

**Research Article****Eating attitude and its relationship with gender among first year MBBS students using EAT-26 questionnaire in a medical college in West Bengal: A cross-sectional study****Madhumanti Thakur<sup>1</sup>, Tirthankar Guha Thakurta<sup>2\*</sup>**<sup>1,2</sup> Department of Physiology, KPC Medical College & Hospital, Jadavpur, Kolkata.**(Received: 15-10-2024****Revised: 25-01-2025****Accepted: 29-01-2025)**Corresponding Author: \**Tirthankar Guha Thakurta*. Email: tirthankar.guhathakurta@gmail.com**ABSTRACT****Introduction and Aim**

Studies revealed dissatisfaction with body weight among university students in industrialized countries. This study aims to identify the influence of gender and socio-demographic factors on the eating attitude among medical students in West Bengal.

**Materials and Methods**

This was an observational cross-sectional study conducted at KPC Medical College & Hospital, on 112 students of Phase-I of MBBS. Each participant was handed a pre-validated EAT-26 (Eating Attitudes Test - 26) questionnaire. EAT-26 scores across individual parameters were analyzed using IBM SPSS 14. Comparison between groups was done using Mean  $\pm$  SD and Student's T Test and associations predicted using Chi-square tests.

**Results**

Female students had greater mean EAT-26 score (mean = 18.63) compared to the male students (mean = 14.57). The prevalence of a significant EAT-26 score ( $\geq 20$ ) is more in female participants compared to males (41% of all female participants, as compared to 25% of all male participants had EAT26 score  $\geq 20$ ). An unpaired Student's T test, performed to compare the EAT-26 scores of male and female students revealed *t*-value of 2.34679, *p*-value of .010363. The result is significant at  $p < .05$ . Socio-demographic variables like area of residence or place of stay did not have any statistically significant association with the EATscores.

**Conclusion**

Female students are at a greater risk of eating disorders than their male counterparts. Hence, educational programs at community level to modify unhealthy eating habits and correct body dysmorphism are recommended.

**Keywords:** Eating disorders; EAT-26; Gender; Medical students.**1. INTRODUCTION****1.1 Review of Literature**

Admission to a medical college frequently involves a significant change in lifestyle to accommodate study requirements. These changes, coupled with demanding academic stress, can put medical students at risk of developing eating disorders and body weight fluctuations which may significantly affect their quality of life [1, 2, 3]. Further, different socio-cultural factors, popular media and peer

influences shape one's idea of an ideal body morphology, and therefore may influence their diet [4, 5, 6]. A study conducted by Marie Dahlin, Nils Joneborg, Bo Runeson at the at the Karolinska Institute Medical University, Stockholm, Sweden demonstrated significant stress among students in the first year of their medical colleges, which was more in females than their male counterparts [7]. Bhushan Chaudhari, Abhinav Tewari, Jyotsna Vanka, Saurav Kumar and Daniel Saldanha conducted a study on the relationship between risk of eating

disorders with self-esteem, body image and body mass index of medical students. Their study, however, found the male students to have a greater tendency of eating disorders, as compared to the female students. This variation in the observations necessitate further studies on the same issues in regional populations [8].

Eating disorders are of grave concern to health and affect people of all ages. However, they are predominant among the young population, especially college-goers [9, 10, 11]. The Multi-Service Eating Disorders Association (MEDA 4) revealed that nearly 15% of females, aged 17 to 24 years, have some type of eating disorders. Earlier thought to be only a western problem, eating disorders are now observed in youngsters of all racial and socioeconomic groups and more than 75% of these cases begin during adolescence [12]. Many surveys have shown that body dysmorphism is most frequent among young adults including university students in developed countries [13, 14]. However, researches on eating disorders are relatively lacking in developing countries like India. Early diagnosis is the key to reduce the prevalence and complications of these illnesses [15]. A systematic review published in 2019 by Galmiche, Déchelotte, Lambert and Tavolacci suggest that the prevalence of Eating Disorders, worldwide, is around 9% [16].

