EFFECT ON MENTAL HEALTH AMONG UNDERGRADUATE COLLEGE STUDENTS OF INDIA DURING THE COVID-19 PANDEMIC: A CROSS-SECTIONAL MULTICENTRIC STUDY

Tripti Jain[1], Rajeev Ranjan[2], Neha Chaudhary[3], Pankaj Kumar[2] & Shamshad Ahmad[3]

[1]All India Institute of Medical Sciences, Patna, India
[2]Department of Psychiatry, All India Institute of Medical Sciences, Patna, India
[3]Department of Community & Family Medicine, All India Institute of Medical Sciences, Patna, India

SUMMARY

Background: College students show higher prevalence of mental health issues as compared to the general population. Unfortunately, this year, students all over the world have to face, added pressure due to COVID-19. This study aimed to estimate the effect of COVID-19 pandemic and lockdown on the mental health of Medical and Engineering Students.

Subjects and methods: The study was carried out at different medical and engineering colleges in Bihar, Delhi and Maharashtra, and Tamil Nadu. 699 responses were collected and analyzed during the study period. Data was collected by email/ online platform through Google form via non- probability Sampling Technique. Mental health status was determined by using Corona virus anxiety screening (CAS), GHQ (General Health Questionnaire)-12, GAD (General Anxiety Disorder)-7 scale and PHQ (Patient Health Questionnaire)-9 scales.369 (53%) MBBS and 330 (47%) Engineering students participated in the study.

Results: Maximum participants in both groups did not have anxiety related to COVID-19 (MBBS (96.8%) and Engineering (95.2%). About two-third participants secured above cut off score i.e., MBBS (62.3%) and Engineering (64.8%) in GHQ-12. Approximately comparable proportion in both groups were found to have severe anxiety and depression (16% vs 20%), when applied GAD-7 and PHQ-9. Uncertainty in the timing of the exams/ Academic delay was found to be the most worrying factor (MBBS, 41.19% vs Engineering 31.82%).

Conclusions: About two-thirds of medical and engineering students psychologically equally affected by current pandemic in our study. A student wellness clinic is the need of hour in current scenario, which is supported by mental health experts (Psychiatrists, Clinical Psychologists) and residents on rotation basiswhere all psychological problem including Stress, Anxiety, Interpersonal crisis, Relationship issues and Personality problems of the students are dealt effectively in institute campus near to student residential area.

Key words: *mental health – depression – anxiety – COVID-19, college students*

* * * * *

INTRODUCTION

College students show higher prevalence of mental health issues as compared to the general population. Prevalence of positive screens was 17.3% for depression, 11.1% for anxiety disorders, 6.3% for suicidal ideation, and 15.3% for non-suicidal self-harm behavior in college students across campuses in the United States (Eisenberg et al. 2013).

Studies have compared the prevalence rates of anxiety disorder, mood disorders or symptoms and stress levels that exist between Engineering and MBBS students. Students pursuing medical education have to face higher levels of stress, fear and anxiety as compared to the general population. Those pursuing medical education have shown higher rates of mood disorders, diagnosed anxiety disorders and suicidal ideation as compared to the general population (Maser et al. 2019). The economic burden, workload, sleep deprivation, difficulty in patient interactions during clinical postings,

stressful learning environment, and the endless year of career planning are thought to be the key stressors in medical students (Dyrbye et al. 2005, Levey 2001). While medical students do face such a taxing mental burden, engineering students face an incredible amount of mental distress due to exams and the pressure of campus interviews and placements. It is therefore not surprising, that engineering students show a comparable amount of mental distress as medical students (Reta et al.2020). However, studies have showed that though the prevalence of mental distress might be the same, medical students show higher rates of mood and anxiety disorders as compared to engineering students (Singh et al. 2016).

