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Research Article

Body Image Dissatisfaction in Healthy Medical Students and its Association to Body Mass Index, Gender and Age

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Abstract

A negative self-perception of one's body is termed as Body Image Dissatisfaction (BID), its outcome being an overall low self-esteem, externality, depression and distortion. It needs to be dealt with efficiently failing, can potentially lead to disordered eating (Anorexic/Bulimic Disorders, gruesome weight management) and even suicidal tendencies.

Objective: To determine the frequency of Body Image Dissatisfaction in apparently healthy medical students and to determine the association of Body Image Dissatisfaction with Body Mass Index (BMI), Gender and Age.

Methods: A descriptive cross sectional study was conducted with a sample of 242 students of King Edward Medical University, Lahore. Data was collected through a self-administered and self-reported questionnaire with Stunkard's Silhouette Scale attached. Data was entered in SPSS version 26. Descriptive analysis was done, and p value was calculated by Pearson Chi Square Test.

Results: The frequency of Body Image Dissatisfaction was established to be 82.2%. The frequency of Body Dissatisfaction was found to be 76.9% and 87.6% in Males and Females respectively, 89.3% and 78.5% in Teenage and Post-Teenage groups respectively, 90.5%, 77.4% and 94.3% in Underweight, Normal Weight and Overweight BMI ranges, respectively. P value turned out to 0.036, 0.029 and 0.011 (<0.05) for Age, Gender and BMI, respectively.

Conclusion: The study highlighted a high burden of Body Image Dissatisfaction in the healthy medical student community of King Edward Medical University, Lahore. The frequency was found to be higher in females, Teenage group, and Overweight BMI range.

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Introduction

The National Eating Disorder Association (2005) defines body image as "how one observes or identifies oneself upon seeing in the mirror".[1] Everyone has an increased desire to achieve that ideal silhouette that we find the healthiest. Dealing with a negative self-perception of one's body is termed as Body Image Dissatisfaction (BID) which is entirely an internal state. Norm is that slenderness in ladies and a

muscled body in the gentlemen is a symbol of social acceptability, labeled as "idealization of slenderness and negative stereotyping of heavier physicque".[2]

Body Image Dissatisfaction in youth, who are particularly vulnerable to the social media influences, is an emerging concern. Public Health Practitioners cite this as a meaningful challenge as this has the potential to institute eating disorders (Anorexia Nervosa, Bulimia Nervosa). Its outcome can be Binge Eating Disorder (BED) and the concept of "Hidden Hunger".[3] Body Image Dissatisfaction can be an indicator of the expected fatalistic weight management steps like Crash Starvation, Overdoing Exercise, surgical interventions, steroid abuse etc.[4] Numerous studies associate this to a spectrum of mental health conditions such as increased negative mood, stress, low self-esteem and depression.[5]

A large body of literature describes that males and females turn progressively more and more dissatisfied with their body types as they transition from childhood to early adulthood.[6] McCabe MP et al[7] reported that with pubertal development, adolescent girls experience an increase in the total body fat and muscle mass. As for most girls, a skinny built is considered an epitome of beauty; this diversion potentiates dissatisfaction. Mond J et al[8] found out that obesity in women is related to dangerously low levels of self-esteem. Literature also documents that not only girls, but boys too are affected with Body Image Dissatisfaction in a greater proportion.[9] They value a ripped muscular figure over a lean one and resort to dramatic measures such as cosmetic surgery, anabolic growth hormone and steroids.

The Tripartite Influence Model postulates that, social influences, such as peers, family, and media, drive individuals to adhere to culturally defined standards of beauty.[10] Work by Richard A et al[11] proved that Psychological disorders are correlated to Body Image Dissatisfaction which seems to be a significant risk factor. Cohen R, Leung SF et al[12,13] discussed that the development and exacerbation of eating disorders is parallel to Body Shape Dissatisfaction. Perception of body image varies across cultures and ethnicities. Though there is paucity of scientific data from Pakistan, Feminists argue that cultures with patriarchal tradition and rigid gender roles like Pakistan, are especially likely to internalize unreal appearance standards.[14]

Objective of this study is to determine the body image perception of apparently healthy medical students in the local context and to determine the association of Body Image Dissatisfaction with Body Mass Index (BMI), Gender and Age. The high risk in this population can be related to increased demand for academic achievement, high stress and anxiety, peer influence and role and identity changes.[13]

