

Original Research Article

Exam Anxiety among Medical Students in Dhaka City and Its Associated Factors-A Cross-sectional Study

Abstract:

Exam anxiety can be term as a mental disorder found in most students. It is a kind of fear and scaredness for which students choose to avoid the feared situations such as exams. A little bit of anxiety is common before and during the examination. Still, it can negatively impact their mental health and academic performances when it is more than the threshold level. The reasons might be expectations and pressure from parents and also for competition with other peers. A cross-sectional study was conducted among medical students of Dhaka City in Bangladesh to see the status of examination phobia as they were usually going through lots of exam pressure than any other students. A structured questionnaire was used to conduct this study. WATS (West Side Test Anxiety Scale) was incorporated into the questionnaire to assess the phobia and anxiety levels of the students. Both descriptive and inferential statistics were performed for intensive analysis.

Medical students must go through several different kinds of exams such as oral examination (viva), written, objective structured practical examination (OSPE), practical, short case, long case; all these things together play a contributing role in the induction of anxiety. More than 30% of students were suffering from moderate to severe examination anxiety, which compelled them to dropout or avoid the potential exams. The findings of this research can contribute significant impact on public health and mental health studies and the mental health professionals can provide policy guideline to the medical student to reduce exam anxiety. Further study needs to be done on a large scale to see a broad-spectrum scenario to assess the severity level of test anxiety and mental health status in the in the COVID-19 pandemic changing situation.

Keywords: Exam anxiety, WATS, Medical students, COVID-19 pandemic.

Introduction:

Examination anxiety is a kind of fear and scaredness for which students choose to avoid the feared situations such as an exam. Examinations are required for evaluation because no

educational system is complete without them [1]. Education refers to the process of attempting to influence an individual's thinking and behavior in a positive direction. The examination is held to measure the students' learning process in order to evaluate the educational objective. Exams are the most fundamental and important aspect of the academic system since they evaluate students' progress over time [2]. So little fear, anxiety, or stress is normal before or during the examination. But when it is more than the usual or excess anxiety, it can be termed severe examination anxiety. The reasons could be high expectations and pressure from parents, and competition with other peers. But research specialists found that most anxious people tend to be least prepared. Still, bright students who have prepared well may also feel test anxiety, contributing mild to severe examination anxiety [3].

Likewise, some students are unavoidably terrified of exams. Phobia causes some of them to become ill prior to the examination. Examination Phobia, Fear of Exam, Anxiety, and other names are used by psychologists to describe students' anxiety or fear of exams [4,5]. Most students suffer from exam anxiety, which is a mental condition. Exam anxiety affects children from primary to secondary school, and it usually begins in childhood or adolescence [6]. The medical profession is a severe pressure zone of study, which is experienced by more or less every student, which is very painful and is a state of discomfort about the future uncertainties [7,8]. Everybody is going through fear or anxiety in life, but the extremity level varies from person to person. When the fear or anxiety is solid and irrational, it can be considered a phobia. Medical students are going through difficulties at every phase of the academic curriculum. Examinations are an essential part of the medical curriculum. They are necessary to motivate students to study to check their potential to become competent doctors and achieve medical education [9]. Medical students are afraid of facing viva because it's a different and challenging part of the exam they have to deal with for passing their exams. Family conditions, over expectation from parents, teacher's rough and strict attitudes sometimes make them drop out of the courses [10]. They fear their performance in exams that can be humiliating or embarrassing and that others will judge them negatively [11]. They experience extreme discomfort and anxiety during exam situations and seek avoidance whenever possible [12]. After a lengthy admission process, to become a doctor, successful completion of the course within due time is necessary. It is the objective of the student, family, and the nation [13]. There are unexpected dropouts and repeated failures in different professional examinations known as defaulters in the medical field.

So, Anxiety is a natural survival mechanism of control due to irrational fear [14]. A research study conducted in India among MBBS students revealed that medical students undergo high stress before the examination [15].