A study conducted by Mitwe Musingo and Lihong Wang among college students in Florida, revealed no significant association of eating habits with sociodemographic variables like gender, residential status and academic classification [17].

Eating disorders and dieting attitudes in adolescent population in India is reported to be high, with several socio-cultural and psychological variables leading to their susceptibility [18]. Study among the MBBS students from North India based on gender differences and their association with eating attitude revealed similarities were more than differences. Furthermore, cultural priming and generation-based differences were also found to be pivotal in determining risk for eating disorders [19].

Anorexia nervosa and bulimia nervosa, two noted categories of eating disorders mentioned in DSM TR IV (Diagnostic and Statistical Manual, Text Revision IV) published by the American Psychological Association, are possibly more extensively studied than Binge Eating Disorder, a proposed third variant of eating disorders [20, 21, 22, 23]. Despite this, the collective pool of data on the prevalence of these conditions in general population is relatively sparse. Studies conducted by Hoek and Hoaken in 2003 revealed that the prevalence of anorexia nervosa among females from Europe and North America are estimated to be about 0.3% of the population. A study by Garfinkel *et al.*, on men from Canada, conducted in 1996 estimated the prevalence of anorexia nervosa to be about 0.1% among men [24, 25].

## 1.2 AIMS AND OBJECTIVES

### *General Objectives:*

- To study the eating attitude among the First Year medical students from a medical college in Kolkata, West Bengal.

### *Specific Objectives:*

- To calculate the prevalence of eating disorders among the First Year MBBS students from a medical college in Kolkata, West Bengal.
- To analyze how gender influences the eating attitude and risk of eating disorders in the study population.

## 2. MATERIALS & METHODS

**2.1 Nature of study:** Observational cross-sectional study

**2.2 Place of study:** Department of Physiology, KPC Medical College & Hospital, Jadavpur, Kolkata.

**2.3 Study population:** Students studying in the Phase-I of MBBS, at KPC Medical College & Hospital, Jadavpur, Kolkata, in the academic session 2023-24.

### **2.4 Inclusion criteria:**

All consenting first year MBBS students of the session 2023-24 of KPC Medical College and Hospital, Kolkata.

### **2.5 Exclusion criteria:**

1. Non-consenting students

2. Students pre-diagnosed with chronic diseases, metabolic diseases or neuromuscular dystrophies
3. Students having pre-existing body dysmorphism due to physical injury or surgical intervention

**2.6 Sample size:**

Sample size was calculated using the equation for finite population.

$$\text{Unlimited population: } n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

$$\text{Finite population: } n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2 N}}$$

Where,

- z is the z score = 1.96 at a confidence interval of 95%
- ε is the margin of error = 5%
- N is the population size = 150
- $\hat{p}$  is the population proportion = 9%

the calculated minimum sample size was 69. Assuming a 10% non-response rate, the minimum sample size was calculated to be 69 + 7 = 76.

In this study, we included 112 consenting participants.

**2.7 Sampling Method:**

The participants were sampled using volunteer-based sampling technique. All 150 students studying in Phase 1 of MBBS, 2023 at KPC Medical College and Hospital, Kolkata, were briefed about the study and handed over the questionnaire with the consent form. Written consent was obtained from 112 participants along with their response sheet.

**2.8 Statistical Methods:**

Each participant was handed a pre-validated EAT-26 (Eating Attitudes Test - 26 Item) questionnaire [26, 27]. The individual responses were separately analyzed by the guidelines set for EAT-26 (Table 1). The obtained scores were recorded using Microsoft Excel 2021. The EAT-26-score, the difference in prevalence across individual parameters (gender, socio-economic profile, demography, etc.) were analyzed using IBM SPSS 29. Comparison between two groups were done using Mean ± SD and student’s T test. A significance level of p < 0.05 were considered to be statistically significant.