Methods

A descriptive cross-sectional study was designed and conducted in King Edward Medical University, Lahore, Pakistan. Formal approval to conduct the study was obtained by the Institutional Review Board of the University. Sample size of 242 students was estimated by using 95% confidence level, 5% absolute precision with expected percentage of Body Image Dissatisfaction as 19.5 %.[15]

$$n = [Z_{(1-d/2)}]^2 \cdot p\,(1-p) / d^2$$

$Z_{(1-d/2)}$ = Confidence Level 95% = 1.96

p = Prevalence 19.5%

q = 1-p

d = Absolute Precision 5%

Male and Female students were equal in number i-e 121 each. (1:1)

Probability Two Stage Sampling Technique (Stratified Sampling followed by Simple Random Sampling) was used. Total number of medical students in King Edward Medical University was calculated to be 1693 [325 (1st Year) + 337 (2nd Year) + 344 (3rd Year) + 352 (4th Year) + 335 (5th Year)]. After dividing them into two strata (males and females), 121 students were randomly selected from each stratum

according to the set eligibility criteria. Students of ages < 17 years and > 24 years were eliminated from the study. Students from disciplines other than MBBS and those suffering from any physical or mental disability were excluded as well. Remaining medical students were asked to fill a self-administered questionnaire with an attached Scale, asking about their self-reported anthropomorphic (weight, height) and socio-demographic data after obtaining due informed consent from each participant. Incomplete questionnaires were not entertained.

After data collection, Body Mass Index (BMI) was calculated by using the formula,

$$BMI = \text{weight (kg)} / \text{height}^2 (m^2)$$

The sample was then divided into three categories as per World Health Organization's standards.

BMI < 18.5 = Underweight

BMI 18.5 – 24.9 = Normal Weight

BMI > 25 = Overweight

Body Image Dissatisfaction was measured using a Patient Reported Outcome Measure (PROM) "Figure Rating Scale (FRS)" developed by Albert Mickey Stunkard which is better known as Stunkard's Silhouette Scale[16] which consisted of an arrangement of nine silhouettes each, for both men and women, aligned from a very skinny to a very thick figure. Participants were asked to choose the silhouette closest to his/her own body (perceived silhouette) and the silhouette representing the ideal size (ideal silhouette). Any discrepancy (≥1) (either perceived minus ideal or ideal minus perceived) between the two figures was labeled as Body Image Dissatisfaction.

Data was compiled and analyzed in Statistical Package for Social Scientist (SPSS) Version 26. Frequencies along with percentages were estimated for descriptive display, while the relationship of Body Image Dissatisfaction with age, gender and BMI was determined using Pearson Chi-Square Test. A p value of < 0.05 was considered to be statistically significant.

No funding was sought for conducting the research and neither were any conflict of interest between the research team and the study respondents.

Results:

Study concluded that in a sample of 242 participants, 199 (82.2%) showed Body Image Dissatisfaction. Out of these 199 students, 109 had a discrepancy of 1, 55 had 2, 26 had 3, 6 had 4, 2 had 5 and 1 had a discrepancy of 6 between their Ideal Silhouette and Perceived Silhouette. 43 participants out of 242 had no discrepancy. Mean Discrepancy was calculated to be 1.39 with Standard Deviation of 1.070. (Figure 1)

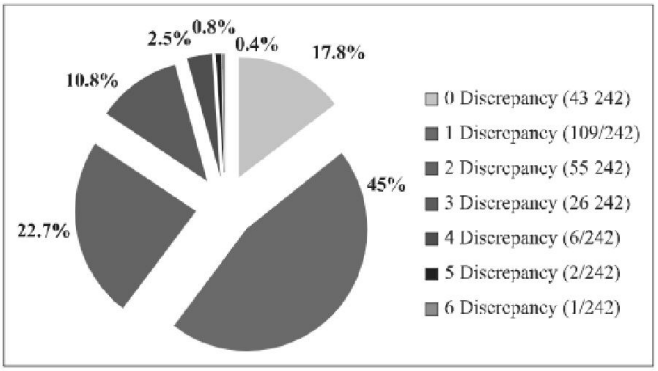

Figure 1: *Pie Chart showing Distribution of Frequencies and Percentages of Body Image Dissatisfaction (BID) according to Discrepancy between Ideal and Perceived Silhouettes*

Table 1 Highlights the burden of Body Image Dissatisfaction among all the studied indicators. Students belonging to urban residential areas and living in Joint families, those with parents that have high incomes, few number of siblings, those who frequently consume processed food and lead a sedentary lifestyle, have high social media exposure, are smokers, un-married, victims of bullying, regular visitors of Psychologists/Psychiatrists and sleep for less than 4 hours at night showed relatively higher figures of Body Image Dissatisfaction.