Literature Review:

Further research from India revealed that examination anxiety impacts mental health and that specific serious incident of suicide are so helpless. When someone is going through fear, it will arouse the utmost response. Common symptoms of anxiety include rapid pulse, nausea, sweating, and trembling [16]. The psychological agony, misconception, or obsessional thought are signs of anxiety. It is due to the particular phobic object or situation [17].

Socio-economic background and exam anxiety

Huilin Chen (2012) showed their empirical research among Mainland Chinese high school students to explore the impact of socioeconomic status on perceived parental pressure and test anxiety. The study included: perceived parental pressure has significant impact on test anxiety; parents' occupations, parents' income and mother's education have significant impact on perceived parental pressure; parents' occupations, parents' income and mother's education have significant impact on test anxiety [18].

Educational factor and exam anxiety

Light Tsegay et.al (2019) in their study which published in BMC medical education showed that excessive course load [AOR = 6.128, 95% CI: (2.675, 14.039)] and taking oral examination [AOR = 2.89, 95% CI: (1.42, 5.84)] were determined as some of the predicting factors of test anxiety among medical students. Additionally, lack of systemic study plan [AOR = 2.4, 95% CI: (1.25, 4.59)] [19]. In our study we also found that socio-demographic factor and educational factor associated with anxiety among medical students. There is very few studies conducted in this topic in Bangladesh. Therefore it is important to conduct this type of study.

Purpose of the Study:

The purpose of the study was to identify the prevalence of exam anxiety among medical students in Dhaka City and its relation to socio demographic factors and other associated factors with severity.

Research questions:

a) What is the socio-demographic status of the public and private medical students?

- b) How much prevalence and level of test anxiety available among private and public medical college?
- c) What are the related factors with test anxiety?
- e) What are the association and level of risk factor of exam anxiety associated with socio-demographic factors?

Methodology:

Study design & participants:

A cross-sectional study design was followed to conduct this study. Two hundred undergraduate students from Dhaka Medical College and Northern International Medical College were selected conveniently for this study. This particular medical college selected as its students were well known and therefore it was easy access for the researcher to collect correct information for this study. The other issue was Dhaka Medical College is a Government Medical College and Northern International Medical College is a Private Medical College which was suitable for this study to know the situation of two different Medical colleges.

The population of Dhaka Medical College was 985 and Northern International Medical College was 450. Total number of populations was 1435. It was a survey based on well-structured questionnaire. The students were selected purposively as per inclusion criteria. Initially the questionnaire with consent forms were sent to the study population those who were willing to participate and given the consent was selected for this study.

WATS (West Side Test Anxiety Scale) used in the statement how much true considered by scale such as extremely always true 5, highly usually true 4, moderately sometimes true 3 slightly seldom true 2, Not at all never true 1.

Among 200 participants (82%) students were below or equal to age 25 years and 18% students were above age 25 years and 20% students were married and (80%) students were unmarried. 50% students were from public medical college and 50% students were from private medical college. Most of the participants 76.5% monthly income were above 15000 BDT on the other hand (23.5%) student’s family income was below or equal 15000 (Table 1).

Table 1: Distribution of socio-demographic status of the respondents (n=200)

Variable	Frequency (n)	Percentage (%)
Age (Years)		
Equal or below 25	164	82

More than 25	36	18
Gender		
Male	73	36.5
Female	127	63.5
Marital Status		
Unmarried	159	80
Married	41	20
Medical College		
Public	100	50
Private	100	50
Total Monthly income of the family (BDT)		
Below or equal 15000	47	23.5
Above 15000	153	76.5

Inclusion and exclusion criteria

The inclusion criteria for the selecting as a sample of this study was follows:

- Graduate and postgraduate medical student
- Student of Government or Private medical college
- Given informant consent for this study

The exclusion criteria

- Medical student outside Dhaka City
- Students who not given informant consent for this study

Sample size calculation:

The sample size was calculated from the following formula:

$$Z^2 * (p) * (1-p)$$

$$c^2$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal

(.5 used for sample size needed)

c = confidence interval, expressed as decimal

(e.g., .05 = ± 5) (Source: <https://www.surveysystem.com/sample-size-formula.htm>)

Hence, the required sample size was calculated to be 303. Due to time budget and man power constrain we managed to collect 200 complete clean data. The socio-demographic status of the respondent was almost similar and all the medical student's inclusion criteria and mental statement were similar. Due to homogeneity of the characteristics of medical student the reduced sample size had no significant effect in this study.

