

Impact of COVID-19 Pandemic On Mental Health Of Medical Students During Second Wave In Puducherry, India.

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ABSTRACT :

INTRODUCTION

Mental health has taken a toll during this on going pandemic. Emerging research assessing then mental health implications of COVID-19 has identified an increased prevalence of depressive and anxious symptomatology among the general public. The on going second wave has led to a further deterioration of mental health. Studies also showed an increase in prevalence of psychiatric disorders among young adults and also in medical students.

AIM: The aim of this study is to identify major stressors associated with the COVID-19 pandemic and to understand their effects on college students' mental health.

METHODS AND MATERIALS: Participants were recruited from the student population of our institute, Sri Lakshmi Narayana institute of medical sciences, Pondicherry. 250 medical students both undergraduate and postgraduate and students of Allied health sciences were included in this study. Pre-final, final and postgraduate students, first year students of the allied health sciences participated in the study.

DATA ANALYSIS

Demographic variables were expressed using Descriptive statistics. DASS 21 questionnaire items were expressed in frequencies and proportion. Chi-square test was used to test the significance. Analysis was done by using SPSS version 23. P value < 0.05 will be considered as statistically significant.

RESULTS

Our study results showed only 3 (1.2%) in the mild depression, category, 2(0.8%) were in mild anxiety category and only 1 (0.4%) student was in mild stress. The mean DASS21 score for the

250 participants was 3.0600 (SD 1.797), indicating very few participants were in stress. Stressors and coping skills were studied, there was a statistically significant value for stigma related to COVID-19 and this combined along with stigma due to mental health could have been barriers to seeking help.

MAIN MANUSCRIPT FILE

INTRODUCTION

COVID-19 was first described in Wuhan, China, in December 2019 and was declared a public health emergency of international concern by World Health Organization on January 30, 2020, and a global pandemic by the same on March 10, 2020 (1). The causative virus (SARS-CoV-2) is an enveloped RNA beta coronavirus related to the Severe Acute Respiratory Syndrome (SARS) virus and has a zoonotic source (closely related to bat-origin SARS-like coronavirus) (2) Direct person-to-person transmission is found to be a major source of infection and occurs through close contact, mainly through respiratory droplets from an infected person when he or she coughs, sneezes, or talks. These droplets may also land on surfaces from where the virus can get transmitted when a person touches the infected surface and then touches his or her eyes, nose, or mouth(3) .Since the reporting of the first case, SARS-CoV-2 has spread around the world, with cases and fatalities increasing by the day. Globally, as of 25 April 2021, there have been over 146 million confirmed cases of COVID-19, including over 3 million deaths reported to the WHO, proving it to be a major global health burden(4) . Mental health has taken a toll during this on going pandemic. Adding to the fear of contracting the virus, enforcement of regional lockdowns, isolation, social distancing closure of educational institutes, workplaces, and entertainment venues, working from home, temporary unemployment, financial stress, home-schooling of children, and lack of physical contact with other family members, friends and colleagues have undoubtedly impacted the mental health.(5,6,7) Emerging research assessing the mental health implications of COVID-19 has identified an increased prevalence of depressive and anxious symptomatology among the general public (8). Also, increased incidences of post-traumatic stress disorder, psychological distress, stress, domestic violence, child abuse, psychosis, addiction, obsessive-compulsive disorder, and suicidality have been reported in the general population during the pandemic (9,11,12,16). Continuous social media exposure is a common cause of provoking anxiety related to COVID-19 among the population (11) .Surveys show that there is worsening of psychiatric symptoms in those with preexisting mental health diagnosis (13,14,15). The on-going second wave has led to a further deterioration of mental health according to a Polish study.(17) The study also showed an increase in prevalence of psychiatric disorders among young adults and also in students The COVID-19 pandemic has brought into focus the mental health of various affected populations. Mental health issues among students are the leading impediment to academic success. Mental illness can affect students' motivation, concentration and social interactions which are crucial factors for students to succeed in higher education (27) Various studies raise concerns about the effect of the pandemic on college student mental health. One study by Chirikov et al reported an increase in prevalence of

