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A Study to Assess the Depression among College Students Before, During and After the COVID-19 Lockdown

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Introduction

According to the World Health Organization (WHO), in the month of March 2020 over 14000 people died due to COVID 19, and more than 3 lakh cases were reported to be infected. In India, 1251 confirmed COVID cases and 32 death cases were reported when nationwide lockdown was declared on 23rd March, 2020. The cases rose sharply as the year progressed and slowly regressed, until the second wave hit India. In India, 29.27 million cases were reported so far during the pandemic, with a case fatality rate of 1.24% (363,079 deaths) up to June 11, 2021. (1,2)

In the current pandemic, all educational institutions, shopping arcades, factories, offices, local markets, transport vehicles, airports, railways, metros, and buses were completely shut down except hospitals, police stations and other emergency services like fire station, petrol pumps, etc. These lockdowns are still active in a lot of communities, and more are expected to arise due to the impending third wave of COVID 19. There are reports that indicate that students in India are scared of COVID 19 and this leads to anxiety and depression, which is all compounded by the effects of the lockdown. (3) Other surveys suggest that more than two-fifths of the people are experiencing common mental disorders, due to lockdown and the prevailing COVID-19 pandemic. (4,5)

According to a study conducted in May 2020, both students and teachers in the education system must adapt to online methods of teaching in which neither group has experience, putting them both at above-average stress levels compared to the rest of the Indian population. (2)

These problems would have only worsened with the second and third wave, and may recur again if the

impending any other potential waves in the future lead to another lockdown.

Prior to the pandemic, in India faced a great deal of stigmas and depression which may or may not have been self-diagnosable, and this leads to poor efficacy as well as poor performance of the students.(6) Naturally with the effects of lockdown, these problems would have only worsened among the youth because of the effects of isolation, online classes, the collapsing economy due to the loss of jobs that require face to face interaction and the depressing events broadcasted through social media. Another study conducted across India confirms that the youth are the ones who suffer the most due the effects of the pandemic, at both micro and macro levels. (1)

Sociodemographic factors also play a significant role in the prevalence of depression amidst the pandemic. Older adults have increased resilience to psychopathologies such as post-traumatic stress disorder after an emergency due to natural disasters, indicating that older population are better equipped to handle stressful situations, which means that the younger population should be our priority to assess the prevalence of depression, anxiety and other psychological manifestations to prevent their comorbidities.(1)

Aside from this, loneliness is a crucial determinant in mediating social skills with anxiety and depression, especially among college students who are at an age when they need to develop these skills to have a secure future. Not only sleep disturbance has a direct correlation with depression, but college students with sleep disturbance and depression are more prone to face anxiety and have poorer cognitive and physical functioning and have a poorer quality of life. (7) Loneliness and sleep disturbances are going to be increased among students in lockdown and quarantine. Another study showed that home confinement and restricted access led to reduced physical activity and increased screen exposure, which might play a major role in disturbing sleep patterns.

A greater number of individuals went bed later at night and awoke later in the morning during lockdown compared to before lockdown. (8)

Aside from sociodemographic, economic, environmental and psychosocial factors like loneliness, we also have to consider the possibility that the COVID-19 infection by itself can be a risk factor for depression. Studies were done in such a way that extrinsic factors like sociodemographic factors, socioeconomic status, loneliness etc were not confounders because the participants all belonged to more or less the same profession with the same earnings, same location, education, socioeconomic status etc. Which all indicates that COVID-19 infection by itself can be considered as a risk factor for depression. (9–11)

With this entire in mind, it is critical to consider the mental health and well-being of college students, as they are a high-risk group for mental and psychosocial disorders, this study was conducted with the objectives to determine the impact of COVID-19 pandemic among college students and its association with depression. Our hypothesis for this study was that ‘there is increased prevalence of depression as an impact of COVID-19’

Material & Methods

A cross sectional study was conducted through Microsoft forms. Modified Beck Depression inventory scoring system was used for assessment of the prevalence and severity of depression among college students of all faculties, like arts, commerce, science, medical, dental and nursing. College going students with age 18yrs or more were included in the study and the students, who

have not given the consent or not willing to participate in the study were not considered for the study.

The authors created a self-administered questionnaire after conducting a thorough literature review and consulting with peers, subject experts and local experts. It included two sections- A and B. Section A is containing some of the socio-demographic characters and closed ended questions on different aspects related to check the impact of COVID-19. Questions were asked to the students regarding their situation before, during and after lockdown. The questions and the scaling used were as per the modified Beck's depression inventory as study tools. Aside from this, some questions to determine other factors and possible confounding variables such as demographic factors, socioeconomic factors, already present cases of depression, COVID-19 infection, etc. were asked to the students to get the most accurate results.

