0%)
BDI Score	25.40 (10.40)	Mild mood disturbance: 22 (22.0%) Borderline clinical depression: 18 (18.0%) Moderate depression: 28 (28.0%) Severe depression: 23 (23.0%) Extreme depression: 9 (9.0%)
BMI	32.21 (5.55)	Overweight: 41 (41.0%) Obese: 59 (59.0%)

significant moderate negative correlation between age and BSQ scores ($P = –0.353$, $P < 0.01$), suggesting that younger participants reported higher levels of body image concern. Depression severity (BDI scores) was also significantly correlated with BSQ, showing a weak positive association ($r = 0.222$, $P = 0.026$). In contrast, when BMI was treated as a continuous variable, it did not show a significant correlation with BSQ scores ($r = 0.128$, $P = 0.204$). When BMI was analyzed categorically (overweight vs. obese), the Mann–Whitney U test also showed no significant difference in BSQ scores ($U = 1016.5$, $P = 0.176$). However, obese individuals had slightly higher mean ranks.

Group comparisons for categorical modifiers showed mixed results. Gender differences were not statistically significant ($U = 545.5$, $P = 0.142$), despite females having higher mean BSQ ranks compared to males. Similarly, education did not significantly affect BSQ scores ($H(4) = 6.50$, $P = 0.165$). However, marital status was significantly associated with BSQ scores ($H(2) = 12.34$, $P = 0.002$). Post-hoc comparisons revealed that unmarried participants reported significantly higher BSQ scores than married participants ($P = 0.004$), whereas widowed participants did not differ significantly from the other groups. These findings highlight age, depression severity, and marital status as significant correlates of body image concern, while gender, education, and BMI showed no statistically significant effects. (Table 2).

Spearman's rho: A non-parametric measure of rank correlation used to evaluate the strength and direction of a monotonic association between two

Table 2: Summary of non-parametric analyses of Body Shape Questionnaire (BSQ) Scores

Effect Modifier	Test Used	Key Statistic	*P*-value	Result
Age	Spearman's rho	$P = -0.353$	<0.01	Significant (negative correlation)
Gender	Mann–Whitney U	U = 545.5 Z = –1.47	0.142	Not significant (females higher mean rank)
Education	Kruskal–Wallis	H (4) = 6.50	0.165	Not significant.
Marital Status	Kruskal–Wallis	H (2) = 12.34	0.002	Significant unmarried > married ($P = 0.004$)
BDI (Depression)	Spearman's rho	$P = 0.222$	0.026	Significant (weak positive correlation)
BMI (continuous)	Spearman's rho	$P = 0.128$	0.204	Not significant
BMI (categorical)	Mann–Whitney U	U = 1016.5 Z = –1.35	0.176	Not significant obese > overweight (ns)

Spearman's rho: A non-parametric measure of rank correlation used to evaluate the strength and direction of a monotonic association between two continuous or ordinal variables. Mann–Whitney U test: Non-parametric test used to compare differences in median ranks between two independent groups. Kruskal–Wallis test: Non-parametric alternative to one-way ANOVA used to compare median ranks among three or more independent groups

continuous or ordinal variables. *Mann–Whitney U test: Non-parametric test used to compare differences in median ranks between two independent groups. Kruskal–Wallis test: Non-parametric alternative to one-way ANOVA used to compare median ranks among three or more independent groups*

Analysis of BSQ scores across gender groups using the Mann–Whitney U test revealed no statistically significant difference (U = 545.50, $Z = -1.47$, $P = 0.142$). Nonetheless, females exhibited higher BSQ scores (median = 50) than males (median = 42), suggesting a trend toward greater body image concerns in women. However, this difference did not reach statistical significance. This aligns with prior literature that emphasizes a female predominance in body dissatisfaction, although the current findings must be interpreted cautiously given the skewed gender composition of the sample (83% female). The overrepresentation of women may have reduced the ability to detect significant differences between groups.

