



IMPACT OF COVID19 ON PSYCHOLOGICAL AND SLEEP HEALTH OF MEDICAL AND PARAMEDICAL STUDENTS

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ABSTRACT

The objective of this study was to evaluate the distress, anxiety, depression, and sleep impact of COVID-19 pandemic on medical and paramedical students via an online survey. This prospective cross-sectional study included 382 (115 male and 267 female) participants and was conducted at University of Health Sciences, in northern India, through an online survey using three psychological scales- Peritraumatic Distress Inventory (PDI), Insomnia Severity Index (ISI) and Depression Anxiety Stress Scale (DASS). The respondents included phase one and two students from various streams namely M.B.B.S (n=208; 53.47%), B.D.S (n=62; %), Nursing (n=91; 6%) and technical courses (n=21; 5.7%). One ninety-eight students (51.8%) suffered mild to severe stress, 161(42.1%) suffered anxiety, 169(44.2%) were depressed and 189(49.5%) students suffered some degree of insomnia. There was no difference in psychological and sleep morbidities in subgroup analysis of gender, residence and stream of medical education.

CONCLUSION: The psychological morbidity is high in medical and paramedical students in terms of anxiety, depression, mental distress and sleep abnormalities in response to COVID-19 pandemic. The students should be counselled regarding mental health at regular interval and professional help should be taken when necessary.

KEYWORDS : Covid-19, stress, anxiety, depression, sleep

INTRODUCTION

Humans have faced and endured many pandemics in the past. These pandemics disrupts all dimensions of human life that is physical, mental and social lives. The Coronavirus Disease 2019 (COVID-19), caused by a new strain of coronavirus of severe acute respiratory syndrome (SARS) group of viruses, has impacted the whole world altogether. After its emergence from Wuhan in China in December 2019, soon it spread worldwide and was declared as a global pandemic by the World Health Organization on 11th March 2020. The pandemic was claimed as a health, economic and social emergency. India too declared a complete lockdown in the whole country from 25th March 2020 which has been extended, partially opened and implemented with restrictions time and again. The lockdown also led to closure of all the educational institutions including the medical colleges all over India. The closure of medical colleges greatly affected the medical training of students of various streams. (1-3)

The past studies have shown that any pandemic or natural disaster greatly impacts the mental health of the people surviving that pandemic or disaster. It is also evident in the case of Covid-19 as the concern for lives, limitations on physical movements and social events due to quarantine, and sudden changes in the routine life has led to various mental health problems in different populations across the world. One such population which has been greatly impacted by the Covid 19 pandemic is the medical college students who will be serving the

population as the future physicians, surgeons, dentists, nurses and various other paramedical professionals. (4,5)

Medical education itself is a stressful training for students and various studies across the globe have clearly demonstrated it including India. (6,7) Medical students have a deeper

understanding of the diseases as compared to other students of the same age, and it might make them more apprehensive during the Covid-19 pandemic. During the SARS epidemic also psychological distress such as anxiety has been reported among medical students. (8) The aim of the present study was to identify the major psychological changes that occurred in the medical and paramedical students and assess the level of stress, anxiety and depression in these students during the COVID-19 pandemic. The study also aimed to identify sleep related disorders which the medical students encountered. The present study documents the findings from online interview survey conducted in a Medical University in Haryana, India, focusing the undergraduate medical and paramedical students regarding impact of COVID-19 on their mental health.

MATERIAL AND METHODS:

Participants

The study included the 382 undergraduate medical students from various streams including M.B.B.S, B.D.S, BSC. Nursing and others (Technical courses such as BSc Perfusion Technology, Operation Theatre technician, Medical Lab Technician, Optometry) studying at a health university in northern India. The mean age of the participants was 19.7 ± 1.2 years. Most of the respondents were phase I and II students from various medical and paramedical streams. The survey was anonymous and confidential. The participation in the study was purely voluntary and prior consent was taken from the participants. The study was conducted in accordance and approval with the rules of the institutional ethical committee of the university.

Data Collection

Google forms platform was utilized to collect the data and the students were invited to participate on online platform via Email and WhatsApp message. A gentle reminder was sent to

respondents to ensure the attainment of maximum responses. An informed consent was taken from every participant before taking part in the study.

All the participants were provided with a self-administered validated study questionnaire which was without any intervention by the authors or any other specific person. The students who did not choose to participate were excluded from the study.

