Original Research Article

Effect of lockdown due to COVID-19 pandemic on mental health of pre-medical students of Maharashtra

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ABSTRACT

Background: The worldwide rapid increase of infected cases of COVID-19 has created a sense of uncertainty and anxiety about what is going to happen. The Government of India ordered the complete lockdown in nation. As a result the pre-medical exam has been postponed with no definite date. It has also lead to unfavourable effects on the learning and psychological health of students.
Aim: To evaluate and analyse the prevalence of Depression, Anxiety and Stress among pre-medical students of Maharashtra using DASS-21.
Methods: It was an online survey which was conducted using Google Forms with link sent using WhatsApp. A standard DASS-21 questionnaire was used for the study. The survey questionnaire would take around 3-4 min to complete. Total 324 responses were received by the stipulated time.
Results: The study showed that the people of age group less than 20 years were more depressed in this lockdown crisis as compared to those of age above 20 years. In the present study, 44 respondents of age less than 20 years had very high levels of anxiety while in the age group of above 20 there were 25 such respondents. The relationship between anxiety level and age was statistically significant. When compared on the stress scale it was found that females of age less than 20 years were under maximum stress.
Conclusion: Index survey suggested that the pandemic affected the preparation of the respondents to a great extent and affected their mental status negatively.

Keywords: Pandemic, Corona virus, NEET, Mental health, Psychological impact

INTRODUCTION

A pandemic is the world wide spread of a new disease and currently COVID-19 has become one of the major catastrophes. A pandemic is defined as "an epidemic occurring worldwide, or over a very wide area, crossing Inter - national boundaries and usually affecting a large number of people."[1]

Human corona viruses constitute a large family of viruses that usually cause mild to moderate upper respiratory illnesses in people such as the common cold.[2] Corona virus infections have since been described in multiple animal species as well, including bats, camels, cattle, cats, chicken, dogs, pigs, rabbits, rats and turkeys. Bats account for the largest group of animal reservoirs.[3]

While many different corona viruses exist, seven types are known to cause disease in humans.[4] Three of the viruses have been associated with causation of more severe illnesses and worse outcomes in humans. The first of these to appear was named severe acute respiratory syndrome (SARS).

It subsequently disappeared in 2004. This was followed by Middle East Respiratory Syndrome (MERS). The third being COVID-19 and is caused by the SARS-COV-2 that was first described in Wuhan China in December, 2019. 5

The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. On February 11, 2020, the WHO has officially declared the COVID-19 as "pandemic" from the previous status of global health emergency. 6

On 24 March 2020, the Government of India under Prime Minister Narendra Modi ordered a nationwide lockdown for 21 days, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India. 7

As the end of the first lockdown period approached, state governments and other advisory committees recommended extending the lockdown. 8

On 14 April, Prime Minister Narendra Modi extended the nationwide lockdown until 3 May, with a conditional relaxation after 20 April for the regions where the spread had been contained or was minimal. On 1 May, the Government of India extended the nationwide lockdown further by two weeks until 17 May. The Government divided all the districts into three zones based on the spread of the virus—green, red and orange—with relaxations applied accordingly. On 17 May, the lockdown was further extended till 31 May by the National Disaster Management authority. On 30 May, it was announced that the on-going lockdown would be further extended till 30 June in containment zones, with services resuming in a phased manner starting from 8 June. It is termed as "Unlock 1". 9

The worldwide rapid increase of infected cases has created a sense of uncertainty and anxiety about what is going to happen. It has also caused a tremendous level of stress among the students. This stress may lead to unfavourable effects on the learning and psychological health of students. 10, 11 Students who managed to go home are worried about being unable to return to their respective institutions for further studies.

The global prevalence rate of anxiety among medical students was 33.8% (95% Confidence Interval: 29.2–38.7%). 12 The COVID-19 pandemic may have a serious impact on the careers of this years' pre-medical and medical students as well. They are experiencing major interruptions in teaching and assessment in the final part of their studies. Further, the students are going to face the severe challenges of the global recession caused by the COVID-19 crisis. So, with this background the present study has been planned with following objectives which are to evaluate Depression, Anxiety and Stress among pre-medical students of Maharashtra using DASS-21 and to analyze the prevalence of Depression, Anxiety and Stress among the pre-medical students.

METHODS

Study design

In order to assess Depression, Anxiety and Stress among the premedical students of Maharashtra, The present study was designed as a cross- sectional questionnaire based study.

Study groups

The students preparing for the pre-medical entrance examination for admission in Maharashtra.

