

**COVID-19 PANDEMIC CAUSING MENTAL STRESS: A CROSS SECTIONAL STUDY TO EVALUATE THE LEVEL OF ANXIETY AND ITS SOURCES AMONG MEDICAL UNDERGRADUATES OF GUJRANWALA MEDICAL COLLEGE**

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**ABSTRACT**

**Background:** Covid-19 has emerged as an unexpected pandemic at the end of 2019. Being new to the world it brings about uncertainties and psychological stress, anxiety being a part of it. Medical students are a high-risk group prone to developing anxiety and the purpose of our study is to determine the severity of this anxiety and its sources. **Methodology:** An observational cross-sectional study was conducted among 300 students from 1<sup>st</sup> year to final year of Gujranwala medical college. A self-reporting questionnaire consisting of GAD-7 scale was sent online to the participants and the data was analyzed using SPSS version 22. Quantitative variables were expressed using frequencies and percentages. Graphs and tables were utilized where needed. **Results:** A total of 88 (32%) out of 272 students exhibited minimal anxiety, 105 (38%) showed mild anxiety, 54 (19%) moderate anxiety and 25 (9%) severe anxiety. The overall anxiety level of the participants was 'mild' with a GAD-7 mean score of 7.188 +/-3.49. Causative factors of anxiety included fear of being infected (53.80%) and bringing infection home (68.4%), stress regarding disconnection with friends and family (56.80%) and delay of the academic year (72.06%), worries related to effect on academic performance (69.12%) and acquisition of clinical skills (80.88%) **Conclusion:** Medical students are indeed facing anxiety and in these unforeseeable circumstances there is a dire need of counseling and provision of moral support to the students in order to maximize their performance in near future.

**KEYWORDS:** Covid-19 Pandemic, Medical Students, Mental Stress.

**INTRODUCTION**

The epidemiology dictionary defines pandemic as "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people".<sup>[1]</sup> This definition is internationally accepted, yet different articles change it on the basis of context as it has certain vague areas. There have been many significant disease outbreaks and pandemics recorded in history which include the Spanish Flu, Hong Kong flu, severe acute respiratory syndrome(SARS), bird flu (H7N9), Ebola, Zika and the latest of them all Covid-19.<sup>[2]</sup>

The Corona Virus Infectious Disease 2019 (COVID-19) emerged as an unexpected outbreak of acute infectious pneumonia, which spread throughout the world within a few months, until it was declared a pandemic by the World Health Organization (WHO) on Mar 12, 2020.<sup>[3]</sup> The disease is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) previously known as the novel corona virus manifesting symptoms

like fever, fatigue, dry cough, shortness of breath, and loss of sense of smell and taste, the severity ranging from mild to severe infection.<sup>[4]</sup> The incubation period of the disease is typically around five days, but may range from two to fourteen days. During this pre-symptomatic period the virus may be contagious and hence the need for precautions. Precautions suggested by the WHO include social distancing, regular hand washing, use of sanitizers, face masks, avoid touching eyes, mouth and nose and subsequently self-isolation for the symptomatic individuals.<sup>[5]</sup>

Along with being a major public health concern, this pandemic has led to drastic social, economic, academic and political disruptions globally. Governments have adopted strict precautionary measures in order to mitigate its effects and reduce the spread of the disease including reduction of public gathering, the closure of public places like shopping malls, commercial areas as well as educational institutes.<sup>[2]</sup> Such precautions are an absolute necessity, nevertheless, they come with a price.

there is a significant psychological and psychiatric impact due to isolation and uncertainty which has led to increased levels of anxiety, depression, fear, paranoia, Post Traumatic Stress Disorder (PTSD) and even increased violent tendencies among masses.<sup>[6]</sup>