Marital status, on the other hand, showed noteworthy trends. The Kruskal–Wallis test indicated a significant overall difference in BSQ scores across groups ($H(2) = 12.34$, $P = 0.002$). Post-hoc comparisons suggested that unmarried participants tended to score higher on body dissatisfaction compared to their married counterparts, whereas widowed individuals exhibited intermediate levels. These patterns, although requiring cautious interpretation, suggest a potential role for social and relational factors in shaping body image concerns. (Figure 1).

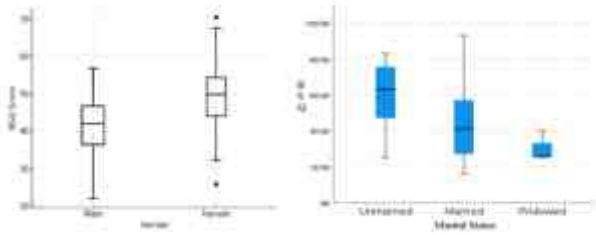

Fig.1: Box plots of Body Shape Questionnaire (BSQ) scores by gender and marital status

The Spearman's correlation analysis revealed a significant moderate negative relationship between age and BSQ scores ($P = -0.353$, $P < 0.001$). Younger participants reported higher body image concerns than older participants. This inverse association suggests that body dissatisfaction was more pronounced in younger adults, while older participants showed comparatively lower concern. These results indicate that age plays an important role in shaping body image perceptions within the study sample. (Figure 2).

A significant positive association was observed between body image dissatisfaction and depressive symptoms. Spearman's correlation analysis revealed a moderate positive correlation between BSQ and BDI scores ($P = 0.222$, $P = 0.026$), indicating that participants with higher depression scores tended to report greater body shape concerns. Although the

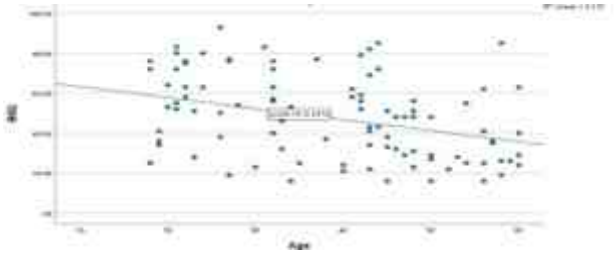

Fig. 2: Scatter plot showing the relationship between age and Body Shape Questionnaire (BSQ) score

effect size was modest, the trend suggests a meaningful association between psychological distress and body dissatisfaction in this sample. (Figure 3).

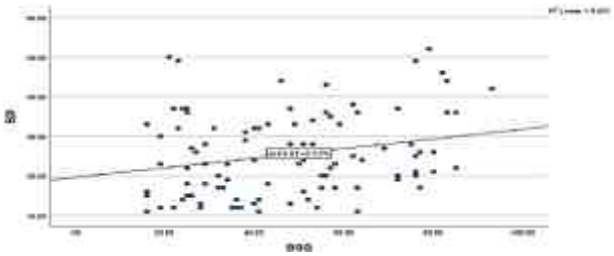

Fig.3: Association between BSQ and BDI Scores

Correlation analysis between BMI and BSQ scores revealed a weak, non-significant positive relationship (Spearman's $P = 0.128$, $P = 0.204$). The scatter plot with regression line illustrates this slight upward trend, suggesting that higher BMI values were associated with marginally higher body image dissatisfaction. However, the effect did not reach statistical significance. These findings indicate that in this sample, BMI alone was not a strong predictor of body shape concerns. (Figure 4).

