Journal of Neurological Sciences and Research

Mental Health Among Health Sciences Students in India During COVID-19: A Cross Sectional Study

Kanav Khera[1]*, Siddheesh Rajpurohit[1], Ajit Singh[2], Gursimran Kaur[3], Anagha R[3], Bisruta Chowdhury[3], Rajita Kaushal[4] and Gurasis Singh Sodhi[5]

[1]Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, India
[2]CliMed Research Solutions, Gurugram, Haryana, India and National Director for Research, World Youth Heart Federation, India
[3]Manipal College of Pharmaceutical Sciences, Manipal Academy of Higher Education, Manipal, Karnataka, India
[4]Department of Psychology, TATA Institute of Social Sciences, Mumbai, Maharashtra, India
[5]Government Medical College and Hospital, Chandigarh, India

*Corresponding author: Kanav Khera, Assistant Professor, Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal Academy of Higher Education, Manipal.

Abstract

Background and Aim: The pandemic has shown ill-effects on the physical mental health of the general public. Students of Health Sciences streams in India are no exception, as they face challenges that can be stressful and overwhelming. The aim of the study is to assess the pervasiveness of depression, anxiety, and stress among the health sciences students in India and to gauge their future readiness in dealing with such widespread diseases.

Material and Method: It is an observational web-based survey conducted in India among 1002 health sciences students, evaluating the psychological impact of the COVID-19 pandemic using a semi-structured DASS-21 in addition to a self-made questionnaire. The self-made questions were used to evaluate our target population's future readiness if an event of a similar scale recurs.

Results: Among total, 50.8% (n, 509) have experienced anxiety, and 40.4% (n, 405) and 57.0% (n, 571) of the students experienced stress and depression, respectively. Among 1002, 63.6% (n, 637) feel anxious by the thought of a future pandemic, 86.4% (n, 86.6) will be more responsive if such an event recurs, 91.0% (n, 912) will resort to healthy coping mechanisms, 86.3% (n, 865) are willing to volunteer in future pandemics, and 85.8% (n, 860) consider themselves prepared enough to withstand the negative impact of it if a similar situation recurs.

Conclusion: These observations suggest that universities and government should promote awareness regarding psychological help among the students and encourage mental health screening programs to combat the adverse psychological effects.

Approvals: Along with the Kasturba Medical College and Kasturba Hospital Institutional ethics committee (IEC: 790/2020), Clinical Trial Registry of India (CTRI/2020/12/029956) approval was taken prior to the study.

Keywords

Introduction

COVID-19, as an illness, gained attention when Chinese Authorities identified a bunch of pneumonia cases on 29th December 2019 in Wuhan, China. The World Health Organization (WHO) and the International Committee on Taxonomy of Viruses (ICTV) named the disease as well as the virus. The infection was known as COVID-19, and the virus was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first human to human transmission was reported on January 30, 2020 [1,2]. The disease is diagnosed based on a positive viral nucleic acid test on throat swab samples by real-time quantitative polymerase chain reaction (RT -qPCR) and CT scan [3]. To date, approx. one hundred thirteen million people got infected worldwide and 11 million in India. The co-morbidities and impermanence related to COVID-19 are leading to severe health conditions, including death.

Mental health issues among health sciences students during the pandemic are underrated and un-investigated domains [4]. The rate of infection in medical students during the SARS outbreak reached 21%, which led to adverse psychological effects, including anxiety and depression [5]. All the components contributed to increased psychological stress in frontline medical staff and students resulting in immediate or long-term psychological consequences and lead to acute or chronic somatic effects [6]. This imposed experience of 'home isolation' under lockdown affects students' emotional well-being in multiple ways with scholastic and expert professions vulnerability. A Canadian report

concentrating on the impacts of isolation after the severe acute respiratory syndrome (SARS) unearthed a relationship between the longer term of quarantine and the high predominance of uneasiness and depression among individuals [7]. Together, isolation and quarantine obstacles resulted in tremendous mental stress among the students [8-10]. Students who were forced to distance themselves from their close family and friends due to social separation norms while living in fear of contracting or spreading this disease could increase anxiety, stress, phobia, depression, etc [11]. The continuous Coronavirus pandemic is becoming a psycho-emotional disorderly situation as nations have been revealing a strong ascent of psychological well-being concerns, including anxiety, depression, stress, sleep disorder, among its residents [12-16]. Such a profound change in the present way of life leads to increased pressure and further disrupts mental well-being. This mental health pandemic at the worldwide level requires specific consideration. This cross-sectional examination was directed among health sciences students in India to assess these students' emotional wellness facing the Coronavirus.