Data collection procedure:

A Self administrative structure questionnaire was produced for participants to collect the data from September 2019 to February 2020 under direct supervision. But due to ongoing crisis did not permit us to conduct a face-to-face meeting on the premises of respective educational institutions after March 8, 2020. Moreover, we avoided visiting people's residents due to health concerns.

A structured survey questionnaire used to conduct this study. A pilot study was carried out in a sample of 20 subjects before the final study. The pilot study was conducted due to check the reliability and validity of the survey questionnaire. WATS (West Side Test Anxiety Scale) was incorporated into the questionnaire to assess the phobia and anxiety levels of the students. The questionnaire contained four parts: (i) title, summary, and consent form (ii) socio-demographic information, (iii) Education related factors, and (iv) WSTA items.

Instrumentation

Westside Test Anxiety Scale was first developed by Driscoll (2007) with 10 items, six of which assess impairment, and the remaining four assess worry and dread using a 5-point Likert-type scale.

According to Richard Driscoll researcher of American Test Anxiety Association describe that as the scale is brief and easily administered, is public access and free of charge to schools, and is shown to be a reliable and valid measure, it is recommended that the Westside Test Anxiety

Scale be considered by intervention programs to screen for test- anxiety impairments. The basis of the selected educational factor included in the questionnaire was pilot study, observation, and previous records.

Statistical analysis:

SPSS version 25 was used for data analysis. Both descriptive and inferential statistics were performed for intensive analysis. In descriptive statistics frequencies, mean, standard deviation shown with tables and graphs. In inferential statistics multinomial regression included for Odd ratio and p value and ROC curve performed to identify the significance among the dependent and independent variables.

Results:

Figure 1: Prevalence of Examination anxiety shows 30% students were suffering from moderate to severe examination anxiety and 70% student detected mild examination anxiety.

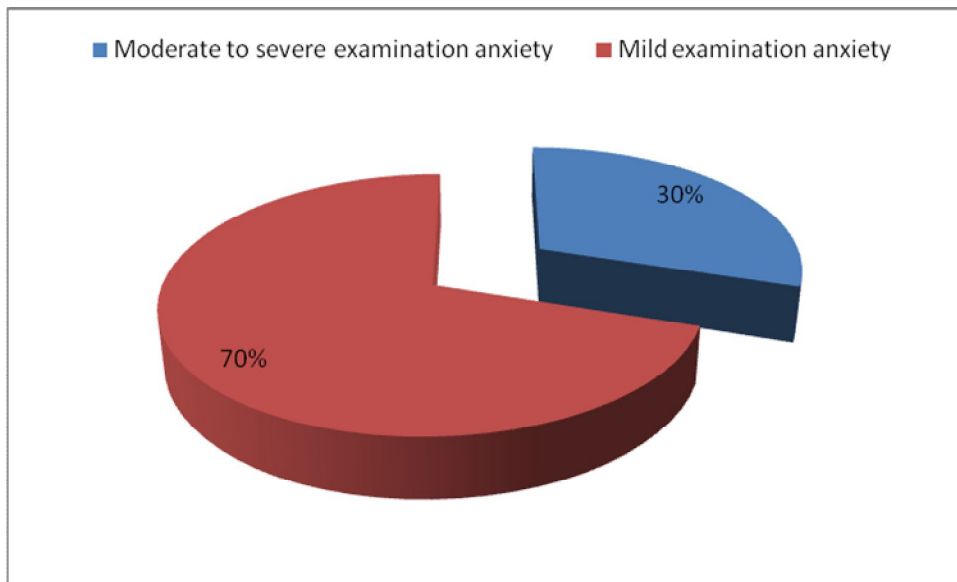


Figure 1: Prevalence of test anxiety

Figure 2 showing 17% of high-test anxiety, 13% of moderately high-test anxiety, 22% of high normal test anxiety, 30% of normal or average test anxiety and 18% of comfortably low-test anxiety.