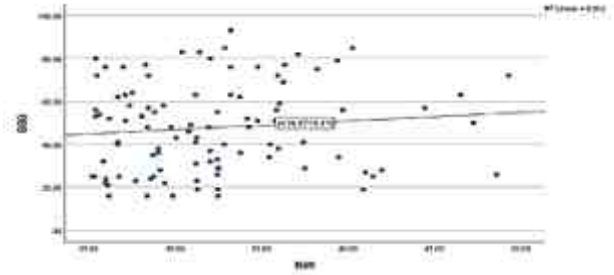

Fig.4: Association between BMI and BSQ Scores

Discussion

In the present study, 63% of depressed patients with elevated BMI reported body image dissatisfaction. This finding aligns with the growing body of evidence from Pakistan demonstrating that body image concerns are highly prevalent across diverse groups, particularly among young and unmarried individuals.[10-12] Recent data from Pakistani universities and medical colleges have shown that both men and women report dissatisfaction with their appearance, often linked to excessive social media exposure and peer comparison.[13,14] Similarly to our results, other local studies have highlighted that younger participants express greater vulnerability to appearance-related distress.[15,16] The consistency of these findings across non-clinical populations suggests that body image dissatisfaction may represent a persistent psychosocial stressor that continues to affect individuals even after the onset of depressive illness. Compared with prior Pakistani studies – most of which examined community or student samples – this research provides evidence from a clinical psychiatric population. Earlier studies have predominantly focused on sociocultural and digital-media correlates of body dissatisfaction, whereas the current work situates these concerns within a therapeutic setting and highlights their coexistence with depression and raised BMI.[10,11] The lack of a significant gender association in our data contrasts with previous findings that body image dissatisfaction is typically higher among women.[12] However, this may reflect under-recognition of appearance concerns among men, a trend that several recent Pakistani studies have begun to report.[17,14] These results collectively suggest that body image issues are no longer confined to female populations and warrant equal clinical attention in male patients as well. The clinical implications of these findings are substantial. Psychiatrists often prioritize pharmacological management of depression while overlooking weight-related self-perceptions and the metabolic effects of psychotropic medications.[18,19] The present study reinforces earlier recommendations from local literature advocating for routine screening of body image dissatisfaction, psychoeducation, and multidisciplinary collaboration involving nutritionists and physiotherapists.[18,20,21] Integrating such holistic approaches may be particularly valuable given the concurrent rise in obesity and depression among Pakistani youth.[12,16] Moreover, the relationship between body image and self-esteem observed in recent Pakistani studies supports the potential role of body-image-focused cognitive-behavioural and mindfulness-based interventions in

improving mood outcomes.[15,22] The present study, therefore, contributes to the existing literature by extending the understanding of body image dissatisfaction from educational and community settings to clinical psychiatric populations. It identifies younger, unmarried individuals as a particularly vulnerable subgroup and underscores that such concerns are not adequately addressed within standard depression management.

This study has several limitations that must be acknowledged. First, due to its cross-sectional design, causal relationships between depression, BMI, and body image dissatisfaction cannot be established. The observed associations merely reflect correlations at a single point in time and do not determine whether body image concerns precede or follow depressive symptoms. Second, the use of convenience sampling from a single psychiatric outpatient department limits the generalizability of the findings. The sample may not be representative of the broader population of individuals with depression and high BMI, particularly those who do not seek psychiatric care. Third, the predominance of females potentially masks true differences between men and women in the experience of body image concerns. Fourth, the small sample size for widowed participants limits the generalizability of their findings. Fifth, duration of illness was not considered as an effect modifier, as it could potentially have an impact, as prolonged use of psychotropics itself has an impact on BMI. Finally, self-reported measures of body image dissatisfaction are subject to reporting bias and social desirability effects, especially in a conservative cultural context such as Pakistan, where discussing body image or weight-related distress may be stigmatized. Future research should aim to address these limitations through larger, multi-center studies, considering all relevant effect modifiers (e.g., duration of illness, types and doses of psychotropic medications), and employing probability sampling techniques and mixed-method designs to obtain a more comprehensive understanding of this issue.