Unfortunately, this year, students all over the world had to face added pressure due to COVID-19. Originating in Wuhan, China and spreading across the world, the Corona virus Pandemic has brought fear, anxiety and panic to households all over the world. For months, India has been under a lockdown. Schools, colleges,

shops, offices, factories, and other services have been shut down due to the pandemic. People have had to face fear of infection, loss of jobs, inability to travel causing people to be stuck in different areas of the world. Therefore, COVID-19 pandemic, has not only had a negative impact on the economy and physical health, but also adversely affected the mental health of people all over the world, with an increase in prevalence and worsening of symptoms in of previously diagnosed patients (Bao et al. 2020, Sljivo Aet al. 2020). Consequently, the psychological health of college students has also been affected. A Study conducted by Cao et al. in China has shown that students have shown a positive association between the COVID-19 related stressors and anxiety (Cao et al. 2020). Students have had to face delay in restarting of colleges, indefinite delays in exams, and increasing economic burdens. The conversion to online teaching platforms, issues regarding social distancing and isolation have also played a role in increasing the mental stress.

Therefore, it is of the utmost importance to study the effect the COVID-19 pandemic has had on the mental health of college going students. It is essential to assess the changes that we have seen in the incidence of anxiety and mood symptoms due to current pandemic. It will guide to prepare for the psychological impact such a pandemic will have on the youth in the future. Thus, this study was conducted with the aim to estimate the effect of COVID-19 pandemic and lockdown on the mental health of MBBS and Engineering students. Furthermore, this study intended to assess the disparity in their attitude and practice towards the pandemic.

SUBJECTS AND METHODS

Study design and participants

The study was carried out at different medical and engineering colleges in Bihar, Delhi and Maharashtra, and Tamil Nadu. Prior to conducting the study, ethical permission was obtained from the Institute Ethics Committee and permission was granted from the Heads of other Medical and Engineering Colleges involved in the study. Data was collected by email/online platform through Google form via non- probability Sampling Technique. First Year to Final Year students currently enrolled in Medical and Engineering colleges in India, willing to provide informed consent were included in the study.

Sample Size

Relevant literature search have reported an approximately 18 % prevalence of severe psychological distress among students (Islam et al. 2020). Thus, taking this prevalence into account, with 3% absolute precision and 95% confidence, calculated sample size came out to be 630. However, 699 responses were collected and analyzed during the study period (Dhand & Khatkar 2014).

Study instruments

Data was collected using an online questionnaire in English language, during one-month period (August 2020). The questionnaire was self-administered to seek details regarding demography, worrisome factor, attitude and practice of participants towards the COVID-19 pandemic. Mental health status was determined by using Corona Virus Anxiety Screening (CAS) scale, General Health Questionnaire (GHQ-12), Generalized Anxiety Disorder (GAD-7) scale and Patient Health Questionnaire (PHQ-9) scale. Corona Virus Anxiety Screening (CAS) scale developed by Sherman A Lee was used to assess anxiety levels regarding COVID-19 pandemic using an optimized cut score of ≥ 9 (90% sensitivity and 85% specificity) (Lee et al. 2020). General Health Questionnaire (GHQ-12) a self-rated 12 items scale developed by Goldberg was used to screen the mental health of participants. A score greater than or equal to 12 was considered significant for identifying mental distress (del Pilar et al. 2008). Those, who scored more than or equal to 12, on the GHQ-12, were than further screened using GAD-7 and PHQ-9 scale. GAD-7 is a self- rated 7 items, 4 points (0-3) Likert scale developed by Spitzer and colleagues in 2006 with a cut off scores of 5, 10, 15 for mild, moderate and severe anxiety respectively (Lowe et al. 2008). Whereas, PHQ-9 scale (Kroenke et al. 2001) is a self-rated, 9 items, 4 points (0-3) Likert scale: a self-administered version of PRIME-MD used for quick depression assessment) with 0-4, 5- 9, 10- 19 and 20-27 score representing none, mild, moderate and severe depression respectively.

