

# Assessment of Examination Related Anxiety among Students in a Medical College at Kolkata, India: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Medical education is considered to be one of the most academically and emotionally demanding training programmes out of any profession. Stress causes a negative effect on the students' psychosocial well-being. Students having anxiety can experience intense feeling of fear or panic and also impairs concentration and working memory.

**Aim:** To estimate the examination related anxiety levels among medical students. Also, to find out its association with different lifestyle and behavioural factors.

**Materials and Methods:** This institution-based cross-sectional descriptive study was conducted among 365 medical students of Calcutta National Medical College, Kolkata, West Bengal, India, from February 2022 to March 2022. The study used pre-designed, pre-tested, and semi-structured questionnaire. To assess anxiety level, the 10-item Westside Test Anxiety Scale was used. The scale consists of 10 questions which are answered based on a 5-point scale. Data was analysed in Statistical Package for Social Sciences (SPSS) version 16.0.

**Results:** Out of 365, 108 (29.6%) students suffered from moderately-high test anxiety during exams in both first and second professional MBBS year. Only 8.2% students had

comfortably-low test anxiety, whereas, 11.2% had extremely-high test anxiety. Among the first year students 37.5% male and 19.5% female had moderately high to extremely high level of test anxiety. In second year students 34.6% male and 20.6% female had moderately high to extremely high level of test anxiety. Male gender, addiction to smoking, addiction to alcohol, virtual gaming habit, coming from a nuclear family, and staying at home during exams had greater odds of having high anxiety than their counterparts. Addiction to smoking had adjusted odds of 1.52 and was found to be statistically significant. Students who resided in their homes had 2.34 times more chances of having high test anxiety and this association was found to be statistically significant. The practice of yoga was found to be protective with adjusted odds of 0.31 and this was also statistically significant.

**Conclusion:** Male gender, addiction to smoking and alcohol, virtual gaming habit, coming from a nuclear family and staying at home during examination time had greater impact on anxiety level than their counterparts. The practice of yoga was found to be protective. Involving students in different extra-curricular activities like outdoor games, yoga, playing music may be helpful in alleviating anxiety level.

**Keywords:** Alcohol, Lifestyle, Smoking, Virtual gaming habit, Westside test anxiety scale, Yoga

## INTRODUCTION

Anxiety can be described as the tense, unsettling anticipation of a threatened but vague event; a feeling of uneasy suspense [1]. Anxiety, although as common as depression, has garnered less attention and is often undetected and undertreated in the general population. Anxiety, stemming from the phenomenon of examination, is common among students of all streams of education. Examination anxiety is quite common among medical students and warrants greater attention due to its significant implications. Medical education is considered to be one of the most academically and emotionally demanding training programmes out of any profession [2]. Consequently, the time of emotional commitment necessary for medical students to devote to their training is extensive. Such demands and stress cause a negative effect on the students' psychosocial well-being.

According to a recent study on assessment of anxiety among medical students, it was observed that 75 out of total of 187 students (40.1%) were affected by symptoms suggestive of anxiety. [3]. A 2014 systematic review of the global prevalence of anxiety among medical students of North America found a large range of prevalence between 7.7% and 65.5% across studies [3]. According to a systematic search for cross-sectional studies that examine the prevalence of anxiety among medical students, done in February 2019. The global prevalence rate was 33.8% among medical students. The data was analysed from 69 studies comprising 40,348 medical students [4]. Anxiety was most prevalent among

medical students from the middle and south-east Asia. Studies have revealed that about one in three medical students generally have anxiety, a prevalence rate which is substantially higher than general population. Students having anxiety can experience not only intense feeling of fear or panic, but also dizziness and headache, nausea, abdominal pain, palpitations and shortness of breath [5]. Anxiety also impairs concentration and working memory. A study conducted in Karnataka in 2017 showed occurrence of exam anxiety in medical students in phase I-III was 37%, 28% and 32% respectively [6].

Therefore, the present study was conducted with the aim of estimating the examination related anxiety levels among medical students and to find out association between socio-demographic parameters and lifestyle habits if any, in order to identify students who are at risk. Thus, to provide timely assistance and intervention by promoting help-seeking behaviour among medical students when they are anxious and stressed.