**Table 1: Distribution of participants’ responses (by percentage) to individual items of EAT-26 questionnaire [n = 112].**

Sl. No.	Item	Distribution of participants’ responses in percentage					
		Always	Usually	Often	Sometimes	Rarely	Never
1	I am terrified about being overweight.	25	14.3	10.7	17.9	17	15.2
2	I avoid eating when I am hungry.	0	6.2	8	32.1	33.9	19.6
3	I find myself preoccupied with food.	1.8	17	19.6	22.3	31.2	8
4	I have gone on eating binges where I feel that I may not be able to stop.	0.9	14.3	17	21.4	25	21.4
5	I cut my food into small pieces	12.5	25	14.3	20.5	15.2	12.5
6	I am aware of the calorie content of foods that I eat.	8.9	10.7	8	25.9	23.2	23.2
7	I particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	3.6	10.7	7.1	23.2	25.9	29.5
8	I feel that others would prefer if I ate more.	14.3	13.4	11.6	23.2	12.5	25
9	I vomit after I have eaten.	0	0.9	0.9	7.1	35.7	55.4
10	I feel extremely guilty after eating.	2.7	6.2	8.9	19.6	12.5	50
11	I am occupied with a desire to be thinner.	19.6	21.4	5.4	15.2	15.2	23.2
12	I think about burning up calories when I exercise.	23.2	31.2	8	14.3	14.3	8.9
13	I feel other people think that I am too thin.	10.7	9.8	6.2	13.4	19.6	40.2
14	I am preoccupied with the thought of having fat on my body.	19.6	15.2	12.5	19.6	18.8	14.3
15	I take longer than others to eat my meals.	14.3	11.6	8.9	26.8	23.2	15.2
16	I avoid foods with sugar in them.	5.4	13.4	9.8	27.7	22.3	21.4
17	I eat diet foods.	0	14.3	7.1	26.8	29.5	22.3
18	I feel that food controls my life.	14.3	11.6	12.5	18.8	17	25.9
19	I display self-control around food.	13.4	16.1	19.6	32.1	15.2	3.6
20	I feel that others pressure me to eat.	5.4	8	11.6	30.4	21.4	23.2
21	I give too much time and thought to food.	6.2	9.8	10.7	35.7	22.3	15.2
22	I feel uncomfortable after eating sweets.	6.2	8	8.9	21.4	31.2	24.1
23	I engage in dieting behavior.	3.6	7.1	12.5	23.2	22.3	31.2
24	I like my stomach to be empty.	2.7	8.9	8	16.1	30.4	33.9
25	I have the impulse to vomit after meals.	0.9	0.9	0.9	8	27.7	61.6
26	I enjoy trying new rich foods.	24.1	31.2	12.5	24.1	5.4	2.7

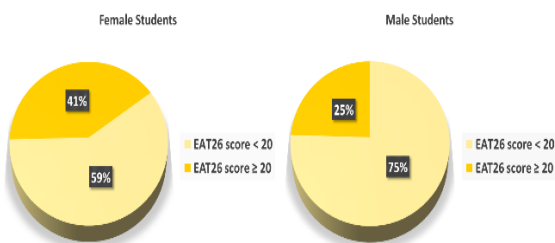
The mean (+/- SD) of the EAT-26 scores of the subjects, along with the median, mode and range, are represented in Table 2.

### 3. RESULTS AND DISCUSSION

#### 3.1 RESULTS

**Table 2. Gender-wise EAT-26 scores of First Year Students from a Medical College in West Bengal**

EAT-26 score	Female students (n = 59)	Male students (n = 53)
Mean	18.63	14.57
SD	±10.38	±7.53
Median	17	15
Mode	11	16
Range	1-44	4-33



**Figure 1. Stratification of EAT-26 scores in male and female Students of MBBS (Phase-I) from a Medical College in West Bengal**



