

Perceived stress responses among medical & dental students in Rehman Medical Institute during COVID-19 pandemic

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ABSTRACT

Introduction: COVID-19 pandemic has posed a challenge for undergraduate medical students. Shifting to E-Learning has added to the existing stressors present due to pandemic. This has affected the psychological well-being of the students.

Objective: To analyze the effects of COVID-19 pandemic on the learning of undergraduate medical students in Rehman Medical Institute, Peshawar, Pakistan.

Materials & Methods: An online cross-sectional study was carried out from March 2021 to May 2021 on 142 students of Rehman Medical College, and Rehman College of Dentistry, Peshawar Pakistan, using the standardized Cohens Perceived Stress Scale (PSS) to collect the data. The questionnaire was created using Google Forms and was distributed online; it had two components consisting of demographic data, and a 14-items stress scale rated on a 5-point Likert scale with scores ranging from 0-56 indicating low, moderate, and high stress scores. The data received were analyzed by SPSS 22 for descriptive statistics.

Results: Out of 142 respondents, 57% were females, while 43% were males. Most of the participants were between the ages of 18-20 years. The mean PSS score of the participants was 29; elevated stress scores were exhibited in female participants with average PSS scores of 29.21 indicating moderate stress levels. The prevalence of stress was highest among 2nd and 3rd year students with PSS scores of 35.25 and 30 respectively.

Conclusion: COVID-19 pandemic has developed stress in medical and dental students. COVID-19 has not only influenced medical education and, but it has affected students' well-being as well.

Keywords: Undergraduate medical, medical students, eLearning, Stress, Covid-19, COVID-19, Pandemic, Perceived stress.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

INTRODUCTION

The current pandemic of severe acute respiratory syndrome the novel Coronavirus 2 (SARS-CoV-2) commonly named the COVID-19 have emerged from the province Wuhan, in China, it have attracted wide attention globally and is an alarming threat towards human health. The current pandemic has posed danger to the lives of human beings. The virus has unknown epidemiological characteristics which makes it highly transmittable compared to the earlier pandemics of the century like SARS-CoV and MERS-CoV.¹ These circumstances have frightened the healthcare authorities around the world,² and individuals in contact with the infected person(s) have been asked to quarantine. Quarantine is a period of individual isolation, home restrictions, termination of all kinds of public gatherings, along with travel restrictions.³

Educational activities are challenged to a greater extent during the current situation. Almost all the schools and colleges have deferred educational activities on campus, shifting to online education / E-Learning. Medical education has always been challenging and demanding⁴ and the current situation has caused lots of interruptions.⁵ Most of the medical lectures which used to be in-person teaching sessions (face to face) had to be terminated in lockdown situation, and replaced by video lecture recordings⁶ and live streaming lectures.⁷

Such set of conditions not only affected the quality of education for students but also had dire negative impacts on the mental health of students. Students who stay at home have increased levels of anxiety and stress,⁸ which lead to harmful effects on their intellectual and learning ability.⁹ The students are not being exposed to regular practical sessions thus making them anxious and worried about their future. The stress and anxiety in medical students has made it hard to cope with the situation.^{10,11}

The pandemic has strongly affected all the educational activities affecting students' lifestyle and psychological health. Therefore, this study was done to determine the effects of COVID-19 pandemic on undergraduate medical and dental students, in particular to assess the perceived stress levels of medical and dental students at Rehman Medical Institute, Peshawar, during the COVID-19 pandemic.

MATERIALS & METHODS

The present cross-sectional descriptive study was conducted online in the Department of Physiology, Rehman Medical College (RMC), Peshawar, Pakistan, from March 2021 to May 2021 on medical and dental students through convenience sampling after obtaining informed consent and ensuring privacy of respondents.

A validated questionnaire, the Cohens Perceived Stress Questionnaire (PSS-14) was used for data collection. PSS-14 comprises of 14 questions with responses based on a 5-point Likert scale ranging from “Never=0” to “Very often=4”. The score ranges from 0-56 deciphered as follows: a score of 0-18 reflecting low stress, a score of 19-37 indicating moderate stress; and a score of 38-56 showing high stress.

Questionnaires were distributed online via Google Forms. A study link was generated from Google Forms and was distributed via Messenger, Telegram, WhatsApp, Facebook, and Instagram through the investigator’s contact. Upon opening the link, the form was divided into two parts. Demographic information was collected in the first part of the study, the second part consisted of PSS-14 questions with regard to the prevailing COVID-19 situation in the country.

The study protocol was approved by the Institutional Ethical Review Board of Rehman College of Dentistry. Participants were assured that the information would remain strictly confidential.

Numerical data were entered and analyzed in Microsoft Excel. Statistical analysis was done using SPSS, version 22.0 (IBM Corporation, Armonk, NY, USA). The Independent Samples T-test was used to compare stress scores among male and female students. The prevalence of a result variable was estimated along

with confidence intervals of 95%. During the entire study, the statistical significance level has been established as $p \leq 0.05$.