Based on the findings of this study, several clinical and research recommendations can be proposed. Routine screening for body image dissatisfaction should be incorporated into the assessment of all depressed patients, particularly young, unmarried adults with elevated BMI. Psychiatrists and mental health professionals should receive training to identify and address body image concerns as part of a comprehensive treatment plan. A multidisciplinary approach-integrating psychiatric care with nutritional counselling and structured exercise programs- should be adopted to address both the psychological and physical dimensions of depression. Recent evidence suggests that structured physical activity can mediate the relationship between body dissatisfaction and maladaptive behaviors, reinforcing the importance of incorporating lifestyle interventions into the management of patients with elevated BMI and depressive symptoms.[23] Incorporating psycho-education and cognitive-behavioral strategies focused on body image may also enhance treatment outcomes. At the research level, future studies should evaluate the effectiveness of such integrative interventions using longitudinal and interventional designs, with equal representation of both genders and inclusion of participants from multiple centers across Pakistan.

Conclusion

These findings suggest that body dissatisfaction is influenced more by psychosocial and psychological factors than by objective body size. Clinicians should pay attention to body image concerns in younger and unmarried patients with depression, as these individuals may be more at risk.

Acknowledgement: The authors gratefully acknowledges the contribution of Mr. Wahaj Nasir in the statistical analysis of the study.

Conflict of Interest: The authors declare no conflict of interest

Grant Support and Financial Disclosure: None

REFERENCES

1. Jan S. Afridi MI, Ayub M. Exploring the Relationship Between Obesity and Depression: A Cross-Sectional Study at Jinnah Postgraduate Medical Center (JPMC), Karachi. BioSight. 2024; 5: 1-8. doi: 10.46568/bios.v5i2-3-4.182
2. Bi X, Liang Q, Jiang G, Deng M, Cui H, Ma Y. The cost of the perfect body: influence mechanism of internalization of media appearance ideals on eating disorder tendencies in adolescents. BMC Psychol. 2024; 12: 138. doi: 10.1186/s40359-024-01619-7
3. Han B, Du G, Yang Y. Relationships between physical activity, body image, BMI, depression and anxiety in Chinese college