depressive disorder and generalized anxiety disorder in students during the pandemic when compared to 2019 (20). Another study done on undergraduate students in New Jersey reported a high levels of mental health distress and elevated concern with COVID-19 leading to academic and everyday difficulties(21). Studies have also shown maladaptive coping behaviours like denial and disengagement as a significant predictor of mental health disorders in young adults. Also, the issue of stigma as a barrier to seeking help and availing counselling services and other support is common among students (5) Another study based on a sample of young adults in India found significant associations between mental health and economic stressors(22) The aim of this study is to identify major stressors associated with the COVID-19 pandemic and to understand their effects on college students' mental health. Indian studies relating are sparse and hence the current study

Methods

Study Design

A convenient sampling was used. A pre-tested and validated questionnaire with the purpose of assessing the mental health status of our college students. First, participants were assessed for their stress, depressive and anxiety symptomology, lifestyle changes, pandemic specific concerns such as concerns about one's health and health of loved ones, concerns about academic performance, financial difficulties. Second, participants were asked about COVID-19 related questions such as Fear during first wave Vs second wave, barriers of seeking professional support during COVID-19, about vaccination, whether participant is a COVID-19 survivor, or a survivor in the family, any loss of loved one, presence of stigma. Third, the participants were questioned about the coping strategies they used to overcome the above difficulties. Keeping in mind of the on going second wave of COVID-19 in INDIA, participants were put on DASS 21 to assess their stress, anxiety and depressive levels in the past one week. Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure depression, anxiety and stress levels. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic nonspecific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. (18) DASS-21 is found to have good reliability and has a good internal consistency and adequate concurrent validity (19)

Participants

Participants were recruited from the student population of our institute, Sri Lakshmi Narayana institute of medical sciences, Pondicherry. 250 medical students both undergraduate and postgraduate and students of Allied health sciences were included in this study. Pre-final, final

and postgraduate students, first year students of the allied health sciences participated in the study.

Data Analysis

First, descriptive statistics were applied to describe participants' demographics (age, gender, academic year, details of stay) and Demographic variables were expressed using Descriptive statistics. DASS 21 questionnaire items were expressed in frequencies and proportion. Chisquare test was used to test the significance. Collected data was entered in Ms- Excel and analysis was done by using SPSS version 23. P value < 0.05 will be considered as statistically significant.

Results

Participants

250 university students were recruited by the researcher for analysis. As shown in table.1.1 The average age was 22.6 (SD 2.31) years, and as in table 1.2, there were more male students (130/250, 52%) than female students (120/250, 48%). About 66% of the participants were undergraduate. Medical students which was the largest population, 27.6% were allied health science students and post graduate medical students included 6% the least among the lot. A few students (49, 19.6%) referred to living with family members as being less independent and the environment to be more distractive. For a majority (201, 80.4%), those who stayed in hostel reported they were feeling stressed out due to strict lockdown restrictions going out with friends and shopping used to be a let out .

Table 1. 1 Demographic characteristics of the study population.

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
Age	250	18.00	32.00	22.6160	2.31039

Table 1 . 2 Demographic characteristics of the study population.

Variables	Frequency (n= 250)	Percentage
Gender		
Male	130	52%
Female	120	48%
Class		
Medical under graduates	166	66.4%
Medical Post graduates	15	27.6%
Allied health science	69	6.0%
Day scholar	49	19.6%
hosteller	201	80.4%

Table 2 .Challenges and concerns to students. Chi-Square Tests

Stigma * Grand Total DASS 21	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	34.104	10	.000
Educational Activities * Grand Total DASS 21	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.116	10	.020

(P value < 0.05 will be considered as statistically significant)

