

Depression, anxiety and stress study amidst COVID-19 in dental undergraduates

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ABSTRACT

Introduction: Persistent stress can impair the student's wellbeing leading to diminished efficiency at work or learning. Dental students are frequently exposed to various stressors that are related to treatment procedures, training and administrative challenges in the college. The aim of the present study is to assess the stress, anxiety and depression levels of dental students during COVID-19. This study aimed to examine the impact of depression, anxiety and stress during COVID-19 pandemic.

Materials and methods: This cross-sectional study was conducted in Kantipur Dental College Teaching Hospital & Research Center, Kathmandu Nepal during covid-19 pandemic. The study was conducted with 150 students with 50 students each from first year, second year and third year. Levels of depression, anxiety, and stress were measured using the Depression, anxiety and stress scale -21 (DASS-21); statistical analysis were performed using SPSS 20.0 and $p < 0.05$ was considered level of significance.

Results: The total DASS score was calculated as 33.76 ± 23.12 , the students showed normal, mild, moderate, severe and extremely severe groups but the maximum frequency was in normal DASS group. The study included four times more female students than male, only 27.33% did regular exercise, 40% reported financial burden on dental study.

Conclusions: A significant relation both on academic as well as social life factors of DASS was noticed on dental undergraduates during COVID-19 which is an alarming situation, emphasizing need of intervention, with the development of appropriate support services for this group.

Keywords: Anxiety, depression, stress, dental students, COVID-19

INTRODUCTION

Corona virus diseases 2019 (COVID-19) has emerged as a major public health emergency of international concern, brought a considerable threat to the psychological wellbeing. In addition to terror of death ensuing from this contagious disease, fatalities among close relatives and consequential anxiety along with depression are some crucial effects that should be acutely dealt with.[1,2] Psychological stress and other mental illness are proved to be markedly connected with COVID-19 which plays a foremost role in the advancement of fear, anxiety and depression. Apart from subsequent social instability, COVID-19 is persistently influencing all facets of human lives. People all over the globe are undergoing harsh sentiments due to lockdown setting when all daily actions are discontinued including schooling of children and business.[3] The World Health Organization defines health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. The Bachelor of Dental Surgery program at Kathmandu University is a 5-year program, Phase-I consists of two years of pre-clinical training in the basic medical sciences and the foundation of dental skills. Phase-II is 3-years for the development of clinical skills in the various dental disciplines. Dental students experience various level of stress related to their studies and the higher education environment that require coping with living away from families, a heavy class load and inefficiencies of mentor relationships and health education program.[2,4]

Both medical and dental school is recognized as a stressful environment that often has a negative effect on student's academic performance, physical health and psychological well-being. More than half of the medical undergraduate students are found to be affected by depression, anxiety and stress.[1,2,4] Medical career is one of the topmost professional courses selected because of its honored place and financial security.[5] Student's usually experience the burden of vast syllabus, high level of competition, inability to cope with the high expectations of parents after joining the course. This creates stress in them which will have a negative impact on their mental health status leading to sleep deprivation, reduced concentration, lack of confidence in handling patients, loss of self-esteem, anxiety, depression, interpersonal conflict, substance abuse, suicidal attempts, etc.[6,7]

Due to widespread of corona virus in public, the government of Nepal had declared lockdown and to maintain social distancing people had to stay at home to stop the spread of infection. Teaching continued online for the rest of the year for the students. Hence sudden isolation and social distancing can significantly affect the mental health of the students as they are removed from their extracurricular activities which make them less connected with their friends and hobbies. [8,9] This situation also gives them uncertainty about their future, their own health, and health of their friends and relatives. Early detection and intervention may help in preventing and minimizing the effects of distress on the students. Hence the aim of the present study is to evaluate depression, anxiety and stress among dental undergraduates during corona virus disease.