students during COVID-19 pandemic. BMC Public health. 2023; 23; 24. doi: 10.1186/s12889-022-14917-9
4. Zhang G, Wang S, Ma P. Increased regional body fat is associated with depressive symptoms: a cross-sectional analysis of NHANES data obtained during 2011-2018. BMC Psychiatry. 2024; 24: 336. doi: 10.1186/s12888-024-05782-4
5. Xiao G, Lin C, Lan Q. Association among obesity, insulin resistance, and depressive symptoms: a meditation analysis. BMC Psychiatry. 2025; 25: 363. doi: 10.1186/s12888-025-06765-9
6. Zamba K, Anastasiades E, Charalambous Z. Influences of sex and BMI on body image, weight bias, disordered eating, and psychological well-being: A multivariate analysis. Obesities. 2025; 5: 54. doi: 10.3390/obesities5030054
7. Faro A, Pereira CR. Factor structure and gender invariance of Beck Depression Inventory. Second edition (BDI-II) in a community dwelling sample of adults. Health Psychology and behavioral Medicine. 2020; 8: 16-31. doi: 10.1080/21642850.2020.1715222
8. Wang X, Wang Y, Xin T. The psychometric properties of the Chinese version of the Beck Depression Inventory-II with middle school teachers. Frontiers in Psychology. 2020; 11: 548965. doi: 10.3389/fpsyg.2020.548965
9. Fernandes HM, Soler P, Monteiro D, Cid L, Novaes J. Psychometric properties of different versions of the Body Shape Questionnaire in female aesthetic patients. Healthcare. 2023; 11: 2590. doi: 10.3390/healthcare 11182590
10. Naveed A, Kazmi UR, Haq T, Bawer M. Body related Shame, Guilt, Dissatisfaction and Depression among University Students with Obesity. Pakistan Journal of Medical & Health Sciences. 2023; 17: 67-70. doi: 10.53350/pjmhs202317367
11. Mallaram GK, Sharma P, Kattula D, Singh S, Pavuluru P. Body image perception, eating disorder behavior, self-esteem and quality of life: A cross-sectional study among female medical students. Journal of eating disorders. 2023; 11: 225. doi: 10.1186/s40337-023-00945-2
12. Khan RJ, Bibi H, Naz S, Afsar F. Body Surveillance and Body Dissatisfaction among Pakistani Young Females: Social Comparison as Moderator. Human Nature: Journal of Social Sciences. 2023; 4: 1-26. doi: 10.71016/hnjss/nc0e0c32
13. Shabbir B, Sarfraz H, Gondal K. Digital dependence and its association with weight disturbances and body image perceptions among female medical students. BMC Public Health. 2025; 25: 24420. doi: 10.1186/s12889-025-24420-6
14. Naz SS, Ahmad F. Depression Associated with Body Mass Index in Adolescent Girls in a Subset of Karachi Population. Cureus. 2022; 14: e24730. doi: 10.7759/cureus.24730
15. Tufail N, Saeed N, Salim T, Sultana W, Umer U, Batool M, et al. Prevalence of body image dissatisfaction among males and females of Nishtar medical university, Multan. International Journal of Community Medicine and Public Health. 2025; 12: 702-8. doi: 10.18203/2394-6040.ijcmph20250300
16. Bilal A, Wazir S, Farooq B. Relationship between body image dissatisfaction and social media usage in young women. Pakistan Journal of Humanities and Social Sciences. 2021; 9: 460-8. doi: 10.52131/pjhss.2021.0903.0151
17. Tufail MW, Saleem M, Fatima SZ. Relationship of Social Media and Body Image Dissatisfaction among University Students. Pakistan Journal of Applied Psychology. 2022; 2: 89-97. doi: 10.52461/pjap.v2i1.1041
18. Zahid MJ. Antipsychotic drugs-associated weight gain and its further implications on health. Journal of Rehman Medical Institute. 2023; 9: 1-2. doi: 10.52442/jrmi.v9i3.529
19. Munir M, Dawood S. Weight stigma and disordered eating behaviors in Pakistani overweight adolescents: the mediating role of body esteem. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity. 2021; 26: 1939-48. doi: 10.1007/s40519-020-01038-8
20. Khidri FF, Riaz H, Bhatti U, Shahani KA, Kamran F, Effendi S. Physical activity, dietary habits and factors associated with depression among medical students of Sindh, Pakistan, during the COVID-19 Pandemic. Psychology Research and Behavior Management. 2022; 15: 1311-23. doi: 10.2147/PRBM.S364540
21. Arsh A, Afaq S, Carswell C, Coales K, Siddiqi N. Barriers & facilitators to physical activity in people with depression and type 2 diabetes mellitus in Pakistan: a qualitative study to explore perspectives of patient participants, carers and healthcare staff. Mental Health and Physical Activity. 2023; 25: 100542. doi: 10.1016/j.mhpa.2023.100542
22. Zainab W, Ahmed S, Kumar A, Ahmed S. The effect of body dissatisfaction on disordered eating attitudes: the mediating role of negative affects in adolescents. Journal of Pakistan Psychiatric Society. 2023; 20: 1. doi: 10.63050/jpps.20.02.272
23. Mediating role of exercise in the relationship between body dissatisfaction and overeating using structural equation modeling. BMC Public Health. 2025; 25: 76. doi: 10.1186/s12889-025-21282-w

Author Contributions

KA: Conception and design of the work, writing the original draft, proofreading, and approval for final submission

AMH: Revising, editing, and supervising for intellectual content

SZ: Data acquisition, curation, and statistical analysis

AF: Manuscript writing for methodology design and investigation

RS: Validation of data, interpretation, and write-up of results