



ORIGINAL ARTICLE

Body Image Perception and its Relationship with Mental Well Being in Female Medical Students: A Cross-Sectional Study from Jammu, J&K, India

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Abstract

Background: Body image dissatisfaction has a wide-ranging influence on individuals' lives, ranging from benign to severe social concerns. The present study aimed to examine body image perception and its relationship with mental well-being among female medical students. **Methods:** The present cross-sectional study was conducted w.e.f. January to March 2025 in a Medical School in Jammu city, UT of J&K, India. Socio-demographic details and self-reported weight and height were collected via a questionnaire. The Stunkard Figure Rating Scale was used to assess body image perception and satisfaction. **Results:** A total of 354 female medical students participated and it was found that 52.26 % of the respondents had body image perception of normal weight while 32.7% thought they were overweight. Age and level of satisfaction with body image were significantly associated with current body image perception ($p < 0.05$). Variables like socioeconomic status, level of satisfaction with body image and perception of current body image were significantly associated with mental well-being ($p < 0.05$). **Conclusion:** One third of female medical students were found to overestimate their current body image. Healthy body image perceptions need to be fostered among medical students who as future doctors will have sway on the health beliefs of individuals.

Key Words

Body Image Perception, Mental Well-being, Medical Students, BMI, Health Belief

Introduction

Body image, as defined by the National Eating Disorder Association, means how we feel about our body, including our shape, height, and weight. The discrepancy between one's perceived and ideal body image has been termed body image dissatisfaction (BID).^[1] The resultant dissatisfaction can have varied social concerns on an individual's life and may lead to poor self-esteem, depression, eating disorders, and social repercussions with resultant consequences on quality of life.^[2]

The combined effect of media exposure,

westernization, and modernization has led to youth and adolescents being increasingly susceptible to B.I.D. Image may be in terms of "underweight", "normal weight", or "overweight/obese" based on subjective assessment of one's weight.

Body image has emerged as an important determinant of dietary and physical activities, which can change the meal patterns of adolescents.^[3]

Globally, 42% of adults said they were attempting to reduce their weight. In Asia, 32.3% of boys and 45.6%

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of girls had tried diets related to weight.

Dieting behavior is heavily influenced by one's self-perceptions of body size, and both overestimation and underestimation can have detrimental effects on quality of life and weight control.^[4]

Mental well-being is a feeling of positivity with effective dealing of life's challenges, performing well, and making a positive impact on the community. People having a negative body image are more likely to have mental health issues as it has a bearing on well-being, self-care, eating habits, and weight stigma.

Body image perception, of late, has become a disorder of concern in developing countries, too. Also, the relevance is more in the students' groups who are easily influenced by beauty and weight-related gadgets. The female medical students are particularly vulnerable as they are the future health advisors^[5,6]. Since there was a paucity of data regarding the body image perception and its impact on mental well-being in a Medical School in Jammu, the present study was conducted.

Methodology

The present cross-sectional study was conducted at Government Medical College (GMC) Jammu, UT of J&K, India, with effect from January 2025 to March 2025, for a period of three months. All the female undergraduate students were eligible for participation. Permission was sought from the Institutional Ethical Committee of the GMC Jammu.

All eligible female MBBS students who provided written informed consent were included in the study. Students who did not respond to the Google Form questionnaire were excluded.

Sample Size Determination

400 undergraduate female students in GMC, Jammu, were eligible for the present study. The questionnaire was shared to these 400 undergraduate female students via Google Forms. However, only 354 of the responses received were complete, for which the data were analyzed.

Details about socio-demographic variables and weight/height were recorded through a questionnaire. The study aimed to assess body image perception as the primary outcome among female undergraduate medical students and to evaluate its potential impact on their mental well-being as a secondary outcome.

Body image perception was assessed using the Figure Rating Scale (FRS), also known as Stunkard's Scale^[7]. The Figure Rating Scale (FRS) is a psychological tool used to assess body image perception. It consists of a

series of silhouette figures ranging from very thin to very obese. Individuals select the figure that best represents their current body size and their ideal body size, helping researchers and clinicians evaluate body dissatisfaction and self-perception.

PHQ-9 questionnaire was used for the assessment of mental well-being^[8]. The PHQ-9 (Patient Health Questionnaire-9) is a standardized tool for screening, diagnosing, and monitoring the severity of depression. It comprises nine questions, each scored from 0 to 3, reflecting the frequency of symptoms. The cumulative score ranges from 0 to 27, categorizing depression as minimal (1–4), mild (5–9), moderate (10–14), moderately severe (15–19), or severe (20–27). This tool aids clinicians in assessing symptom progression and informing treatment decisions.