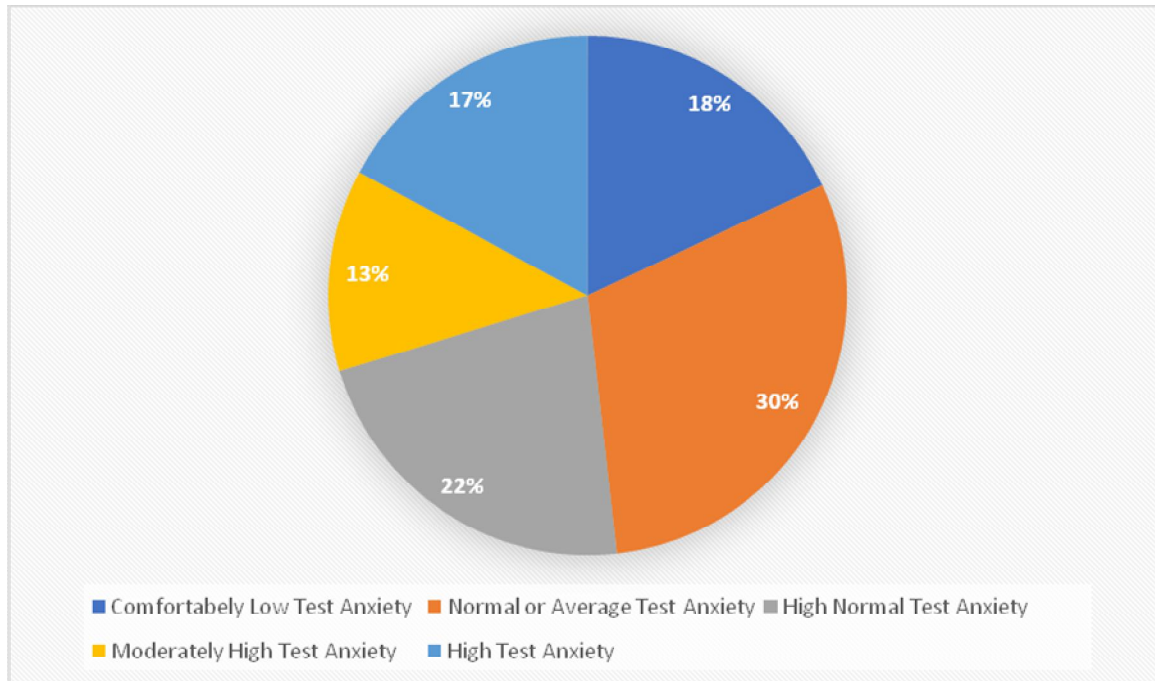


Figure 2: Prevalence of test anxiety

χ^2 test shows that the P value of appear to supplementary exam with moderate to severe Phobia were less than (.05) which is significant. Similar results shown in case of Students who used to do tuition or part time job. The p value of Fearing of facing Viva and Regularity in the class also significant with moderate to severe Anxiety and mild Anxiety. A research undertaken in Bangladesh disclosed that the reasons for dropout and default were absence of collaborative educators, overloaded curriculum and absence of adequate counseling at the correct moment [10].

Table: 2 Distribution of related factors with Examination Anxiety (n=200)

Variables	Prevalence of Exam Anxiety		χ^2 test value	df	p-value
	Moderate to Severe Anxiety n (%)	Mild Anxiety n(%)			
Appear to Supplementary Exam					
Yes	26 (43.3)	98 (70)	12.677	1	<0.001
No	34 (56.7)	42 (30)			
Students do tuition or part time job					

Yes	49 (81.7)	63 (45)	22.917	1	<0.001
No	11 (18.3)	77 (55)			
Fear of facing Viva					
Yes	47 (78.3)	131 (93.6)	9.962	1	.002
No	13 (21.7)	9 (6.4)			
Regularity in the class					
Yes	59 (98.3)	112 (80)	11.37	1	.001
No	1 (1.7)	28 (20)			

The result of parameter estimates from multi-nominal regression shows that the Odd ratio of demographic variables is associated with moderate to severe examination anxiety. The P-value of age and types of medical college were significant. One study that was performed in Punjab, Pakistan reveals that exam creates frustration and increases rate of sleeplessness. Students are depressed and not feeling well due to exam [20]. Table 3 shows that the risk factors association among socio-demographic factors and test anxiety. Age had highest association with test anxiety as the odd ratio was (21.403) and medical college type was 2nd highest association with odd ratio (6.365). In both cases p value was significant.