Questionnaire Design

The questionnaire consisted of four sections a) demographic details and place of current residence, b) questions from Depression anxiety stress scale (DASS). (9–11) c) questions from Peritraumatic distress inventory (PDI) and d) questions from insomnia severity index (ISI). Questionnaire was available in English and Hindi versions.

Depression, Anxiety and Stress Scale (DASS 21) [Lovinbond & Lovinbond, (1995)]: DASS 21 is a psychological tool used to measure distress along with three axes of stress, anxiety and depression. Total 21 items (7 items for each axis) are rated on 4-point Likert scale from 0 to 3 (0 = did not apply to me at all, 1 = applied to me sometimes, 3 = applied to me most of the times). Each item score of a particular subscale is added to get total score. Total score for each subscale ranges from 0-21 for each subscale and total score of each scale explains the severity of that subscale. There are cut off scores for each axes to measure the severity of stress, anxiety and depression. The Cronbach's alpha coefficients for depression (0.82), anxiety (0.82), and stress (0.79) are respectively. It also has good sensitivity and specificity.

Peritraumatic Distress Inventory (PDI) [Brunet et al (2001)]. It is a 13-item self-reported inventory that measures distress experienced by an individual during and immediately after a traumatic experience, in our case, due to COVID-19. PDI has good internal consistency (Cronbach's $\alpha = 0.83$) and good test-retest reliability (0.74). The items of PDI were grouped into four factor structures given by Simeon et al: life threat, loss of control, helplessness/anger and guilt/shame. Responses from the participants were recorded on 5-point Likert scale (0 = Not at All True; 1 = Slightly True; 2 = Somewhat True; 3 = Very True; and 4 = Extremely True). Total scores for the inventory ranged from 0–52. A score ≥ 15 indicated significant distress and score of > 23 was defined as marked distress.

Insomnia Severity Index (ISI) [Bastien, Vallières, & Morin (2001)]. This is a 7-item self-report tool for assessment of severity and impact of insomnia. The participants were instructed to recall last one-month experiences about their sleep pattern and answer questions related to problems in onset of sleep, maintaining sleep, early morning awakening, dissatisfaction with sleep, daytime sleep difficulties and its interference in daily functioning. This scale also assesses sleep problems noticed by other family members and distress caused to the subject by sleep problems. Items were rated on 5-point Likert scale (no problem = 0 to very severe problem = 4). Total score of ISI ranged from 0 to 28. Higher scores on this scale are indicative of more the dysfunction. Score range 8-14 indicated sub threshold insomnia, 15-21 moderate insomnia and 22-28 severe insomnia.

Statistical Analysis:

The recorded data was transferred on Excel database and analysed by using SPSS Statistic 23 (IBM SPSS Statistics, New York, United States). The qualitative data was reported as frequency (percentage) and quantitative data was reported as mean \pm SD, median, IQR. The various subgroups based on gender, residence and different medical streams were compared using Chi-Square test/Fischer-Exact test.

RESULTS:

The present study comprised of a total three-hundred-eighty-

two undergraduate medical and paramedical students (115 males, 30.1%) from various streams studying at the University of Health Sciences, Rohtak, Haryana, India. Most students were living in nuclear family (n=264, 69.1%) and belonged to urban background (n=157, 51.6%). The participants included medical students from MBBS (n=208; 54.5%), BDS (n=62; 16.2%), Nursing (n=91; 23.8%) streams and other technical courses (n=21; 5.5%). The mean age, gender distribution, level of education and place of living of participants among different streams is given in table 1.

Stress, anxiety, and Depression among medical students One ninety-eight students (51.8%) suffered mild to severe stress, 161 (42.1%) suffered anxiety, 169 (44.2%) were depressed and 189 (49.5%) students suffered some degree of insomnia.

We also categorized stress, anxiety in mild to extremely severe categories according to DASS scale. The findings of the present study revealed that in 33%, 13.9%, 4.2% & 0.08% Mild, moderate, severe, and extremely severe stress was observed respectively.

Mild, moderate, severe, and extremely severe anxiety was observed in 11.3%, 16.8%, 6.6%, 7.6% respectively.

Mild, moderate, severe, and extremely severe depression was observed in 14.2%, 18.2%, 6.3%, 5.8% respectively.

Sleep is an important marker of our mental health, and it is often disturbed in stressful situations. One Eighty-nine (49.5%) students reported sleep abnormality of some kind. Insomnia subthreshold, mild, and severe was found in 37.4%, 9.9% and 2.4% respectively.

Ninety students (23.6%) reported mental distress on PDI scale.