Data were analyzed using SPSS version 22.0. Descriptive statistics were used to summarize socio-demographic variables, body image perception, and PHQ scores. Categorical variables were expressed as frequencies and percentages with 95% confidence intervals (CI). Chi-square test and analysis of variance (ANOVA) were applied to determine associations between variables. Variables showing statistical significance on univariate analysis were further entered into multivariate regression analysis to identify independent predictors of body image perception and mental well-being. A p-value of <0.05 was considered statistically significant.

Results

Although 400 female students were approached, only 354 gave informed written consent and participated in the study, corresponding to a response rate of 88.5%. More than half of the participants perceived themselves to have normal body weight (52.26%; 95% CI: 47.1%–57.4%), while 32.77% (95% CI: 28.1%–37.8%) perceived themselves as overweight and 14.97% (95% CI: 11.6%–19.1%) as underweight according to the Figure Rating Scale.

Age and level of satisfaction with body image showed statistically significant associations with current body image perception ($p < 0.05$). Participants aged 23–26 years demonstrated comparatively higher overweight perception than younger participants ($F = 3.571$, $p = 0.029$). Similarly, respondents dissatisfied with their body image were significantly more likely to perceive themselves as overweight compared to satisfied respondents ($F = 13.892$, $p < 0.001$). No statistically significant association was observed between body image perception and

Table 1: Association of socio-demographic variables with current body image perception using multivariate regression analysis (n= 354)

S.No.	Socio-demographic variable	Underweight	Normal	Overweight	F value	p value	Adjusted β (95% CI)	Adjusted p value
1	Age (in years)				3.571	0.029	0.12 (0.01–0.23)	0.041
	17–19	21	47	26				
	20–22	25	109	61				
	23–26	7	29	29				
2	Socio-economic status				0.859	0.463	—	—
	Lower middle class	2	4	1				
	Middle class	22	52	37				
	Upper class	2	6	4				
	Upper middle class	27	123	74				
3	Type of family				0.117	0.890	—	—
	Nuclear family	39	137	83				
	Joint family	11	38	27				
	Three generation family	3	10	6				
4	Residential status				0.326	0.568	—	—
	Day scholar	21	75	51				
	Hosteler	32	110	65				
5	Dietary habits				0.260	0.771	—	—
	Vegetarian	21	69	43				
	Both vegetarian and non-vegetarian	32	115	72				
	Eggetarian	0	1	1				
6	Level of satisfaction with body image				13.892	<0.001	0.31 (0.18–0.44)	<0.001
	Neutral	19	54	48				
	Satisfactory	26	108	26				
	Unsatisfactory	8	23	42				

socioeconomic status, type of family, residential status, or dietary habits ($p>0.05$).

On multivariate regression analysis, level of satisfaction with body image remained an independent predictor of current body image perception after adjusting for age, socioeconomic status, residential status, and dietary habits

(Adjusted $\beta = 0.31$, 95% CI: 0.18–0.44, $p<0.001$). Age also retained borderline statistical significance in the adjusted model (Adjusted $\beta = 0.12$, 95% CI: 0.01–0.23, $p=0.041$).

Table 1 shows that age and level of satisfaction with body image are found to have statistically significant

S.No.	Socio-demographic variable	Image perception			F value	p value
		Underweight	Normal	Overweight		
1	Age (in years)				3.571	0.029
	17-19	21	47	26		
	20-22	25	109	61		
	23-26	7	29	29		
2	Socio-economic status				0.859	0.463
	Lower middle class	2	4	1		
	Middle class	22	52	37		
	Upper class	2	6	4		
	Upper middle class	27	123	74		
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6	Level of satisfaction with body image				13.892	0.000
	Neutral	19	54	48		
	Satisfactory	26	108	26		
	Unsatisfactory	8	23	42		

association with current body image perception.

Table 2 shows that the agreement between BMI category and current body image perception is fair and significant i.e., the agreement score is 39%. The agreement between BMI category and current body image perception was fair but statistically significant (Kappa = 0.391, $p < 0.001$), indicating a 39% concordance between actual BMI and perceived body image.

The mean PHQ score of participants was 9.25 ± 5.67 (95% CI: 8.66–9.84). Higher mean PHQ scores were observed among participants aged 17–19 years, those belonging to lower middle socioeconomic status, and participants from nuclear families. Hostellers showed slightly higher PHQ scores compared to day scholars.