Sample size

In this study the sample size of 340 participants was estimated by the standard formula used for the sample size calculation of cross-sectional studies using the proportion of 33 for mental disorders in the previous studies and 95% confidence interval.[12]

Inclusion and exclusion criterion

In the study only the students preparing for the pre-medical entrance examinations were included and students preparing for other entrance examinations or other undergraduate examination were excluded from the study.

Study duration

The study was carried out in the span of one month from 10th May 2020 to 10th June 2020.

Study site

The online study was conducted using the Google forms in association with the department of community medicine at Vedantaa Institute of Medical Sciences, Dahanu.

Study tool

An online semi-structured questionnaire was developed, with a consent form attached to it. The link of the questionnaire was sent through e-mails, WhatsApp, and other social media to the contacts of the investigators. The link was also posted in social media group comprised of only premedical students. On receiving and clicking the link, the participants got auto directed to the information about the study and informed consent. Once they accepted to take the survey, they filled up the demographic details. Then, a set of several questions appeared sequentially, which the participants were to answer.

The study questionnaire has two sections each of demographics and DASS-21 scale.

A section of demographic profile (Age, Gender, pursuing course) was added in the questionnaire and in the second section of study "Depression Anxiety and Stress Scale (DASS- 21) was administered. DASS is a reliable tool to assess psychological distress in clinical and non -clinical populations. (Lovibond PF, 1995). [13] The DASS-21 is based on three subscales of depression, stress, and anxiety, and each subscale consists of seven questions each.

Data scoring

The data from all the Google forms was pooled in the MS Excel 2010 and then was analysed on the basis of Depression, Anxiety and Stress Scale - 21 Items (DASS-21). The DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. Each item is scored in a self -rated Likert scale from 0 (didn't apply to me all) to 3 (much or mostly applied to me) in the past 1 week. [13]

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 and the stress scale is sensitive to levels of chronic nonspecific arousal. The rating of DASS sub items such as depression, anxiety, and stress can be rated as normal, mild, moderate, and extremely severe.

Statistical analysis

The analysis was carried out with the help of MS Excel 2010. And chi square test was used to draw meaningful conclusion.

RESULTS

Demographic characteristics

Out of 500 people to whom online questionnaire was distributed, only 64.8% (324) filled the questionnaire. Out of these 324 samples 32% (104) were males and 68% (220) were females. Out of the total respondents 51.55% (167) where in the age group of less than 20 years and 48.45% (157) were in age group of 20 years to 25 years. The mean age of the respondents is 19.17 years.

81.17% (263) of the participants belongs to the category of post 12th followed by the students of 12th and 11th standards. For majority of the students the mode of preparation is self-study along with online classes.

Depression scale

The study showed that the people of age group less than 20 years were more depressed in this lockdown crisis as compared to those of age above 20 years. The difference of age group and depression was statistically significant (Table 1). Also it was found that females were comparatively more depressed than that of males but this was not statistically significant. (Table 2)

Anxiety scale

In the present study, 44 respondents of age less than 20 years had very high levels of anxiety while in the age group of above 20 there were 25 such respondents. The relationship between anxiety level and age was statistically significant (Table 3). It was also seen that there was significant difference between male and female anxiety levels and that females on comparison had high anxiety scores. (Table 4)

Stress scale

When compared on the stress scale it was found that females of age less than 20 years were under maximum stress. The relation between age and stress, gender and stress came out to be statistically significant (Table 5 and 6).
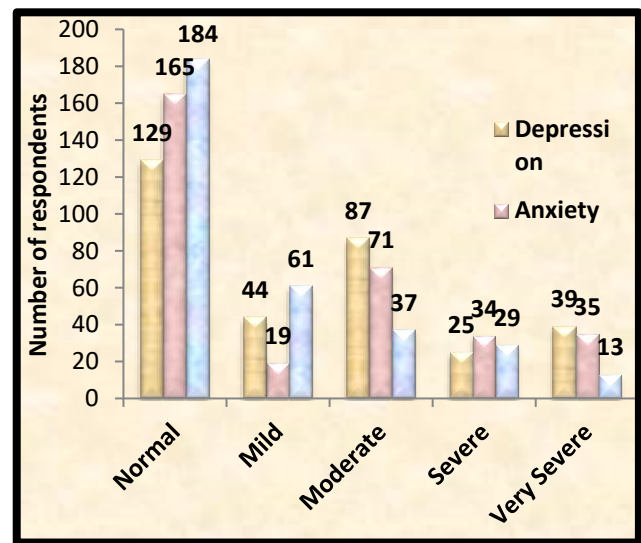

Figure 1: Overall mental status of respondents (n=324).