The stress levels of general populations including office employees, daily wagers, health care providers and the students (especially the medical students) have indeed been elevated due to the present pandemic as is evident from various local and international studies which have been carried to assess the mental impact and study the related diverse factors of the COVID-19 pandemic. A study conducted on health professional students at Sichuan University, China concluded that 26.63% participants demonstrated clinically significant psychological distress, while 11.10% met the criterion for a probable acute stress reaction with childhood adversity, stressful life event experiences and internet addiction being positively associated with distress and good family terms being negatively associated.<sup>[7]</sup> A systematic review and meta-analysis on the psychological and mental impact of COVID-19 among health-care workers, the general population, and patients with higher COVID-19 risk stated that the pooled prevalence of anxiety and depression was 33% and 28% respectively.<sup>[8]</sup> Medical community is more prone to exposure than any other community as is evident from a study conducted in Pakistan showing prevalence of anxiety and depression as 21.4% and 21.9% respectively among health care workers.<sup>[9]</sup> Medical students, being confused of their roles, are more vulnerable to the development of mental disorders especially anxiety as indicated by a study conducted in United Arab Emirates (UAE) in which almost half of students reported anxiety levels ranging from mild to severe especially during hospital visits with females reporting higher levels of anxiety (OR=2.02, 95% CI, 1.41 to 2.91).<sup>[10]</sup>

These studies have shown the impact of the COVID-19 pandemic on the mental health and have pointed out various related factors by using different tools to assess anxiety and stress levels. These include Depression Anxiety Stress Scales -DASS-21, generalized Anxiety Disorder 7 -GAD-7, Hamilton Anxiety Rating Scale-HARS and various others. Generalized anxiety disorder 7 -GAD-7 is one of the most widely used instruments for the measuring, detection, assessment and screening of anxiety disorders due to its diagnostic reliability and efficiency.<sup>[11]</sup>

The COVID-19 pandemic has affected populations around the globe socially, financially and mentally. The closure of educational institutes has created an air of uncertainty among the students especially those at undergraduate level. The medical students at undergraduate level are facing difficulties as they rely for their medical education on the clinical learning experience both in the lecture theaters as well as at the bedside which has been severely compromised due to

closure of the medical schools.<sup>[12]</sup> It is important to assess the various aspects (academic, psychological, financial and social) of the pandemic on medical students as it might leave unavoidable negative impacts on their studies, their professional examination and subsequently their clinical practice. The mental effects of COVID-19 pandemic on medical students cannot be ignored which may be due to various stress related factors which is causing anxiety among them related to their academics, learning of clinical skills, examination performance etc. It is vitally important to evaluate the stress and anxiety among the students and study the various related factors and assess its effect on academics among the medical students. To the best of author's knowledge, no such study has been done in Gujranwala Medical College. Therefore, this study was carried with the objective to evaluate the anxiety levels using GAD-7, its related factors and its effect on academics among the medical students. Such type of study is necessary in order to collect evidence-based statistics and devise necessary measures to monitor and ensure the mental well-being of medical students in particular and whole of the youth in general.

## **Methodology**

### **Study design**

It was an Observational descriptive cross-sectional Study.

### **Study duration**

The study was carried out in 2 months (20<sup>TH</sup> March 2020 To 20<sup>th</sup> May 2020).

### **Study setting**

Our study setting was Gujranwala Medical College. It was established in 2010 and is affiliated with District Headquarter/Teaching Hospital, Gujranwala. 500 medical students undergo undergraduate training in the college throughout the year (an average of 100 students each year) producing substantially able medical professionals who are serving humanity in Pakistan as well as around the globe.

### **Study population**

The Undergraduate medical students from 1st year till final year were included in the study.

### **Sampling technique**

Non-probability convenience sampling technique was used.

### **Sample size**

The sample size calculated for the study was 300  $\bar{e}$  anticipated response rate of 90 % (7.5% margin of error).

### **Data collection tool**

The questionnaire was divided into three parts. The first part contained demographic variables (age, year of study, gender). The second part comprised of the Generalized Anxiety

Disorder - 7 (GAD-7) scale to calculate the anxiety levels.

(GAD-7) is a self-reported questionnaire for screening and determining the severity of generalized anxiety disorder (GAD). GAD-7 has seven items, with which we determine severity of different signs of GAD according to responses obtained which are then given a score according to the 4-item Likert scale assigned to each of the 7 questions. The scores are as follows; Not at all (0 points), Several days (1 point), More than half the days (2 points), Nearly every day (3 points) so that the total score ranges from 0 to 21. The GAD-7 is a widely used screening instrument, and it has demonstrated excellent uniformity and internal consistency (Cronbach's  $\alpha = 0.911$ ).

