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ORIGINAL ARTICLE

STRESSORS ASSOCIATED WITH CHANGE IN ACADEMIC AND SOCIAL ATTRIBUTES DUE TO COVID-19 PANDEMIC AND THEIR PSYCHOLOGICAL IMPACT ON MEDICAL STUDENTS

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ABSTRACT

OBJECTIVE: To identify the stressors related to academic online teaching and the change in social norms during the pandemic and to assess their psychological impact on the medical students.

METHODS: A web based, descriptive cross-sectional study was conducted at Hazrat Bari Imam Sarkar Medical and Dental College, Islamabad Pakistan over a period of 4 months using an Online questionnaire via Google forms based on Depression Anxiety Stress Scales (DASS21) scale comprising of 21 questions which address the depression, anxiety, and stress related questions. The modified questionnaire also contained open ended questions along with a short questionnaire based on 3 points Likert scale.

RESULT: Total of 305 subjects participated. Mean (±SD) severity score for Depression, anxiety and stress was 2.02± 1.3, 1.76±1.25 and 1.66±1.15 respectively. Highly significant positive correlation was observed between depression and stress score of subjects and history of COVID-19 infection in an acquaintance (r=0.179, p=<0.01) and (0.132, p=<0.001) respectively; between depression and stress score of subjects and history of acquaintance who expired due to COVID-19 (r=0.198, p<0.01) and s (r=0.25, p<0.01) respectively; distraction during online classes and depression and stress score (r=0.233, p<0.01) and (r=0.236, p<0.01) respectively and worry about effect on clinical skills due to teaching through online sessions and depression (r=0.161,p<0.01).

CONCLUSION: The stressors related to change in the academic activities and social norms due to SARS-CoV-2 has had significant psychological impact on the mental health of students which requires attention and formal counselling.

KEY WORDS: COVID-19 (MeSH); SARS-CoV-2 (MeSH); Mental Health (MeSH); Psychological Phenomena (MeSH); Online education (Non-MeSH); Education, Distance (MeSH).

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INTRODUCTION

Pakistan confirmed its first case of COVID-19 on February 26, 2020. After this the SARS-CoV-2 spread very rapidly in Pakistan. In order to contain the virus, government officials and public health experts took measures like self-isolation and social distancing. Education ministry of Pakistan announced the closure of the educational institutes on March 13, 2020, and Government of Pakistan declared complete lockdown on March 23, 2020. However, since the educational departments cannot be closed for long time therefore, they were compelled to shift from face-to-face to online delivery model.[1] Sudden shift from face-to-face learning to online classes was not an easy transition. This is because not all faculty and students are tech-savvy and other problems such as lack of computers and information technology (IT) related devices at home and lack of availability of structure by the university for faculty and students to deal with online classes may arise. Moreover, internet connectivity particularly for people living in small towns and electrical power shortage might add to the dilemma.[2]

The most severe cause of stressors among medical students were high parents expectations, extensiveness of syllabus,[3] lack of time and facilities for entertainment, staying in hostels, tests and exams.[4] The infectious diseases related disasters in the past due to SARS, Ebola, H1N1 influenza, MERS and equine influenza all have negative effect on the psychological well-being of populations.[5-8] Not many studies have been done in Pakistan to see the difficulties students are facing due to online classes, the impact of SARS-CoV-2 impact on family and how they are affecting the psychological health of medical students. Therefore, we aimed to study the mental well-being of medical students and we used depression, anxiety, stress scale (DASS21) which targets depression, anxiety and stress related symptoms.[9] We also aimed to see the problems that students are facing due to online classes and psychosocial impact of SARS-CoV-2 and how they are affecting students psychologically. Further their top ranked reservations and recommendations for improvement of online sessions were compiled.