Table 3: Parameter Estimates

Prevalence of Anxiety ^a	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Moderate to severe phobia	Intercept	-5.123	1.159	19.545	1	.000		
	[Age= ≤ 25]	3.064	1.044	8.604	1	.003	21.403	2.763 165.763
	[Age=>25]	0 ^b	.	.	0	.	.	.
	[Gender=Male]	.061	.393	.024	1	.876	1.063	.492 2.299
	[Gender=Female]	0 ^b	.	.	0	.	.	.
	[Marital status=Unmarried]	.420	.488	.739	1	.390	1.521	.584 3.961
	[Marital status =Married]	0 ^b	.	.	0	.	.	.

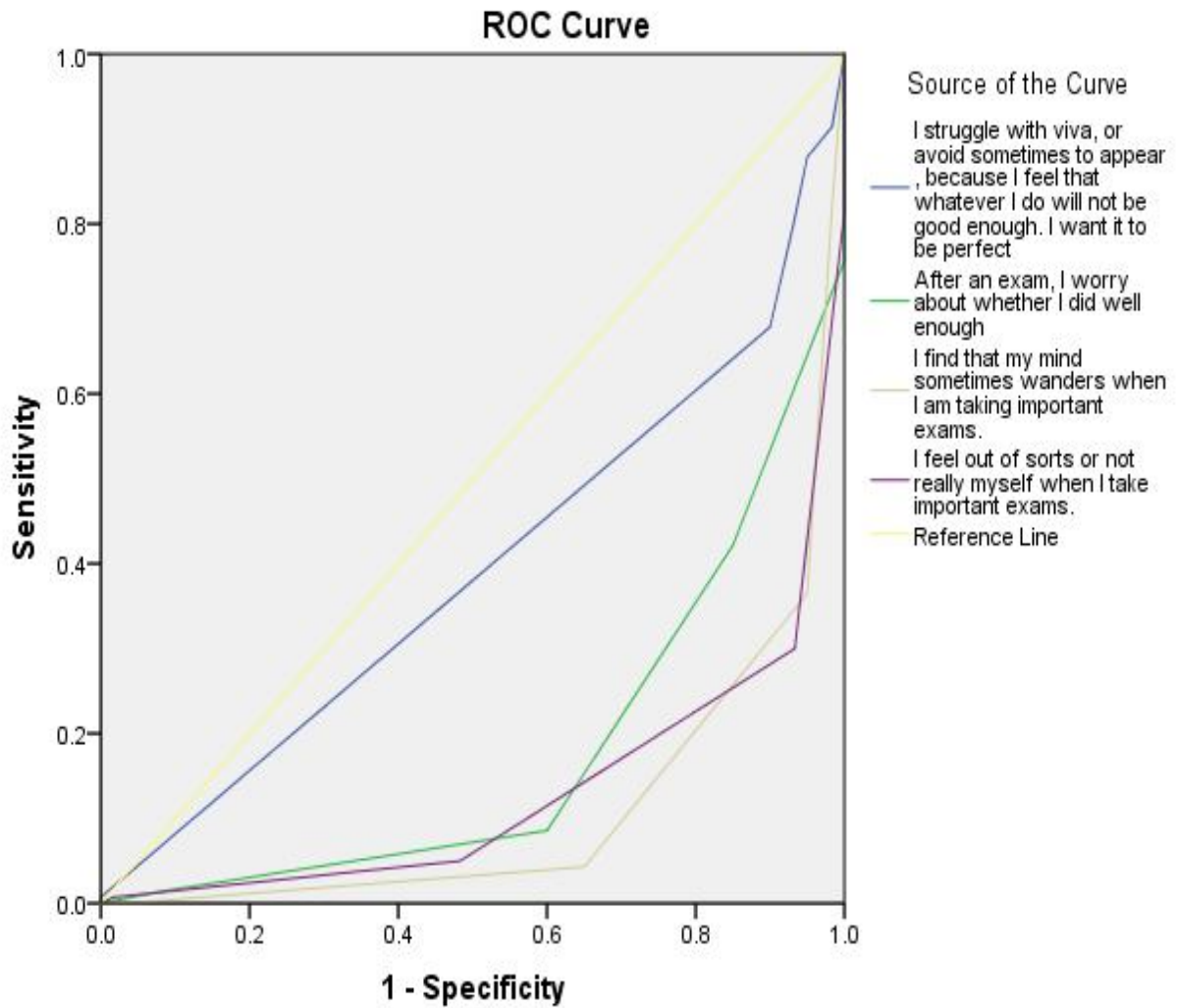
[Monthly income BDT≤ 15000]	.091	.422	.046	1	.829	1.095	.479	2.503
[Monthly income BDT>15000]	0 ^b	.	.	0
[Medical college=Public]	1.851	.395	21.957	1	.000	6.365	2.935	13.803
[Medical college=Private]	0 ^b	.	.	0