Challenges and concerns to College Students' Mental Health During COVID-19

Out of 250 participants, 38 (15.2%) indicated that their concern and anxiety on one own health and for their loved ones had increased due to the COVID-19 pandemic, whereas 212 (84.8%) indicated it remained the same. Many of participants indicated negative impacts (either mild, moderate, or severe) of COVID-19 on academic-, health-, and lifestyle-related outcomes. A few

students (49/250, 19.6%) mentioned that their home is a distractive environment and a more suitable place to relax rather than to study. Among these were students who were worried about their families and relatives who were more vulnerable, such as older adults, parent with existing co-morbidities, and those who are pregnant or gave birth to a child recently. Some of the participants strictly socially isolated themselves 30 (12%) for safety reasons it was also found that these students have avoided many social gatherings in the last one year but the majority 220 (88%) were not following strict protocols and guidelines related to COVID-19 Pandemic. They stated that it was having an impact on mental health to isolate themselves and hence they did not strictly abide by the protocols. A vast majority of participants 241 (96.4%) did not have any interpersonal relationship issues, approximately 9 (3.6%) have had interpersonal relationship issues. The most striking result of the survey is that half the study population 126 (50.4%) had sleep disturbance and the rest 124 (49.6%) did not have. Some reported increased hours of sleep, while others had poor sleep quality. Despite the large number of students who reported sleep disturbance none of them had sought help for the same. Palpitations were experienced by 160 (64%) when they listen to news related pandemic seriousness, rest 90 (36%) did not experience any. Many students 145 (58%) found it Difficult to relax and felt agitated when they had to attend classes during the pandemic 2nd wave. Some of the students 117 (46.8%) felt panicky at certain news related to COVID-19 like mortality and severity of virulence of the triple mutant virus but others 133 (53.2%) did not panic. Many of them 126 (50.4 %) were apprehensive regarding day to day to situations and the rest 124 (49.6%) were not. Majority of the students 221 (88.8%) were concerned about academic performance and a few 29 (11.2%) were not at all concerned. Many of the students 126 (50.4 %) indicated difficulty in concentrating on academic work due to various sources of distraction because of the on-going chaos and failure in the medical system and everyday headlines on an increasing infectivity rate and the rest 124 (49.6%) said there was not much of difficulty. Students who had Overthinking when they were idle were 34 (13.6%) and 216 (86.4%) did not have excessive thoughts. Majority 126 (50.4%) reported increased screen time social media (Facebook, Instagram Whatsapp Snapchat), internet (Amazon Prime, Netflix, Hotstar, Zee5), and video games (call of duty, candy crush, ludo,) and the rest 124 (49.6%) reported similar status.

A majority of 156 (62.4%) students had low self-esteem and rest 94 (37.6) were ok. A total of 126 (50.4%) had hopelessness and 124 (49.6%) were feeling hopeful regarding the situation. A total of 35 (14%) had disruption in eating pattern, for example, irregular times of eating and skipping meals and the rest 215 (86%) did not have any issues. A small group of 35 (14%) students felt lethargic and the other 215 (86%) felt energetic enough. Only a few 34 (13.6%) Excessively avoided social gathering the rest 216 (86.4%) did not have social restrictions. Additionally, monotonous life patterns were mentioned by some 126 (50.4%) to negatively affect concentration on academic work and rest 124 (49.6%) had occupied themselves with various distractions. A total of 38 (15.2%) students had death wishes but they also reported it to be very much transient and the rest 212 (84.8%) did not have any.

COVID-19 RELATED QUESTIONS

244 (97.6%) students were vaccinated with first dose and second dose 6 (2.4%) Only 2 (0.8%) of study population were Fearful during first wave whereas the majority of 248 (99.9%) students were worried about the second wave reason being the triple mutant strain and associated mortality and severity .Thankfully there was not a single student who lost a loved one due to COVID-19 .4 (1.6%) have had COVID-19 and the rest 246(98.4%) have never had none of the students who had the disease had any residual residual symptom. Table 2. depicts the most significant finding in our study is that a vast majority of students 242 (96.8%) were stigmatized by public at any stage of pandemic , and a very few 8 (3.2%) were not.