## MATERIALS AND METHODS

This institution-based cross-sectional descriptive study was conducted among 365 medical students (first and second year) of Calcutta National Medical College, Kolkata, West Bengal, India, from February 2022 to March 2022. Data collection was conducted after two weeks of their examination. Semester examination was completed in the third week of January and data was collected in February 2022 when new semester classes were started. Before

starting data collection ethical approval was taken from Institutional Ethics Committee (Ref No. EC-CNMC/2022/28).

**Inclusion criteria:** First and second year MBBS student of Calcutta National Medical College who gave consent for data collection were included in the study.

**Exclusion criteria:** Students who were absent on the days of data collection and were on chronic antipsychotic drugs, were excluded from the study.

Data were collected from 200 first year students out of 250 and 165 second year students out of 200 using a predesigned, pretested and semi-structured questionnaire.

## Procedure

Questionnaire had two sections;

A= General information

B= Westside Test Anxiety Scale

Among the first year student 46 were absent during the data collection time and four students did not give consent for data collection. Among the second-year students 36 were absent, two were unwilling to participate and two students were excluded from the study as they were on chronic antipsychotic medication. To assess anxiety level Westside test anxiety scale was used in the study [7]. Modified B. G. Prasad socio-economic scale, 2021 was used to determine socio-economic status of the students [8].

**Westside test anxiety scale:** The Westside test anxiety scale is a brief, 10 item instrument designed to identify students with anxiety impairments who could benefit from an anxiety reduction intervention. This scale is a reliable and valid measure of test-anxiety impairment. The scale items cover self-assessed anxiety impairment and cognitions which can impair performance. The scale consists of 10 questions which are answered based on a five point scale. Maximum and minimum possible scores were 50 and 10, respectively [7]. The test anxiety score is then calculated by dividing the aggregated score by 10 and classified as [7]:

- Comfortably low (1.0-1.9).
- Normal or average (2.0-2.5).
- High normal (2.5-2.9).
- Moderately high (3.0-3.4).
- High (3.5-3.9) and
- Extremely high (4.0-5.0).

## STATISTICAL ANALYSIS

Data entry and analysis were done in Statistical Package for Social Sciences (SPSS) version 16.0. Frequency distribution tables were used for descriptive statistics in the form of simple proportion and percentage. Multi-nominal logistic regression was used to assess factors influencing anxiety level considering significance level at 5%.

## RESULTS

Most of the students belonged to the age group of 20 years or less. The female students constituted about 130 (35.6%). The students mainly belonged to urban areas (67.7%) and came from nuclear families (80%). A substantial proportion of students resided away from their homes either in hostels or as paying guests (71.2%) [Table/Fig-1].

On assessing lifestyle and behavioural factors in the students, about 39.5% of the students had addiction to either smoking, alcohol or chewing tobacco. Very few students practiced yoga on a regular basis 38 (10.7%). About 187 (51.2%) of the students indulged in indoor or outdoor games and approximately 198 (54.2%) of the students pursued music and/or dance in their leisure time. More than half of the students had the habit of reading books other than those in their curriculum [Table/Fig-2].

Socio-demographic variables		First year students (n,%)	Second year students (n,%)
Age (years)	≤20	186 (93)	96 (58.2)
	≥21	14 (7)	69 (41.8)
Gender	Male	129 (64.5)	106 (64.2)
	Female	71 (35.5)	59 (35.8)
Religion	Hinduism	140 (70)	114 (69.1)
	Islam	51 (25.5)	44 (26.7)
	Others	9 (4.5)	7 (4.2)
Residence	Urban	139 (69.5)	108 (65.5)
	Rural	61 (30.5)	57 (34.5)
Family	Joint	36 (18)	37 (22.4)
	Nuclear	164 (82)	128 (77.6)
Socio-economic status	Upper	133 (66.5)	100 (60.6)
	Upper middle	19 (9.5)	25 (15.1)
	Middle	11 (5.5)	14 (8.4)
	Lower middle	25 (12.5)	17 (10.3)
Local residence	Home	78 (39)	62 (37.6)
	Hostel/Paying guest	122 (61)	138 (82.4)

[Table/Fig-1]: Distribution of students according to socio-demographic characteristics.