a. The reference category is: mild anxiety.

b. This parameter is set to zero because it is redundant.

ROC curve shows that state variable anxiety with test variables I struggle with viva, or avoid sometimes to appear, because I feel that whatever I do will not be good enough, I want it to be perfect, after an exam, I worry about whether I did well enough, I find that my mind sometimes wanders when I am taking important exams., I feel out of sorts or not really myself when I take important exams are associate and Asymptotic Significant that has at least one tie between the positive actual state group and the negative actual state group.

Study in Sudan disclosed that quality information suggests that medical science learners at Sudanese colleges were alerted to the impact of anxiety on test results.Sadly, this knowledge is a cause of frustration in most situations, rather than leading to proper planning to resolve this unfavorable issue [11]. Those who have experienced more stress were more prone to fail than those who have experienced ideal stress [21]. Appear to supplementary exam is highly significantly associated with examination phobia. Students who were engaged in doing tuition or part time job is highly significantly associated with examination phobia. Students who felt fear of facing viva was significantly associated with examination phobia. Regularity in the class is significantly associated with examination anxiety.



Diagonal segments are produced by ties.

Figure 3: ROC Curve

Table 4: Area Under the Curve

Test Result Variable(s)	Area	Std. Error ^a	Asymptotic Sig. ^b	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound

I struggle with viva, or avoid sometimes appearing, because I feel that whatever I do will not be good enough. I want it to be perfect	.393	.041	.017	.313	.474
After an exam, I worry about whether I did well enough	.178	.032	.000	.116	.241
I find that my mind sometimes wanders when I am taking important exams.	.109	.026	.000	.059	.160
I feel out of sorts or not really myself when I take important exams.	.129	.026	.000	.079	.180

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

Discussion:

We detected anxiety of examination in a notable portion (approximately one-third) of the medical students participating in this study. Fear of exams could be one of the factors playing a vital role behind dropping out of medical students from the coursework. Unfortunately, information on the dropouts and defaulters of medical science curriculum in Bangladesh is not adequate. Although a study in Mymensingh Medical College reported a dropout rate of 4.78%, the gap in the knowledge on this matter is yet to be filled [22].

In our study we found that 17% of high-test anxiety, 13% of moderately high-test anxiety, 22% of high normal test anxiety, 30% of normal or average test anxiety and 18% of comfortably low-test anxiety.

We also found moderate to high test anxiety in almost half of the total respondents. Whereas another research by Loya et al. found some level of exam anxiety (both healthy and unhealthy) in around 79% of professional medical students [23]. The academic curricula of medical schools are on the of the toughest irrespective of time and location. The academic contents and

coursework is responsible for significant amount of stress and anxiety among the students [24]. The mental health of the undergraduate medical students, as well as postgraduate students, has become a matter of serious concern at present times [25]. Growing examination phobia among the targeted population could be a sign of gradual deterioration of mental health. Arsi Prasad Jha stated that there is a significant relationship between high academic anxiety and exam-phobia among students in general [26].