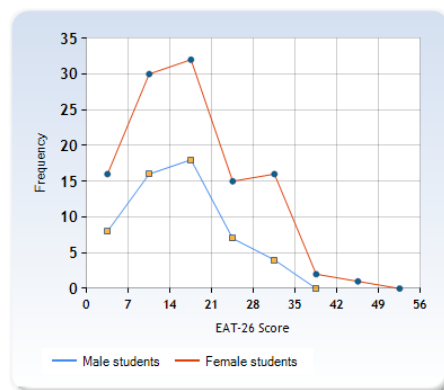
**Figure 2. Gender-based stratification of EAT-26 scores of MBBS (Phase I) Students from a Medical College in West Bengal**

Levene’s Test for Homogeneity of Variance was applied on the data sets for EAT-26 scores of males versus the EAT-26 scores of females. The f-ratio value is 6.29751. The p-value is 0.013547. The result is significant at  $p < .05$ .

The requirement of homogeneity is not met, which is a pre-requisite for conventional Student’s t-test.

Hence, modified t-test (Welch’s t-test) was performed, which does not require the data sets to be homogeneous. The p-value obtained was

0.01223, which is statistically significant at  $p < 0.05$ .



**Figure 3. Frequency polygon comparing distribution of EAT-26 scores of Male and Female MBBS (Phase I) Students from a Medical College in West Bengal**

**Table 3. Chi-square statistic showing relationship between area of residence and EAT-26 scores of the participants.**

	Urban	Suburban	Rural	Row Totals
EAT score 20 or more	29 (27.48) [0.08]	3 (5.77) [1.33]	6 (4.75) [0.33]	38
EAT score < 20	52 (53.52) [0.04]	14 (11.23) [0.68]	8 (9.25) [0.17]	74
Column Totals	81	17	14	112 (Grand Total)

The chi-square statistic is 2.635. The p-value is .267799. The result is *not* significant at  $p < .05$ .

**Table 4. Chi-square statistic showing relationship between place of residence and EAT-26 scores of the participants.**

	Own home	Rented apartment	Hostel/PG	Row Totals
EAT score < 20	38 (40.96) [0.21]	10 (9.25) [0.06]	26(23.79) [0.21]	74
Eat score 20 or more	24 (21.04) [0.42]	4 (4.75) [0.12]	10 (12.21) [0.40]	38
Column Totals	62	14	36	112(Grand Total)

The chi-square statistic is 1.419. The p-value is .491888. The result is *not* significant at  $p < .05$ .

#### 3.2 DISCUSSION

The Eating Attitudes Test (EAT-26) is used to identify the presence of “eating disorder risk” based on attitudes, feelings and behaviors related to eating. There are 26 self-report questions

assessing general eating behavior and five additional questions assessing risky behaviors. The EAT-26 can aid in the screening and diagnosis of various eating disorders. A higher score represents a greater chance of eating disorder, and a score  $\geq 20$  usually indicates a high level of concern related to dieting and body image [28].

In our study, female students had a greater mean EAT-26 score (mean=18.63) compared to the male students (men=14.57). Furthermore, the prevalence of a significant EAT 26 score ( $\geq 20$ ) is more in females in comparison to males (41% of all female participants, as compared to 25% of all male participants had EAT 26 score  $\geq 20$ ) (Figure 1). From a different perspective, of all participants who scored  $\geq 20$ , 65% are females and only 35% are males. On the other hand, of all participants who scored  $< 20$ , 47% are females and 53% are males (Figure 2). These findings are in agreement with the findings of Marie Dahlin *et al.*, that females are at a greater risk of eating disorders, but contradicts the findings of Bhushan Chaudhari *et al.*, that male medical students are more prone to eating disorders and poor body image related issues compared to their female counterparts [7, 8].

More extreme values of EAT-26 scores were observed among female students, as compared to their male counterparts (Figure 3).

Influence of sociodemographic variables other than gender, like, area of residence (urban/suburban/rural) and place of residence (own home/rented apartment/hostel/paying guest accommodation) were analysed using Chi-Square statistic (Table 3, Table 4). Both factors were found to have statistically insignificant association with the EAT-26 scores of the participants. These findings concert with those of Musingo and Wang [17].