Figure 1 describes the overall mental status of the respondents. Out of 324 respondents 44 (13.58%) had mild depression, 87 (28.85%) had moderate, 25 (7.71%) had severe and 39 (12.03%) had very severe depression. Whereas if we see on the anxiety scale 19 (5.86%) had mild, 71 (21.91%) had moderate, 34 (10.49%) had severe and 35 (10.80%) of them had very severe anxiety. According to the stress scale 61 (18.82%) people had mild, 37 (11.41%) had moderate, 29 (8.95%) had severe and 13 (4.01%) had very severe stress. But overall 129 on depression scale, 165 on anxiety and 184 on stress scale were reported to be completely normal on DASS-21 Scale.

Table 1: Age-wise distribution of mental status of respondents on depression scale.

Age	Normal (0-9)	Mild Depression (10-13)	Moderate Depression (14-20)	Severe Depression (21-27)	Very Severe Depression (> 28)	No. of respondents	p-value
<20	44	24	57	18	24	167	
≥20	85	20	30	7	15	157	<0.0001*

*Chi-square test; p < 0.05 is statistically significant.

Table 2: Gender-wise distribution of mental status of respondents on depression scale.

Gender	Normal (0-9)	Mild Depression (10-13)	Moderate Depression (14-20)	Severe Depression (21-27)	Very Severe Depression (> 28)	No. of respondents	p-value
Male	47	09	23	10	15	104	0.1604
Female	82	35	64	15	24	220	

Table 3: Age-wise distribution of mental status of respondents on anxiety scale.

Age	Normal (0-7)	Mild anxiety (8-9)	Moderate anxiety (10-14)	Severe anxiety (15-19)	Very Severe anxiety (> 20)	No. of respondents	p-value
<20	62	13	48	19	25	167	<0.0001*
≥20	103	6	23	15	10	157	

*Chi-square test; p < 0.05 is statistically significant.

Table 4: Gender-wise distribution of mental status of respondents on anxiety scale.

Gender	Normal (0-7)	Mild anxiety (8-9)	Moderate anxiety (10-14)	Severe anxiety (15-19)	Very Severe anxiety (> 20)	No. of respondents	p-value
Male	54	3	31	6	10	104	0.0378*
Female	111	16	40	28	25	220	

*Chi-square test; p < 0.05 is statistically significant.

Table 5: Age-wise distribution of mental status of respondents on stress scale.

Age	Normal (0-14)	Mild stress (15-18)	Moderate stress (19-25)	Severe stress (26-33)	Very Severe stress (> 33)	No. of respondents	p-value
<20	75	42	22	18	10	167	**0.0003***
≥20	109	19	15	11	03	157	

*Chi-square test; p < 0.05 is statistically significant.

Table 6: Gender-wise distribution of mental status of respondents on stress scale.

Gender	Normal (0-14)	Mild stress (15- 18)	Moderate stress (19-25)	Severe stress (26-33)	Very Severe stress (> 33)	No. of respondents	p-value
Male	59	17	11	07	10	104	**0.0094***
Female	125	44	26	22	03	220	

*Chi-square test; p < 0.05 is statistically significant.

DISCUSSION

Index survey is unique in the sense that it assessed the psychological impact of COVID-19 specifically on the students preparing for pre-medical exam in Maharashtra. As this report is being written we are in the 12th week after the national lockdown was announced on 25th march 2020. The total number of COVID-19 cases is 3, 85,129 and 1, 20,504 for India and Maharashtra, respectively. [13] It has already claimed 12,676 lives all over India and 5751 in Maharashtra. This study is the first of its kind to look into the psychological impact of this exceptional situation on premedical students. As we know every year the NEET pre medical test is conducted in the first week of May all over the nation but because of the pandemic the exam has been postponed with no definite date.

Premedical students face a variety of extrinsic and intrinsic pressures. Fierce competition for medical school placement breeds high extrinsic pressures to achieve stellar Ranks in Pre-Medical tests. Intrinsic pressures of self-motivation, perfectionism, hard work, and determination, the very things we admire physicians for, may be the same traits, which, when combined with extrinsic pressures, become a hindrance to a person's well-being

The socio-demographic profile suggests that majority of the respondents were male, living in urban areas, and preparing for the pre medical entrance examinations. Majority of the respondents were aware of the symptoms of COVID-19 and they were very much aware of the pandemic and the lockdown and various restrictions by the national and state governments.

This study was achieved using DASS-21. [13] Similar to previous research, we have found that the factor structure of the DASS-21 among adolescents is different to that among adults. The findings reveal that instead of comprising only three factors: Depression, Anxiety and Stress, the DASS-21 also reveals a common General Distress among pre-medical students. [15] Other tools that can be used to asses Depression, anxiety and stress are Patient Health Questionnaire 9 (PHQ-9), Generalized Anxiety Disorder 7-item (GAD-7), etc. However, we chose DASS-21 due to its reliability, multifactorial analysis and time constraints.