In the third part there were 15 questions related to social effects of the pandemic while 7 questions related to the effects on academics of the medical students. These questions were validated by 2 experts including a medical educationist and a clinical psychologist. A pilot study was done on 10 medical undergraduates for which the Cronbach's  $\alpha$  for internal consistency was 0.70.

#### Data collection procedure

The questionnaire was sent online to the participants using Google forms. The importance and objectives of the research were explained to the participants.

Participants were given full liberty of acceptance or refusal to participate in the survey. Maximum and equal participation from all the years (1st year to final year) was ensured. The completely filled questionnaire were received back to the principal investigator.

#### Data analysis

The data was entered and analyzed using SPSS version 20. Using descriptive statistics, mean and standard deviation was calculated for Continuous variable (GAD-7 score, age) while frequencies and percentages were calculated for categorical variables (year of study, gender, responses to the questions).

#### Ethical consideration

This research was approved by the ethical review board of Gujranwala Medical College/District Headquarter-Teaching Hospital, Gujranwala.

#### RESULTS

272 out of 300 responses were obtained, the overall response rate being 90%. Among the total participants 144 (53%) were females and 128(47%) were males. The percentage of participation of final year medical students was the highest (22%). The year-wise distributions of the respondents are given in

Figure 1.

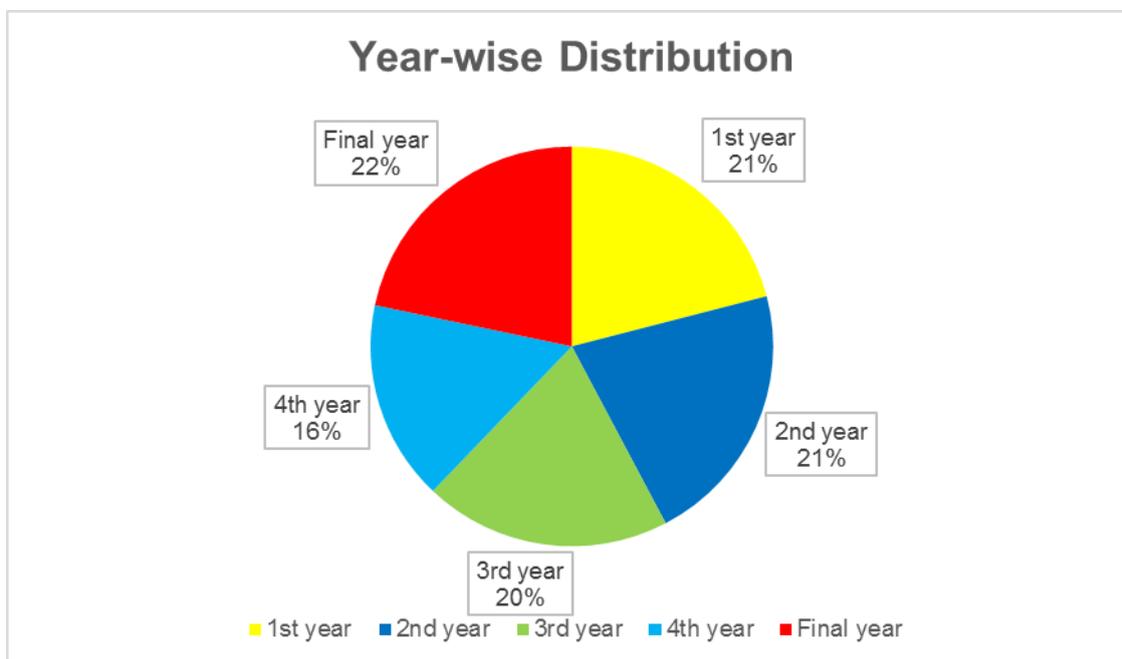


Figure 1: Year-wise distribution of participants.

#### Generalized Anxiety Disorder (GAD-7) Scale

The mean GAD-7 score was  $7.188 \pm 3.49$  (mild anxiety) with maximum score of 21 and minimum score of 0.

