

ANXIETY LEVELS DUE TO COVID-19: COMPARISON BETWEEN MEDICAL AND NON-MEDICAL STUDENTS

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ABSTRACT

Objective: The objective was to assess and compare the anxiety levels in undergraduate medical and non-medical students due to COVID-19.

Methods: We conducted a cross sectional study on undergraduate students through the administration of an online survey. A questionnaire consisting of demographic information and the Generalized Anxiety Disorder Scale-7 (GAD-7) was completed by 385 participants over a period of three weeks. Chi-square test was applied on the data which was analyzed by using SPSS Version 25.0.

Results: Out of 385 participants, 73% of respondents were medical students and 27% were non-medical students. Non-medical students had a higher mean anxiety score of 11.21 ± 5.77 compared to 9.36 ± 5.71 in medical students. 21.7% of medical students experienced severe anxiety, 19.6% experienced moderate anxiety and 38.8% experienced mild anxiety. In non-medical students, 35.6% experienced severe anxiety, 20.2% experienced moderate anxiety and 34.6% experienced mild anxiety. Results of Chi-squared test indicated a significant p-value (0.013) consistent with the anxiety levels being high in medical and non-medical students.

Conclusion: Our study observed higher anxiety levels of non-medical students than those of medical students. Anxiety levels in both medical and non-medical students due to COVID-19 were found to be significantly high. Psychological interventions, appropriate strategies and professional and personal support are recommended to ameliorate the mental health of medical and non-medical students.

Keywords: Anxiety, COVID-19, Medical students, Non-medical students

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INTRODUCTION

Public health emergency of international concern (PHEIC) was confirmed by World Health Organization (WHO) in the second meeting of International Health

Regulations on the 30th of January, 2020¹. With a suggested zoonotic origin, COVID-19 represents a causative agent of a potentially lethal disease². The SARS-CoV-2, also recognized as the novel coronavirus, causes the following symptoms: fever, cough of dry nature, sore throat, breath shortness, anorexia and fatigue³. As of 24th July 2020, a total of 15,257,287 confirmed cases globally – 270,400 in Pakistan – with 628,240 deaths have been reported by WHO⁴.

Anxiety – a fear feeling which takes place when a person faces a situation of stress – is of particular importance during this pandemic⁵. It can affect the way a person functions for example the way he eats and sleeps, the way one feels about themselves, and the way one thinks about things. Undergraduate students in particular have undergone a greater negative impact on their mental health leading to aggravated symptoms of

stress and anxiety, further exacerbated with the newly introduced system of online studies and exams due to COVID-19 induced lockdown all over the country. Studies show that students of colleges react more negatively to the COVID-19 pandemic, and in particular towards core issues faced due to COVID-19 such as the rapid spreading of the virus globally and the impact it has had on the education and learning experience of students⁶.

In other words, medical students are undergoing an unforeseen break in their education due to closure of university throughout the world over COVID-19 concerns⁷. A previous study also shows that non-medical student's anxiety levels have increased due to online learning⁸. In short, both medical and non-medical students are in a vulnerable position as they must exercise significant psychological and physical effort to cope with mental and emotional issues such as anxiety⁹.

Studies have demonstrated the negative effect of quarantine measures on mental health^{10, 11} and research has been conducted on the impact of SARS and MERS epidemics on mental health¹². One study in China showed widespread anxiety levels in medical students due to COVID-19 stating that the impact was likely due to the effect of the virus on studies and implementation of social distancing¹³. However, studies on the influence of COVID-19 on the mental wellbeing of undergraduate medical and non-medical students in Pakistan have not been done. It is imperative that a cross-sectional approach to evaluate the anxiety levels of such students be done to take relevant measures to ensure sound mental health of these students. Further, it is necessary that medical students be recognized as the most vulnerable to COVID-19-induced anxiety especially keeping in mind their future role as frontline workers and even considering that some articles are already recommending that medical students should work in hospitals to assist in the fight against COVID¹⁴.