Material and Methods

Study design & population

Along with the Institutional ethics committee, Clinical Trial Registry of India (CTRI) approval was taken prior to the study. We conducted an observational, cross-sectional survey among health sciences students in India between December 2020 and January 2021. The link for the survey questionnaire was circulated via different social media platforms to health sciences students. Upon receiving the subject's consent to participate in the study via a consent question, they could proceed and respond to the questionnaire.

Instrument

The survey questionnaire was prepared in three parts: the first part was for demographic details like name, email, age, gender, place of residency, living with family, qualification, and marital status. Name and email were collected for the validation of answers and to avoid sampling bias after consent form. In the second part, the semi-structured depression anxiety and stress scale - 21 (DASS 21) was used. DASS-21 has twenty-one questions, equally divided into three sections to assess stress, depression, and anxiety. It provides a normal, mild, moderate, or severe result to assess only the severity of a particular psychological symptom. Each question can be self-rated from 0 (did not apply to me all) to 3 (much or mostly applied to me) in the last seven days. To obtain the final score in DASS 21, since it is a shorter version of the DASS-42 questionnaire, each category or sub-scales score was multiplied by two [17]. The third part of the questionnaire consisted of five self-made questions to assess the future readiness of the health sciences students in dealing with such widespread diseases. It was meant to check whether they view the pandemic as an opportunity for dealing with a similar situation in the future or whether it had an effect in reverse. The Cronbach alpha score was found to be 1 for these questions, and they required a yes or no response. Responses with proper information were included, while incomplete responses or responses from students without a health sciences background were excluded. Throughout the survey, subject or participant safety and confidentiality were maintained.

Statistics

Categorical and continuous variables were reported in proportions and mean ± standard deviation (SD), respectively, for the socio-demographical parameters. For the data cleaning Excel data sheet was used, and statistical analysis SPSS version 20 (IBM Corp., Armonk, NY, USA) was used. Chi-square or χ2 test and t-test methods were used for categorical and continuous variables, respectively. The statistical significance was determined at $p < 0.05$.

Results

Demographic

A total of 1096 healthcare students participated in the current study, but data of 94 students were removed due to inadequate information. The mean age of eligible 1002 participants was 21.55 ± 2.19 years, with the majority of female participants (68%). Qualification, living status and marital status among participants were analysed among participants (Table 1).

Variable	No. of participants (%)/1002
Gender	
Male	309 (30.8)
Female	681 (68.0)
Other	12 (1.2)
Qualification	
Under Graduate	717 (71.6)
Post Graduate	265 (26.4)
Higher Degree	20 (2.0)
Course Enrolled	
Medical	317 (31.6)
Paramedical	685 (68.4)
Living with Family	
Yes	777 (77.5)
No	225 (22.5)
Marital Status	
Married	27 (2.7)
Unmarried	960 (95.8)
Prefer not to declare	15 (1.5)
Widowed	0

Table 1: Demographic details.

Depression

Out of 1002 participants, 43.0% (n, 431) were normal, while 11.9% (n, 119), 20.3% (n, 203), 10.1% (n, 101) and 14.8% (n, 148) were having mild, moderate, severe, and extremely severe depression respectively.

Upon bivariate analysis between depression and no depression groups, no statistically significant

difference was found regarding gender, course enrolled, qualification, and living with family (Table 2).

Variables	Total Participants	Depression (% in total)	No-Depression (% in total)	p-value
Gender	-	-	-	-
Male	309	169 (16.9)	140 (14.0)	0.302
Female	681	393 (39.2)	288 (28.7)	-
Other	12	9 (0.9)	3 (0.3)	-
Qualification	-	-	-	-
Under Graduation	717	418 (41.7)	299 (29.8)	0.060
Post-Graduation	265	147 (14.7)	118 (11.8)	-
Higher Degree	20	6 (0.6)	14 (1.4)	-
Course Enrolled	-	-	-	-
Medical	317	180 (18.0)	137 (13.7)	0.924
Para-Medical	685	391 (39.0)	294 (29.3)	-
Living with Family	-	-	-	-
Yes	777	438 (43.7)	339 (33.8)	0.465
No	225	133 (13.3)	92 (9.2)	-

Table 2: Clinical characteristic of depression.

Anxiety

Out of 1002 participants, 49.2% (n, 493) were normal, while 7.6% (n, 76), 17.8% (n, 178), 8.9% (n, 89) and 16.6% (n, 166) were having mild, moderate, severe, and extremely severe anxiety respectively. Upon bivariate analysis between anxiety and no anxiety groups, no statistically significant difference was found regarding gender, course enrolled, qualification, and living with family (Table 3).