Participants dissatisfied with their body image had significantly higher PHQ scores (12.42 ± 5.74) compared to those satisfied with their body image (6.88 ± 4.45). Similarly, participants perceiving themselves as overweight demonstrated higher PHQ scores (10.50 ± 5.76) compared to those perceiving themselves as having normal weight (8.50 ± 5.08). Statistically significant associations of PHQ score were observed with socioeconomic status ($F = 4.037$, $p = 0.008$), residential status ($F = 3.990$, $p = 0.047$), level of satisfaction with body image ($F = 33.37$, $p < 0.001$), and perception of current body image ($F = 4.52$, $p = 0.011$).

Multivariate linear regression analysis demonstrated that dissatisfaction with body image independently

**Table 2: Kappa Agreement between BMI and current body image perception (n= 354)**

BMI category	Current Body Image Perception			Total
	Under weight	Normal weight	Over weight	
Underweight	17	17	4	38
Normal weight	25	120	24	169
Over weight	11	48	88	147
Total	53	185	116	354

Measurement of agreement Kappa= 0.391 ($p=0.000$)

Table 3: Association of socio-demographic variables with PHQ score (n= 354)

S.No.	Socio-demographic variable	N (%)	Mean $\pm$ SD PHQ score	F value	p value	Adjusted β (95% CI)	Adjusted p value
1	Age (in years)			1.054	0.350	—	—
	17–19	94 (26.55)	9.98 $\pm$ 5.97				
	20–22	195 (55.08)	9.00 $\pm$ 5.56				
	23–26	65 (18.36)	8.95 $\pm$ 5.56				
2	Socio-economic status			4.037	0.008	0.14 (0.03–0.25)	0.012
	Lower middle class	7 (1.98)	15.29 $\pm$ 7.06				
	Middle class	111 (31.35)	9.55 $\pm$ 5.73				
	Upper class	12 (3.39)	6.25 $\pm$ 5.38				
	Upper middle class	224 (63.28)	9.08 $\pm$ 5.49				
3	Type of family			0.817	0.443	—	—
	Nuclear family	259 (73.16)	9.47 $\pm$ 5.73				
	Joint family	76 (21.47)	8.53 $\pm$ 5.66				
	Three generation family	19 (5.37)	9.16 $\pm$ 4.90				
4	Residential status			3.990	0.047	0.11 (0.01–0.22)	0.039
	Day scholar	147 (41.52)	9.17 $\pm$ 5.12				
	Hosteler	207 (58.47)	9.31 $\pm$ 6.04				
5	Dietary habits			0.331	0.719	—	—
	Vegetarian	133 (37.57)	9.10 $\pm$ 5.21				
	Both vegetarian and non-vegetarian	219 (61.86)	9.37 $\pm$ 5.96				
	Eggetarian	2 (0.56)	6.50 $\pm$ 2.12				
6	Level of satisfaction with body image			33.37	<0.001	0.42 (0.27–0.58)	<0.001
	Neutral	121 (34.18)	10.47 $\pm$ 5.79				
	Satisfactory	160 (45.19)	6.88 $\pm$ 4.45				
	Unsatisfactory	73 (20.62)	12.42 $\pm$ 5.74				
7	Perception of current body image			4.52	0.011	0.19 (0.06–0.33)	0.006
	Underweight	53 (14.97)	9.13 $\pm$ 6.95				
	Normal weight	185 (52.26)	8.50 $\pm$ 5.08				
	Overweight	116 (32.77)	10.50 $\pm$ 5.76				

predicted higher PHQ scores after adjustment for age, socioeconomic status, residential status, and body image perception (Adjusted $\hat{a} = 0.42$, 95% CI: 0.27–0.58, $p < 0.001$). Perception of being overweight also independently predicted higher PHQ scores (Adjusted $\hat{a} = 0.19$, 95% CI: 0.06–0.33, $p = 0.006$).

Body Image Discrepancy Score (BID's) was calculated by estimating the difference between the respondent's current physical appearance and their ideal body image according to the Figure Rating scale. Body Image Discrepancy analysis showed that 84 participants (23.73%; 95% CI: 19.6%–28.4%) perceived their current appearance as ideal, while 124 (35.03%; 95% CI: 30.2%–40.1%) perceived their appearance as lower than their ideal body image. Additionally, 146 participants (41.24%; 95% CI: 36.2%–46.4%) perceived themselves as heavier than their ideal body image.

