



Level of Depression, Anxiety and Stress, Among Dental Post Graduates During 2nd Wave of COVID 19: A Cross-Sectional Study

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Abstract

Introduction: Dentists naturally are subjected to high levels of stress due to heavy workloads, patient relationships, and the urgency of the job. COVID 19 has showed both fear and perceived job insecurity which were proportional to anxiety, stress and depressive symptoms.

Objective: To assess level of Depression, Anxiety and Stress among Dental post graduates during the second outbreak of COVID 19.

Materials and Methods: A cross sectional study was conducted on 41 dental post graduates having clinical exposure with patients participated in online questionnaire based survey using DASS -21 scale. A descriptive analysis and chi square test was done to assess depression, anxiety and stress levels among these dental postgraduate students posted in COVID 19 duty.

Results: The percentage of female participants 73.17% was more than male participants 26.83%. The prevalence of depression, anxiety, and stress was found to be 9.7%, 4.8%, and 4.8% respectively. We have found a significant association of depression with anxiety and stress among study participants ($p=0.002$).

Conclusion: Majority of the post graduate students participated were free from psychological impact. But, a mild to moderate level of depression associated with anxiety and stress among few dental post graduates during COVID 19 second outbreak was found to be highly significant. This could be attributed to prior exposure to 1st pandemic COVID wave. The most psychological level of impact was depression followed by both anxiety and stress. There is a need for psychological

intervention and mental health programs to promote mental

status of dental post graduates at institution level.

Keywords: COVID 19 Pandemic, Dentist, Mental Status, Psychological Impact, DASS 21.

The following core competencies are addressed in this article: Mental health, Medical knowledge and Psychological status.

Introduction

In late December 2019, a novel viral outbreak originated in Wuhan City, China which later came to be known as “coronavirus disease-2019 (COVID-19).” As the epidemic spread rampantly to other parts of the world, becoming a major public health problem not only for China but also countries around the world, the World Health Organization (WHO) announced this outbreak a pandemic. India reported its first confirmed COVID-19 case on January 30, 2020 and the cases thereby continued to rise till date with second wave going on with worst affect compared to first wave. To mitigate the spread, nationwide lockdown was initiated in March 25, 2020 followed by partial lockdown and unlock in different states at different time intervals as and when the severity of corona virus on humans increased and decreased its positivity rates.^[1]

India ranks at top list due to the impact of COVID 19 scenario when compared with other countries in the world affecting all age groups. Health care workers are the only group who are at risk as they come in contact with patients directly or indirectly in this pandemic situation. According to Occupational Safety and Health Administration (OSHA), dentists are considered a high risk group for spreading infection through aerosols while treating a patient's oral cavity. Even though most of dental care settings have been suspended in countries experiencing COVID-19 pandemic, Dental care professionals are still reported of undergoing enormous physical and psychological pressure, knowing the fact of being at a higher risk group.^[2,3]

The present study was conducted during the second wave in India to assess the psychological impact of depression, anxiety and stress levels on dental postgraduate students posted in COVID duty. The literature reveals about mental health status among dentists during 1st COVID 19 pandemic situation.^[1,2] However, lacunae exist during and after 2nd wave for Indian post graduate dentist doctors. Due to dearth of availability of medical professionals to manage COVID patients during 2nd wave, dental post graduates in India were asked to work in COVID wards, who having minimum knowledge and training when compared to medical post graduates. The present study was thus conducted to know the psychological impact among Indian dental post graduates during 2nd wave outbreak. The results obtained will determine the effect of certain demographic and health variables on participants' responses related to their mental health status during and after 2nd wave of COVID 19.

Materials and Methods

Study design: The study was designed, analyzed and interpreted according to STROBE guidelines.^[4]

Setting, location and period of study: An observational, cross sectional online questionnaire based survey on a sample group of 41 post graduate students from Bapuji Dental College, Davangere in Karnataka State, India were selected for the research study that was conducted for 3 months between April - June 2021. Prior to the start of the present survey ethical approval was obtained from the institutional ethical and research committee. The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000.

Inclusion and Exclusion Criteria: The dental post graduates who had been posted for COVID duty were included and those who were not willing to participate in this online survey which was to determine their mental health status level were excluded.

Sample size: All the 2nd year post graduate students(n=45) posted in COVID duty were selected. Among them four students opted out due to personal and medical issues. Finally a total of 41 post graduate students participated.