Section B is Modified Beck's depression inventory. This depression inventory can be self-scored, and each question is measured on a score of 0 to 3.

Due to lack of relevance of question 21 about whether interest in sex has declined or not, this question has been removed from the Beck's depression inventory questionnaire. The grading of depression has been slightly modified to serve the purpose of assessing the sensitivity, and it is not to be used as a diagnostic tool for depression. There are also ethical qualms about asking about personal information about the sexual history of the participant, as he/she may not be comfortable to disclosing such information due to lack of trust, social stigmas, etc. This modification was made according to Beck's Depression Inventory second edition, NCTSN (2021). Total maximum score is 60, which is divided into different levels of depression as score 0-10: These ups and downs are considered normal, 11-16: Mild mood disturbance, 17-20: Borderline clinical depression, 21-30: Moderate depression, 31-40: Severe depression and over 40: Extreme depression.

Sample size was calculated by using statistical formula was 160 (P= 53.1 and L = 15% of P).(3) Accordingly data was collected from 200 students, by using an online survey and purposive sampling method with total anonymity using the tool and self-structured questionnaire.

The data was compiled, and the results were noted. Statistical analysis was done by using SPSS-22. Frequency and percentages were obtained. Chi-square test was applied to check the association between depression and different factors. Binary logistic regression was used to find out the significant predictor for depression.

Ethical consideration: Ethical consideration from Research Review Committee (RRC) and the Institutional Ethical committee (IEC) was taken (BV(DU)MC&H/Sangli/IEC/458/21). The poll was anonymous and whatever personal information was taken is safe and not revealed publicly in any way. Consent was taken from each participant prior to the study. No significant risks were involved in the study.

Results

Data of total 200 students was used in the analysis, after cleaning it. Students from nearly all educational streams, like medical, engineering, arts, commerce, law, MBA etc have participated in the study. Out of 200, 95 (47.5%) were males. Majority of students were older than 20 years (76.5%). Mild depression was found in 166 (83%) students whereas moderate depression in 23 (11.5%) and severe depression in only 11(5.5%) of students.

In the current study we found that minimum Beck's depression score was 11 and maximum was 51. Students with Mild mood disturbance were 146(73%) and borderline clinical depression were 20(10%). These students were included under the category of mild depression. Twenty-three (11.5%) students had moderate depression, whereas 9(4.5%) and 2(1%) had severe and extreme depression respectively.

For analysis purpose, we modified categories of depression as mild (mild mood disturbances and borderline clinical depression – depression score up to 20) and moderate / severe depression (Moderate, severe and extreme depression- score > 20).

Only seven (3.5%) students were living at the hostel during the lockdown while others were with their family members. After lockdown 113(56.5%) were living in hostel, whereas still 86 (43%) were living at the home and only one student was living at relative's house.

Table 1 shows that there was statistically significant association between good quality internet connection and depression at the time of lockdown ($p < 0.01$). The students, who had moderate or severe depression, were not having good internet connection, whereas those with good quality connection had mild depression.

Maximum students (96.5%) had attended the online classes during lockdown and the remaining (3.5%) students attended offline. Even if internet quality was not good for 39 (19.5%) of students, 84.5% of them attended online classes. However, depression was not found significantly dependent on whether attended online or offline classes and quality of these classes. The students who had attended the classes, were found to have mild depression and those who had not attended the classes had moderate or severe depression.

Thirty-six (18%) of the students were found to be COVID positive, and 86 (43%) students had lost someone from their family, friends or relatives before or during lockdown. There was no association of COVID positive status and losing the dear ones with occurrence of depression among the study participants.

Table-2 shows about the association of depression with various factors among the study participants.

Depression was significantly associated with problems like stress, depressed feeling, family or relationship issues before, during and after lockdown ($p< 0.01$). Moderate / severe depression was found in the students, who had the problems like stress, depressed feeling, family or relationship issues. The students, who spent less than the usual time with their family, were having significantly more depression during the lockdown ($p < 0.01$). Before and after lockdown, this association was not found to be significant.

The students, who had spent more than the usual time on the internet before and after the lockdown were significantly associated with moderate / severe depression ($p < 0.05$).

Students, who ate normally, had mild depression 89(87.25%), whereas who ate either less or more than the normal had moderate or severe depression 21(21.43%). Though these findings were not statistically significant, the proportions were larger.

Depression was significantly associated with not exercising for a week. Moderate or severe depression was found in the students, who had not exercised for a whole week during the lockdown ($p < 0.01$).