The study revealed that Covid-19 is creating psychological distress among the individuals, as there are restrictions due to lockdown students are forced to stay home and hence they are unable to attend the live classes for preparation and hence the most common mode of preparation was found to be self-study and online classes. Because of the lockdown individuals are going through a crisis situation and feeling lack of control on their lives due to lockdown and restrictions imposed upon them.

Our results revealed a 62.17% prevalence of depressive symptoms during the COVID-19 outbreak in the premedical students. The anxiety and stress symptoms were found to be present in 49.06% and 43.19% of pre-medical students, respectively which is much more than the global prevalence of anxiety which was 33.8% and anxiety was most prevalent among medical students from the Middle East and Asia. [12]

In the study conducted by the Daniel Z fang BS et al. the significant relationship was observed between the PHQ-9 severity cut-offs and premedical status, with premedical students more likely to be rated as severely depressed and less likely to have insignificant depression than non-premedical students this findings correlates to the findings of the present study. [14]

This prevalence of excessive worrying and feeling depressed is far more than what we ordinarily get in community sample. Majority of the respondents were worried more than usual about their own future as well as future of their family members and worried about the educational carrier during the period of lockdown. This comes as no surprise considering that this situation.

It was seen that students below 20 years were more depressed than those above 20 years. This might be because those above 20 years were mainly post 12th students and they have already experienced the pre-medical examinations and have a little more clarity about the exam patterns and hence about their careers. Though it was found that greater number females were depressed as compared to males but it was not statistically significant. A growing body of research has highlighted troubling rates of depression, burnout, and suicidal ideation among graduate medical students. [16,17,18]

The study reveals that around 28.85% (81) of the total students faced moderate depression and 21.29% (69) students had severe and very severe depression in the on-going lockdown crisis. The most important reason for this because this was the beginning year of their careers and because of the delay in the exam conduction the academic sessions will also be delayed. It was seen that students below 20 years were more depressed than those above 20 years. This might be because those above 20 years were mainly post 12th students and they have already experienced the pre-medical examinations and have a little more clarity about the exam patterns and hence about their careers. Though it was found that greater number females were depressed as compared to males but it was not statistically significant.

The study also showed that 40.74% (132) students had mild to moderate anxiety level. The females of age less than 20 years had maximum anxiety scores according to the DASS-21 scale. This may be because they don't have past experience of examinations and uncertainty about the exam schedule and pattern from the government authorities. It was found that out of total study population 140 (43.20%) students were experiencing mild to severe/ very severe stress. Similar to anxiety scores the stress

scores were also found to be on a higher side of younger females below 20 years. This may be because the premedical exams directly affect the carriers of the students and their future and day by day they are being stressed as the lockdown is uncertain. Many of the student complaints of non-availability of the study materials and practice examinations this may be a cause for the stress of the students.

Many respondents found that COVID-19 pandemic had made difficult to adjust to the new routine during lockdown period and disturbed their preparations. This is a testimony to the fact that the current situation has been quite disruptive in terms of emotional health of the respondents concerned and required adjustment on part of them to get acquainted to new routine during the period of lockdown.

Limitations

There are similar limitations of the present study.

- The present study was designed as a cross sectional observational study and conducted on a limited sample size.
- The present study did not highlight the correlation of mental status of the pre medical students and their causes.
- In this study the mental status of the pre medical students was not compared with the non-medical students.

CONCLUSION

The lockdown due to COVID-19 pandemic poses an extraordinary medical challenge to the premedical students. The study showed that the people of age group less than 20 years were more depressed in this lockdown crisis and also the females are more depressed. The anxiety of the students are very high and mainly in the females. The females of age less than 20 years were under maximum stress. The socioeconomic effect of this pandemic is expected to last very long. This survey was an attempt to peek into the psychological impact of the pandemic, while it was till at peak. Index survey suggested that the pandemic affected the preparation of the respondents to a great extent and affected their mental status negatively.

Recommendations

- CBSE should appoint a panel of psychologist and councillors to guide the pre-medical students.
- A toll free helpline need to be generated to solve the queries and help the students to prepare in the pandemic.
- CBSE should provide online study materials and practice tests for the students.

The above recommendations will definitely help the premedical students to maintain their mental health and to prepare for the examination.

Future directions

Future studies should look into the psychological impact of COVID-19 pandemic in a larger population of premedical students and as well as in all the population which should be representative of whole of India. Furthermore, future studies can look into separately the psychological impact of "lockdown" and its effects on lifestyle of Indian students. Structured instruments can be used to assess the psychological impact of COVID-19 pandemic among the frontline health‑care workers, COVID-19 survivors, and caregivers.

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