Statistical analysis

The instruments used in this study are all validated to be used in Indian context and have good reliability and internal consistency. Analysis was conducted to compare the levels of stress, fear related to COVID-19, anxiety, depressive symptoms, worrying factors, susceptibility to infection and practice among participants (i.e. Medical vs Engineering students).It was evaluated by independent t test and chi-square test depending upon the variables. All the tests were two tailed and a p value of less than 0.05 was considered significant. STATA version 13 software was used for statistical analysis of collected data in the study.

RESULTS

General characteristics of study participants

A total of 369 (53%) and 330 (47%) students representing the MBBS and Engineering course participated in the study (Table 1) shows that the study participants comprised of 43.6% females and 56.4% males in MBBS course and 23.6% females and 76.4% males in engineering course. The means age of participants in the

both study courses were approximately 20 years. Among the MBBS course participants, the highest proportion belonged to first year student i.e., 50.68% and least were from third year i.e., 10.84% whereas in engineering course, maximum participants belonged to second (30.61%), third (26.36%) and fourth year (27.88%) and least belonged to first year (15.15%).

Comparison of COVID-19 related fear, stress, anxiety and depression between medical and engineering students

Table 2 presents that with respect to the corona anxiety scale, maximum participants in both groups achieved below cut off value i.e., MBBS (96.8%) and Engineering (95.2%). Alternatively, for GHQ 12, maximum participants secured above cut off score i.e. MBBS (62.3%) and engineering (64.8%). Those who achieved over cut off scores were further graded for GAD 7 and PHQ 9 score**.** Regarding GAD 7, grading, more than half of the participants in the both groups had mild anxiety. On the other hand, moderate anxiety proportion was higher among engineering students (23.83%) as compared to MBBS students (19.57%). However, this difference was not statistically significant (p=0.7). Furthermore, the proportion of severe anxiety was approximately similar (16%) in both the groups. Concerning PHQ 9, maximum and approximately equal

Table 1. General characteristics of study participants (n=699)

Characteristics	MBBS (mean±SD)	Engineering (mean±SD)	*P* value (Unpaired t test)
Age	20.7±3.2	20.4±1.6	0.21
	MBBS - n (%)	Engineering - n (%)	*P* value (Chi square test)
Gender			<0.01
Female	161 (43.6)	78 (23.6)	
Male	208 (56.4)	252 (76.4)	
Year of study course			<0.01
First year	187 (50.7)	50 (15.2)	
Second year	81 (21.9)	101 (30.5)	
Third year	40 (10.9)	87 (26.4)	
Fourth year	61 (16.5)	92 (27.9)	
Living arrangement			<0.01
Home	150 (40.7)	189 (57.3)	
Hostel	219 (59.3)	141 (42.7)	
Total	369 (100)	330 (100)	

Table 2. Mental Health Tools applied across the study groups

Cut off value of Corona Anxiety Scale and GHQ-12 (n=699)			
	MBBS - n (%)	Engineering - n (%)	p value (chi square test)
Corona Anxiety Scale*			0.28
Below Cut off value	357 (96.7)	314 (95.2)	
Above Cut off value	12 (3.3)	16 (4.8)	
GHQ-12**			0.49
Below Cut off value	139 (37.7)	116 (35.2)	
Above Cut off value	230 (62.3)	214 (64.8)	
Total	369 (100)	330 (100)	
Grading of GAD-7 and PHQ-9 score among the study participants having above cut-off GHQ-12 score (N= 444)			
	MBBS - n (%)	Engineering - n (%)	p value
GAD-7			0.70
Mild	149 (64.8)	128 (59.8)	
Mod	45 (19.6)	51 (23.8)	
Severe	36 (15.6)	35 (16.4)	
PHQ-9			0.70
Minimal	42 (18.3)	43 (20.1)	
Mild	96 (41.7)	92 (43.0)	
Moderate	45 (19.6)	32 (14.9)	
Severe	47 (20.4)	47 (22.0)	
Total	230 (100)	214 (100)	

*Corona anxiety scale cut off value ≥9;   **GHQ 12 cut off value ≥12

participants in the both groups were suffering from mild depression i.e., MBBS (41.74%) and engineering (42.99%). Moderate depression was noted in higher proportion among MBBS students (19.57%) as compared to their counterpart (14.95%). However, this difference was not statistically significant. On the other hand, approximately similar proportion of participants in both groups had minimal depressive symptoms i.e. [MBBS (18.26%) and Engineering (20.09%)] and severe depression i.e. [MBBS (20.43%) and Engineering (21.96%)].