To our knowledge, no research has been conducted to assess the anxiety levels of medical and non-medical students due to COVID-19. This study aims to compare levels of anxiety in medical and non-medical students.

METHODS

A cross-sectional study took place in June, 2020 after approval from the ethical review committee of CMH LMC & IOD, Lahore. A population consisting of 385 undergraduate students, between the ages 17 to 25, were the subjects of the study, and were categorized as either medical or non-medical students. Written informed consent was obtained from a consent form which explained the purpose of the study. Google Forms was used for dissemination of the questionnaire. The

questionnaire was voluntarily and anonymously filled by participants whose responses were collected over a period of three weeks.

RaoSoft software was used to calculate the sample size to be 385 (using the formula: $n = Z^2 * P(1-P) / m^2$), with a 5% error margin and a 95% confidence interval.

The questionnaire consisted of three sections: firstly, the consent form; secondly, demographic profile and questions pertaining to educational circumstances of the students during the pandemic as well as information related to COVID-19; lastly, the Generalized Anxiety Disorder Scale-7 (GAD-7).

The GAD-7 is a standardized questionnaire which was utilized to measure the anxiety levels in undergraduate medical and non-medical students based on how frequent the symptoms occurred within the last two weeks. It is a seven-item, self-rated scale developed by Spitzer and colleagues in 2006¹⁵ as a severity indicator and a screening tool for Generalized Anxiety Disorder. GAD-7 is well-validated and its reliability is good, with Cronbach's $\alpha = 0.89$ ¹⁶. Symptoms are self-reported using a 4-item Likert rating scale ranging from 0 (not at all) to 3 (nearly every day), which totals up to scores ranging from 0 to 21¹⁷. Mild, moderate and severe anxiety were linked with the scores of 5, 10, and 15 respectively.

We entered all data for statistical analysis into Statistical Package for Social Sciences (SPSS) Version 25.0. Categorical variables were expressed as frequencies and percentages while continuous variables were expressed as mean and standard deviations (SD). Chi-square test was used for categorical data. P-value of less than 0.05 was taken significant.

RESULTS

Out of 385 students, there were 281 medical and 104 non-medical students. The mean age of students was 20.83 ± 1.31 . Mean anxiety score of the students was 9.86 ± 5.77 . Non-medical students had a higher anxiety score of 11.21 ± 5.77 than 9.36 ± 5.71 in medical students.

Table 1 depicts demographic profiles of the respondents. Analysis revealed the majority of participants (82.9 %) to be female, from urban areas (91.7%).

Information provided by the respondents about their current circumstances during COVID-19, tabulated in Table 2, showed 79.2% of participants knowing someone who contracted COVID-19. Out of the 385 participants, only seven (all medical students) had tested positive for COVID-19. Both medical and non-medical students were having ongoing classes (93.6% and 77.9%, respectively).

The results of the Generalized Anxiety Disorder Scale-7 (GAD-7) are highlighted in Table 5; p-value of 0.013 was found to be significant. 80.1% of medical

students and 90.4% of non-medical students were shown to be suffering from mild, moderate, and severe forms of anxiety in this study.

Table 1: Base-line characteristics of participants

Characteristics	Participants No. (n = 385) (%)	Medical Students No. (%)	Non-medical Students No. (%)
Sex			
Male	66 (17.1)	60 (90.9)	6 (9.1)
Female	319 (82.9)	221 (69.3)	98 (30.7)
Area of Residence			
Urban	353 (91.7)	254 (72.0)	99 (28.0)
Rural	32 (8.3)	27 (84.4)	5 (15.6)
Family's Monthly Income			
Less than or equal to 25000	12 (3.1)	9 (75.0)	3 (25.0)
25000 – 50000	43 (11.2)	33 (76.7)	10 (23.3)
50000 – 100000	110 (28.6)	82 (74.5)	28 (25.5)
Greater than 100000	220 (57.1)	157 (71.4)	63 (28.6)
Economic Status			
Lower Class	3 (0.8)	3 (100.0)	0 (100.0)
Lower Middle Class	64 (16.6)	46 (71.9)	18 (28.1)
Upper Middle Class	302 (78.4)	220 (72.8)	82 (27.2)
Upper Class	16 (4.2)	12 (75.0)	4 (25.0)
Year of Study			
1 st Year	104 (27.0)	69 (66.3)	35 (33.7)
2 nd Year	142 (36.9)	100 (70.4)	42 (29.6)
3 rd Year	94 (24.4)	78 (83.0)	16 (17.0)
4 th Year	36 (9.4)	30 (83.3)	6 (16.7)
5 th Year	9 (2.3)	4 (44.4)	5 (55.6)