RESULTS

Table 1 shows the demographic details of medical and dental students to PSS-14 during this lockdown period. Most respondents were females (57%), while (43%) were males. Majority of the participants (69%) in the study were between ages 18-20 years; (31%) of the participants were between ages 21-25 years. The non-smoker population was more (97.2%), the smoker’s percentage was less 2.1% and 0.7% of the participants reported that they started smoking during the pandemic. 82.4% of students were studying MBBS, while 17.6% were studying in BDS.

Table 1: Demographic data of students (n=142).

Demographic Variables		Frequency (f)	Percentage (%)
Age (years)	18-20	97	69
	21-25	44	31
	26-30	0	0
	30 and above	01	0.7
Gender	Male	61	43
	Female	81	57
Smoking Status	Smoker	03	02.1
	Non-smoker	138	97.2
	Started in pandemic	01	0.7
Educational Year	1 st year BDS	06	04.2
	2 nd year BDS	01	0.7
	3 rd year BDS	0	0
	4 th year BDS	18	12.7
	1 st year MBBS	95	66.9
	2 nd year MBBS	09	06.3
	3 rd year MBBS	07	04.9
	4 th year MBBS	04	02.8
	5 th year MBBS	02	01.4

The psychometric analysis of the students is shown in Table 2.

Table 2: Responses of the participants to PSS-14 on a 5-point Likert scale (0 = Never to 4 = Very Often).

#	PSS-14 Items	None of the time f (%)	A little of the time f (%)	Some of the time f (%)	Most of the time f (%)	All of the time f (%)
1.	In the last month, how often have you been upset because of something that happened unexpectedly?	20 (14.1)	16 (11.3)	63 (44.4)	29 (20.4)	14 (9.9)
2.	In the last month, how often have you felt that you were unable to control the important things in your life?	25 (17.6)	14 (9.9)	46 (32.4)	31 (21.8)	26 (18.3)
3.	In the last month, how often have you felt nervous and “stressed”?	14 (9.9)	12 (8.5)	47 (33.1)	41 (28.9)	28 (19.7)
4.	In the last month, how often have you dealt successfully with day-to-day problems and annoyances?	04 (2.8)	11 (7.7)	53 (37.3)	57 (40.1)	17 (12)
5.	In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	5 (3.5)	24 (16.9)	50 (35.2)	39 (27.5)	24 (16.9)
6.	In the last month, how often have you felt confident about your ability to handle your personal problems?	05 (3.5)	20 (14.1)	36 (25.4)	56 (39.4)	25 (17.6)
7.	In the last month, how often have you felt that things were going your way?	10 (7)	24 (16.9)	69 (48.6)	30 (21.2)	09 (6.2)
8.	In the last month, how often have you found that you could not cope with all the things that you had to do?	17 (12)	25 (17.6)	45 (31.7)	37 (26.1)	18 (12.7)
9.	In the last month, how often have you been able to control irritations in your life?	04 (2.8)	26 (18.3)	57 (40.1)	38 (26.8)	17 (12)
10.	In the last month, how often have you felt that you were on top of things?	14 (9.9)	35 (24.6)	63 (44.4)	20 (14.1)	10 (7)
11.	In the last month, how often have you been angered because of things that happened that were outside of your control?	09 (6.3)	33 (23.2)	49 (34.5)	33 (23.2)	18 (12.7)
12.	In the last month, how often have you found yourself thinking about things that you have to accomplish?	04 (2.8)	09 (6.3)	22 (15.5)	51 (35.9)	56 (39.4)
13.	In the last month, how often have you been able to control the way you spend your time?	12 (8.5)	31 (21.8)	57 (40.1)	26 (18.3)	16 (11.3)
14.	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	13 (9.2)	32 (22.5)	41 (28.9)	32 (22.5)	24 (16.9)

Table 3 provides the comparative demographic data of males and females. Significant difference is seen among the genders only in the age group of 18-20 years.

Table 3: Comparative demographic data of students with p-values (n=142).

Parameters	Total	Male	Female	p value
Age 18-20 years	97	40	57	0.03
>20 years	45	21	24	0.92
Smoking	03	01	02	0.90
Non-Smoking	138	60	78	0.76
Started smoking	01	01	0	-
1 st year	101	48	53	0.84
2 nd year	10	02	08	0.73
3 rd year	07	0	07	-
4 th year	22	09	13	0.82
Final year	02	02	0	-

The student's response to PSS is shown in Table 4. The average stress score for all the participants was 31.52 ± 5.2 indicating moderate stress levels. Moderate stress scores were observed in students of 2nd and 3rd professional years with mean scores of 32.10 ± 6.12 and 33.14 ± 8.97 respectively, followed by students of 1st professional year (mean score 31.61 ± 5.01) as shown in Table 4. Female participants of the study reported more stress (32.04 ± 5.59) than the male population (30.84 ± 4.54), while the highest scores were observed in female students from 2nd professional year (33.38 ± 5.34).