Variables	Total Participants	Anxiety (% in total)	No-Anxiety (% in total)	p-value
Gender	-	-	-	-
Male	309	151 (15.1)	158 (15.8)	0.643
Female	681	351 (35.0)	330 (32.9)	-
Other	12	7 (0.7)	5 (0.5)	-
Qualification	-	-	-	-
Under Graduation	717	369 (36.8)	348 (34.7)	0.383
Post-Graduation	265	132 (13.2)	133 (13.3)	-
Higher Degree	20	8 (0.8)	12 (1.2%)	-
Course Enrolled	-	-	-	-
Medical	317	150 (15.0)	167 (16.7)	0.134
Para-Medical	685	359 (35.8)	326 (32.5)	
Living with Family	-	-	-	-
Yes	777	394 (39.3)	383 (38.2)	0.915
No	225	115 (11.5)	110 (11.0)	-

Table 3: Clinical characteristic of anxiety.

Stress

Out of 1002 participants, 59.6% (n, 597) were normal, while 10.7% (n, 107), 13.2% (n, 132), 10.6% (n, 106) and 6.0% (n, 60) were having mild, moderate, severe, and extremely severe stress respectively. Upon bivariate analysis between stress and no stress groups, no statistically significant difference was found with respect to gender, course enrolled, qualification, and living with family (Table 4).

Variables	Total Participants	Stress (%)	No-Stress (% in total)	p-value
Gender	-	-	-	-
Male	309	113 (11.3)	196 (19.6)	0.253
Female	681	287 (28.6)	394 (39.3)	-
Other	12	5 (0.5)	7 (0.7)	-
Qualification	-	-	-	-
Under Graduation	717	298 (29.7)	419 (41.8)	0.148
Post-Graduation	265	102 (10.2)	163 (16.3)	-
Higher Degree	20	5 (0.5)	15 (1.5)	-
Course Enrolled	-	-	-	-
Medical	317	127 (12.7)	190 (19.0)	0.876
Para-Medical	685	278 (27.7)	407 (40.6)	-
Living with Family	-	-	-	-
Yes	777	310 (30.9)	467 (46.6)	0.531
No	225	95 (9.5)	130 (13.0)	-

Table 4: Clinical characteristic of stress.

Future readiness

Among total, 63.6% (n, 637) feel anxious by the thought of a future pandemic, 86.4% (n, 912) will be more responsive if such an event recurs, 91.0% (n, 912) will resort to healthy coping mechanisms, 86.3%(n, 865) are willing to volunteer in the event of a future pandemic and 85.8% (n, 860) consider themselves prepared enough to withstand the negative impact of it should a similar situation recur. (Table 5).

Questions asked	n (%) out of 1002
The thought of a future pandemic makes me feel anxious/threatened.	637 (63.6)
I feel I would be more responsive in case such an event occurs	868 (86.6)
I will resort to healthy coping mechanisms in such a future event	912 (91.0)
I would be willing to volunteer in the event of an infectious crisis	865 (86.3)
I consider myself prepared enough to withstand the negative impact of such a situation if it occurs in the future.	860 (85.8)

Table 5: Responses on future readiness.

Result and Discussion

The COVID-19 pandemic till now was most challenging for Indian public health. The pandemic has shown ill-effects on the physical health and mental health of the general public. Students of Health Sciences streams in India are no exception, as they face challenges that can be stressful and overwhelming. The intensive measures taken by universities to ensure the well-being of students from the rapidly spreading infectious disease led to uncertainty about what is going to happen. Owing to the pandemic, many students have been placed in quarantine which could also have been a cause for increased prevalence of depression and anxiety [18]. Using the DASS 21 questionnaire, our survey quantitatively evaluated mental distress reactions following three axes of depression, anxiety, and stress. It is accepted as a reliable measure for assessing psychological symptoms that could contribute to the diagnosis of depression and anxiety and aid in measuring treatment response. However, it was not designed to be solely used as a diagnostic tool and was not intended to supplant a comprehensive clinical interview. Each item was scoring from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the last seven days). It provided a mild, moderate, or severe result to assess only the severity of a particular psychological symptom.