Depression and exercising vigorously were also found significantly related with each other ($p < 0.01$). The students, who did vigorous exercise daily were found to have moderate/ severe depression.

Depression and walking for at least 10 min, during the lockdown were significantly associated ($p < 0.05$). Similarly, the students, who had not walked for at least 10 min were having moderate / severe depression (Table 3).

To find the significant predictor, we applied binary logistic regression with Wald's backward method. The factors, which were found to be significant in the univariate analysis and the factors, which were significantly associated with depression were considered for multivariate analysis. Hence, we prepared three models according to similarity of factors.

In the first model: (Problems) all the problems related to students; like good quality internet connection, problems like stress, depressed feeling, family or relationship and facing such problems before, during and after lockdown were considered. We have chosen a model, obtained in step 3 with 83.5% accuracy, to get the significant predictor for this model. We found Problems like stress, depressed feeling, family or relationship issues as a significant predictor for this model.

In the second model (Time spent): Time spent on internet before, during and after the lockdown was considered. Time spent on the internet after the lockdown was the significant predictor found in the second model' as we have chosen the step 2 with 83% accuracy model.

The third model (Exercise): Independent factors considered were vigorous exercise, moderate exercise, walk for at least 10 minutes and NOT exercising. We found walking as a significant predictor, in the step 4, with 83% accuracy.

Discussion

The primary goal of this study was to investigate the impact of the COVID-19 pandemic on depression among college students. Data was collected through an online survey from all educational streams and we found that all the participants had depression; either mild or moderate to severe. Male and female students of all ages suffered from depression in equal amounts, regardless of their age. The majority of students had mild depression, but there were also moderate and severe cases. Our study found that 34% of students had moderate to severe depression, whereas in the study conducted Nezam S. et al using 'Beck's Depression Inventory' this was 47.78%. (12) This difference is due to difference in the socio-demographic characters of study participants.

Klaser et al found overall prevalence of depression as 26.4% and Vankar et al found Moderate to severe depression in 26.6% of the participants. (13,14) Chen F et al found it to be comparatively less i.e., only 11.78% students; whereas Kumar S et al found it to be very high 80%. (15,16) The prevalence rates in different studies vary greatly. In our study, we have used Beck Depression Inventory, which is a subjective scale, so results may be varying drastically. Methods of assessment, grading, and cut off used to assess depression, as well as differences in the sample size chosen for the study, may result in different percentages of depression. (15)

Students were unable to attend the online classes in a majority of cases. For studying, 20% of students did not have access to a high-speed internet connection. Furthermore, it is possible that this is one of the most significant causes of depression. Kapasia N. et al found that the 32.4% students having poor quality internet connection. (17) Students must be able online platforms for learning, which they may not be familiar with or competent with. Due to various technological issues, online learning may be disruptive, risking their future careers. (18)

We found a significant association of depression with different problems like stress, depression, family or relationship issues. In the present study, depression was not significantly related with eating disorders, but larger proportion of students, who were eating either less or more than the usual had moderate or severe depression. Diet had a significant impact on the physical as well as mental health. A healthy diet is often linked to a lower risk of developing psychiatric disorders. (19)

Students, who were not doing any type of exercises had large were more prone to depression. They should engage themselves in cardio exercises such as walking, running, swimming, and in bicycling to maintain a healthy lifestyle. (19)

The association of depression with different factors may not be directly related to COVID-19, but rather to the impact of COVID-19 on long-term study pattern and career development. Depression has a negative impact on the interpersonal, social, and occupational spheres of students' lives, making it a multidimensional disorder. (12,20)

Conclusions

Students are facing mental health problems like depression before, during and after the lockdown. Students were unable to attend the online classes due to non-availability of a high-speed internet connection. Furthermore, it is possible that this is one of the most significant causes of depression. For generalization, we need to conduct the study on a larger sample size using random sampling methods.

The infra-structural facilities for the online teaching learning process should be provided to the educational system, which can help to regulate the digital learning process and also overcome the academic disturbances during future health emergencies. We used only the Beck's Depression inventory to measure the depression, which is more subjective. The study would be strengthened using other validated instruments, as well as more objective measures. Due to the case-control design used in the study, a causal relationship of depression as impact of COVID-19 cannot be determined.

