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ORIGINAL ARTICLE

The Impact of Covid-19 on Medical Students: A Cross Sectional Survey

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ABSTRACT

Aim: To understand the psychological impact of COVID – 19 on Medical Students of a private sector Medical University in Karachi, Pakistan.

Method: This cross-sectional study was conducted among medical students studying at Hamdard College of Medicine and Dentistry, Karachi, Pakistan. The data collection was done through online survey from July 2020 to December 2020. The study aimed to gather data from many medical students. A total number of 420 students were participated from Hamdard College of Medicine and Dentistry in Karachi, Pakistan. The participants were selected from all years of MBBS and BDS programs .

Results: Out of 420 participants, 236 (56.2%) were male and 184 (43.8%) female, with a male:female ration of 1.28:1. Majority of participants were single as 411 (97.9%), of 224 (53.3%) students living with their family, 150 (35.7%) in hostel and 46 (11%) living with friends. In our sample 369 (87.9%) students studying in MBBS program while only 51 (12.1%) BDS, among those 80 (19%) medical students were in first year, followed by 122 (29%) second year, 65 (15.5%) third year, 54 (12.9%) fourth year and 99 (23.6%) studying in final year. IES-R scale and results shows 75 (17.9%) reported that PTSD is a clinical concern, probable diagnosis of PTSD 28 (6.7%) and majority rated as high enough to PTSD 133 (31.7%). Impact of event (revised) scale shows significant association with age and year of study with p value 0.026 and 0.002 respectively. Based on the PHQ9 scale, Gender, Living arrangements and the program enrolled in were reported significant association with depression p values 0.059, 0.008 and 0.006 respectively.

Conclusion: Findings suggests high rate of anxiety, depression, and signs of PTSD in medical students due to COVID-19 which needs pressing attention and provision of professional help from mental health practitioners.

Keywords: Impact, Covid-19, Medical students

INTRODUCTION

The ongoing coronavirus pandemic-2019 (COVID-19) outbreak has quickly spread across the globe. It has greatly affected both public and private sector institutes and raised serious concerns for students[1]. Frequent rotations of different departments made medical students more vulnerable for COVID-192]. This situation become further complicated for the final year medical students were about to sit in their final examinations. A number of medical schools reduced clinical exposure because of the possible exposure to virus to these young doctors. This resulted leaving students anxious and uncertain about their medical career and acquiring appropriate skills[3]. Furthermore, missing on job training or having a severely decreased workload in placements can affect students significantly when applying for residency[4]. This trajectory has been changed with COVID-19 disrupting routines in hospitals, medical schools and beyond[5], while many universities and colleges are halting campus based teaching and examination resulting in transition to online teachings[6].

The pandemic is having worst results in low and middle-income countries (LMICs) with already limited resources and weak education systems[7]. Medical students are experiencing increased depression and anxiety as a result of COVID-19 which gradually affects their physical, emotional, and mental well-being[8]. Long-standing social distancing can have negative effects on mental health[9]. Current pandemic can worsen already existing mental health conditions[10] with the death numbers increasing by the day and with news and social media flooded with COVID-19 discussions[11]. In such a time of crisis senior residents who typically teach students may shift their full focus to managing COVID-19–related issues during shifts which further poses challenges for medical students due to not getting enough time of senior medical professionals[12].

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As not much is known regarding the long-lasting impact of COVID-19 on medical education, it is therefore also necessary to record and study the full impact of the changes being made.

Objective of the study was to explore how medical students experienced the pandemic and how this is affecting their mental health and well-being.

MATERIAL & METHOD

This cross-sectional study was conducted among medical students studying at Hamdard College of Medicine and Dentistry, Karachi, Pakistan after permission from IRB. The data collection was done through online survey from July 2020 to December 2020. The study aimed to gather data from many medical students; as seen in the literature the larger the sample size has greater reliability and validity. With the ease of lock down this study was easy to carry on the medical college students and a self-responded questionnaire was developed in which no secret information required and all the questions were mandatory to be answered by those medical students who agreed to participate in the study. A total number of 420 students were participated from Hamdard College of Medicine and Dentistry in Karachi, Pakistan. The participants were selected from all years of MBBS and BDS programs.