METHODS

Study Design

The web-based, descriptive cross-sectional study was conducted among the 305 medical students after approval from the institutional Ethical Review Committee. The undergraduate medical students of Hazrat Bari Imam Sarkar Medical and Dental College, Islamabad Pakistan were randomly selected for this study after informed consent. Students who were not willing participate in the

TABLE I: DEMOGRAPHIC CHARACTERISTICS OF THE STUDY PARTICIPANTS (N=305)

DEMOGRAPHICS		Frequency (n=305)	Percentage
Year of study MBBS	First year	45	14.8
	Second year	59	19.3
	Third year	61	20
	Fourth year	55	18
	Final Year	39	12.8
Year of study BDS	First year	27	8.9
	Second year	19	6.2
Area of residence	Rural	239	78.4
	Urban	66	21.6
Place of stay after lockdown	Parents	291	95.4
	Relative's or Friend's House	7	2.3
	Hostel	4	1.3
	Rented Flats	3	1
Place of stay before lockdown	Hostel	124	40.7
	Day Scholar	164	53.8
	Other	17	5.6
Internet service provider	PTCL LAN	142	46.6
	EVO Wireless	14	4.6
	Another internet service provider	64	21
	Mobile network service provider (ZONG, WARID, Ufone, Mobilink, Telenor etc.)	85	27.9
Platform for online classes	Facebook	303	99.3
	Google meet	2	0.66

study and those who do not have Internet access were excluded from this study.

Rating Instrument

Study was based on the DASS21 scale which comprised of 21 questions which addressed the depression, anxiety and stress related questions. Each question had 4 answers or items and they were scored from 0 (Did not apply to me at all - NEVER) to 4 (Applied to me very much, or most of the time - ALMOST ALWAYS). All the answers from questions related to D, A and S were added to together and multiplied by 2 to get our final score.

For depression, those who scored from 0-9 were labelled as "Normal", 10-13 as "Mild", 14-20 as "Moderate", 21-27 as "Severe" and 28+ as "Extremely Severe". For stress, those who scored "0-12 were labelled as "Normal", 15-18 as "Mild", 19-25 as "Moderate", 26-33 as "Severe" and 34+ as "Extremely Severe".[10]

Data Collection

After getting approval from the Ethical committee of Hazrat Bari Imam Sarkar Medical and Dental College, Islamabad we distributed the questionnaire on Google Forms via Official students Facebook group (made by the college administration) of the college. First page consisted of consent; the questionnaire was displayed to those who consented. Total of 307 subjects were included in the study. Those subjects who did not fill all questions were contacted by the contact information provided in the questionnaire to confirm whether they didn't understand unanswered questions, or they didn't prefer to answer those questions. All subjects who were contacted later told that they didn't comprehend the questions and hence left them unanswered. Thus, we obtained those answers after explaining the questions. We excluded 2 subjects after discussion with the team since they did not provide any contact information, which may have been used for clarification. So finally, a total of 305 students participated in the study. The responses to open ended questions were then ranked by the number of times they were selected. The participation was purely voluntary, and the questionnaires were kept anonymous and confidential. The evaluators ranked the responses and discussed categorization. The interviews were reviewed multiple times by the evaluators to reach a consensus.

Statistical Analysis

After cleaning the data from excel sheet, data were imported into SPSS software for statistical analysis. We used IBM SPSS version 22.0. Continuous variables were expressed as mean and standard deviations (SD) whereas frequency and percentages were used to present categorical data. Spearman correlations were used to see the correlation between depression, anxiety and stress of students with the problems associated with online classes, their demographics and fear of COVID-19 on them or their family, relatives and friends.

RESULTS

Out of 305 students participated in the study, 184 (60.3%) were females and 121 (39.7%) were males. The mean age of the participants was 21±2.3 years. The demographics are shown in Table I.

