Depression, Anxiety and Stress among Undergraduate Medical Students during the COVID-19 Pandemic

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Abstract:

Introduction: Depression, anxiety, and stress among medical undergraduate students are often under-recognized and undertreated. Prolonged online classes in the backdrop of COVID-19 pandemic have resulted in tremendous psychological stress among students. **Objective:** To assess the prevalence of stress, anxiety and depression among medical students during the COVID pandemic and the associated factors. **Method:** A cross-sectional study was conducted among undergraduate students in a medical college in Delhi. A self-administered questionnaire, containing general information (on-screen time, death or hospitalization in family due to COVID) and the DASS-21 version, was circulated to students enrolled before 2020. Data collected was tabulated in Microsoft Excel and analysed using SPSS version 23. **Results:** Out of 550 students, 345 (62.7%) participated in the study, of which 341 gave consent. High frequencies of depression 214 (62.8%), anxiety 199 (58.3%) and stress 150 (43.7%) were reported. Significant association was found between the determinants like hectic online classes and curbs on travelling and socializing. **Conclusion:** The high burden of depression, anxiety and stress detected among the students is a pointer towards a negative impact of online classes that can negatively impact academic performance, professionalism and empathy towards patients.

Keywords: Anxiety, Depression, Medical undergraduates, Online class, Stress.

Introduction:

Globally, mental health among undergraduate students represents an important public health entity. Undergraduate (UG) students in medical colleges are facing tremendous psychological stress during the COVID-19 pandemic with prolonged periods of online classes and lack of clinical correlation due to absence of practical physical sessions and clinical exposure. Research studies have highlighted that online classes may lead to serious disorders and mental health issues such as depression, anxiety and stress.[1,2] Stress is any action that places special psychological or physical demands upon a person, anything that can unbalance his or her individual equilibrium.[3] Furthermore, extended lockdowns and lack of social interaction has made their life monotonous resulting in burnout. Burnout is a state of emotional, physical, and mental exhaustion, wherein you feel overwhelmed, emotionally drained, and unable to meet constant demands.[4]

The literature on this area is scarce in India, hence the present study was undertaken with the objective to determine the prevalence of

psychological stress, anxiety and depression among medical UG students during the second-wave of COVID-19 pandemic and to determine its associated factors so that appropriate measures may be taken on time. This study was undertaken in a girls' medical college in Delhi as this city was among the worst hit during the second wave. The UG hostels of the college were evacuated in April 2021 in response to the emergency situation prevailing in the city amidst an unprecedented crisis of oxygen and clamor for hospital beds.

Method:

A cross-sectional study was conducted among medical UG students of Delhi using the Depression Anxiety Stress Scales-21 (DASS-21) scale from May to July 2021.[5] The reference period used was April to May which corresponds to the upsurge in severe cases and deaths due to COVID-19 delta variant. Undergraduate medical students enrolled before 2020 and who were willing to participate and gave their consent, were included in the study. Those students who were suffering from any severe illness or already undergoing any psychiatric treatment at the time of the conduction of the study were excluded from the study.

Sample size: The sample size was calculated taking the Prevalence (p) of 24.9% [6] and relative precision (d) = 20% of p = 4.98 [6]

$n = 4pq/d^2 = 4*24.9*75.1 /4.98*4.98 = 301.6$

The sample size obtained was rounded off to 300 after taking into consideration all the three parameters (depression, anxiety and stress 300). Convenient Sampling method was used. The three batches enrolled before the year 2020 (2017, 2018, 2019) were included in the study. The class strength of each batch varied from 200-240.

Study tool: A semi-structured questionnaire consisting of general information, details regarding their online class duration, concerns and apprehensions related to the classes, total on-screen time spent, history of any hospitalization or death in the family due to COVID-19 were obtained. The standardized Depression Anxiety Stress Scales-21 (DASS-21) questionnaire was used to assess depression, anxiety and stress level for the past three months, was converted into Google format and circulated online on the official groups of students. DASS-21 questionnaire is 21 item scale is a pre-validated questionnaire with a set of three self report scales designed to measure the emotional states of depression, anxiety and stress. Each of three DASS-21 scales contains 7 items, divided into subscales with similar content.[5] Open-ended questions on barriers to accessing mental health care were also included.