Anxiety of examination was found to be higher in medical students of 25 years or below. In spite of being statistically significant, the relationship could not be readily explained due to the lack of prior evidence on the matter and needs further investigation. We assume that the experience in senior students that grows with age plays some role in helping them to cope with the fear of exams and the stress associated with it.

Students engaged in part-time job or tuition was estimated to have higher levels of examination phobia. This could be linked to the financial conditions of the participants. The students who were not economically solvent were naturally under constant pressure and anxiety of paying the fees in time. Moreover, getting involved in some source of income could hamper with their studies, leading to under-preparation and Phobia during exams. In fact, a study on university students by Smith et al. identified financial condition as a significant factor contributing to increased rates of dropouts among the mentioned population [27].

Another factor was the exams themselves. Some students confessed to have the fear of facing face-to-face interviews. As viva examinations are a big part of the medical education system, naturally the fear of viva ultimately led to the anxiety of examinations among the students. Similar issues were observed in another study on medical students in Bangladesh. According to a study in Sudan, those who experienced more stress were more prone to fail [21]. Like a vicious cycle, fear of examination led to failing in them, moreover attending supplementary exams led to the rising fear of examinations among the students. Regularity in class could indicate the interest and level of understanding of a student regarding medical topics. The study by Abdal Miah et al. revealed that those who spontaneously took part in the medical studies and understood the lectures clearly were less likely to miss the classes [10]. Prior evidence does not directly link regularity in class with examination phobia, but it does show significant association of regularity with dropouts and defaulters. Attending classes regularly could mean a greater understanding and

knowledge of the subject, and thereby eliminating any fear associated with it or examinations. Lily Sheppard¹ & Richard E. Hicks in their study showed that maladaptive perfectionism has been identified as a mutual characteristic among students that leads to identified situations such as depression and anxiety [28].

We urge for further researches on the matter.

Conclusion:

This study discovered that medical students have to go through several different kinds of exams such as viva, written, OSPE, practical, short case, long case all these things together play a contributing role in induction of moderate to severe phobia. According to our data 30% of students were suffering from moderate to severe examination phobia which compelled them to dropout or avoid the potential exams. The examination pattern is changed in COVID-19 pandemic situations. Therefore, we can assume that the prevalence and severity of Phobia also changed in COVID-19 pandemic situation. In the present COVID-19 pandemic situation further study is necessary to assess the actual scenario of anxiety among the medical students. This research can contribute a significant impact on public health and mental health studies. Mental health professionals can provide a guideline to the medical student to reduce exam anxiety. We urge for further researches on the matter.

Ethical approval and consent

The research proposal was reviewed and approved by the Ethics Review Committee (ERC) of North South University. Informed consent was taken from the respondent. Individual respondents had no access to know about other respondent's information. Therefore, elements of voluntary and confidentiality were addressed and strictly maintained. This information is only used for research and publication purposes.

References:

1. Agrawal A, Goel R. Examination Phobia: A Common Problem of Students. Review Journal of Philosophy and Social Science. 2016;41(2):1-6.