A comparable number of students participated from First through final year to avoid bias. Rural based participants were more as compared to the urban based students. The day scholars

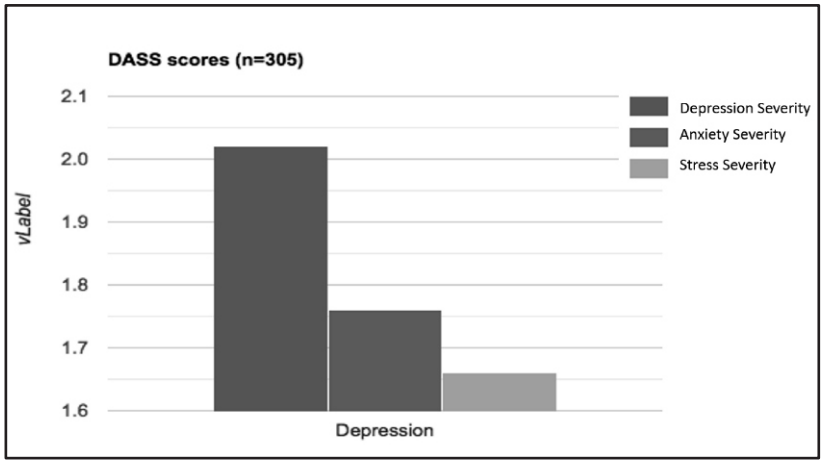

Figure 1: Depression Anxiety Stress Scales (DASS21) scores (n=305) of the study participants

TABLE II: PSYCHOLOGICAL WELL-BEING OF THE STUDENTS (N=305)

DASS scale	DASS stress N (%)	DASS Anxiety N (%)	DASS Depression N (%)
Normal	213 (69.8)	208 (68.2)	166 (54.4)
Mild	31 (10.2)	19 (6.2)	43 (14.1)
Moderate	26 (8.5)	42 (13.8)	46 (15.1)
Severe	23 (7.5)	16 (5.2)	23 (7.5)
Extremely severe	12 (3.9)	20 (6.6)	27 (8.9)

DASS: Depression Anxiety Stress Scales

were more amongst the participants of the study as compared to the students in the hostel. Facebook remained the major platform for online study.

The psychological wellbeing of students based on DASS 21 is shown in Table II. Results showed that 7.5%, 5.2% and 7.5% students were severely depressed, anxious and stressed, respectively while 8.9%, 6.6% and 3.9% of the students were extremely severely depressed, anxious and stressed, respectively.

The spearman correlations between COVID-19 related stressors with depression, anxiety, stress scores amongst students are shown in table III.

Detailed reservations of the students regarding online sessions are shown in table IV and the recommendations to improve upon various aspects of online teaching are shown in table V.

DISCUSSION

College and university students are more prone to mood disorders like anxiety, depression etc.[11] Even the previous infectious related disasters like SARS, equine Influenza has caused significant amount of distress to people[12-13] because in such conditions people are subject to isolation, quarantine etc. not to mention the effect on the economy, psychosocial well-being, inter-personal and communication patterns. Our research study shows that 45.6% of students are depressed, 31.8% have anxiety and 30.2% are stressed (including mild, moderate, severe and extremely severe). Our findings concords with the other COVID-19 related psychological studies in China[14-15] and in Turkey.[16] No one was prepared for the global pandemic. The rapid global spread of disease, deception theories, myths, the way of media reporting the disease causing the stress among people. These were added by closing of educational institute in Pakistan on March 13, 2020, and complete lockdown on March 23, 2020. The lockdown caused a financial set back, lack of communication, frustration which added more stress to medical students.

The students living in urban areas are more stressed than those living in rural areas. However, the study done in students in China shows that students living in rural areas are more anxious than those in urban areas[17-18] whereas the urban areas have better economy, more educational resources, and more availability of internet. Cities have better availability of hospitals, hospitals have more resources, the sanitation condition is better thus preventing survival of SARS-CoV-2, more spread of information through media and other resources. But our study showing very different results. One of the reasons could be that virus transmission is more rapid in densely populated areas and knowledge of it causing more anxiety in students despite having better resources than those living in urban areas or that precise source of obtaining information through electronic media is causing the distress as the TV news channel spread information subjectively than objectively and that focus is more on criticism than the achieved goals.