Assessment measures:

Demographics: A questionnaire was used to collect the demographic data such as age, gender, marital status etc.

Fear of Covid-19 Scale: The Fear of COVID-19 Scale, a seven-item scale, has robust psychometric properties. It is reliable and valid in assessing fear of COVID-19[13].

Patient Health Questionnaire (PHQ-9): The PHQ-9 is a multipurpose instrument for screening, diagnosing, monitoring and measuring the severity of depression+]

Generalized Anxiety Disorder (GAD-7): A 7-item scale measuring generalised anxiety[15].

Impact of Event Scale- Revised (IES-R): A short, easily administered self-report questionnaire, the Impact of Event Scale--

Revised (IES-R), has 22 questions, 5 of which were added to the original Horowitz (IES) to better capture the DSM-IV criteria for PTSD[16].

Procedure: The students were selected from a recognized medical university in Karachi who fulfilled the inclusion and exclusion criteria. Prior to inclusion the purpose of the study was explained, and verbal informed consent was taken from the students. All of the participants were sent an online version of the survey for responses. Chi-square and student T test were performed using on statistical software SPSS Version 22.

RESULTS

Out of total 700 medical students, 420 students completed the online survey (response rate of 60%). Of 420 participants, 236 (56.2%) were male and 184 (43.8%) female, with a male:female ration of 1.28:1. Distribution of various socio-demographic variables (Table 1) shows that 119 (28.3%) fall in age group 18-20, following with 211(50.2%) 21-23 and 90(21.4%) 24-26. Majority of participants were single as 411(97.9%), of 224 (53.3%) students living with their family, 150(35.7%) in hostel and 46(11%) living with friends. In our sample 369 (87.9%) students studying in MBBS program while only 51(12.1%) BDS, among those 80(19%) medical students were in first year, followed by 122(29%) second year, 65(15.5%) third year, 54(12.9%) fourth year and 99(23.6%) studying in final year.

There are significant number of students, who report moderate anxiety 125(29.8%), severe anxiety 48(11.4%), findings of PHQ9 shows moderate depression 114(27.1%), moderately severe depression 77(18.3%), and severe depression 43(10.2). we also applied IES-R scale and results shows 75(17.9%) reported that PTSD is a clinical concern, probable diagnosis of PTSD 28(6.7%) and majority rated as high enough to PTSD 133 (31.7%).

Chi-square test shows (Table 2) highly significant association between age and anxiety with p value 0.002. Similarly association between gender and anxiety with p value 0.012 and association between program i.e., (MBBS and BDS) with p value 0.005 also reported as significant.

Impact of event (revised) scale (Table 3) also shows significant association with age and year of study with p value 0.026 and 0.002 respectively. Based on the PHQ9 scale (Table 4), Gender, Living arrangements and the program enrolled in were reported significant association with depression p values 0.059, 0.008 and 0.006 respectively.

We also applied Fear of COVID 19 scale (Table 5) and only a single variable shows significant p value 0.041 and that was year of study i.e., first and second year reported higher mean score with compare to third and fourth year medical students.

Table 1: Descriptive statistics (n=420)

Variables	Frequency	Percentage
Age in years		
18-02	119	28.3
21-23	211	50.2
24-26	90	21.4
Gender		
Male	236	56.2
Female	184	43.8
Marital status		
Single	411	97.9
Married	9	43.8
Program		
MBBS program	369	87.6
BDS program	51	12.1
Class		
First year	80	19.0
Second year	122	29.0
Third year	65	15.5
Fourth year	54	12.9
Fifth year	99	23.6
Living arrangement		
Living with family	224	53.3
Living with friends	46	11.0
Hostel	150	35.7
IES-R		
No PTSD	184	43.8
PTSD is a clinical concern	75	17.9
Probable diagnosis of PTSD	28	6.7
High enough to PTSD	133	31.7
GAD-7		
Absent	112	26.7
Mild anxiety	135	32.1
Moderate anxiety	125	29.8
Severe anxiety	48	11.4
PHQ-9		
Minimal depression	55	13.1
Mild depression	131	31.2
Moderate depression	114	27.1
Moderately severe depression	77	18.3
Severe depression	43	10.2
FCV Mean ± SD	21.31 ± 5.77	