Table 2: Responses relevant to COVID-19 and educational circumstances

Characteristics	Participants No. (n = 385) (%)	Medical Students No. (%)	Non-medical Students No. (%)
Relative or acquaintance contracted COVID-19			
Yes	305 (79.2)	215 (76.5)	90 (86.5)
No	80 (20.8)	66 (23.5)	14 (13.5)
Respondent tested positive for COVID-19			
Yes	7 (1.8)	7 (2.5)	0 (0.0)
No	378 (98.2)	274 (97.5)	104 (100.0)
Currently having online classes			
Yes	344 (89.4)	263 (93.6)	81 (77.9)
No	41 (10.6)	18 (6.4)	23 (22.1)
University taking proper steps to prepare students for practical/clinical/viva			
Yes	65 (16.9)	49 (17.4)	16 (15.4)
No	243 (63.1)	217 (77.2)	26 (25.0)
Do not have such components their course of study	77 (20.0)	15 (5.3)	62 (59.6)
Had or are having exams			
Yes	179 (46.5)	100 (35.6)	79 (76.0)
No	206 (53.5)	181 (64.4)	25 (24.0)
Stressed about academic delay			
Yes	296 (76.9)	214 (76.2)	82 (78.8)
No	89 (23.1)	67 (23.8)	22 (21.2)
Difficulty level in going about daily life activities due to COVID-19			
Not difficult at all	35 (9.1)	31 (11.0)	4 (3.8)
Somewhat difficult	201 (52.2)	151 (53.7)	50 (48.1)
Very difficult	97 (25.2)	64 (22.8)	33 (31.7)
Extremely difficult	52 (13.5)	35 (12.5)	17 (16.3)

Table 3: Anxiety levels of participants

Anxiety Levels	Medical Students No. (%)	Non-medical Students No. (%)
Minimal	56 (19.9)	10 (9.6)
Mild	109 (38.8)	36 (34.6)
Moderate	55 (19.6)	21 (20.2)
Severe	61 (21.7)	37 (35.6)

p-value from Chi-Square Test = 0.013 (significant)

DISCUSSION:

Throughout the world COVID-19 pandemic has affected a considerable number of lives. It has been observed that public health emergencies can have a negative effect on psychological health; prior research proves a clear effect on the mental wellbeing of students at university level due to COVID-19-induced lifestyle changes as the main source of distress¹⁸.

Previous studies have shown the stress levels of medical and non-medical students to be extremely high¹⁹. Research has also indicated that medical students are subject to a greater impact on psychological health²⁰. Despite studies done to assess the psychological health of either undergraduate or medical students, there is insufficient literature comparing medical and non-medicals students. This study was conducted to bridge this gap by assessing and comparing anxiety levels of these two groups of students due to COVID-19.

73% of the respondents were medical students who demonstrated high levels of anxiety; 38.8% experienced mild anxiety, 19.6% had moderate anxiety and 21.7% suffered from severe anxiety in accordance with the scale set by GAD-7 questionnaire. These high levels of anxiety, particularly mild and severe anxiety, were greater than the levels assessed in previous studies which showed that only 21.3% of medical students experienced mild anxiety, with 2.7% and 0.9% suffering from moderate and severe anxiety, respectively¹¹. This can be due to the fact that 76.2 % of medical students claimed to be stressed due to academic delay. Previous studies show that students show greater stress levels during the COVID-19 pandemic due to the hampering of scheduled study plan and future career²¹.