Methodology and Parameters Used:An online questionnaire based cross sectional study being conducted was explained to all dental post graduates in English language. The participants were asked to submit completed questionnaires via links sent in Google forms. The questionnaire proforma used was Depression, Anxiety and Stress (DASS) rating scale developed by Lovibond and Lovibond (1995) to assess the psychological level among post graduate dentists posted in COVID duty.^[5]

DASS Rating Scale:Each post graduate student was sent a 21 item short form version of Depression, Anxiety and Stress (DASS) rating scale. Each DASS subscale comprises seven self report items that are rated on a four point scale from 0(do not apply to me at all) to 3(applied to me very much or most of the time). The depression subscale assesses core depressive symptomatology of dysphoria, hopelessness, devaluation of life, self deprecation, lack of interest/involvement, anhedonia, and inertia. The anxiety subscales assess core anxiety symptomatology of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress subscales assesses chronic, nonspecific arousal, namely difficulty relaxing, nervous arousal, being easily upset or agitated, irritability and over reactance and impatience.^[5-7]

Statistical Analysis: Based on the questionnaire rating scale answered by each dental postgraduate, the scores were totaled and results tabulated. The data were entered and analyzed using SPSS software version 23 for frequency distribution, descriptive analysis and chi square test to assess depression, anxiety and stress levels among the dental postgraduate students posted in COVID 19 duty.

Results

Demographic Details:The mean age of post graduate students was 26.91 ± 1.56 , 73.17% were female students. Majority 35(85.36%) of the students were staying in hostel. Among them very few 5(12.19%) were married, all of them belong to upper socioeconomic class.

Table 1 shows over all questions asked related to assessment of depression in DASS -21 scale and the overall study sample answered to the four options given to it with percentages indicated in parenthesis.

Table 2 shows over all questions asked related to assessment of anxiety in DASS -21 scale and the overall study sample answered to the four options given to it with percentages indicated in parenthesis.

Table 3 shows over all questions asked related to assessment of stress in DASS -21 scale and the overall study sample answered to the four options given to it with percentages indicated in parenthesis.

Table 4 shows the assessment levels of depression, anxiety and stress that are classified as normal, mild, moderate, severe and extremely severe. In the present study, only normal, mild and moderate scores exist.

Table 5 shows association of depression with anxiety and stress categories in the study sample group. An association of depression with stress was highly significant with chi square value 201.1 and degree of freedom of 120. An association of depression with anxiety was highly significant with chi square value 211.0 and degree of freedom of 156.

Discussion

Dental professionals and dental students are at an increased risk for these viruses from dental patients, as dental practice involves face-to-face communication with the patients and frequent exposure to saliva, blood, and other body fluids. Routine dental practices that emit aerosols pose a risk to patients, dentists, and auxiliary staff. In this process, dentists may provide routes for virus transmission from unrecognized COVID-19 infected patients and patients under surveillance. Transmission is similar to other respiratory diseases; it can occur with droplets ejected during speaking, coughing, or sneezing (activities of the respiratory system) and also through aerosols employed during clinical procedures. Therefore, dentists and dental students need to be very careful and showed develop preventive strategies to avoid COVID-19 involving, for example, hand hygiene, personal protective equipment (PPE) and cross contamination prevention methods for all staff when performing aerosol-emitting procedures. Less experienced students are likely to be more susceptible to the risk of infection diseases. Dental students both undergraduates and postgraduates, are inherently at high risk of exposure to infectious diseases. The emergence of COVID-19 has brought new challenges and responsibilities to institutions providing dental education.^[8,9,10]

The DASS-21 which was used in this study is a short version of the DASS-42 and has the advantage of being less time-consuming and more consistent when compared to the full-scale version.^[3]

The percentage of participants in the present study was females 73.17% more than males 26.83% respectively. This was similar when compared with previous studies on larger female participants being 65%, 76.3% 53.6% 59.7% 54.7% and 73% females respectively.^[3,7,8,11,12,13]

In the present study, the prevalence of depression, anxiety, and stress was found to be 9.7%, 4.8%, and 4.8% respectively. These scores were less when compared with previous study among dental interns being depression 11.9% and anxiety 7.3% except for stress being 0.9% which is very high.^[3] The present study scores were very less when compared with previous studies among undergraduate dental students with mean values 11.9±4.1, 12.2±4.0 and 12.9±4.3 respectively and among university students with mean values 14.04±10.44, 7.71±8.29 and 16.93±10.98 respectively.^[7,13]

The present study result was more when compared with previous study with mean values for depression 4.88±4.85 and anxiety 2.88±3.57 except for stress being 7.08±5.04 which was very less.^[11]