Tavolacci, Grigioni, Richard, Meyrignac *et al.*, [13] pointed out that discontent with body weight among university students and young adults is most frequent in highly industrialized countries. This study reveals that similar dissatisfaction is not uncommon in developing countries like India. Overall, the female subjects had a greater EAT-26 score compared to the male subjects

studying in the same academic phase of the same medical college.

The culture of “dieting” which emerged with the era of pop culture, has very often created unrealistic standards of beauty. This, along with the portrayal of slim archetype of the female body as an ideal has led to an explosion in diet culture, meal skipping and disordered eating. The above factors also contribute to gender differences in the perception of body image – the females being more affected due to greater objectification in popular media [29].

The seeming disparity between the findings of different studies maybe explained due to the existing differences in the cultural appropriation of ideal body image, religious or ethnic limitations on dietary habits and the role of mass media in promoting ideal body archetypes.

#### 4. CONCLUSION

Eating attitude is modulated by several biological, socio-cultural and psychological factors. This study aimed to evaluate the eating attitude among Phase-I medical students in a medical college in Kolkata. Based on our findings, we conclude that eating disorders are more likely to be seen among female students in comparison their male counterparts.

Furthermore, we recommend school and community level educational and psychological programmes that can encourage positive body image and therefore promote healthy eating habits.

#### ACKNOWLEDGEMENT

The authors are indebted to Prof. Dr. Debasish Sanyal, Head, Department of Psychiatry, KPC Medical College and Hospital, Kolkata for his valuable guidance.

#### CONFLICT OF INTEREST

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

#### FUNDING INFORMATION

No funding was received for this research work.

## ETHICAL INFORMATION

The study was conducted maintaining anonymity and confidentiality of the participants after obtaining clearance from the Institutional Ethics Committee of KPC Medical College & Hospital, Jadavpur.

## REFERENCES

1. Nadeem T, Gul B, Chhapra R, Mahr F, Pirani S, Asad N. Eating disorders in medical and nursing students of a private university: relationship with depression, anxiety, and stress. *Nursing*. 2023;20:30.
2. Memon AA, Adil SE, Siddiqui EU, Naeem SS, Ali SA, Mehmood K. Eating disorders in medical students of Karachi, Pakistan-a cross-sectional study. *BMC research notes*. 2012 Dec;5:1-7.
3. Alhazmi AH, Al Johani A. Prevalence and associated factors of eating disorders among students in Taiba University, Saudi Arabia: a cross-sectional study. *Malaysian Journal of Public Health Medicine*. 2019 Jan 1;19(1):172-6.
4. Naik SP. Eating disorders and its relationship with self-esteem among medical student. *Journal of Cardiovascular Disease Research*. 2022; 13(7).
5. Fan Y., Li Y., Liu A. *et al.*, Associations between body mass index, weight control concerns and behaviors, and eating disorder symptoms among non-clinical Chinese adolescents. *BMC Public Health*. 2010; 10(314). <https://doi.org/10.1186/1471-2458-10-314>
6. Bosi ML, Nogueira JA, Alencar CH, Moreira JA. Body image and eating behavior among medical students: eating disorders among medical students.
7. Dahlin M, Joneborg N, Runeson B. Stress and depression among medical students: A cross-sectional study. *Medical education*. 2005 Jun;39(6):594-604.
8. Chaudhari B, Tewari A, Vanka J, Kumar S, Saldanha D. The relationship of eating disorders risk with body mass index, body image and self-esteem among medical students. *Annals of Medical and Health Sciences Research*. 2017;7(3).
9. Iyer S, Shriram V. Prevalence of eating disorders and its associated risk factors in students of a medical college hospital in South India. *Cureus*. 2021 Jan 26;13(1).
10. Klump KL, Bulik CM, Kaye WH, Treasure J, Tyson E: Academy for eating disorders position paper: Eating disorders are serious mental illnesses. *Int J Eat Disord*. 2009, 42:97-103. 10.1002/eat.20589
11. Nicoli MG, Junior RD. Binge eating disorder and body image perception among university students. *Eating behaviors*. 2011 Dec 1;12(4):284-8.
12. Rohde P, Stice E, Shaw H, Gau JM, Ohls OC: Age effects in eating disorder baseline risk factors and prevention intervention effects. *Int J Eat Disord*. 2017, 50:1273-1280. 10.1002/eat.22775
13. Tavolacci MP, Grigioni S, Richard L, Meyrignac G, Déchelotte P, Ladner J. Eating disorders and associated health risks among university students. *Journal of nutrition education and behavior*. 2015 Sep 1;47(5):412-20.
14. Veale D, Gledhill LJ, Christodoulou P, Hodsoll J. Body dysmorphic disorder in different settings: A systematic review and estimated weighted prevalence. *Body image*. 2016 Sep 1;18:168-86.
15. Eisler I, Dare C, Russell GF, Szmukler G, le Grange D, Dodge E: Family and individual therapy in anorexia nervosa. A 5-year follow-up. *Arch Gen Psychiatry*. 1997, 54:1025-1030. 10.1001/archpsyc.1997.01830230063008
16. Galmiche M, Déchelotte P, Lambert G, Tavolacci MP. Prevalence of eating disorders over the 2000–2018 period: a systematic literature review. *The American journal of clinical nutrition*. 2019 May 1;109(5):1402-13.
17. Musingo MN, Wang L. Analysis of eating habits according to socio-demographic characteristics of college students. *Pakistan Journal of Nutrition*. 2009 Dec 2;8(10):1575-80.
18. Upadhyah A, Misra R, Parchwani D, Maheria P. Prevalence and risk factors for eating disorders in Indian adolescent