For Ethical Consideration: Clearance from the Institutional Ethical Committee was obtained prior to the start of the study. Informed consent was obtained which was inbuilt in the Google-form. Strict confidentiality and anonymity was maintained throughout the study. Strict confidentiality and anonymity was maintained while collecting and analysing the data from the students during the study. Those students having higher scores were referred to the Institutional Mental Health Support Group and were provided tele-counselling and were referred to concerned professionals from the Psychiatry Department, LHMC if necessary.

Data analysis: The data was collected in google format and analyzed using SPSS version 23. The burden of mental health of students in each domain was analyzed in terms of proportion affected in terms of mild, moderate and severe categories and chi-square was used to analyze association between variables and scores of depression, anxiety and stress.

Results:

Although sample size calculated was 300, questionnaires were circulated to all eligible medical students from all batches (2017 to 2019) considering the fact that the response rate of online google questionnaires are generally 35-40% in most of the Online surveys. However a higher response rate (62%) was observed in the study. Since only 341

(62%) forms were found to be complete they were included for final analysis. Almost all the students (96.2%) were residing at their own residence and attending online theory and practical classes from home at the time of the study. The average online class duration was 5.5 ±4.6hrs. While average on-screen time (which is inclusive of passive time spent on browsing the internet or social media, watching TV and preparing online assignments) is 8.5±3hrs.

244 (71.6%) students reported that they found the college routine hectic and about half of the participants (54.5%) revealed that they could spend on average one hour of leisurely time with their family and friends on week-days as online classes were rescheduled during the late evening hours too. Some of the stressors as mentioned by the participants are depicted in figure 1.

The DASS-21 scores and its distribution among the participants are described in Table 1. Out of all the three domains, 'Stress' scores were found to be the most prominent followed by depression.

Highest DASS scores were contributed by the junior-most batch (63.34%) i.e 2019 admission year. Significant association was found between the determinants like hectic online classes and curbs on travelling and socializing post-second wave of COVID pandemic (Table 1).

The most frequently cited barriers to seeking professional help related to psychological stress were fear of breach of confidentiality (47.5%) resulting in stigma associated with using mental health services and documentation of academic records (45.1%). Hectic schedule of online classes and curbs on travelling, socializing and other leisure time activities outside home were significantly associated with depression, stress and anxiety. (Table 2)

Discussion:

Depression, anxiety, and stress among medical students are often under-recognized and undertreated. Medical students also seldom seek professional help. Epidemiological data suggested that the prevalence of depression increased by 18.4% from 2005 to 2015.[7] According to a cross-sectional study carried out in Pakistan, a high prevalence of anxiety (47.7%) was found among medical students.[8] An Indian study reported a relatively higher prevalence of depression 66.9% among medical UGs.[9] This corroborates with the findings of the present study in which the overall prevalence of depression, anxiety and stress was 62.8%, 58.3% and 43.7% respectively.

A comparatively lower prevalence was reported by a study from China, wherein 28.8% suffered from anxiety, 53.8% from stress and 16.1% from depression (using the DASS 21 questionnaire).[10] In a recently conducted study in Iranian Medical students in 2020 the prevalence of mild to severe anxiety and depression among them was 38.1% and 27.6%, respectively. Higher levels of anxiety were related to female gender, lower grade point average and experience of COVID-19 symptoms.[11] Barriers to seek mental health services were lack of time, lack of confidentiality, stigma associated with using mental health services and apprehension regarding academic record has been highlighted in few studies including the present study.[12] In addition, it is possible that medical students feel that developing resilience is an inseparable part of doctor's training and hence distress would need to be endured without complaining.[13] In this pandemic era, many factors might increase students' susceptibility to depression such as changes in lifestyle and reduced social interaction. Some other factors brought out in the present study were online class fatigue, lack of clinical exposure and inability to learn practical skills.