COPING MECHANISM DURING COVID-19

To cope with stress and anxiety imposed by COVID-19, college students reported seeking support from others but were mainly using various self-management methods. Only 14(5.6%) used educational activities like live classes, group discussions, clinical postings , online classes , online pre –PG preparation classes and rest 236 (94.4%) had problems with educational activities . A few students sort to Yoga 5 (2%), some sort out to meditation and breathing exercises 15 (6%), spiritual measures 43 (17.2%),spending time with family 49 (19.6%), many participants mentioned that communicating with their families and friends was a primary way to deal with stress and anxiety during COVID-19. Some explicitly stated that they were using a virtual meeting application such as Zoom frequently to connect to friends and family. Most of them kept routine 224 (89.6%) , physical exercise 31 (12.4%) and the rest 219(87.6) stated relaxing hobbies like playing with pets, playing cricket , listening to music , reading novels ,and drawing , enjoying streaming services 224 (89.6%), and social media 237 (94.8%) . The factor to mention is that the majority despite having excessive negative thoughts 219 (87.6%) did not avail the services of psychiatrists inside the campus or private. Man participants who indicated an increase in stress and anxiety and other psychological symptoms claimed that they had not used any psychiatric counselling services during the pandemic. Reasons for such low use included the condition not being perceived as severe enough to seek the services, double stigma, not comfortable talking about mental health issues, and lack of trust in unknown persons .Some 5, (2%), relied on negative coping methods such as ignoring and avoiding the news about COVID-19 excessive gadget use 224 (89.6%) but very few students reported drinking or smoking patterns.

Table 3 . Depression, Anxiety and Stress Scale - 21 items.

Variables	Frequency (n=250)	Percentage (%)
Depression		
Normal	247	98.8
Mild	3	1.2
Anxiety		
Normal	248	99.2
Mild	2	0.8
Stress		
Normal	249	99.6
Mild	1	0.4

Table .4. Frequency And Percentage Of DASS-21

Grand Total of DASS 21	Frequency	Percent(%)
.00	11	4.4
1.00	38	15.2
2.00	52	20.8
3.00	58	23.2
4.00	47	18.8
5.00	22	8.8

	6.00	14	5.6
	7.00	2	.8
	8.00	3	1.2
	9.00	1	.4
	10.00	2	.8

Descriptive Statistics	N	Mean	Std. Deviation
Grand Total of DASS 21	250	3.0600	1.79703
Total	250		100.0

Table 4.1 Individual item DASS-21 -Mean and Standard deviation

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
I	250	.00	4.00	.1480	.55074
II	250	.00	2.00	.1200	.36072
III	250	.00	1.00	.1440	.35179
IV	250	.00	2.00	.0680	.26770
V	250	.00	3.00	.0840	.33073
VI	250	.00	1.00	.0920	.28961
VII	250	.00	.00	.0000	.00000
VIII	250	.00	1.00	.0840	.27794
IX	250	.00	1.00	.0720	.25901
X	250	.00	1.00	.0960	.29518
XI	250	.00	1.00	.0520	.22247
XII	250	.00	1.00	.1440	.35179
XIII	250	.00	1.00	.0560	.23038

XIV	250	.00	.00	.0000	.00000
XV	250	.00	2.00	.1200	.42227
XVI	250	.00	1.00	.0120	.10910
XVII	250	.00	2.00	.1280	.39016
XVIII	250	.00	2.00	.1920	.50214
XIX	250	.00	2.00	.2400	.49738
XX	250	.00	4.00	.2520	.65591
XX1	250	.00	4.00	.9560	.83237

DASS21 :

Our study results showed only 3 (1.2%) in the mild depression category, 2(0.8%) were in mild anxiety category and only 1 (0.4%) student was in mild stress. The mean DASS-21 score for the 250 participants was 3.0600 (SD 1.797), indicating very few participants were in stress.