On the other hand, non-medical students demonstrated higher levels of anxiety as compared to medical students with 35.6% experiencing severe anxiety, 20.2% having moderate anxiety and 34.6% experienced mild anxiety. This study has established significantly high levels of anxiety in medical and non-medical students due to COVID-19. This can be on account of 79.2% of students who knew someone (relative or acquaintance) who contracted COVID-19. These levels are significantly greater than previous research having only 0.55% of such respondents¹³. One

reason may be the exponential increase in COVID-19 cases since the publication of previous studies.

The greater anxiety levels of non-medical students are inconsistent with previous studies, which show that medical students are more prone to having higher levels of anxiety²². The higher levels of anxiety in non-medical students in the sample can be attributed to their lack of overall information amidst the COVID-19 pandemic whereas more medical students have read the guidance of clinical management and according to previous studies have deeper knowledge and understanding of the disease²³. Another reason may be because medical colleges are considered to be more well-informed about the importance of psychological health and may have taken better steps to alleviate the anxiety levels of medical students. The greater mean anxiety score of 11.21 in non-medical students than 9.36 in medical students is consistent with their self-assessment of how difficult COVID-19 has made their lives with 16.3% of non-medical students responding with “extremely difficult” as compared to 12.5% of medical students.

The online classes being taken by majority of the respondents are also considered to be a significant source of anxiety in medical and non-medical students. Previous studies also indicate that students who take online classes have generally higher levels of anxiety²⁴. Furthermore, a greater percentage of non-medical students – 76% compared to 35.6% of medical students – had previously given or were currently having exams, which may explain the higher anxiety levels in these students. It is well-established in literature that examinations induce greater anxiety in students.²⁵ It can be reasoned that non-medical students experienced higher levels of anxiety due to the timeline of their examinations rather than due to COVID-19.

Medical students were more concerned with the practical (clinical) component of their exams with 77.2% responding that their universities had not taken proper steps to prepare them for it while most non-medical students, 59.6%, did not have such a component in their exams. The implication of the pandemic for the future of medical students in residency programmes has been discussed,²⁶ highlighting a

prominent source of anxiety for medical students who feel unprepared for this aspect of their syllabus.

Previous studies have already stipulated the need for establishment of mental health cells,²⁷ while others have highlighted the necessity of social support during such public health emergencies²⁸. Keeping in view the findings of this study, colleges should take proper steps to ensure sound mental health in undergraduate students, particularly in non-medical colleges. The mental health of medical and non-medical students should be closely monitored, and psychological intervention is recommended with appropriate strategies that can help receive professional and personal support during this pandemic.

CONCLUSION:

COVID-19 pandemic has had an adverse impact in causing anxiety in undergraduate students; 80.1% of medical students and 90.4% of non-medical students were shown to be suffering from mild, moderate, and severe forms of anxiety in this study. The findings of this study established non-medical students to be experiencing higher anxiety levels than medical students. Online classes, stress due to academic delay and exams, as well as personally knowing COVID-19 patients seem to be important factors that contribute to higher anxiety levels in both undergraduate medical and non-medical students. Furthermore, the results show the importance of monitoring and improving the mental health of these students. Proper information about the disease should be provided, in particular to non-medical students who are shown to have greater anxiety, attributed to both lack of information and timeline of examinations. It is recommended for universities to employ timely strategies that provide psychological support to undergraduate students during such public health emergencies.

ETHICAL APPROVAL:

The study was approved by the Ethical Review Committee of CMH Lahore Medical & Institute of Dentistry, Lahore, Pakistan. IRB Reference No. 56/ERC/CMHLMC Dated: 24th May, 2020.

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AUTHORS' CONTRIBUTION:

- NN:** Literature search, study design and concept, questionnaire design, data collection
IB: Literature search, study design and concept, questionnaire design, data collection, data analysis
JJ: Literature search, study design and concept, questionnaire design, data interpretation, drafting
FA: Data analysis, data interpretation, drafting
FI, HR, RKA: Drafting, Revision and final approval