- females. *National Journal of Physiology, Pharmacy and Pharmacology*. 2014 May 1;4(2):153.
19. Gupta N, Bhargava R, Chavan BS, Sharan P. Eating attitudes and body shape concerns among medical students in Chandigarh. *Indian Journal of Social Psychiatry*. 2017 Jul 1;33(3):219-24.
  20. Grilo CM. Eating and weight disorders. *Psychology press*; 2014 Jun 3.
  21. Mussell MP, Mitchell JE. Anorexia nervosa and bulimia nervosa. In: *The Disorders*. 2001 Jan 1 (pp. 57-64). Academic Press.
  22. Berkman ND, Lohr KN, Bulik CM. Outcomes of eating disorders: a systematic review of the literature. *International Journal of Eating disorders*. 2007 May;40(4):293-309.
  23. Mancuso SG, Newton JR, Bosanac P, Rossell SL, Nesci JB, Castle DJ. Classification of eating disorders: comparison of relative prevalence rates using DSM-IV and DSM-5 criteria. *The British Journal of Psychiatry*. 2015 Jun;206(6):519-20.
  24. Hoek HW, van Hoeken D. Review of the prevalence and incidence of eating disorders. *Int J Eat Disord*. 2003 Dec;34(4):383-96. doi: 10.1002/eat.10222. PMID: 14566926.
  25. Garfinkel PE, Lin E, Goering P, Spegg C, Goldbloom DS, Kennedy S, Kaplan AS, Woodside DB. Bulimia nervosa in a Canadian community sample: Prevalence and comparison of subgroups. *American Journal of Psychiatry*. 1995 Jul 1;152(7):1052-8.
  26. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. *Psychological medicine*. 1982 Nov;12(4):871-8.
  27. Koslowsky M, Scheinberg Z, Bleich A, Mark M, Apter A, Danon Y, Solomon Z. The factor structure and criterion validity of the short form of the Eating Attitudes Test. *Journal of personality assessment*. 1992 Feb 1;58(1):27-35.
  28. Garner *et al.*, The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*. 1982. 12, 871-878.
  29. Jacob JS, Panwar N. Effect of age and gender on dietary patterns, mindful eating, body image and confidence. *BMC psychology*. 2023 Sep 5;11(1):264.