Comparison of worrying factors, susceptibility to infection and practice between medical and engineering students during COVID-19 pandemic and lockdown

Factors that worry the students during the pandemic most were studied and a statistically significant distribution was depicted. Uncertainty in the timing of the exams/ Academic delay (41.19% and 31.82%), followed by fear of falling sick and being isolated (20.32% and 19.7%), worry about loss of an academic year (15.45% and 18.18%) were the most worrying factors among the MBBS and Engineering students respectively. Furthermore, proportion of participants considering themselves mild to moderate susceptible to COVID-19 infection was statistically higher among MBBS group (60.66%) than the engineering group (48.42%) and matching with this, more engineering students (40.19%) considered themselves as not susceptible to infection as the MBBS students (29.92%). As many as 57.2% students in MBBS course and 43.6% in engineering course took no medicine/remedy to prevent COVID-19 infection. Percentage of students adopting homemade remedies was more in engineering group (31.8 %) as compared to the MBBS group (24.9%). Although, the proportion of students taking medication after doctor's advice was approximately equal in the both groups i.e., MBBS (15.5%) and engineering (14.9%), but higher proportion of engineering students were self-medicating (9.7%) as compared to MBBS students (2.4%). This distribution across both the groups was highly significant (p value <0.001) (Table 3).

Table 3. Distribution of participants according to the most worrying factor, susceptibility to infection and practice of participants (N=699)

	MBBS n (% with 95% CI)	Engineering n (% with 95% CI)	p value (Chi square)
Factor			<0.01
Fear of falling sick and being isolated	75 (20.3, 16.5-24.7)	65 (19.7, 15.7-24.3)	
Increasing financial burden due to addition of an academic year	26 (7.1, 4.8-10.0)	24 (7.3, 4.8-10.5)	
Lack of Valid Information regarding treatment of medical emergencies	19 (5.2, 3.2-7.8)	13 (3.9, 2.2-6.5)	
Loss of Leisure Activities even in minimum amounts	16 (4.3, 2.6-6.8)	23 (7, 4.6-10.1)	
Uncertainty in timing of exams	152 (41.2, 36.3-46.3)	105 (31.82, 6.9-36.9)	
Worry about loss of an academic year	57 (15.5, 12.0-19.4)	60 (18.2, 14.3-22.6)	
Others*	24 (6.5, 4.3-9.4)	40 (12.1, 8.9-15.9)	
Susceptible to infection			<0.01
No Susceptibility	108 (29.3, 25.3-34.7)	141(42.7, 36.8- 47.6)	
Mild to moderate susceptibility	227 (61.5, 55.5-65.6)	153 (46.4, 42.9-53.9)	
Highly susceptibility	34 (9.2, 6.7-12.7)	36 (10.9, 8.23-15.3)	
Medicine/ Remedy			<0.01
Home-Made Remedies	92 (24.9, 20.7-29.5)	105 (31.8, 29.9-36.9)	
After Doctor's Advice (Allopathic, Ayurvedic, Homeopathic, Siddha, Unani, etc)	57 (15.5, 12.0-19.4)	49 (14.9, 11.3-19.0)	
Self-Medication (Allopathic, Ayurvedic, Homeopathic, Siddha, Unani, etc)	9 (2.4, 1.2-4.4)	32 (9.7, 6.8-13.3)	
No measures taken	211 (57.2, 52.1-62.2)	144 (43.6, 38.4-49.0)	
Total	369 (100)	330 (100)	