Research studies have also revealed that batch year and academic performance of medical students have a significant association with the prevalence of depression. First year students had the highest prevalence of depression followed by second year students (p value < 0.001).[9] Similar results have

Figure 1: Concerns and Stressors related to prolonged online classes as reported by participants
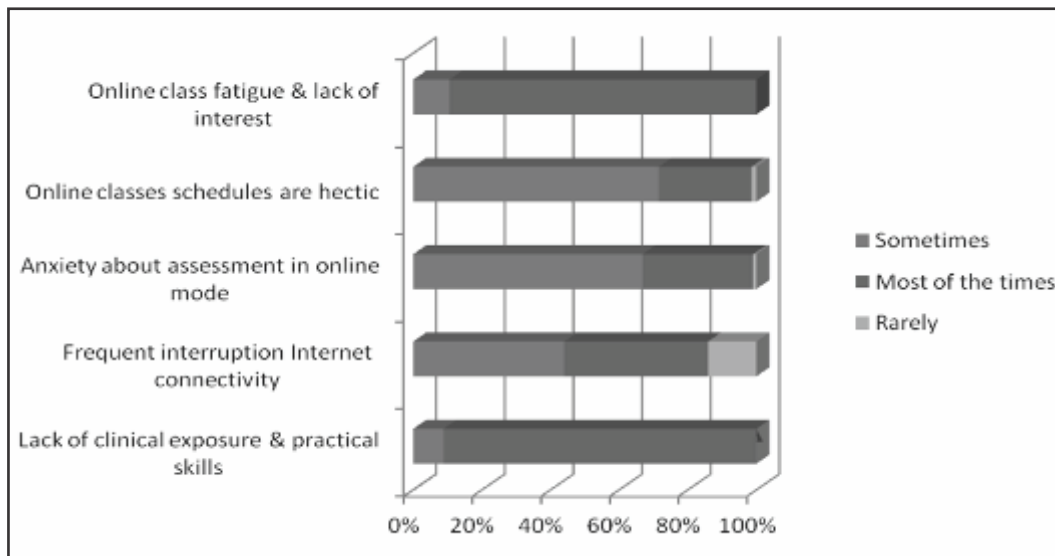

Table 1: DASS-21 Scores and proportion of students affected across different categories (N=341)

DOMAINS	DASS-21	Proportion of students affected				
	(Mean±SD)	Mild	Moderate	Severe	Extreme	Overall
Depression	13.80±10.58	51 (15.1)	80 (23.5)	34 (10)	49 (14.4)	214 (62.8)
Anxiety	10.09±8.27	30 (8.8)	87 (25.5)	34 (9.97)	48 (14.1)	199 (58.3)
Stress	14.30±5.6	56 (16.4)	44 (13)	37 (10.9)	13 (3.8)	150 (43.7)

Table 2: Association between various determinants with depression, anxiety and stress among students

Determinants	Association of depression, anxiety and stress			
	Strength of association	Depression	Anxiety	Stress
Curbs on travelling, socializing and other leisure time activities outside home	OR Chi square p-values	3.83 34.22 0.00	2.04 9.34 0.001	2.11 10.66 0.00
Death in the family due to COVID	OR Chi square p-values	1.23 0.64 0.42	1.29 1.03 0.31	1.19 0.47 0.34
Hospitalization in the family due to COVID	OR Chi square p-values	0.65 3.05 0.08	0.90 0.41 0.74	0.6 4.96 0.03
Impact of hectic schedule of online classes	OR Chi square p-values	1.54 3.45 0.04	4.2 36.9 0.00	2.62 17.84 0.000

been observed in our study. Risk factors correlating with the presence and severity of anxiety, such as the unsteadiness or disruption of family income, having COVID-19 symptoms or having a relative or an acquaintance infected with COVID-19[14,15] have been identified in the general population.