MATERIALS AND METHODS

This cross-sectional study enrolled 150 dental undergraduates at Kantipur Dental College Teaching Hospital & Research Center, Basundhara, Kathmandu which included first, second and third year students attending online classes during COVID-19. The study was approved from Institutional Review Committee (IRC/Ref. 40/020) and informed consent was obtained from each participant. The study was conducted during November-December 2020. The participant's socio-demographic characteristic, psychological wellbeing was assessed by the Depression Anxiety Stress Scale (DASS-21),[10] the short version of a self-rated questionnaire that assesses the severity of DAS symptoms experienced by dental undergraduates.

Size of study sample was calculated as:

$$n = Z^2 \cdot p(1-p) / d^2$$

Where,

- $Z = 1.96$ = value of the standard normal distribution corresponding to a significance level of $\alpha = (1-\alpha)/2$
- d = absolute precision, 5%
- p = expected proportion in the population, 8%
- $n = (1.96)^2 \times 0.08 \times (1-0.08) / (0.05)^2 = 113$

With 10% error, sample size=130 (for equal distribution, 150 participants were enrolled for the study). Data Management and Analysis was performed by Microsoft EXCEL and SPSS (version 20.0). The data was expressed as mean \pm standard

deviation and the comparison between samples for stress differentiation was performed by Student's t-test, Mann-Whitney U and Kruskal-Wallis test to evaluate the effects of various characteristics on the emotional disturbances self-reported by the students, p-values <0.05 were considered statistically significant.

RESULTS

The study group comprised of 150 dental undergraduates which mostly females (82%) and aged less than 21 years (78.66%). Majority of students (72%) had normal body mass index (BMI) while some students were underweight or overweight. Majority (72.6%) of the students did

not do any exercise activity (Table 1).

The distribution of students in each sub-category shows that most students are in the normal category by the levels of depression, anxiety, and stress score (Table 2).

Table 3 highlights the distribution of anxiety, depression and stress levels in the first, second and third year students. The DASS score were further categorized to normal, mild, moderate, severe and extremely severe scale and maximum number of students presented normal scoring, followed by moderate, mild and the least frequency was seen in severe and extremely severe groups of depression, anxiety and stress.

Table 1: General characteristics of students and association with emotional disturbances

	Total no. (%)	Depression Mean	P	Anxiety Mean	P	Stress Mean	P	Total DASS Mean	P
Age (Years)									
<21	118 (78.66)	76.63	0.538	75.22	0.881	75.43	0.971	75.86	0.844
>21	32 (21.33)	71.33		76.52		75.75		74.16	
Gender									
Female	123 (82)	75.79	0.861	74.78	0.665	75.58	0.963	75.29	0.899
Male	27 (18)	74.19		78.86		75.15		76.46	
BMI (Body Mass Index) grading (kg/m²)									
<18.5	25 (16.66)	86.38	0.313	90.72	0.066	82.40	0.049	87.10	0.077
18.5- 24.9	108 (72)	72.02		70.08		70.13		70.09	
25-30	17 (11.33)	77.31		83.63		96.28		89.25	
Years of BDS study									
1 st year	50	75.65	0.760	79.05	0.592	75.49	0.288	76.42	0.717
2 nd year	50	78.57		70.54		68.63		71.58	
3 rd year	50	72.34		76.95		82.25		78.46	
Regular exercise									
No	109 (72.66)	80.82	0.014	80.10	0.034	80.52	0.021	81.37	0.007
Yes	41 (27.33)	61.35		63.23		62.15		59.90	
Financial burden on studying BDS									
No	91 (60.66)	67.50	0.005	70.05	0.055	67.22	0.004	66.99	0.003
Yes	59 (39.33)	87.84		83.91		88.27		88.63	
Participation in college activities									
No	81 (54)	80.59	0.118	78.80	0.311	78.04	0.437	79.31	0.244
Yes	69 (46)	69.52		71.63		72.52		71.02	
Habit of drinking coffee at night									
No	122 (81.3)	70.80	0.005	73.44	0.233	71.03	0.008	70.98	0.008
Yes	28 (18.7)	95.98		84.46		94.96		95.20	
Peers grading (1= respondent dissatisfied with peers, 2= neither, 3= satisfied)									
1	6 (4)	106.42	0.001	121.25	0.001	115.92	0.005	118.67	0.000
2	39 (26)	94.64		89.46		95.09		96.21	
3	105 (70)	66.62		67.70		65.91		65.24	

Table continued on next page . . .