The gender, qualification, living with family and course enrolled did not show any statistically significant association with depression among health sciences students. Around 12% (n, 119) and 20% (n, 203) of the participants were more likely to have mild and moderate depression, respectively. In comparison, 10% (n, 101) and 15% (n, 148) were more likely to have severe and extremely severe depression, respectively. The survey also reported that out of 717 undergraduate health science students, more than half (58.3%) were likely to have depression. In comparison, in a study performed on 353 undergraduate medical students in Odisha, India, 51.3% of the students were more likely to have depression. 14.7%, 19%, 12.7%, and 4.8% of the undergraduates had mild, moderate, severe, and extremely severe forms of depression [19]. Health science students are especially exposed to stressors during the pandemic, and more often, health sciences students are neglected, even with possibly having adverse effects on their academic success. It affects their overall psychological health and can also adversely affect their learning due to increased evasion of learning events, which can ultimately reduce their psychomotor concentration [20]. Moreover, the lack of physical activity may have had amplifying effects on the pervasiveness of depression among students, as shown by a study done by Borja Del Pozo Cruz et al, 2020, where a sedentary lifestyle was found to be significantly linked with increased depressive symptoms [21].

Seventy-six (8%) and 18% (n, 178) of the participants in our cohort were likely to have mild and moderate anxiety. In comparison, 9% (n, 89) and 17% (n, 166) were likely to have severe and extremely severe anxiety, but 49% (n, 493) of the survey population was found to be normal. Bivariate analysis between anxiety and no anxiety groups with respect to gender, qualification, course enrolled and living with family showed no statistically significant difference, contrary to the cross-sectional survey conducted among the undergraduate students in Bangladesh, which indicated that more than two-thirds of the students were suffering from mild to severe anxiety (87.7%) throughout the pandemic [22]. In our study, out of 1,002 participants, 405 experienced some level of stress during the lockdown. Still,

bivariate analysis between stress and no stress groups showed no statistically significant difference concerning gender, course enrolled, qualification, and living with family. Generally, graduate students are expected to experience substantial amounts of stress and anxiety due to academic delays leading to the final examination's postponement, followed by graduation later than expected. This disruption can cause severe effects on their behavior [22].

Studies have revealed that the commonness of anxiety, depression, and stress during the COVID 19 pandemic is higher in females as compared to males [23-25]. However, upon bivariate analysis, our study found no statistically significant disparities in the pervasiveness of the above-mentioned conditions in males and females, respectively. Pandemic preparedness aims to brace health sciences students for action in times of global crises. 86.6% (n, 868) of the respondents in our present study feel that they would be more responsive in case such an event occurs and 86.3% (n, 865) were willing to volunteer in a future infectious crisis. Even though the present study results point towards a mostly prepared group of respondents, it becomes vital to ensure that regular training programs are held for health care workers. Our health care infrastructure needs to be better equipped to handle a future event of this scale. Educational institutions should be able to adapt to alternative modes of delivery should the need arise. Willingness to volunteer, although present, cannot make up for the lack of knowledge and expertise in disaster situations. Untrained and underprepared students can end up putting both patients as well as themselves at risk. Nevertheless, 85.8% (n, 860) of the respondents deemed themselves prepared enough to endure the negative effects of such a situation if it occurs in the coming time. Flexibility is described as "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (American Psychological Association, 2014). Since 91.0% (n, 912) of our demographic claims that they will work towards healthy coping mechanisms if a similar situation arises in the future, we feel that resiliency development and strengthening can be seen as a feasible intervention that could be integrated into the curriculum of students. A study done by Maunder et al., 2008 suggests that prior pandemic preparation builds resilience, reducing the stressful effects of the exposure to the same [26].

Conclusion

This survey found that 50.8% of students experienced anxiety, and 40.4% and 57.0% of the students experienced stress and depression, respectively. This finding highly suggests the need for mental or psychological support to decrease the prevalence of mental or psychological disorders among students of health sciences stream. University or government should implement certain rules and regulation to provide psychological or mental help to the ones who need. We as an observer feel that parents should be involved in such cases to create a friendly and positive environment at home.

Acknowledgement

None.

Financial Support and Sponsorship

Nil.

Conflict of Interest

There is no conflict of interest.