Table 4. Preventive measures adopted by the study participants

Preventive Measures	MBBS n (%)	Engineering n (%)
Using sanitizers to sanitize your hands	321 (87)	232 (70)
Washing your hands with soap often	340 (92)	289 (88)
Quarantining family members with fever/cough	103 (27.9)	91(27.5)
Avoiding visiting other friends' room in your hostel	0 (0)	0 (0)
Not had food in the mess	74 (20)	68 (20.6)

Preventive measures adopted by the study participants during COVID-19 pandemic and lockdown

Table 4 displays that the practice of using sanitizers and frequent hand washing was noted more among the MBBS students (87% and 92% respectively) as compared to the engineering students (70% and 88% respectively). Approximately equal proportion in the both groups were found to follow quarantining family members having symptom of fever/ cough i.e., 27% and also not having food in the mess as preventive measure i.e., 20%. On the other hand, no one avoided visiting their friends' room in the hostel.

DISCUSSION

The expeditious spread of the COVID-19 pandemic has brought up global public panic along with several challenges and has, undoubtedly made an adverse impact on the mental well being (Olum et al. 2020). This study attempts to recognise the perspective and precieved mental health status of a sample of students across the country. A thorough search of relevant literature yielded that this is one of the few study conducted in India, which examines and compares the mental health status and overview of medical and engineering students towards COVID-19 from different regions of our country. The myths and misconceptions usually generated by the encircling invalid news report has intensified the uncertainity of this ongoing pandemic, hence evoking worry among the individuals (Roy et al. 2020). Approximately 62% and 65% students in both groups (MBBS vs. Engineering) experienced psychological distress, evidenced by their above cut-off score on the GHQ12. This is similar to finding reported by Maciaszek et al among medical professional (68%) (Maciaszek et al. 2020). Also, Salas et al. in Spain reported high prevalence of psychological distress (71.98%) among general population (Domínguez-Salas et al. 2020).The mental status of participants having above cut off GHQ-12 score was further evaluated by using GAD-7 and PHQ-9 tool and it was found in the study that approximately 16% and 20% were having severe anxiety and severe depression, respectively; which calls for active intervention. These psychological impacts might be due to the Worrying factors of students mentioned earlier in this study which could worsen in absence of interpersonal communication. Findings in this study are in contrast to the findings of Xie et al and Chua et al. in China (Xie et al. 2019, Chua et al. 2004) who concluded that medical students undergo less severe anxiety and depression than non-medical students. They justified the finding by explaining that generally, knowledge regarding epidemic is higher among medical students than non-medical students. Maximum participants in the both groups did not have anxiety related to COVID-19 (96.8% vs 95.2%). Low proportion in this study could be attributed to the fact that the questionnaire was administered during the later phase of the pandemic, when they were already have acquired knowledge and awareness about the interventions done by the government to halt the rise of infection.

We found that the students in the both groups were worried most regarding the uuncertainty in the timing of the exams/ Academic delay (41.19% and 31.82%). Their concern could be explained by the fact that the delay in examinations would lead to extension in stay and unpredictability about their future which indirectly give way to financial trouble (Sahu 2019). Similarly, Wenjun Cao et al. also documented in their study that worry regarding delay in activity is associated with anxiety among the Chinese students. Whereas, Changwon Son mentioned that the most widespread concern among the students was related to academic performance (82%) as the transition to online classes was posing as a challenge to them (Son et al. 2020). An analysis of perception towards susceptibility to COVID-19 infection was done on Likert scale, which revealed that higher proportion of MBBS students (60.66%) acknowledged themselves at mild to moderate scale than the engineering students (48.42%). This difference among the two groups is note worthy; as higher perception of susceptibility as observed among MBBS students could draw outbreak induce anxiety while contrarily, perceiving self as less susceptible as noted among engineering students could persuade false sense of security, making them more vulnerable to exposure of infection (Singh et al. 2020). However, in this study, the proportion of students considering themselves susceptible in the both groupswere higher than that reported in another study by Singh et al. (27.3%). Another important finding noted in this study was that the prevalence of self-medication was found to be very low as compared to other studies (Nasir et al. 2020, Helal & Abou-ElWafa 2017) and growing inclination towards homemade remedies was noted (MBBS, 24.9% vs. Engineering, 31.8%). This inclination is expected out as endorsement and guidelines of homemade remedies doing round these days, especially from ministry of Ayush to increase the immunity against the infection during this pandemic (www.investindia.gov.in). Although, more engineering students then the MBBS students (9.7% versus 2.4%) resorted to self-medication. This finding is in contrast to the finding reported by Helal and Abou-ElWafawho found higher proportion of medical students (72.4%) opted for self-medication as compared to non-medical students (52.6%). Promotion of good hand hygiene is one of the most primary plus robust tool to scale down the spread of COVID-19 (WHO 2020). In respect to this, another decisive finding in this study was that the use of sanitizers and frequent hand washing were the most