2. Jha AP. A Study of Examphobia in Students in Relation to Exam Phobia Causes Difference Reason Overcoming [Internet]. [cited 2021 May 11]. Available from: <https://targetstudy.com/articles/exam-phobia-cause-and-remedies.html>
4. Thakur J. A comparative study of Examination Phobia among Boys and Girls in Rural and Urban area of H. Sc. School. 2016;7(12):781–9.
5. D FAP. Effect of Reality Therapy in Reducing Examination Phobia Among Students of Fce(T) Bichi, Kano State. 2018;18–21.
6. Chowdhury SR. Examination Anxiety among Secondary Level students . 2019;24(2):23–8.
7. Salam A, Yousuf R, Bakar SMA, Haque M. Stress among medical students in malaysia: A systematic review of literatures. *Int Med J.* 2013;20(6):649–55.
8. Denscombe M. Social conditions for stress: Young people's experience of doing GCSEs. *Br Educ Res J.* 2000;26(3):359–74.
9. Simran G, Sangeeta N, Lily W. Evaluation of examination anxiety status and its associated factors among first professional medical (MBBS) students. *J Interdiscip Multidiscip Res.* 2015;2(8):1–11.
10. Miah MA, Khan MAW, Talukder MHK, Begum F, Nargis T, Khan TF, et al. Reasons of Dropouts and Defaulters of Medical Students in Bangladesh. *Bangladesh J Med Educ.* 2014;2(2):1–6.
11. Sideeg A. Test Anxiety, Self-Esteem, Gender Difference, and Academic Achievement: The Case of the Students of Medical Sciences at Sudanese Universities: (A Mixed Methods Approach). *Br J Arts Soc Sci [Internet].* 2015;19(II):2046–9578. Available from: <http://www.bjournal.co.uk/BJASS.aspx>
12. Loranger AW. The International Personality Disorder Examination. *Arch Gen Psychiatry.* 1994;51(3):215.
13. Sonawane D. Phobia about Thesis in Medical Postgraduate student. *J Med Thesis Sep.* 2014;Dec ;(2(2):):3-4.].
14. Kumaraswamy N. Depression, anxiety, and academic stress among college students: A brief review. *Indian J Heal Wellbeing.* 2017;8(1):748–51.
15. Mittal R, Kumar R. Exam Stress in MBBS Students and the Methods Used for its Alleviation. *Int J Med Dent Sci.* 2018 Jan 9;7(1):1604.

16. Watson D, Friend R. Measurement of social-evaluative anxiety. *J Consult Clin Psychol.* 1969;33(4):448–57.
17. Rizhal Ristanto, Siti Zubaidah, Muhamad Amin FR. *International Journal of Research and Review.* Int J Res Rev. 2015;2(6):343–7.
18. Chen H. Impact of parent's socioeconomic status on perceived parental pressure and test anxiety among Chinese high school students. *International Journal of Psychological Studies.* 2012 Jun 1;4(2):235.
19. Tsegay, L., Shumet, S., Damene, W. *et al.* Prevalence and determinants of test anxiety among medical students in Addis Ababa Ethiopia. *BMC Med Educ* **19**, 423 (2019). <https://doi.org/10.1186/s12909-019-1859-5>
20. Boaden EE. No Covariance structure analysis of health-related indicators in the elderly at home with a focus on subjective health Title. 2011; 1 (July): 1–7.
21. Sains Malaysia U, Bharu K, Author M, B Yusoff MS. Associations of Pass-Fail Outcomes with Psychological Health of First-Year Medical Students in a Malaysian Medical School. Vol. 13. 2013.
22. Wahed F, Latif SA, Mahamud MM, Nessa A, Hossain MA, Sultana SZ, et al. Drop-out and admission cancel rate among the students in a selected medical college. *Mymensingh Med J.* 2011 Apr;20(2):197–200.
23. Loya NS, Jiwane NN. Exam Anxiety in Professional Medical Students. Vol. 4, *International Journal of Innovative Science and Research Technology.* 2019.
24. Manisha M, Pavithra. Evaluation of Exam Anxiety among Health Science Students. *Int J Res Rev* Vol. 2019;6.
25. Backović D V., Maksimović M, Davidović D, Živojinović JI, Stevanović D. Stress and mental health among medical students. *Srp Arh Celok Lek.* 2014;141(11–12):780–4.
26. Jha AP. A Study of Examphobia in Students in Relation to Their Study Habit and Academic Anxiety. *Culture, Literature, Languages, Education, Philosophy and Spirituality.*
27. Smith JP, Naylor RA. Dropping out of university: A statistical analysis of the probability of withdrawal for UK university students. *J R Stat Soc Ser A Stat Soc.* 2001

Jan;164(2):389–405.

28. Lily Sheppard & Richard E. Hicks, Maladaptive Perfectionism and Psychological Distress: The Mediating Role of Resilience and Trait Emotional Intelligence International Journal of Psychological Studies Archives Vol. 9, No. 4 (2017)