Table 4: The average PSS scores of students according to gender and their years of study (n=142).

Academic Year	Mean score	Male	Female	p value
1 st year (n=101)	31.61 ± 5.01	30.63 ± 4.57	32.51 ± 5.25	0.058
2 nd year (n=10)	32.10 ± 6.12	27.00 ± 8.48	33.38 ± 5.34	0.204
3 rd year (n=7)	33.14 ± 8.97	-	33.14 ± 8.97	-
4 th year (n=22)	30.32 ± 4.37	32.67 ± 3.78	28.69 ± 4.11	0.032
5 th year (n=2)	31.50 ± 2.12	31.50 ± 2.12	-	-
All years (n=142)	31.52 ± 5.2	30.84 ± 4.54	32.04 ± 5.59	0.17

DISCUSSION

Many countries have asked their residents to isolate and to follow all the necessary precautions to avoid catching the virus during the global pandemic. Medical students have been quarantined to prevent them and their families from getting infected. There has been the prevalence stress and anxiety in residents of south-western China in the times of viral outbreak.¹²

Due to the academic burden, medical students are said to be at a greater risk of mental health issues. The current study reports that most of the study participants had stress. Recent studies have reported that the majority (73%) of undergraduate medical students suffer from stress.^{13,14} The demanding nature of medical

college life have put them at risk of developing stress. The negative feelings have been intensified by the ongoing pandemic situation and on and off E-Learning.¹⁵ Stress is said to have a variety of negative impact on mental health as well as physical health.¹⁶ High levels of stress along with an isolating environment have detrimental effects on the cognitive functioning and can affect the learning abilities of a student.¹³ A recent study reported that one-fourth of the medical students experienced feelings of sadness during the period of quarantine.¹⁷

During medical studies there is a transitional period, shifting from pre-clinical years into clinical years; approaching into 3rd year and onwards is an important turning point for the students.¹⁸ This transition leads to a particular change in the learning needs of students along with teaching patterns, leading to a notable change in medical students. Such changes have challenges; this is very important with regard to those who are inclined towards transition from a medical student to a doctor.¹⁸

Our study reports that most of the study respondents were from 1st year of MBBS (66.9%), and they reported to have stress, which can be attributed to the fact that they were in start of their professional studies worried about their future. This pandemic would have contributed to stress in a way that students were supposed to attend online courses from home which affected their in-person learning in wards, on simulators, or on live cases. A study by Saravanan et al.,¹⁴ reported high stress levels in 2nd and 3rd year MBBS students in contrast to 1st year MBBS students ($p < 0.05$). A student's gender whether male or female might make them susceptible towards stress. Our study found that female students showed high stress levels as compared to the male students. A comparative study among medical and nonmedical students also revealed that higher number of female medical students (48.6%) were said to be stressed out during the course of their studies.¹⁹

A study conducted by Hamza et al.,²⁰ in Saudi Arabia reports high stress levels medical students in their transitional year that was 3rd year of their studies (from pre-clinical to clinical). The current study is in line with Hamza et al., in a way that high stress levels were seen in 3rd year medical students. The reason might be that the students are newly introduced to the clinical subjects and during the time of pandemic they are directed to take online sessions. This would lead to less clinical exposure in their initial years of clinical career which might contribute to make them worry about their clinical skills development.

E-Learning has affected the education to a certain extent, as the teachers were not prepared and aware of the new teaching methods and students who previously have been used to in-person classes had to face some difficulties with the new teaching methods. On the other hand, studies from other countries have found that the acceptance rate of E-Learning is slow but 55% of the student's found it useful, timesaving and effective.²¹

Literature suggests different coping actions for medical students to fight against the stress they are facing.²² Mostly used strategies to overcome stress is regular exercise, online fun with family and friends, getting involved in religious activities, and accepting to live in the new normal of COVID-19 situation. Religious activities are frequently practiced by highly stressed students

during their lifetime. Coping stress with the help of religion helps in cognitive development, emotional building towards stress. A study also suggests that getting involved in religious activities in response to stress is important for an individual.²²

CONCLUSION

The pandemic has affected the education to a certain extent, as the teachers were not prepared and aware of the new teaching method and students who previously have been used to in person classes had to face some difficulties with the new teaching methods. This have resulted in increased perceived stress responses among students of medical sector. Our study provides a platform for the policy makers of the institute to come up with

workshops, training programs for the teachers and make them able to help their students to surpass these tough times.

LIMITATIONS

The study has some limitations we did not have a control group from other educational backgrounds to compare study results of the medical students. We did not include interns, house officers, and medical residents in our study.

RECOMMENDATIONS

Further studies should be designed to compare the stress responses, anxiety, and depression of medical students with students from other educational backgrounds.

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