Table 1: *Frequency of Body Image Dissatisfaction (BID) in Correspondence to the Socio-Demographic, Economic, Biological and Behavioral Indicators*

		Body Image Dissatisfaction (BID)		Total			Body Image Dissatisfaction (BID)		Total
		Yes	No				Yes	No	
Religion	Islam	197 (82.4%)	42	239	Attempted Weight Management Techniques	None	109 (79%)	29	138
	Hinduism	0 (0%)	1	1		Starvation	20 (90.9%)	2	22
	Christianity	1 (100%)	0	1		Exercise	60 (85.7%)	10	70
	Other	1 (100%)	0	1		Steroid Use	2 (100%)	0	2
Ethnicity	Punjabi	173 (85.3%)	38	211		Surgery	2 (66.7%)	1	3
	Sindhi	4 (100%)	0	4		Other	6 (85.7%)	1	7
	Balochi	2 (66.7%)	1	3	Self-Perception of Body Weight	Underweight	29 (87.9%)	4	33
	Pakhtoon	6 (75%)	2	8		Normal	107 (76.4%)	33	140
	Gilgiti	2 (100%)	0	2		Overweight	63 (91.3%)	6	69
	Kashmiri	4 (80%)	1	5	Smoking Status	Non-Smoker	171 (83.4%)	34	205
	Other	8 (88.9%)	1	9		Occasional Smoker	13 (76.5%)	4	17
Residential Area	Rural	30 (73.2%)	11	41		Regular Smoker	15 (75%)	5	20
	Urban	169 (84%)	32	201	Physical Activity	Not Active at all	43 (81.1%)	10	53
Social Media Exposure (social media activity /day)	Low	22 (78.6%)	6	28		Moderately Active	145 (83.4%)	29	174
	Moderate	88 (80.7%)	21	109		Very Active	11 (73.4%)	4	15
	High	89 (84.5%)	16	105	Sweetened Beverages (times per week)	≤ 4 Drinks	140 (81.4%)	32	172
Preferred Language of Communica-tion	Urdu	170 (81.7%)	38	208		> 4 Drinks	59 (84.3%)	11	70
	English	9 (81.8%)	2	11	Un-sweetened Beverages (times per week)	≤ 4 Drinks	142 (80.2%)	35	177
	Punjabi	10 (83.4%)	2	12		> Drinks	57 (87.7%)	8	65
	Other	10 (90.9%)	1	11	Processed Food Consumption	Never	7 (70%)	3	10
	Matriculation	35 (76%)	11	46		Rare	95 (80.5%)	23	118

Mother's Education (Highest degree achieved)	Graduation	94 (84.7%)	17	111		Frequent	97 (85/1%)	17	114
	Post-Graduation	61 (81.4%)	14	75	Nutritional Status	Poor	16 (84.2%)	3	19
	Other	9 (90%)	1	10		Fair	92 (83.6%)	18	110
Father's Education (Highest degree achieved)	Matriculation	19 (86.4%)	3	22		Good	91 (80.5%)	22	113
	Graduation	79 (80%)	20	99	Night Sleep Hours	< 4 Hours	27 (87.1%)	4	31
	Post-Graduation	97 (83.6%)	19	116		4-8 Hours	136 (82.4%)	29	165
	Other	4 (80%)	1	5		> 8 Hours	36 (78.3%)	10	46
Number of Siblings	None	5 (71.4%)	2	7	Psychiatrist Visits	Never	168 (81.2%)	39	207
	One	36 (85.7%)	6	42		Seldom	25 (89.3%)	3	28
	Two	60 (83.4%)	12	72		Often	6 (85.7%)	1	7
	Three	46 (83.6%)	9	55	Bullying Experience	Yes	75 (83.4%)	15	90
	Four	30 (83.4%)	6	36		No	124 (81.6%)	28	152
	More than Four	22 (73.4%)	8	30	Living Arrangement	Joint Family	44 (84.6%)	8	52
Monthly Family Income	≤ 50000	19 (79.2%)	5	24		Nuclear Family	150 (82.9%)	31	181
	≤ 100000	76 (81.7%)	17	93		Step Family	4 (80%)	1	5
	≤ 150000	59 (81.9%)	13	72		Other	1 (25%)	3	4
	> 150000	45 (84.9%)	8	53					
Marital Status	Un-Married	190 (82.3%)	41	231					
	Married	9 (81.8%)	2	11					