Comparison of Various Subgroups:

We compared the stress, anxiety, depression, insomnia and PDI distress among students of different streams which was found to be nonsignificant. (Table 2)

Gender, residence, and family structure (Nuclear/Joint) was not found to have significant impact on experience of stress, anxiety, depression, insomnia and PDI distress in our student cohort.

DISCUSSION:

Covid-19 has affected the whole globe and people are facing physical, mental emotional and social health challenges throughout the world. (3,12,13) Medical students are always prone for developing mental health issues due to their busy schedule, long study hours and exposure to distress of sick patients during outpatient and indoor postings. (14) The colleges have remained closed almost for one year and students have attended most of their classes on online platform. The lack of practical exposure, social isolation, fear of Covid-19 has created a mental ambiguity in minds of young future professionals. (15)

The present study aimed at assessing the impact of Covid-19 pandemic on psychological health of undergraduate medical and paramedical students focusing on stress, anxiety, depression, mental distress and sleep disturbances. The students pursuing various medical and paramedical courses namely M.B.B.S, B.D.S, BSC. Nursing and other technical paramedical courses at a health university in Northern India were part of the study. The results revealed that there were considerable number of students who were affected by the outbreak of Covid -19 pandemic in terms of having anxiety, depression and stress. A large percentage of students also suffered from sleep disturbances and mental distress. However, it was noted that there was no statistically significant

difference in these parameters amongst different course students indicative of similar extent of psychological impact in medical as well as paramedical students.

In the present study, the prevalence of psychological distress (PDI >14) was found to be 23.6% among different stream students. A study done at American University of Beirut on medical students also reported mental stress in 30.1% and sleep disturbances in 21.2% first year students in response to the COVID-19 pandemic. The students also felt more stressed and nervous especially after the shift to online education which affected their academic and social life. (5)

Another study conducted in US on post graduate and undergraduate medical students found mild, moderate and severe anxiety in 34%, 19% and 11% students respectively while in the present study mild, moderate, severe, and extremely severe anxiety was observed in 11.3 %, 16.8%, 6.6%, 7.6% students respectively. (16)

A cross-sectional survey done by few authors indicate that more than two-thirds of the students experienced mild to severe depression and anxiety along with altered sleep pattern in 58.5% students during covid-19 pandemic. (17) The present study reported mild, moderate, severe, and extremely severe depression in 14.2, %, 18.2%, 6.3%, 5.8% respectively and 49.5% students reported sleep abnormality of some kind. Insomnia reported was subthreshold, mild, and severe 37.4%, 9.9% and 2.4% respectively. Sleep deprivation may lead to substantial damage to memory, emotional regulation and concentration as quality sleep is vital for balanced human psyche. (17)

In one of the studies done on psychological impact of COVID-19 pandemic on medical students in Turkey, 29.5% students reported altered sleep pattern which is low compared to present study while another study done in Jordan on mental health of medical students reported poor sleep quality in 47.4% students which shows similar results as that of present study. (18,19)

Another cross-sectional google survey done using a self-administered questionnaire including 418 undergraduate and postgraduate medical students from across the world noted symptoms due to psychiatric illness in 93.1%; depression in 92.3%, anxiety in 37.8%, obsessive compulsion disorder in 53.8%, and post-traumatic stress syndrome in 39.9% students which are considerably high as compared to present study. (20)

However, one more pre-structured questionnaire-based study done using DASS21 scale reported prevalence of anxiety, stress, and depression in 1st-year medical students as 17.20%, 15.60%, and 10.80%, respectively which are low compared to present study. (21)

The present cross-sectional survey, conducted during the second wave of the COVID-19 pandemic gained insight into feelings of medical and paramedical students in addition to measuring the burden of psychological impact in response to the pandemic. Students recognized a significant assault to their mental wellbeing.

The results of the study provide a firm basis to recommend psychological debriefing at individual as well as mass level sessions need to be taken to alleviate students' stress, which might cause deleterious effects on various aspects of their life. As students of today are future professionals, so the need to enhance their coping abilities to such kind of stressful clinical situations should be considered by governments and institutions.