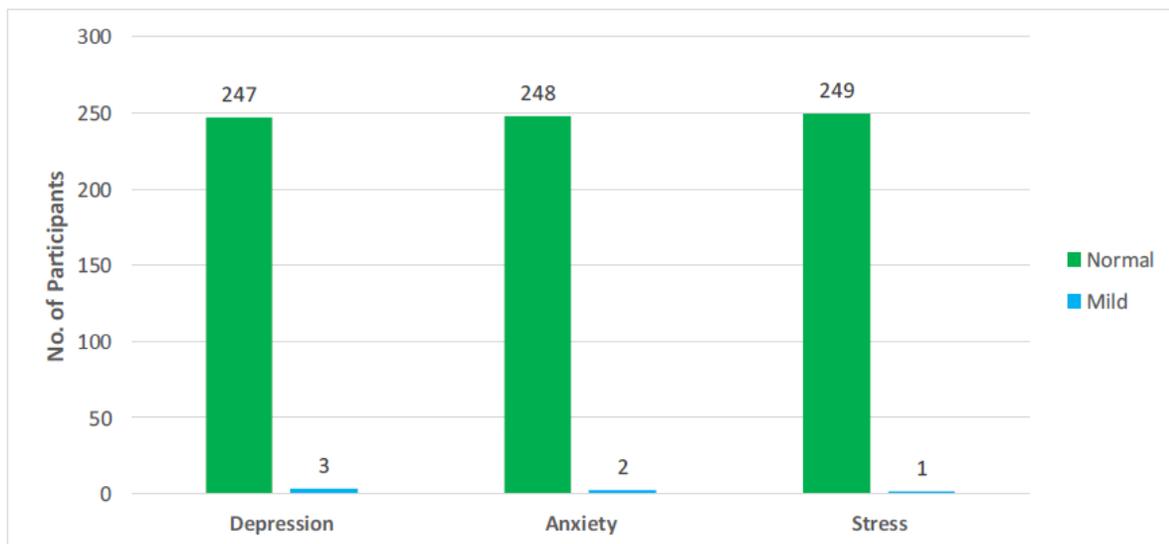


Fig .1.SEVERITY GRADING OF COMPONENTS OF DASS-21 scale

DISCUSSION:**Principal Findings**

Medical College students comprise a population that is considered particularly vulnerable to mental health concerns because of the high pressure to perform well in academics. The findings of this study bring into focus the effects of pandemic-related transitions on the mental health and well-being along with coping skills of this specific population. Our findings suggest very less negative impact of the COVID-19 pandemic on mental health but a major impact on academics, health, and lifestyle-related outcomes. Enrique et al (23) depression 18.4%, anxiety 23.6% and

stress 34.5% , Tanvi shah et al (24) reported that prevalence depression 48.3% anxiety 50% out of which 26.75 were in borderline and extreme stage of depression. By conducting a study in the midst of the pandemic, we found that a very few of the participants were experiencing stress and anxiety due to COVID-19. In addition, results of the DASS-21 showed moderate levels of stress among our participants. Whereas Our study results showed only 3 (1.2%) in the mild depression category, 2(0.8%) were in mild anxiety category and only 1 (0.4%) student was in mild stress. However, the administration of DASS-21 as interview questions (compared to allowing participants to read and respond to the 21 questions) might have introduced bias and resulted in underreporting. In a study by Wang et al (25) Chinese university students showed higher anxiety for COVID-19 this was similar in our study even though the students did not score high on anxiety scale they had expressed difficulty in relaxing, and felt agitated when they had to attend class during the second wave and many students panicked on hearing the news of death due to COVID-19. The most striking finding is that half the study population had the impact of the pandemic on sleeping and eating habits are also a cause for concern, as these variables have known correlations with depressive symptoms and anxiety in a study by Acharya et al [26]. Although a majority of participants expressed concerns regarding academic performance, interestingly, almost half of the participants reported lower stress levels related to academic pressure and class workload since the pandemic began. This may be due, in part, to adaptations and coping to the current scenario of pandemic and reduced exam tension due to delay of exams. This is similar to a study in the US by Changwon Et Al (27). A few students 15.2% (38/250) reported having transient death wishes associated with the COVID-19 pandemic. Previous research by Zivin et al [28] reported about 3%-7% of the college student population to have suicidal thoughts outside of the pandemic situation. In recent studies in China [29,30,31] there were major impact of pandemic on mental health of students. Although majority of our participants specifically mentioned several factors such as feelings of loneliness, hopelessness, powerlessness, as well as financial and academic uncertainties, other outcomes that were perceived to be impacted by the COVID-19 pandemic may also act as contributors to the transient feeling of low and death wishes. In particular, both difficulty concentrating and changes in sleeping habits are associated with depression [26,32]. A majority of them 156 (62.4%) had low self-esteem issues in a study by Haopeng et al (33) speculate that the relationship between collective self-esteem and perceived stress may be enhanced during COVID-19.