The responses given to the individual items of GAD-7 questionnaire are given in table 1.

A total of 88 (32%) out of 272 students exhibited minimal anxiety, 105 (38%) showed mild anxiety, 54 (19%) moderate anxiety and 25 (9%) severe anxiety. In all categories females predominated men except in category 2 (mild anxiety) where opposite trends were seen. (table 2).

Among all five years, 42% participants of final year presented with minimal anxiety, 47% individuals of 1<sup>st</sup> year showed mild anxiety, 29% respondents from 2<sup>nd</sup> year

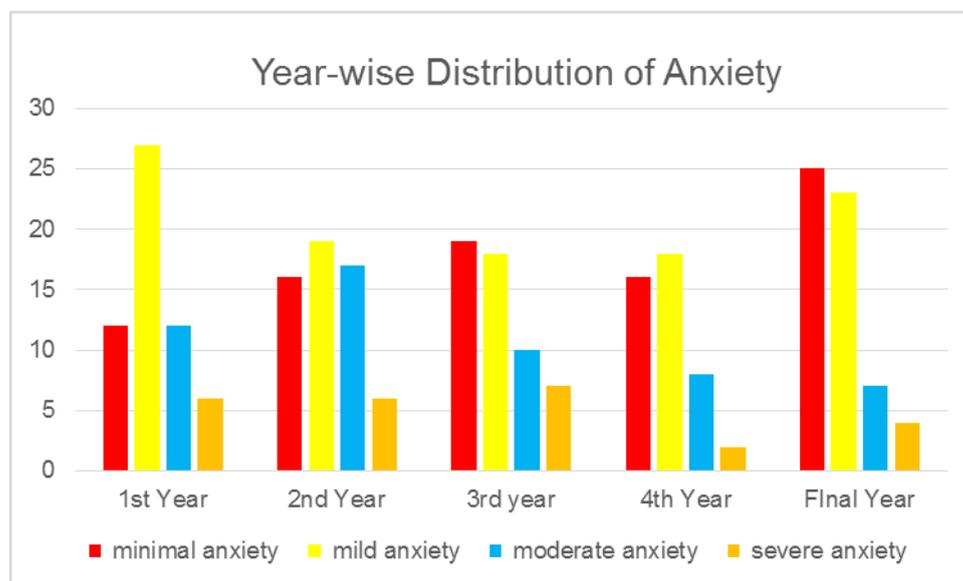
exhibited moderate anxiety and 12% students of 3<sup>rd</sup> year had severe anxiety. The rest of the frequencies can be seen in figure 2.

**Table 1: Frequency Of Responses To Gad-7 Questionnaire.**

GAD-7				
Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	96(35.4%)	96(35.4%)	49(18%)	30(11.1%)
2. Not being able to stop or control worrying	105(39%)	89(33.1%)	35(13%)	40(14.9%)
3. Worrying too much about different things	67(25.1%)	108(40.4%)	42(15.7%)	50(18.7%)
4. Trouble relaxing	107(40.1%)	101(37.8%)	30(11.2%)	29(10.9%)
5. Being so restless that it is hard to sit still	165(61.1%)	50(18.5%)	33(12.2%)	22(8.1%)
6. Becoming easily annoyed or irritable	81(29.9%)	89(32.8%)	44(16.2%)	57(21%)
7. Feeling afraid, as if something awful might happen	102(37.8%)	89(33%)	43(15.9%)	36(13.3%)
	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?	56(20.6%)	167(61.4%)	36(13.2%)	13(4.8%)

**Table 2: Gender-Wise Distribution Of Anxiety.**

Level of Anxiety	Males (n=128)		Females (n=144)	
	%	n	%	n
Minimal Anxiety	16.17	44	16.17	44
Mild Anxiety	20.58	56	18.01	49
Moderate Anxiety	6.61	18	13.23	36
Severe Anxiety	3.67	10	5.51	15



**Figure 2: Severity of Anxiety Among Participants.**

#### **Sources & Factors Related to COVID-19 Pandemic**

57.7% participants stated that they were afraid to go out due to corona virus, 58.5% said that they were stressed due to quarantine, 53.8% indicated that they get anxious even at mild symptoms associated with Covid-19. 40.7%

felt that the threat of corona may never end, 89% were stressed due to change in daily schedule. 56.8% were anxious because of disconnection from friends and family. Financial stability was a minor concern among majority of students. (Table 3).