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References

1. Anand V, Verma L, Aggarwal A, Nanjundappa P, Rai H. COVID-19 and psychological distress: Lessons for India. PLoS ONE. 2021;16(8 August):1–16.
2. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, Anxiety and Stress Among Indians in Times of Covid-19 Lockdown. Community Mental Health Journal. 2021;57(1):42–8.
3. Chaudhary AP, Sonar NS, TR J, Banerjee M, Yadav S. Impact of the COVID-19 Pandemic on the Mental Health of College Students in India: Cross-sectional Web-Based Study. JMIRx Med. 2021;2(3): e28158.
4. K. V. The mental health impact of the COVID-19 epidemic on college students in India. Asian Journal of Psychiatry. 2020;1(oct).
5. Chen F, Zheng D, Liu J, Gong Y, Guan Z, Lou D. Depression and anxiety among adolescents during COVID-19: A cross-sectional study. Brain, Behavior, and Immunity. 2020;88(January):36–8.
6. Vankar JR, Prabhakaran A, Sharma H. Depression and stigma in medical students at a private medical college. Indian Journal of Psychological Medicine. 2014;36(3):246–54.

7. Nyer M, Ph D, Farabaugh A, Ph D, Fehling K, Soskin D, et al. Relationship Between Sleep Disturbance and Depression, Anxiety, and Functioning in College Students. Depression and Anxiety. 2014;30(9):1–14.
8. Majumdar P, Biswas A, Sahu S. COVID-19 pandemic and lockdown: cause of sleep disruption, depression, somatic pain, and increased screen exposure of office workers and students of India. Chronobiology International. 2020;37(8):1191–200.
9. Mohammad khanizadeh A, Nik Bakht F. Since January 2020 Elsevier has created a COVID-19 resource Centre with free information in English and Mandarin on the novel coronavirus COVID- 19. The COVID-19 resource center is hosted on Elsevier Connect, the company' s public news and information. 2020;(January).
10. Gennaro M, Lorenzo R De, Conte C, Poletti S. Since January 2020 Elsevier has created a COVID-19 resource Centre with free information in English and Mandarin on the novel coronavirus COVID- 19. The COVID-19 resource center is hosted on Elsevier Connect, the company's public news and information. Elsevier Journal, Brain Behav Immun. 2020;89(January):594–6.
11. Sensoy B, Gunes A, Ari S. Anxiety and depression levels in Covid-19 disease and their relation to hypertension. Clinical and Experimental Hypertension. 2021;43(3):237–41.
12. Nezam S, Golwara A, Jha P, Khan S, Singh S, Tan war A. Comparison of prevalence of depression among medical, dental, and engineering students in Patna using Beck's Depression Inventory II: A cross-sectional study. Journal of Family Medicine and Primary Care. 2020;9(6):3005.
13. Klaser K, Thompson EJ, Nguyen LH, Sudre CH, Antonelli M, Murray B, et al. Anxiety and depression symptoms after COVID-19 infection: results from the COVID Symptom Study app. Journal of neurology, neurosurgery, and psychiatry. 2021 Dec 1;92(12):1254–8.
14. Vankar JR, Prabhakaran A, Sharma H. Depression and stigma in medical students at a private medical college. Indian Journal of Psychological Medicine. 2014;36(3):246–54.
15. Kumar GS, Jain A, Hegde S. Prevalence of depression and its associated factors using Beck Depression Inventory among students of a medical college in Karnataka. Indian Journal of Psychiatry [Internet]. 2012 Jul [cited 2022 Mar 10];54(3):223. Available from: /pmc/articles/PMC3512357/
16. Chen F, Zheng D, Liu J, Gong Y, Guan Z, Lou D. Depression and anxiety among adolescents during COVID-19: A cross-sectional study. Vol. 88, Brain, Behavior, and Immunity. Academic Press Inc.; 2020. p. 36–8.
17. Kapasia N, Paul P, Roy A, Saha J, Zaveri A, Mallick R, et al. Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India. Children and Youth Services Review. 2020 Sep 1;116.
18. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, Anxiety and Stress Among Indians in Times of Covid-19 Lockdown. Community Mental Health Journal. 2021 Jan 1;57(1):42–8.
19. Verma K. The mental health impact of the COVID-19 epidemic on college students in India. Vol. 53, Asian Journal of Psychiatry. Elsevier B.V.; 2020.

20. Sabbarwal B, Puranik MP, Sowmya KR. Prevalence of depressive symptoms and associated factors among dental students: A cross sectional study. Journal of Global Oral Health. 2019 Sep 25; 2:16–22.

Legend Tables

Table 1: Association of good quality internet and depression.