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REFERENCES:

1. Lancet T. India under COVID-19 lockdown. *Lancet* (London, England) [Internet]. 2020 May 25 [cited 2021 Nov 24];395(10233):1315.
2. Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). *Indian J Pediatr*. 2020 Apr;87(4):281–6.
3. N C, S C, R B, A S, A A, M R, et al. COVID-19: A Multidisciplinary Review. *Frontiers in public health* [Internet]. 2020 Jul 29 [cited 2021 Nov 24];8. Available from: <https://pubmed.ncbi.nlm.nih.gov/32850602/>
4. Wang H, Xia Q, Xiong Z, Li Z, Xiang W, Yuan Y, et al. The psychological distress and coping styles in the early stages of the 2019 coronavirus disease (COVID-19) epidemic in the general mainland Chinese population: A web-based survey. Hashimoto K, editor. *PLoS ONE* [Internet]. 2020 May 14 [cited 2021 Nov 24];15(5):e0233410. Available from: <https://dx.plos.org/10.1371/journal.pone.0233410>
5. Bachir B, Najji A, Fayli A. The educational and psychological impact of the COVID-19 pandemic on medical students: A descriptive survey at the American University of Beirut. *Medicine* [Internet]. 2021 Jul 16 [cited 2021 Nov 24];100(28):e26646.
6. Givens JL, Tjia J. Depressed medical students' use of mental health services and barriers to use. *Acad Med*. 2002 Sep;77(9):918–21.
7. Sidana S, Kishore J, Ghosh V, Gulati D, Jiloha R, Anand T. Prevalence of depression in students of a medical college in New Delhi: A cross-sectional study. *Australas J Med J*. 2012;5(5):247–50.
8. Loh L-C, Ali AM, Ang T-H, Chelliah A. Impact of a spreading epidemic on medical students. *Malays J Med Sci*. 2005 Jul;12(2):43–9.
9. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol*. 1988 Jun;54(6):1063–70.
10. Brunet A, Weiss DS, Metzler TJ, Best SR, Neylan TC, Rogers C, et al. The Peritraumatic Distress Inventory: a proposed measure of PTSD criterion A2. *Am J Psychiatry*. 2001 Sep;158(9):1480–5.
11. Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Med*. 2001 Jul; 2(4): 297–307.
12. Ma Z, Zhao J, Li Y, Chen D, Wang T, Zhang Z, et al. Mental health problems and correlates among 746 217 college students during the coronavirus disease 2019 outbreak in China. *Epidemiol Psychiatr Sci*. 2020 Nov 13; 29: e181.
13. Hossain MM, Tasnim S, Sultana A, Faizah F, Mazumder H, Zou L, et al. Epidemiology of mental health problems in COVID-19: a review. *F1000Res*. 2020; 9:636.
14. Melaku L, Mossie A, Negash A. Stress among Medical Students and Its Association with Substance Use and Academic Performance. *Journal of Biomedical Education* [Internet]. 2015 Dec 2 [cited 2021 Dec 13]; 2015: e149509.
15. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020 Mar 14;395(10227):912–20.
16. Guo AA, Crum MA, Fowler LA. Assessing the Psychological Impacts of COVID-19 in Undergraduate Medical Students. *Int J Environ Res Public Health* [Internet]. 2021 Mar 13 [cited 2021 Dec 12];18(6):2952.
17. Lalan R hanish, Sundarasamy DVG, Thamizharasan R. Psychological impact of COVID-19 on medical college students. *European Journal of Molecular & Clinical Medicine* [Internet]. 2020 Dec 16 [cited 2021 Dec 12];7(10):435–43.
18. Torun F, Torun SD. The psychological impact of the COVID-19 pandemic on medical students in Turkey. *Pak J Med Sci* [Internet]. 2020 [cited 2021 Dec 12]; 36(6): 1355–9.
19. Alnaser AR, Joudeh RM, Zitoun OA, Battah A, Al-Odat I, Jum'ah M, et al. The impact of COVID-19 pandemic on medical students' mental health and sleep quality in Jordan: a nationwide cross-sectional study. *Middle East Current Psychiatry* [Internet]. 2021 Oct 26 [cited 2021 Dec 12];28(1):74. Available from: <https://doi.org/10.1186/s43045-021-00150-4>
20. Aftab M, Abadi AM, Nahar S, Ahmed RA, Mahmood SE, Madaan M, et al. COVID-19 Pandemic Affects the Medical Students' Learning Process and Assaults Their Psychological Wellbeing. *Int J Environ Res Public Health*. 2021 May 28;18(11):5792.
21. Vala N, Vachhani M, Sorani A. Study of anxiety, stress, and depression level among medical students during COVID-19 pandemic phase in Jamnagar city. *National Journal of Physiology, Pharmacy and Pharmacology* [Internet]. 2020 Jan 1 [cited 2021 Dec 12]; Available from: <https://www.scienceopen.com/document?vid=00f66796-d4a9-4fbd-9f44-0501163bac23>