commonly reported precautions taken by students of both the courses. This is in consensus, with the finding of Singh et al. (98.7%), Khasawneh et al. (87%) and Maheshwari et al. (92%) (Khasawneh et al. 2019, Maheshwari et al. 2020). However, the prevalence of use of sanitizer was noted more among the MBBS students (87%) as compared to the engineering students (70%). This comparative low prevalence is inappropriate and is a cause of concern. Education, proper training and legitimate information may go a long way in promoting hand hygiene and hence, combating COVID-19 spread.

Standard pre-validated mental health tools were used in the study but still, as the administered questionnaire was self- rated, the contention of subjectivity and reliability could not be ruled. Moreover, the convenient sampling technique limits the generalization of study outcome. However, possibility of sampling bias has been reduced by taking relatively larger sample size.

CONCLUSION

To conclude, medical students evaluated the epidemic outbreak to be more severe and contemplative than the engineering students by judging themselves more susceptible to infection. Likewise, positive practices were more prevalent among the medical students. However, the psychological impact of the outbreak was experienced equally by both the medical and engineering students. The result of the study outlines that students should be provided regular factual and transparent information through email or in other accessible ways. Above all, to address the mental health issues; it is important to encourage continuous approach through webinars on COVID-19 offered nationally and internationally by CDC, AIIMS, New Delhi and WHO. Furthermore, it is recommended that establishment of Student wellness clinic in colleges and awareness regarding helpline numbers should be raised to address the mental health issues among students.

References

1. *Bao Y, Sun Y, Meng S, et al.: 2019-nCoV epidemic: address mental health care to empower society. The Lancet 2020;10224: e37-8*
2. *Cao W, Fang Z, Hou G, Han M, et al.: The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry Res. 2020; 287:112934*
3. *Chua SE, Cheung V, Cheung C, et al.: Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. Can J Psychiatry 2004; 6:391-93*
4. *Delpilar SM & Dresch V: The 12-Item General Health Questionnaire (GHQ-12): reliability, external validity and factor structure in the Spanish population. Psicothema 2008; 4:839-43*
5. *Dhand NK & Khatkar MS: Statulator: An online statistical calculator. Sample Size Calculator for Estimating a Single Proportion. Available online at: http://statulator.com/SampleSize/ss1P.html2014. [Last Accessed 28 September 2020]*
6. *Domínguez-Salas S, Gómez-Salgado J, Andrés-Villas M, et al.: Psycho-Emotional approach to the psychological distress related to the COVID-19 pandemic in Spain: A Cross-Sectional Observational Study. In Healthcare 2020; 8:190*
7. *Dyrbye LN, Thomas MR, Shanafelt TD: Medical student distress: causes, consequences, and proposed solutions. Mayo Clin Proc 2005; 12: 1613-22*
8. *Eisenberg D, Hunt J, Speer N: Mental health in American colleges and universities: variation across student subgroups and across campuses. J Nerv Ment Dis 2013; 1:60-7*
9. *Helal RM, Abou-ElWafa HS: Self-medication in university students from the city of Mansoura, Egypt. J Environ Public Health. 2017; 2017: 9145193*
10. *Invigorating Ayurveda in the times of COVID-19: India's Position and Investment Opportunities. Available online at: https://www.investindia.gov.in/siru/invigorating-ayurveda-times-covid-19-indias-position-and-investment-opportunities [Last accessed on 3/10/2020]*
11. *Islam MA, Barna SD, Raihan H, et al: Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. PloS one 2020; 8:e0238162*
12. *Khasawneh AI, Humeidan AA, Alsulaiman JW, et al.: Medical students and COVID-19: Knowledge, attitudes, and precautionary measures. A descriptive study from Jordan. Front. Public Health 2020; 8:253-60*
13. *Kroenke K, Spitzer RL, Williams JB: The PHQ9: validity of a brief depression severity measure. J Gen Intern Med 2001; 16:606-13*
14. *Lee SA, Mathis AA, Jobe MC, Pappalardo EA. Clinically significant fear and anxiety of COVID-19: A psychometric examination of the Corona virus Anxiety Scale. Psychiatry Res. 2020; 20:113112*
15. *Levey RE: Sources of stress for residents and recommendations for programs to assist them. Acad Med 2001; 2:142-50*
16. *Löwe B, Decker O, Müller S, et al.: Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. Med Care 2008; 3:266-74*
17. *Maciaszek J, Ciulkowicz M, Misiak B et al.: Mental Health of Medical and Non-Medical Professionals during*