Did you have good quality internet connection at the time of lockdown?	mild depression	moderate/ severe depression	Total
No	26 (66.7)	13 (33.3)	39 (100)
Yes	140 (87)	21 (13)	161 (100)
Total	166 (83)	34 (17)	200 (100)
Chi-square = 9.16, p value = 0.002			

Table 2: Cross table-showing association of depression with different factors before, during and after lockdown.

depression	before lockdown			during lockdown			after lockdown		
	mild	Moderate / severe	Total	mild	moderate/ severe	Total	mild	moderate/ severe	Total
Problems like stress, depression, family or relationship issues									
No	117 (90.7)	12 (9.3)	129 (100)	87 (92.6)	7 (7.4)	94 (100)	92 (89.3)	11 (10.7)	103 (100)
Yes	49 (69)	22 (31)	71 (100)	79 (74.5)	27 (25.5)	106 (100)	74 (76.3)	23 (23.7)	97 (100)
	Chi-square = 15.26, p value = 0.000			Chi-square = 11.472, p value = 0.001			Chi-square = 6.013, p value = 0.014		
Time spent with family or friends									
Less than usual	37 (82.2)	8 (17.8)	45 (100)	21 (65.6)	11 (34.4)	32 (100)	46 (79.30)	12 (20.7)	58 (100)
More than usual	16 (76.2)	5 (23.8)	21 (100)	121 (89)	15 (11)	136 (100)	33 (75.00)	11 (25)	44 (100)
Usual	113 (84.3)	21 (15.7)	134 (100)	24 (75)	8 (25)	32 (100)	87 (88.80)	11 (11.2)	98 (100)
	Chi-square = 0.877, p value = 0.645			Chi-square = 11.734, p value = 0.003			Chi-square = 4.872, p value = 0.088		
Time spent on the internet									
Less than usual	34 (82.9)	7 (17.1)	41 (100)	4 (66.7)	2 (33.3)	6 (100)	22 (78.6)	6 (21.4)	28 (100)
More than	13 (61.9)	8 (38.1)	21 (100)	133 (82.1)	29 (17.9)	162 (100)	56 (73.7)	20 (26.3)	76 (100)

usual									
Usual	119 (86.2)	19 (13.8)	138 (100)	29 (90.6)	3 (9.4)	32 (100)	88 (91.7)	8 (8.3)	96 (100)
Total	166 (83)	34 (17)	200 (100)	166 (83)	34 (17)	200 (100)	166 (83)	34 (17)	200 (100)
	Chi-square = 7.645, p value = 0.022			Chi-square = 2.546, p value = 0.28			Chi-square = 10.174, p value = 0.006		

Table 3: Association of depression with different factors

	mild depression	moderate/ severe depression	Total	Significance
How many days did you NOT exercise in a week during the time of lockdown				
1-2 days	93 (86.10)	15 (13.9)	108 (100)	Chi-square = 12.405, p value = 0.002
3-4 days	44 (91.7)	4 (8.3)	48 (100)	
5-7 days	29 (65.9)	15 (34.1)	44 (100)	
Did you do any vigorous exercise during the time of lockdown (running, swimming, weight lifting, aerobics)				
1-2 times a week	43 (97.7)	1 (2.3)	44 (100)	Chi-square = 11.59, p value = 0.009
3-4 times a week	30 (85.7)	5 (14.3)	35 (100)	
5-7 times a week	22 (84.6)	4 (15.4)	26 (100)	
No	71 (74.7)	24 (25.3)	95(100)	
Did you walk for AT LEAST 10 minutes a day during the time of lockdown?				
No	31 (68.9)	14 (31.1)	45 (100)	Chi-square = 8.194, p value = 0.004
Yes	135 (87.1)	20 (12.9)	155 (100)	
Total	166 (83)	34 (17)	200 (100)	

Table 4: Binary Logistic regression

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
(Model: Problems) Overall Percentage = 83.5								
good quality internet	-1.155	0.433	7.102	1	0.008	0.315	0.135	0.737
Problems like stress, depression	1.446	0.406	12.706	1	0.000	4.246	1.917	9.401
Constant	-1.406	0.423	11.035	1	0.001	0.245		
(Model: Time spent on Internet) Overall Percentage = 83								
During lockdown	-0.43	0.541	0.633	1	0.426	0.65	0.225	1.877
after lockdown	-0.563	0.273	4.241	1	0.039	0.57	0.333	0.973
(Model: Exercise) Overall Percentage = 83								
Walk	-1.115	0.401	7.712	1	0.005	0.328	0.149	0.72
Constant	-0.795	0.322	6.094	1	0.014	0.452		

B: regression coefficient, S.E.: Standard Error, Wald: Wald's coefficient, d.f.: Degrees of freedom, sig: significance, Exp(B): Odds ratio,