Table 2: Chi-square relationship of GAD-7 with socio-demographic details (n=420)

Variables	GAD - 7 (n=420)				P Value
	Absent	Mild anxiety	Moderate anxiety	Severe anxiety	
Age					
18 – 20 years	43	28	33	15	0.002
21 – 23 years	56	65	70	20	
24 – 26 years	13	42	22	13	
Gender					
Male	50	86	76	24	0.012
Female	62	49	49	24	
Marital Status					
Single	112	130	122	47	0.255
Married	-	05	03	01	
Program					
MBBS Program	89	126	109	45	0.005
BDS program	23	09	16	03	
Class					
First year	21	24	22	13	0.245
Second year	29	40	42	11	
Third year	18	16	22	09	
Fourth year	21	13	15	05	
Fifth year	23	42	24	10	
Living arrangement					
Living with family	54	76	63	31	0.071
Living with friends	17	18	08	03	
Hostel	41	41	54	14	

Table 3: Chi-square relationship of IERS-R with socio-demographic details (n=420)

Variables	IERS-R				P Value
	No PTSD	PTSD is a clinical concern	Probale diagnosis of PTSD	High enough of PTSD	
Age					
18 – 20 years	57	15	03	44	0.026
21 – 23 years	89	41	22	59	
24 – 26 years	38	19	03	30	
Gender					
Male	91	48	17	80	0.097
Female	93	27	11	53	
Marital Status					
Single	182	73	27	129	0.610
Married	02	02	01	04	
Program					
MBBS Program	156	65	26	122	0.235
BDS program	28	10	02	11	
Class					
First year	34	10	01	35	0.002
Second year	49	23	11	39	
Third year	26	11	07	21	
Fourth year	30	08	08	08	
Fifth year	45	23	01	30	
Living arrangement					
Living with family	99	40	16	69	0.102
Living with friends	22	13	04	07	
Hostel	63	22	08	57	

Table 4: Chi-square relationship of PHQ-9 with socio-demographic details (n=420)

Variables	PHQ-9					P Value
	Minimal depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression	
Age						
18 – 20 years	19	35	30	17	18	**0.175**
21 – 23 years	28	73	54	40	16	
24 – 26 years	08	23	30	20	09	
Gender						
Male	26	71	68	52	19	**0.059**
Female	29	60	46	25	24	
Marital Status						
Single	52	131	110	76	42	**0.134**
Married	03	-	04	01	01	
Program						
MBBS Program	42	113	109	69	36	**0.006**
BDS program	13	18	05	08	07	
Class						
First year	09	22	20	12	17	**0.169**
Second year	17	42	34	25	04	
Third year	06	20	19	13	07	
Fourth year	11	17	12	09	05	
Fifth year	12	30	29	18	10	
Living arrangement						
Living with family	31	58	68	45	22	0.008
Living with friends	07	15	18	06	-	
Hostel	17	58	28	26	21	

Table 5: Student's t-test relationship of FCV with socio-demographic details (n=420)

Variables	FCV		P Value
	N	Mean ± SD	
Age			
18 – 20 years	119	21.92 ± 6.0	0.267
21 – 23 years	211	20.88 ± 5.69	
24 – 26 years	90	21.51 ± 5.71	
Gender			
Male	236	21.36 ± 5.8	0.852
Female	184	21.25 ± 5.76	
Marital Status			
Single	411	21.32 ± 5.69	0.825
Married	9	20.89 ± 9.31	
Program			
MBBS Program	369	21.36 ± 5.4	0.646
BDS program	51	20.96 ± 8.1	
Class			
First year	80	21.94 ± 6.18	0.041
Second year	122	21.86 ± 5.51	
Third year	65	20.71 ± 5.85	
Fourth year	54	19.26 ± 6.05	
Fifth year	99	21.64 ± 5.36	
Living arrangement			
Living with family	224	20.72 ± 5.15	0.048
Living with friends	46	21.20 ± 6.63	
Hostel	150	22.22 ± 6.26	