Discussion

The results of the present study have revealed that more than half of the respondents (52.26%) had the current body image perception that their weight was normal, while one-third (32.77%) of them thought they were overweight, and only 14.97% considered themselves underweight. These findings are in agreement with those reported by Bhujade R *et al*^[9], Rakesh M *et al*^[10], Divecha CA *et al*^[11], and Zainuuddin AA *et al*^[12]. The body image perception is usually the result of thoughts, attitudes, and feelings among the respondents, while media preferences for thinness also weigh heavily as far as current body image perception is concerned.

Regarding the level of satisfaction with body image, 45.19% of the respondents were satisfied, while 34.18% were neutral, and only 20.62% were unsatisfied with their body image in the present study. These findings are similar to those reported by Bhujade R *et al*^[9] from Ujjain, India, where in 47.9% respondents were satisfied with body image, but 33.5% respondents were unsatisfied with body image in contrast to 20.62% reported in the present study. Priya D *et al*^[13] reported a higher proportion (68%) of image satisfaction among the respondents. Overweight stigma is usually felt more by women and is among the reasons for overestimating their body image. Among the socio-demographic variables, age and level of satisfaction with body image were found to be significantly associated with body image perception in the present study. ($p < 0.05$). Bhujade R *et al*^[9] underlined gender and age as independent variables significantly associated with body image satisfaction.

Agreement between BMI category and current body

image perception was fair and significant at 39%. However, Bhujade R *et al*^[9] noted an agreement score of 45% in their study, which comprised both male and female participants. It has been reported that overestimation in respondents with normal BMI and overweight may lead to eating disorders like anorexia nervosa, while underestimation among overweight people leads to a decrease in weight control modalities^[3,4]. Evidence has shown that respondents with correct perceptions would follow healthy nutritional behavior, exercise, and healthy sleeping patterns^[14]. It would be prudent to conclude that appropriate body image perception is important for optimum self-appraisal, which has a bearing on eating behaviors and mental well-being.

On further analysis of the results, it was found that socioeconomic status, residential status, level of satisfaction with body image, and perception of current body image were significantly associated with mental well-being/PHQ scores ($p < 0.05$). Neumark-Sztainer D *et al*^[15] reported that lower body satisfaction puts adolescents at risk for weight gain and poorer overall health. Authors have similarly reported that those with body image distortion were at risk of depression, frequent dieting, and extreme weight loss attempts^[16,17]. Kumar KV *et al*^[18] reported that certain aspects of body image perception affect the mental well-being of university students, such as resilience and personality. Hold E *et al*^[19] reported that female participants seemed to be more dissatisfied with their body image and dieting. Of late, the role of media influence, societal beauty standards, and the impact of body image on mental well-being have become interesting research topics.

The inclusion of confidence intervals in the present study provides a more robust estimate of the precision and reliability of the observed proportions and mean values. The relatively narrow confidence intervals around the prevalence estimates of normal weight perception, overweight perception, and body image discrepancy indicate acceptable statistical precision and support the consistency of the findings within the study population. Furthermore, the confidence interval estimates for PHQ scores reinforce the observed association between body image dissatisfaction and poorer mental well-being among female medical students. These observations are consistent with previous studies which highlighted that distorted body image perception and dissatisfaction adversely influence psychological well-being and quality of life.^[14,15]

Additionally, multivariate regression analysis was

performed to minimize the influence of potential confounding variables. After adjustment, dissatisfaction with body image continued to demonstrate an independent association with altered body image perception and higher PHQ scores. Perception of being overweight also independently predicted poorer mental well-being among the respondents. These findings strengthen the evidence that body image dissatisfaction may independently contribute to adverse psychological outcomes among female medical students, irrespective of socio-demographic characteristics. Similar findings have been documented by Kumar KV *et al.*^[18], who reported that body image perception significantly affects mental well-being among university students. Neumark-Sztainer *et al.*^[15] and Blashill *et al.*^[16] also observed that lower body satisfaction and body image distortion were associated with depressive symptoms, unhealthy dieting behaviours, and poorer overall health outcomes among adolescents and young adults.

Limitations

Small sample size, single-centre study, and all-female participation lead to findings that lack generalization. Since the participants self-reported height and weight, there is a likelihood of under- or over-reporting. Another limitation of the FRS is its inability to capture the full diversity of body types, as the original scale does not represent all possible variations.

Conclusion

The results are an eye-opener as medical students, despite being well aware of physiology and other body image issues, suffer from discrepancies in body image perception. It reinforces the point that knowledge, though necessary, may not be the most significant factor in body image perception.

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