Table 1: General characteristics of students and association with emotional disturbances (Continued . . .)

	Total no. (%)	Depression Mean	P	Anxiety Mean	P	Stress Mean	P	Total DASS Mean	P
Faculty grading (1= respondent dissatisfied with faculty, 2= neither, 3= satisfied)									
1	4 (2.7)	84.25	0.104	98.50	0.150	85.38	0.011	93.00	0.018
2	45 (30)	86.44		83.54		91.21		89.60	
3	101 (67.3)	70.28		71.00		68.11		68.52	
College grading (1= respondent dissatisfied with college, 2= neither, 3= satisfied)									
1	25 (16.66)	85.83	0.241	80.48	0.631	81.52	0.050	82.98	0.150
2	55 (36.66)	77.30		76.86		83.79		80.77	
3	70 (46.66)	69.48		71.66		65.86		67.73	
Academic performance (1= respondent least satisfied with own academic performance,									
1	72 (48)	93.07	0.000	86.83	0.000	92.88	0.000	92.82	0.000
2	76 (46)	59.53		66.57		59.58		60.13	
3	2 (1.33)	50.00		57.00		55.00		36.00	
Social life (1= respondent least satisfied with social life, 2=satisfied 3= very satisfied)									
1	141 (27.33)	105.35	0.000	103.07	0.000	107.78	0.000	109.82	0.000
2	101 (67.3)	65.75		66.07		63.95		63.68	
3	8 (5.3)	45.56		53.19		55.94		48.88	
Accommodation									
Home	76 (50.66)	78.41	0.414	74.88	0.081	75.95	0.054	75.70	0.104
Hostel	50 (33.33)	76.10		83.90		83.46		82.74	
Room/flat	24 (16)	65.02		59.96		57.48		59.79	

Table 2: Levels of depression, anxiety and stress by DASS-21 among the students

	Depression level		Anxiety level		Stress level		Total DASS score	
	N	%	N	%	N	%	N	%
Normal	84	56	76	50.7	83	55.3	142	94.7
Mild	21	14	14	9.3	21	14	2	1.3
Moderate	26	17.3	29	19.3	25	16.7	5	3.3
Severe	10	6.7	17	11.3	13	8.7	1	0.7
Extremely severe	9	6	14	9.3	8	5.3	-	
Mean scores	10.24 ± 9.61		8.8 ± 6.84		14.72 ± 9.74		33.76 ± 23.12	
Range of scores	0-40		0-28		0-38		0-98	

Table 3: Frequency of the depression, anxiety and stress according to the year of study.

	Depression			Anxiety			Stress			Total DASS score		
	1 st yr	2 nd yr	3 rd yr	1 st yr	2 nd yr	3 rd yr	1 st yr	2 nd yr	3 rd yr	1 st yr	2 nd yr	3 rd yr
Normal	28	27	29	21	29	26	26	33	24	46	48	48
Mild Stress	7	8	6	5	6	3	9	7	5	1	-	1
Moderate stress	8	9	9	13	7	9	9	3	13	1	2	2
Severe stress	3	3	4	7	3	7	3	5	5	1	-	-
Extremely severe stress	3	3	3	3	5	6	2	2	4	-	-	-

The association of different emotional disturbances (depression, anxiety, and stress) with different characteristics of students is explored in Table 1. Habit of regular exercise, financial burden, peers grading, and academic performance are shown to have strongest associations with the emotional disturbances as well as the habit of coffee drinking. (Table 1)

DISCUSSION

On analysis, the frequency of female students were four times more than male. Maximum number of students did not perform regular exercise, only 27.33% study group performed exercise and significant relationship were found on comparing with depression, anxiety, stress and total DASS.