Table 3: Sources Of Anxiety In Relation To Covid-19 And Its Impact On Day To Day And Social Life.

QUESTIONS	Response	n	%age
Have you been previously diagnosed with a mental illness?	Yes	254	93%
	No	19	7%
Do you find difficulty in falling asleep in these days?	Yes	169	61.90%
	No	103	38.1%
Has anyone from your family or friends been infected with COVID-19?	Yes	227	83.20%
	No	46	16.80%
Do you feel afraid to go out?	Yes	157	57.70%
	No	42	15.40%
	Sometimes	73	26.80%
Do you feel stressed due to staying at home?	Yes	159	58.50%
	No	62	22.80%
	Sometimes	51	18.80%
Do u fear that u may bring the virus back home if you go out?	Yes	186	68.40%
	No	26	9.60%
	Sometimes	60	22.10%
Having minor symptoms similar to COVID-19 in you or your family member alarm you for having being infected by the disease?	Yes	147	53.80%
	No	91	33.30%
	Sometimes	35	12.80%
Do you fear that corona virus threat may never go?	Yes	111	40.70%
	No	83	30.40%
	Sometimes	79	28.90%
Do you feel that your daily schedule has been affected?	Yes	243	89%
	No	14	5.10%
	Sometimes	16	5.90%
Do you feel stressed for being disconnected with your friends or family?	Yes	155	56.80%
	No	54	19.80%
	Sometimes	64	23.40%
Has corona virus pandemic affected your family financially?	Yes	68	24.90%
	No	171	62.60%
	Sometimes	34	12.50%
Is your family's future financial stability worrying you?	Yes	70	25.60%
	No	148	54.20%
	Sometimes	55	20.10%

**Academic Effects of COVID-19 Pandemic**

As far as the academics were concerned, 87.13% students felt that their studies have been affected and 69% were worried because of this. 72% feared that their

year may end late. 74% felt that their clinical skills will remain inadequate due to the threat of infection and 80% were afraid of being an incompetent doctor due to this reason. (Table 4)

Table 3: Sources Of Anxiety In Relation To Covid-19 And Its Impact On Day To Day And Social Life.

Effect on Academics	Response	n	%age
Do you feel that your studies have been affected?	Yes	237	87.13%
	No	25	9.19%
	Sometimes	10	4%
Do u fear that your academic year may end late than usual?	Yes	196	72.06%
	No	48	17.65%
	Sometimes	28	10.29%
Do you worry that your academic performance will be affected?	Yes	188	69.12%
	No	45	16.54%
	Sometimes	39	14.34%
Do you worry that u may not be able to learn essential clinical skills in hospital due to threat of catching the corona virus in the hospital?	Yes	202	74.26%
	No	39	14.34%
	Sometimes	31	11.40%
Do you believe online lectures will be as beneficial as traditional	Yes	28	10.29%

classroom lectures?	No	211	77.57%
	Sometimes	33	12.13%
Do you fear that not being able to study in college and hospital may affect your clinical skills as a future doctor?	Yes	220	80.88%
	No	27	9.93%
	Sometimes	25	9.19%
Do you wish to resume studies in college despite the pandemic?	Yes	107	39.34%
	No	113	41.54%
	Sometimes	52	19%

## DISCUSSION

The COVID-19 pandemic has spread worldwide and has had a profound impact on whole of the society. It's spread has led to unprecedented load on the public health sector of every affected country. It also has laid damaging effects on the economy of the countries, directly or indirectly affecting the socio-economic status and the physical and mental well-being of the general population. Due to closure of the educational institutes, the academic activities of the students, especially at undergraduate level, have been compromised which may lead to unforeseeable consequences. This has consequently resulted in rising stress and anxiety levels among them. The present study was carried out to assess the anxiety levels among medical undergraduates due to the COVID-19 pandemic and to study deeply the related factors and the effect of the pandemic on their lives.