the Peak of the COVID-19 Pandemic: A Cross-Sectional Nationwide Study. J. Clin. Med 2020; 8:2527

18. Maheshwari S, Gupta PK, Sinha R, et al.: Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study. J Acute Dis2020; 3:100

19. Maser B, Danilewitz M, Guérin E, et al.: Medical Student Psychological Distress and Mental Illness Relative to the General Population: A Canadian Cross-Sectional Survey. AcadMed 2019; 11:1781-91

20. Nasir M, Chowdhury AS, Zahan T: Self-medication during COVID-19 outbreak: a cross sectional online survey in Dhaka city. Int J Basic Clin Pharmacol. 2020; 9:1325

21. Olum R, Kajjimu J, Kanyike AM, et al.: Perspective of medical students on the COVID-19 pandemic: survey of nine medical schools in Uganda. JMIR Public Health Surveill2020;2:e19847

22. Prasad Singh J, Sewda A, Shiv DG, et al.: Assessing the Knowledge, Attitude and Practices of Students Regarding the COVID-19 Pandemic. Journal of Health Management 2020; 2:281-90

23. Reta Y, Samuel T, Mekonnen M: Mental Distress and Associated Factors among Undergraduate Engineering Student of Hawassa University, Ethiopia. J Multidiscip Healthc 2020; 13:99-107

24. Roy D, Tripathy S, Kar SK, et al.: Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian JPsychiatr 2020; 51:102083

25. Sahu P: Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. Cureus 2020; 4:e7541

26. Singh R, Shriyan R, Sharma R,et al.Pilot study to assess the quality of life, sleepiness and mood disorders among first year undergraduate students of medical, engineering and arts. J Clin Diagn Res. 2016;5: JC01- 05

27. Šljivo A, Kaþamakoviü M, Quraishi I & Kulenoviü A D. Fear and depression among residents of Bosnia and Herzegovina during covid-19 outbreak - Internet survey. Psychiatria Danubina, 2020; 2: 266-72

28. Son C, Hegde S, Smith A, et al.: Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. J Med Internet Res 2020; 9:e21279

29. WHO: Promoting hand hygiene to save lives and combat COVID- 19.Available online at: https://www.who.int/ southeastasia/news/detail/04-05-2020-promote-hand-hygiene-to-save-lives-and-combat-covid-19

30. Xie L, Luo H, Li M, et al. The immediate psychological effects of Corona virus Disease 2019 on medical and non-medical students in China. Int J Public Health 2020; 8:1-9

Correspondence:

Assistant Professor Rajeev Ranjan, MD, Phd
Department of Psychiatry, All India Institute of Medical Sciences
Room no. 152, 1-D, OPD Block, Patna, 801507, India
E-mail: rajeevranjan0087@gmail.com