COVID-19 related questions : majority of the students 244 (97.6%) had received the first dose of vaccination and still there was tremendous fear in 248 (99.9%) this is slightly similar to the study by Ornel et al(34) wherein the absence of a vaccine to counter the disease, have led to an increased feeling of fear among the population.

In our study we also identified several coping mechanisms varying between adaptive and maladaptive behaviors. We found out that there was excessive screen time in majority (126/250, 50.4%) and addictions a few students. In contrast, adaptive coping such as acceptance and proactive behaviors are known to positively impact mental health. Our findings suggest that the majority of our participants exhibited adaptive coping behaviors. A participatory model of

intervention development can be used, in which researchers' and psychologists' engagement with the target population to adapt interventional programs to their specific context has shown promise [35]. Similar approaches can be adopted to engage college students as well to develop a mental health program that leverages their natural positive coping behaviors and addresses their specific challenges. The study in china by Nurunnabi et al (36) also revealed that university students employ a number of coping strategies in relation to COVID-19, but also suggests a need to strengthen such strategies in this population. Also the results of study by Freire et al (37) suggest that encouraging flexibility in coping strategies would help to improve university students' self-efficacy. Despite a majority of students reporting low self-esteem issues, hopelessness, depressive thoughts, death wishes, sleep disturbance and anxiety over the current second wave of COVID-19 pandemic most of them scored low on the DASS-21 Scale. There could be various attributes to this first being time limited questionnaire to be filled by Participants, second several barriers to seeking help, such as stigma and also social stigma due to COVID-19. We have statistically significant score on social stigma due to COVID-19 where the whole family is stigmatized by the public because of fear and anxiety with a lack of knowledge about the disease due to COVID-19. We have to embark on strategies to prevent social stigma due to COVID-19 as described by WHO (38,39). In a study (40) it shows that High stigma exists among students about the causation of depression, and there exists an environment in which students discriminate fellow colleagues based on the presence of depression. Hence we can see that from our study self-management and positive coping strategies are preferred by medical students and this could be the solution to overcome stigma on mental health. Digital technologies and tele-psychiatric applications have shown future promise to enable self-management of mental health issues [41]. For instance, Youn et al [42] successfully used social media networks as a means to reach out to college students and screen for depression by administering a standardized scale, the Patient Health Questionnaire-9. Artificial intelligence is a door to the future for psychiatry advantages and qualitative findings from the many studies might be helpful (43,44) Several countries within the G20 have taken significant steps to support health and well-being issues for university students; however, numerous countries are far behind in addressing this issue. Hence, government leaders of G20 countries, policymakers, and health providers should promptly take the necessary measures to regulate the outbreak, improve safety measures to decrease disease transmission, and administer those who demand medical attention(45).

Limitations and Future Work

First, the sample used is from one medical college in Pondicherry, the students were the only students attending medical college during the second wave of pandemic and findings may not generalize to all college students in this part of the country. However, given the nationwide changes in universities transitioning to virtual classes and similar stay-at-home orders, we cannot generalize these findings. Additionally, a majority of our participants were from medical undergraduates. Therefore, future work is needed to use a stratified nationwide sample across wider disciplines to verify and amend these findings. Finally vast majority of participants

reported various psychological issues they scored low on the structured questionnaire and have not used the university psychiatric services during the pandemic. Future work needs to focus more on reduction of stigma on mental health by introducing mental health programmes, camps and social media involvement. Above all the social stigma of COVID-19 needs to be broken down. Also future work on Tele-psychiatry may be a key to success. As seen in the case of health care workers in the aftermath of the severe acute respiratory syndrome outbreak, there is a possibility that the effects of the pandemic on medical students may linger for a period beyond the peak of the COVID-19 pandemic itself.

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