Conclusion and Recommendation:

The overall depression, anxiety and stress scores reported were substantial with hectic online classes and with curbs on socializing and travelling being one of the significant determinants. The national medical council should formulate guidelines for conducting online classes in Medical colleges in the event of fresh waves of pandemic or during outbreaks of similar nature. The faculty should take into cognizance of all determinants that were noted in the study while preparing the content and duration of teaching rosters particularly for practical classes. Since student distress and untreated anxiety are reported to negatively impact academic performance, they should be screened early and provided mental health support through institutional mechanisms.

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Conflict of Interest: Nil

References:

1. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and Self-Reported Patient Care in an Internal Medicine Residency Program. Ann Intern Med. 2002 Mar 5;136(5):358.

2. Mareiniss DP. Decreasing GME Training Stress to Foster Residents' Professionalism: Academic Medicine. 2004 Sep;79(9):825–31.

3. Mehta M, Singh MM, Gupta SK, Kushal A. Study of Stress among Health Care Professionals: A Systemic Review. International Journal of Research Foundation of Hospital and Healthcare Administration. 2018 Jun;6(1):6–11.

4. Smith M, Segal J, Robinson L. Burnout Prevention and Treatment [Internet]. HelpGuide. Available from: https://www.helpguide.org/articles/stress/burnout-prevention-and-recovery.htm#:~:text=Burnout%20is%20a%20state%20of,unable%20to%20meet%20constant%20demands

5. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behaviour Research and Therapy. 1995 Mar;33(3):335–43.

6. Saraswathi I, Saikarthik J, Senthil Kumar K, Madhan Srinivasan K, Ardhanaari M, Gunapriya R. Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. PeerJ. 2020;8:e10164.

7. Vos T, Allen C, Arora M, Barber RM, Bhutta ZA, Brown A, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet. 2016 Oct;388(10053):1545–602.

8. Alvi T, Assad F, Ramzan M, Khan FA. Depression, anxiety and their associated factors among medical students. J Coll Physicians Surg Pak. 2010 Feb;20(2):122–6.

9. Sidana S. Prevalence of depression in students of a medical college in New Delhi: A cross-sectional study. AMJ. 2012 Jun 1;5(5):247–50.

10. Shah SMA, Mohammad D, Qureshi MFH, Abbas MZ, Aleem S. Prevalence, Psychological Responses and Associated Correlates of Depression, Anxiety and Stress in a Global Population, During the Coronavirus Disease (COVID-19) Pandemic. Community Ment Health J. 2021 Jan;57(1):101–10.

11. Nakhostin-Ansari A, Sherafati A, Aghajani F, Khonji M, Aghajani R, Shahmansouri N. Depression and Anxiety among Iranian Medical Students during COVID-19 Pandemic. IJPS [Internet]. 2020 Jul 29 [cited 2022 Apr 22]; Available from: https://publish.kne-publishing.com/index.php/IJPS/article/view/3815

12. Givens JL, Tjia J. Depressed medical students' use of mental health services and barriers to use. Acad Med. 2002 Sep;77(9):918–21.

13. Chi X, Becker B, Yu Q, Willeit P, Jiao C, Huang L, et al. Prevalence and Psychosocial Correlates of Mental Health Outcomes Among Chinese College Students During the Coronavirus Disease (COVID-19) Pandemic. Front Psychiatry. 2020;11:803.

14. Lasheras I, Gracia-García P, Lipnicki DM, Bueno-Notivol J, López-Antón R, de la Cámara C, et al. Prevalence of Anxiety in Medical Students during the COVID-19 Pandemic: A Rapid Systematic Review with Meta-Analysis. Int J Environ Res Public Health. 2020 Sep 10;17(18):E6603.

15. Lei L, Huang X, Zhang S, Yang J, Yang L, Xu M. Comparison of Prevalence and Associated Factors of Anxiety and Depression Among People Affected by versus People Unaffected by Quarantine During the COVID-19 Epidemic in Southwestern China. Med Sci Monit [Internet]. 2020 Apr 20 [cited 2022 Apr 22];26. Available from: https://www.medscimonit.com/abstract/index/idArt/924609