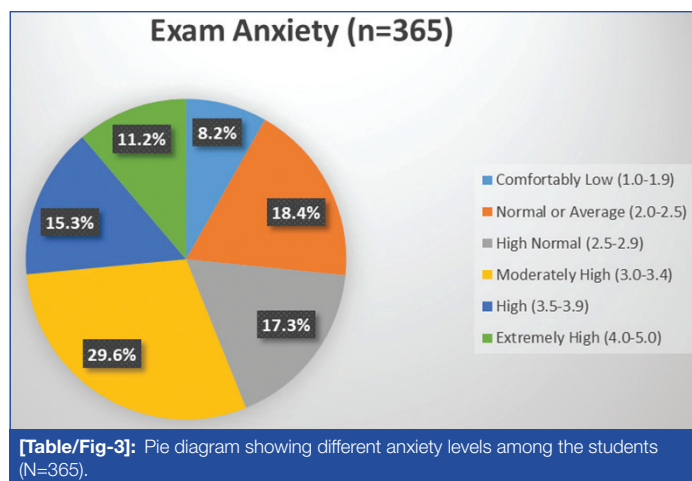
Variables		First year students (n,%)	Second year students (n,%)
Addiction	Yes	76 (38)	68 (41.2)
	No	124 (62)	97 (58.8)
Yoga	Yes	17 (8.5)	22 (13.3)
	No	183 (91.5)	143 (86.7)
Indoor/Outdoor games	Yes	100 (50)	87 (52.7)
	No	100 (50)	78 (47.3)
Music/Dance	Yes	75 (37.5)	75 (45.5)
	No	125 (62.5)	90 (54.5)
Art and Craft	Yes	46 (23)	44 (26.7)
	No	154 (77)	121 (73.3)
Reading books in leisure	Yes	102 (51)	96 (58.2)
	No	98 (49)	69 (41.8)

[Table/Fig-2]: Distribution of study population according to lifestyle and behavioural factors.

The study revealed moderately high to extremely high anxiety level in 205 (56.2%) students. Among them 132 (36.2%) were male and 73 (20%) were female. On further categorisation of students based on the Westside test anxiety scale, it is seen that about 108 (29.6%) of the students suffered from moderately-high test anxiety during exams. Only 8.2% had comfortably low test anxiety whereas 11.2% had extremely high test anxiety as per the scale. Among the first year students 37.5% male and 19.5% female had moderately high to extremely high level of test anxiety. In second year students 34.6% male and 20.6% female had moderately high to extremely high level of test anxiety [Table/Fig-3,4].

For the multinomial regression model, a score of 30 or below, as per the Westside anxiety scale, were considered low anxiety and above 30 as high anxiety. The goodness of fit test for the model had  $R^2=0.61$ .

The regression analysis showed that male gender, addiction to smoking, addiction to alcohol, virtual gaming habit, coming from a nuclear family and staying at home during exams had greater odds of having high anxiety than their counterparts. Addiction to smoking had adjusted odds of 1.52 and was found to be statistically



Anxiety level	First year (n,%)			Second year (n,%)		
	Male (n=129)	Female (n=71)	Total (n=200)	Male (n=106)	Female (n=59)	Total (n=165)
Comfortably low test anxiety	9 (4.5)	4 (20)	13 (6.5)	13 (7.9)	4 (2.4)	17 (10.3)
Normal or average test anxiety	23 (11.5)	13 (6.5)	36 (18)	19 (11.5)	12 (7.3)	31 (18.8)
High normal test anxiety	22 (11)	15 (7.5)	37 (18.5)	17 (10.3)	9 (5.5)	26 (15.8)
Moderately high test anxiety	42 (21)	22 (11)	64 (32)	27 (16.4)	17 (10.3)	44 (26.7)
High test anxiety	23 (11.5)	13 (6.5)	36 (18)	11 (6.7)	9 (5.5)	20 (12.1)
Extremely high test anxiety	10 (5)	4 (2)	14 (7)	19 (11.5)	8 (4.8)	27 (16.4)

**[Table/Fig-4]:** Distribution of study population according to anxiety levels as per westside test anxiety scale.

significant. Students who resided in their homes had 2.34 times more chances of having high test anxiety and this association was found to be statistically significant. The practice of Yoga was found to be protective with adjusted odds of 0.31 and this was also statistically significant [Table/Fig-5].