References

1. Zu ZY, JiangMD, Xu PP, Chen W, Ni Q, et al. (2020) Coronavirus Disease 2019 (COVID-19): A Perspective from China. Radiol. 296(2):E15-E25.
2. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges Int J Antimicrob Agents. 55(3):105924.
3. Li X, Geng M, Peng Y, Meng L, Lu S. (2020) Molecular immune pathogenesis and diagnosis of COVID-19. J Pharm Anal. 10(2):102-8.
4. Spoorthy MS, Pratapa SK,Mahant S. (2020) Mental health problems faced by healthcare workers due to the COVID-19 pandemic–A review Asian J Psychiatr. 51:102119.
5. Peeri NC, Shrestha N, Rahman MS, Zaki R, Tan Z, et al. (2020) The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: what lessons have we learned? Int J Epidemiol. 49(3):717-26.
6. Esler M. (2017) Mental stress and human cardiovascular disease. Neurosci Biobehav Rev. 74(pt B):269-76.
7. Hawryluck L, Gold W, Robinson S, Pogorski S, Galea S, et al. (2004) SARS Control and Psychological Effects of Quarantine, Toronto, Canada Emerg Infect Dis. 10(7):1206-12.
8. Styra R, Hawryluck L, Robinson S, Kasapinovic S, Fones C, et al. (2008) Impact on health care workers employed in high-risk areas during the Toronto SARS outbreak. J Psychosom Res. 64(2):177-83.
9. Brooks S, Webster R, Smith L, Woodland L, Wessely S, et al. (2020) The psychological impact of quarantine and how to reduce it: rapid review of the evidence. The Lancet. 395(10227):912-920.
10. Lai J, Ma S, Wang Y. (2019) Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease. JAMA Netw Open. 3(3).
11. Selvaraj P, Muthukanagaraj P, Saluja B, Jeyaraman, M, Anudeep T, et al. (2020). Psychological impact of COVID-19 pandemic on health-care professionals in India-A multicentric cross-sectional study. Indian J Med Sci. 72(3):141-7.
12. Gritsenko V, Skugarevsky O, Konstantinov V, Khamenka N, Marinova T, et al. (2021) COVID 19 Fear, Stress, Anxiety, and Substance Use Among Russian and Belarusian University Students. Int J Ment Health Addict. 19(6):2362-8
13. Ahorsu DK, Imani V, LinCY, Timpka T, Broström A, et al. (2020) Associations Between Fear of COVID-19, Mental Health, and Preventive Behaviours Across Pregnant Women and Husbands: An Actor-Partner Interdependence Modelling Int J Ment Health Addict. 11:1-5.
14. Savitsky B, Findling Y, Ereli A, Hendel T. (2020) Anxiety and coping strategies among nursing students during the covid-19 pandemic. Nurse Educ Pract. 46:102809.
15. Roy D, Tripathy S, Kar S, Sharma N, Verma, S, et al. (2020) Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic Asian J Psychiatr. 51:102083.

16. Xiao H, Zhang Y, Kong D, Li S, & Yang, N. (2020) Social Capital and Sleep Quality in Individuals Who Self-Isolated for 14 Days During the Coronavirus Disease 2019 (COVID-19) Outbreak in January 2020 in China. Med Sci Monit. 26:e923921-1.

17. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. (1998) Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and community a sample. Psychological Assessment. 10(2):176.

18. Tang F, Liang J, Zhang H, Kelifa MM, He Q, et al. (2020) COVID-19 related depression and anxiety among quarantined respondents Psychol Health. 36(2):164-78

19. Iqbal S, Gupta S, Venkatarao E. (2015) Stress, anxiety & depression among medical undergraduate students & their socio-demographic correlates Indian J Med Res. 141(3):354-7.

20. Al-Rabiaah A, Temsah MH, Al-Eyadhy A, Hasan GM, Al-Zamil F, et al. (2020) Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi ArabiaJ Infect Public Health. 13(5): 687-1.

21. Del Pozo Cruz B, Alfonso-Rosa RM, McGregorD, Chastin SF, Palarea-Albaladejo J, et al. (2020) Sedentary behaviour is associated with depression symptoms: Compositional data analysis from a representative sample of 3233 US adults and older adults assessed with accelerometers. J Affect Disord. 15:265:59-62.

22. Islam MA, Barna SD, Raihan H, Khan MN, Hossain MT. (2020) Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. PLOS ONE. 15(8):e0238162.

23. Moghanibashi-Mansourieh A. (2020) Assessing the anxiety level of Iranian general population during COVID-19 outbreak. Asian J Psychiatr. 51:102076.

24. Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, et al. (2020) Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. Eur Child Adolesc Psychiat. 29(6):749-8.

25. Wang Y, Di Y, Ye J, & Wei W. (2020) Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China Psychol Health Med. 26(1):13-22.

26. Maunder RG, LeszczM, Savage D, Adam MA, Peladeau N, et al. (2008) Applying the Lessons of SARS to Pandemic Influenza. Can J Public Health. 99(6):486-8.