Our study shows that the families of those students whose monthly income are affected seems to be more depressed and stressed. This concords with the studies done on the students in China.[19] This could be due to multiple reasons like lack of knowledge of decrease in COVID-19, the health bills if someone got infected in family, worry about the tuition fees, etc. Similarly, students who are afraid for family members or friends getting infected, and those whose family member or friend got infected or died due to COVID-19 are more depressed, anxious, and stressed (positive correlation; two-tailed p values are less than 0.05). National Health Commission of China provided guidelines about the psychological intervention due to COVID-19. Psychiatrist can address this distress not only among students but also to the general public. They can provide information about the range of natural stress responses like panic attacks, sleeping problems, increase in substance use, anxiety, depression etc. sleep hygiene, physical exercises like jogging, relaxation techniques.

CONCLUSION

The stressors related to change in the academic activities and social norms due to SARS-CoV-2 has had significant psychological impact on the mental health of students which requires attention and formal counselling.

TABLE III: CORRELATION OF MAJOR STRESSORS WITH DEPRESSION, ANXIETY AND STRESS SCORES

Stressors	Depression score		Anxiety Score		Stress score	
	r	p	r	p	r	p
Urban	0.129	0.062	0.110	0.022	0.122	0.034
Absence of steady income	0.172	0.003	0.113	0.049	0.159	0.005
Worry about family members getting infected	0.157	0.006	0.126	0.028	0.16	0.005
Having a Family member or friend who died due to COVID-19	0.198	<0.01	0.158	0.006	0.25	<0.01
History of infection with COVID-19 in friend or relative	0.178	<0.01	0.153	0.007	0.132	<0.01
Interruption in online classes due to electrical power outage	0.131	0.025	0.138	0.016	0.119	0.037
Distraction during online classes	0.223	<0.03	0.168	0.003	0.236	<0.01
Worry about effect on clinical skills due to teaching through online sessions	0.161	0.005	0.135	0.018	0.139	0.015

r= correlation coefficient

TABLE IV: PARTICIPANT TOP RANKED RESERVATIONS REGARDING ONLINE TEACHING SESSIONS FOR MEDICAL STUDENTS DURING THE COVID-19 PANDEMIC

RESERVATIONS	Frequency (n=305)	Percentage
Concentration span of students is limited	281	92.1
Assessment of student participation and performance is not standardized	174	57
Content not modified according to online platform leading to content saturation.	235	77
Long hours of gadget use is ergonomically inconvenient	275	90.2
Lack of interaction makes the content delivery monotonous.	287	94.1
Practical skills severely compromised due to lack of hands on training.	229	75.1
Internet accessibility and connectivity issues	287	94.1
No specific reservation	235	77
Lack of transparency in various online assessment modalities	201	65.9

FUTURE RECOMMENDATIONS

Keeping in view the drastic psychological effects in medical students and the major stressors leading to them, online teaching strategies should be improved based upon the reservations and future recommendations of the students being the major stakeholders of this paradigm shift.

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TABLE V: PARTICIPANT TOP RANKED RECOMMENDATIONS TO IMPROVE VARIOUS ASPECTS ONLINE TEACHING SESSIONS DURING THE COVID-19 PANDEMIC

RECOMMENDATIONS	FREQUENCY (n=305)	Percentage
Assessment should be congruent with the online teaching strategies.	216	70.8
Modification in Learning objectives according to online teaching strategies.	265	86.9
Training of Students and faculty regarding online sessions before the proposed time of implementation	192	63
Uniform online teaching strategies to be adopted amongst the affiliated colleges	180	59
Student feedback to be given due weightage after each session	165	54.1
Division of students into smaller groups for more effective interaction and monitoring of discipline	259	84.9
Sessions to be made more engaging by using online competitive strategies like quizzes.	229	75.1
Student-centred learning to be promoted rather than teachercentred approach	198	64.9
Softwares with stringent transparency measures should be adopted for student assessment	189	62
Availability of recorded lectures only upon genuine demand so that students do not miss the live lecture.	132	43.3

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

WO: Conception and study design, acquisition, analysis and interpretation of data, drafting the manuscript, critical review, approval of the final version to be published.

RSJ, SJ & JR: Study design, acquisition of data, drafting the manuscript, approval of the final version to be published.

MI: Acquisition, analysis and interpretation of data, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declared no conflict of interest

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DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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