The overall anxiety level of the participants was 'mild' with a GAD-7 mean score of 7.188 +/-3.49. 32% of the participants reported minimal anxiety, 38% mild, 19% moderate and 9% severe. A similar study conducted in Changzhi medical college, China using Generalized Anxiety Disorder Scale (GAD-7) indicated that 0.9% of the respondents were experiencing severe anxiety, 2.7% moderate anxiety, and 21.3% mild anxiety. Correlation analysis indicated that economic effects, poor living conditions, infected relatives, effects on daily life, as well as delays in academic activities, were positively associated with anxiety symptoms. However, social support was negatively related with the levels of anxiety.<sup>[13]</sup>

In our study it was indicated that people were reluctant to leave their houses (57.7%) out of fear of contracting the infection (68.4%) but at the same time this self-isolation has led to increased levels of stress (58.5%). The increased level of fear in a person when they or their family present with even minor symptoms of Corona (53.8%) corresponds to the overall increase in anxiety levels. Covid-19 has spread worldwide causing complications and deaths and these causes have instigated fear among individuals.<sup>[14]</sup> Another descriptive study using a questionnaire with a Five-Point Likert Scale conducted in Saudi Arabia indicated that during quarantine 44.1% on the respondents felt emotionally detached from family, friends and fellow students and 23.5% students felt disheartened.<sup>[15]</sup> It has been indicated that isolation leads to anxiety and exacerbation of already existing mental illnesses.<sup>[16]</sup> Openness is the key

to alleviate stress and being disconnected from friends and family has exaggerated the anxiety already existing due to uncertain academic conditions.<sup>[17]</sup>

Our study indicated that 87.13% students felt their studies have been affected and they were worried about their academic year being delayed (72.06%). 69.12% were worried about their academic performance and 80.8% dreaded being an incompetent doctor due to lack of clinical skills in future. These results correspond with other studies conducted on students for the evaluation of anxiety and its sources.<sup>[13]</sup> Due to quarantine and lockdown as a result of Covid-19 there have been a gap in studies, students are worried about their academics and also about the spread of corona and the health of their family members,<sup>[18]</sup> For a student the most worrisome part is a delay in studies, lagging behind their fellows and acquiring inadequate skills, specifically clinical skills in the case of medical students.<sup>[13]</sup> In the study carried out in Saudi Arabia, both female and male medical students showed a marked decrease in their overall work performance and time spent studying.<sup>[10]</sup> A cross-sectional survey conducted by utilizing a Self-designed questionnaire at 3 different medical institutes of Karachi (Dow University of Health and Sciences, Jinnah Sindh Medical University and Karachi Medical and Dental College), in the duration from January 2020 to February 2020 involving 3rd, 4th and 5th year MBBS students and 3rd and 4th year BDS students concluded that 75.8% participants were worried regarding probability of getting infected during medical rotations, 80% individuals were afraid of insufficient treatment and medical care, in case they were infected. Majority of them feared the incompetency of their institutes in terms of massive outbreak.<sup>[12]</sup>

A limitation of our study is that the sample size was small and it was a single centered study. It is therefore recommended that future studies should involve larger sample sizes and multiple centers may be involved so that the results can be more generalized at a provincial or national level.

## CONCLUSION

Many medical students have suffered anxiety because of this COVID-19 pandemic. Lack of college education, lack of outdoor activities, fear of living with this pandemic in future, fear that this academic year may go in waste and lack of social gatherings were positively associated with anxiety symptoms. Although extensive

research has not been done on this topic, however, there is an indirect correlation between covid19 pandemic and anxiety among medical students. It is suggested that collaborated attention should be given by government and teachers towards the mental health of students and further studies should be done to overcome this problem in future.

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- ISSN: 0971-2143 Vol-31-Issue-23-May-2020 Page | 508 Copyright @ Authors COVID-19 Pandemic: Looking in the mind of students during lockdown Ravi Kant Associate Professor, School of Education, Central University of South Bihar, Gaya, India, 2020.