According to the study, 60% of the respondents reported no financial burden on studying BDS and depression, stress and total DASS score showed significant relation. Majority of students had no habit of drinking coffee or any beverages at night and only anxiety did not show any significant relation. On age-wise (<21 yrs and >21 years) comparison none of the parameters (emotional states) showed any significant relation. The peers grading showed strongly significant relationships whereas faculty grading and college grading did not show any strong significant relation, accommodation grading, BMI grading, years of BDS study. Similarly, social life grading, academic performance grading showed statistically significant relationships.

Due to vast course, long study hours, frequent examinations, poor competition, sleep deprivation and many other factors make the medical students more stressed, which slowly makes them depressed. [13] Because of contagiousness of COVID-19 and consequent lockdown situation, mental health of the people is deemed to be drastically affected. No doubt, researchers across the globe are rigorously searching for the genetics of the corona virus, its epidemiological features and clinical manifestations but the impact of COVID-19 pandemic on the psychology of people is a neglected facet and should be brought to the attention of stakeholders for timely intervention.[14,15] The pressure to perform well academically is a strong predisposing factor for depression, anxiety, stress (DAS) among students. In addition, the majority of science students undergo further stress as they have to appear for entrance examinations for admission in specialized professional courses.[16] The pressure

of preparation for regular examinations along with entrance examination creates a high degree of anxiety in many students, especially in those who are unable to perform at par with other students scoring higher grades.[17,18]

Corona pandemic and its socio-economic impact can also be a stressor for all findings.[19] Online system of education (staying at home) is reported to even increased the rate of depression, anxiety and stress.[8] Basudan S, 2017 study says dental education can be a significant source of stress among dental students, and similar researches have detected higher levels of stress among dental students than in the general population.[11, 20]

Manandhar SA (2019) found 68.62% stress among BDS students and prevalence of stress was higher in male as compared to females.[4,9] Academic related stress occurs due to huge syllabus to be studied within limited time frame and to take examinations in a competitive environment. Study by Samson P (2019) on nursing student found extremely severe level of anxiety (72%), followed by depression (51%) and stress (47%).[2] Various categories of potential stressors for dental students are academic performance, faculty relations, patient and clinic responsibilities, personal life issues, professional identity and financial obligations.[2,9] Overall, the highest ranked sources for these mental health disorders reported for dental students includes examination, fear of failing, and completing course. A study from Southeast of Iran also reported that stress arises when the pressure and demands of the environment exceed one's ability, while high levels lead to adverse consequences.[6]

It plays a significant role in dissatisfaction, restlessness, and frustration; increases cardiovascular diseases, malignancies, and drug addiction are inextricably linked to a progressive increase in the frequency and intensity of stress and tension.[20,21] However, it is more prevalent among medical students compared to the general population. Dentistry in medical schools and colleges is recognized in providing the most stressful environment which often exerts a negative impact on the academic performances as well as on the psychological wellbeing of the students.[18,22,23] Researchers found 60.4% of the students both male and female have moderate to severe depression. First year students had the highest depression symptoms as compared to the students of other years of education. Likewise, our

first year students showed higher level of anxiety, second year had higher depression and third year study showed higher level of stress.[24-26] Professional consequences of disturbed mental health are compromised academic performance, deceitfulness, decrease in empathy, ethics, and high frequency of medical error, stress, health and emotional problems gradually increases during the period of undergraduate study.[27] It is crucial that the medical and dental educationist should be aware of the frequency and reasons of student's distress including institutional factors and its impact on their personal and professional life.[28,29]

It has been reported that dental students express considerable stress symptoms during their training and that they are more anxious than the general population, showing higher levels of depression, obsessive compulsive disorders, and interpersonal sensitivity than age-matched norms. Thus, recognizing the importance of mental health, the present study was carried out to assess the DAS among dental undergraduates in Kantipur Dental College Teaching Hospital, Kathmandu using DASS-21.

CONCLUSION

This study aimed to assess the levels of depression, anxiety and stress in undergraduate dental students and found that the levels of these conditions were high but the actual numbers could be higher than those reported herein. Participants with abnormal depression, stress scores require a clinical diagnosis to receive prompt treatment which includes relaxation strategies, interpersonal approaches such as counseling systems, programs designed to improve studying and test taking skills and stress management workshops.

CONFLICT OF INTEREST

None.

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