Variable	Constant	Wald	df	AOR <sup>#</sup>	95% CI for Exp (B)
Gender (Male)	0.14	0.319	1	1.03	0.68 1.55
Year of MBBS (second year)	-0.045	0.032	1	0.86	0.51 1.44
Smoking (yes)	0.035	0.029	1	1.52*	1.02 2.58
Alcohol (yes)	0.026	0.15	1	1.03	0.67 1.55
Virtual gaming (yes)	0.45	0.001	1	1.02	0.68 1.61
Family type (nuclear)	0.453	2.869	1	1.62	0.85 2.41
Yoga (yes)	-0.212	0.357	1	0.31*	0.22 0.83
Indoor/outdoor games (yes)	-0.078	0.108	1	0.51	0.42 1.76
Music/Dance (yes)	-0.157	0.461	1	0.34	0.45 1.89
Arts and craft (yes)	0.338	1.593	1	1.21	0.91 2.45
Reading books in leisure (yes)	-0.173	0.596	1	0.44	0.23 1.14
Local Residence (home)	0.68	0.009	1	2.34*	1.62 3.04

**[Table/Fig-5]:** Multinomial regression showing various factors influencing examination anxiety among medical students (N=365).  
#Adjusted Odds ratio

## DISCUSSION

Exam anxiety is a common problem not only in medical students but other students also. But in case of medical student, extensive course curriculum along with higher aspiration may cause psychological burden. This may lead to excessive worry which can

be demotivating and may cause performance deterioration, if not managed properly [9,10].

In the present study, among the first year MBBS students 37.5% males and 18.5% females showed moderate to extremely high examination anxiety. Similarly in second year MBBS students, 34.6% males and 20.6% females had moderate to extremely high test anxiety. The difference in gender is not reflected in the multinomial regression model where males had 1.03 odds of having test anxiety in comparison to females. Likewise, no specific gender difference in anxiety was found study done by Zhang Z et al., [11] However, studies done by Aida Y [12] and Inam SN et al., [13] revealed higher level of examination anxiety among female students.

In the present study, 58.9% medical students had test anxiety which was closely related to the study done by Stover JB et al., (52% had test anxiety) in Malaysia (2012); Brouse CH et al., (64% test anxiety) in Pakistan (2010) and Tsegay L et al., (52.30% test anxiety) in 2019 from Ethiopia [14-16]. However, a lower percentage was seen in the study done by Glynn SM et al., [17] (6% had test anxiety) in India (2008), Cheng SC et al., [18] (7% had test anxiety) in Taiwan (2008) and Coumaravelou S et al., [19] (18.2% had test anxiety) in Malaysia (2014). The present study showed that students in the second year MBBS had lower odds of having test anxiety than first year MBBS students, the probable reason could be that students get used to the curriculum and exam pattern gradually.

In the present study, it was found that those students who are generally involved in yoga, indoor/outdoor games, reading books and playing music or dance in leisure times had less anxiety during exam time than their counterparts. Practice of yoga was found to be protective with the adjusted Odds ratio of 0.31 which was also statistically significant. The probable reason being these practices made them psychologically stronger or may be helped in alleviating anxiety during stressful situations. Similar findings were found in study done by Rehman F et al., [20], Hashmat S et al., [21] and Grewal S et al., [10] where physical exercise and extracurricular activities played an important role in alleviating anxiety level. On the other hand students having habit of alcohol or smoking (AOR=1.52, 95% CI: 1.02-2.58) had more anxiety level than others.

It was also found that students from nuclear family or those who were living in home had more anxiety level than others probably due to not being able to communicate their feelings to someone who is also going through the same situation.

All students need good mentors who can help them cope with the pressure of completing curriculum and performing well in exams. As the study suggests, first year students need help in not only curriculum completion but also in other aspects like adjusting to the new environment away from family and support systems. The mentors can be their safe space who can guide them through their stressful times. Also, participation in extracurricular activities will help students interact well with each other and feel rejuvenated. Teachers and college authorities must encourage participation in sports and cultural events so that students can handle the stress of exams better. Another important issue that this study highlights is that deaddiction programs should be available in every institution, so that students do not resort to any addictions in times of distress, because addictions may increase their exam anxiety and hamper their health in the long run.

## Limitation(s)

In the present study, additional factors like peer pressure and emotional functioning of the students, could not be included. Also, recall bias was a limitation as well.

## CONCLUSION(S)

From the present study, it can be concluded that male gender, addiction to smoking and alcohol, virtual gaming habit, coming from a nuclear family and staying at home during examination time had

greater impact on anxiety level than their counterparts. The practice of Yoga was found to be protective. Involving students in different extra-curricular activities like outdoor games, yoga, playing music may be helpful in alleviating anxiety level. Concerned authority should take care of those who are severely stressed by proper counseling. Necessary changes in medical curriculum especially in assessment system may be opted to ease such type of difficulties.

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