DISCUSSION

The present study aimed at understanding impact of covid-19 on medical students in post nationwide lockdown due to pandemic in Pakistan. To our knowledge this is first study of its kind from a lower income country looking at impact of covid-19 on medical student's mental health. Results show a significant impact of Covid-19 on medical students with regard to depression, anxiety, fear of covid and trauma. In our sample about 27.1% were in moderate, 18.3 moderately severe and 10.2% with severe depression and 29.8% moderate and 11.4 severe anxiety. Our results are consistent as well as contrary with other studies. A study conducted on depression and anxiety among Iranian medical students found 27.6% and 38.1% prevalence of mild to severe depression and anxiety respectively[8]. Another recent study conducted on depression and anxiety among university students found around 15% of students with moderately severe depression and 18% with anxiety[17]. Another study conducted with Bangladesh medical students during the initial period of Covid-19 revealed that 65.9% of the medical students had different levels of anxiety, ranging from mild (27.3%), moderate (26.8%) and severe (11.8%)[18].

Significantly higher proportion of students studying medicine in Pakistan reported anxiety and depression in our study can be associated to numerous reasons. As findings suggests mental health quotient of medical students has pre-existing low as compared to normal population due to academic pressure[19]. Pakistan being a developing country, it is possible that online education system was not as effective. There is electricity shortage, connectivity issues, some students are unable to afford laptops which is why students could be concerned about their medical education. Students may have apprehensions about their practical capabilities as a professional as they were unable to learn in hospital through clinical rotations and internships[3,20].

Furthermore, around 56.3% [IES-R: PTSD as a clinical concern = 17.9%, probable diagnosis of PTSD = 6.7%, high enough to PTSD = 31.7%] which is backed by previous findings. Emergence of COVID – 19 provoked a question on the role of health care students in society on how they should be prepared for a health crisis like this and protect themselves from the contagion specially without sufficient protective resources generated a lot of stress[21,22]. Medical students studying online being isolated and quarantined in home environment affected their concentration level which can be a traumatic experience[22]. Uncertainty of examinations mode and process, restructuring of papers and syllabus is also a reason that created distress in medical students as it effects their GPA and future prospects[5,23-25].

Finally, a high proration of students reported fear of covid-19, Mean (21.31, SD=5772). About 62.6% were afraid of covid, 52.1% uncomfortable to think of corona, 29% felt clammy when they thought of corona, 55.9% become nervous and anxious when they watched news about corona, 24.3 were unable to sleep due to worry of getting corona and 32.4% reported their heart races or palpitates when they think about getting corona. Other studies have shown a similar trend on fear of covid-19 as an immediate consequence of Covid-19 [26]. First- and second-year medical students displayed higher score on Fear of COVID 19 scale comparatively to third, fourth and final year Medical students. This may be secondary to their less clinical knowledge and practical experience as compared to third year, fourth year and final year medical students. Although most likely young adults are at low probability of physical health problems from COVID-19, they may be anguished stress of GPA maintenance and pandemic's secondary repercussions i.e., lockdown, related social standstill and economic downfall[25].

CONCLUSION

Findings of the present study suggests that the influence of COVID-19 on mental health of medical students and their well-being is extensive. The results of the research shows that respondents faced mental health issues like depression, anxiety and fear related to COVID-19 pandemic as it drastically altered the conventional education and learning paradigm with negative aftereffects. It is evident that failure to deal with such stressors can results in serious consequences for the education and performance as medical professional of medical students. By developing and utilizing efficient strategies and support programs, organizational leaders can safeguard wellbeing of medical students effectively.

Conflict of Interest: The authors have no conflict of interest to declare.

Ethics, consent and permissions: This study has been ethically approved by Hamdard College of Medicine and Dentistry Karachi, ethical committee.

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