Table 2 summarizes the frequencies and percentages of Body Image Dissatisfaction according to the study variables i-e age, gender and Body Mass index (BMI). 89.3% students from teenage group while 78.5% students from post-teenage group were reportedly having Body Image Dissatisfaction. Body Dissatisfaction was observed in 76.9% male students and 87.6% female students. 90.5%, 77.4% and 94.3% were the numbers of Body Image Dissatisfaction that showed up in Underweight, Normal and Overweight BMI ranges respectively. Using Pearson Chi Square test, P value was calculated for each of the study variables (Age, Gender, BMI) which came out to be 0.036, 0.029 and 0.011 respectively (< 0.05) thus the results were statistically significant commenting fairly strong statistical association of Body Image Dissatisfaction with Age (Teenage Group), Gender (Females) and BMI (Overweight Population) as they exhibited greater prevalence of Body Dissatisfaction.

Table 2: *Relationship of Body Image Dissatisfaction (BID) with Age, Gender and Body Mass Index (BMI)*

		Frequency and Percentage of Body Image Dissatisfaction (BID)			
		Yes	No	Total	P-value
Age Group	Teenage (< 20 Years)	75 (89.3%)	9	84	0.036 (< 0.05)
	Post-Teenage (≥ 20 Years)	124 (78.5%)	34	158	
	Total	199	43	242	
Gender	Male	93 (76.9%)	28	121	0.029 (< 0.05)
	Female	106 (87.6%)	15	121	
	Total	199	43	242	
Body Mass Index (BMI)	Underweight	19 (90.5%)	2	21	0.011 (< 0.05)
	Normal	130 (77.4%)	38	168	
	Overweight	50 (94.3%)	3	53	
	Total	199	43	242	

Discussion:

In the light of this study, the frequency of Body Image Dissatisfaction (BID) was determined to be 82.2%. The results of this research are in consonance with a previous study done by Costa Lda C, Silva DA, Alvarenga Mdos S and de Vasconcelos Fde A,[17] using Figure rating scale, which had 82.9% students having Body Image Issues. It is especially noteworthy that the majority of students in both the studies were from the Normal Weight BMI range yet they were still unhappy with their portrayal of bodies. As opposed to the literature, this study's results are higher than the studies conducted in Mala-ysia[18] and Spain[19] where 60.1% students showed Body Dissatisfaction [18] while 65% of the respondents desired to modify the look of their bodies.[19] Differences probably arose due to the contrasting sociocultural characteristics of the participants.

The prevalence of Dissatisfaction in males and females was estimated to be 76.9% and 87.6% respectively. Girls showed greater concerns regarding their overall appearances than boys. The results of this study are homogenous to most of the studies been done in the past. One such example is by Azmira Ab. Latiff, Juliawati Muhamad and Razlina A. Rahman[18] that showed 2.07 times higher proportion of Body Image Disturbances in females as compared to their guy counterparts when adjusted for other variables. The observations of Cruzat-Mandich C, Diaz-Castrillon F, Lizana-Calderon P and Castro A[19] were in line with our results that weight management techniques like dieting, gymming and liposuction fat loss are most of the women's infatuation and is rapidly gaining popularity in the masses. Likewise, another research was conducted in The University of Leipzig, Germany commenting about the severity of Body Dissatisfaction especially in ladies.[4] Similar data collected by Sarah Grogan[2] showed that abdomen, buttocks and thighs are the most problematic body parts in a women's body and they often overestimate their dimensions. This is a negative behavior that needs to be addressed. In our study, Dissatisfaction was fairly high in male participants too. Analysis showed that 2 and 70 out of the total 121 male participants (**Table 1**) had reported of using steroids and hard core body building exercises respectively to gain muscle mass (a V Shaped Figure) in a short period of time. This might be a probable cause for males getting more and more insecure

regarding their body shapes and contours like females. The work of Martini MCS, Assumpcao D, Barros MBA, Canesqui AM and Barros Filho AA[20] is one of a kind in this respect because it showed comparable and analogous Body Dissatisfaction in both men and women (34.5% in men and 52% in women).

According to the study, Body Image Dissatisfaction noted in the Teenage group was 89.3% while in the Post-Teenage Group was 78.5%. These results are supported by a 10-year longitudinal research conducted in the state of Minnesota, US showing that Body Image Satisfaction of Adolescents decreases between middle school and high school years.[4] An Asian study involving 13 Year Olds and 14 Year Olds resonates with our concepts and reported the percentage of Body Dissatisfaction to be 78.1% in young girls and boys which persists throughout the adolescent phase and adulthood.[21] Rationale behind this is that with adolescence, there is a rapid surge in Body Mass Index.[7] Younger age groups have always been on the verge of fatalistic unrecognized media influences particularly imposed by the Western Culture. They have more spare time on hand to spend on fashion magazines and television. On the other hand, they are less knowledgeable about the pernicious health outcomes of incorrect weight management. In addition, direct or indirect comments from parents and their perceptions of body weight play a massive impact on teenagers, body goals.

Careful analysis of the data inferred the percentages of Body Image Dissatisfaction lying in different Body Mass Index (BMI) ranges to be 94.3% in Overweight followed by 90.5% in underweight and 77.4% in Normal Weight range. Studies conducted earlier have shown mix evidence regarding BMI distribution. According to our calculated frequencies, with increase in the BMI, the chance of developing Dissatisfaction with your Body Image escalates. This is exactly in accordance with the work of Weinberger NA, Kersting A, Riedel-Heller SG and Luck-Siko-rski C,[4] according to which people with obesity or higher body mass indices reported more Body Image Dissatisfaction than their normal weight counterparts because Body image Disturbance is an essential concept and is negatively prejudiced by weight gain. Increase in the Total Body Fat in turn increases Body Mass Index and Body Image Disturbances.[7] In Underweight Category, it is almost always boys who show Body Image Issues. Being underweight is considered a sign of infirmity and weakness. A study done in Rural South Africa[22] showed that underweight physiques are reflected as unattractive and unhealthy by the majority of young girls and boys. Prevalence of Body Dissatisfaction in Normal BMI range was also quite high in this study. This aligns with one of the researches conducted in Brazil[20] that determined the prevalence of weight dissatisfaction in normal weight juveniles to be 43.-7%. Study of Farah Wahida Z, Mohd Nasir MT and Hazizi AS[21] found out a major spike in the prevalence rate (78.1%) of Body Image Dissatisfaction in adolescents, even though more than half of the students had normal Body Mass Indices.

P Value was calculated to be 0.036, 0.029 and 0.011 (<0.05). The results were therefore statistically significant. There is association of Body Image Dissatisfaction with Teenage group, Female Gender and Overweight BMI range.

Effects of socio-demographic, economic, biological and behavioral indicators on Body Image Dissatisfaction revealed that urban residents, smokers, unmarried participants, victims of bullying, students with less educated parents but high family incomes and a high social media exposure showed more Body Dissatisfaction than their peers. This is supported by Martini MCS, Assumpcao D, Barros MBA, Canesqui AM and Barros Filho AA showing that participants particularly ladies belonging to high socioeconomic status were not satisfied with their current weights.[20] These facts are also favored by a research conducted in the city of Santa Maria,[23] according to which probability of Body Image Instabilities was higher in adolescents where the parents had less schooling. But those with higher family incomes and those from upper class socioeconomic background were relatively less dissatisfied with their Body Image. This debate is perhaps because the research was done in the urbanized city of Santa Maria in the State of Rio Grande do Sul and the outcomes can't be generalized for the developing countries. The

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summary is that the level of education and employment status of individuals remain significant factors in influencing Body Image Dissatisfaction.[24]

Owing to the lack of time, self-reported weight and height were used to determine Body Mass Index. Some participants didn't know their current anthropomorphic data which may have led to bias and questionability in the validity of the results. Body Image Dissatisfaction was evaluated as 0 (satisfyyied/no discrepancy) and 1 (Dissatisfied/discrepancy) due to which the degree of dissatisfaction remained indeterminate in age groups, sexes and BMI ranges. The study also didn't analyze if the students preferred to gain weight or lose weight.

Conclusion:

The study highlighted a high burden of Body Image Dissatisfaction in the healthy medical student community of King Edward Medical University, Lahore. The frequency was found to be higher in females, Teenage group and Overweight BMI range.

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