Previous studies showed elevated levels of depression, anxiety and stress among dental students with 60.64%, 37.02%, and 34.92%, respectively.^[10] Also, significant increase in both prevalence and levels of depression, anxiety and stress was observed among medical undergraduates with 35.5%, 33.2% and 24.9% respectively that can be correlated with the present study among dental post graduates in COVID time were a strong association has been observed between depression with anxiety and stress.^[14]

SL No	Author's name and year	Place of study	Number of subjects	Parameters assessed	Conclusion
1	Ajwa N et al (2020) [15]	Saudi Arabia	577	Anxiety (GAD-7) Depression (PHQ-9)	18% dentists had moderate anxiety, and 6% showed severe symptoms. Regarding depression, 33% reported moderate to severe levels, with only 5% showing severe symptoms. Neither the dental assistants nor the dental hygienists reported such severity.

2	Owen C et al (2021) [16]	Whales	166	Stress	High levels of stress were found, with 82% of respondents saying stress levels in the dental team have increased noticeably. 3/4 th of respondents have gone to work despite not feeling mentally well enough. Working conditions and financial pressures caused by the pandemic have directly impacted the mental health of many dentists.
3	Montoya MM et al (2021) [17]	Peru	368	Depression, Anxiety and stress	In dental students had a higher prevalence of depression, anxiety and stress during the second wave of COVID-19. In dental professionals, only working and being unmarried were risk predictors for stress. Those having children and being asymptomatic were protective predictors for depression, while being male, unmarried and with children were protective predictors for stress. None of the factors considered in this study was a predictor for anxiety in both dental students and dental professionals
4	Tao J et al (2020) [18]	China	969	Depression (PHQ -9) Anxiety(GAD -7) Stress (PSS -10) Acute Stress (ASDS)	Dental care providers suffered psychological depression, stress, anxiety, and posttraumatic stress disorder (PTSD) during COVID-19, which indicates the importance of psychological support at times of major epidemic outbreaks.
5	Kondhalkar S et al (2021) [19]	India	225	Consequences and impact of pandemic on demographics, changes in routine practice, infection control, financial aspects etc	Practicing dentists' financial status, patient flow, emotional and psychological wellbeing is affected due to drastic changes made in their practicing protocols due to COVID 19.
6	Rahman et al (2020) [20]	India	304	Perceived psychological stress	Every practicing dentist had some form of stress as measured according to CPDI. The risk of contagion, fear or uncertainty of education, financial implications and future practice avenues may be the cause of acute stress
7	Present study	India	41	Depression, Anxiety and stress	Majority of the dental post graduate students participated where free from psychological impact. But, a mild to moderate level of depression associated with anxiety and stress among few

					dental post graduates during COVID 19 second outbreak was found to be highly significant.
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Limitations of the study:

- The sample group of 41 participants in the present study is less.
- A research on a larger group sample should be conducted to validate the outcome of the present study including demographic variables such as age, marital status, with and without children, annual income etc.
- In the present study, mental health status of post graduate dentists was covered such as depression, anxiety and stress. Further, research regarding the causes of mental illness need to be investigated.

Table 1: Assessment of Depression among study participants using DASS 21 during COVID 2nd pandemic situation.

Variable	Questions	Did not apply to me at all n(%)	Applied to me to some degree, or some of the time n(%)	Applied to me to a considerable degree or a good part of time n(%)	Applied to me very much or most of the time n(%)
Depression	I could not seem to experience any positive feeling at all	17(41.5)	17(41.5)	5(12.2)	2(4.9)
	I found it difficult to work up the initiative to do things	16(39.0)	17(41.5)	6(14.6)	2(4.9)
	I felt that I had nothing to look forward to	23(56.1)	10 (24.4)	5 (12.2)	3(7.3)
	I felt down-hearted and blue	20(48.8)	14(34.1)	7(17.1)	--
	I was unable to become enthusiastic about anything	21(51.2)	17 (41.5)	3 (7.3)	--
	I felt I wasn't worth much as a person	26(63.4)	11 (26.8)	4 (9.8)	--
	I felt that life was meaningless	25(61.0)	12(29.3)	3(7.3)	1(2.4)

Table 2: Assessment of Anxiety among study participants using DASS 21 during COVID 2nd pandemic situation.

Variable	Questions	Did not apply to me at all n(%)	Applied to me to some degree, or some of the time n(%)	Applied to me to a considerable degree or a good part of time n(%)	Applied to me very much or most of the time n(%)
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Anxiety	I was aware of dryness of my mouth	28(68.3)	8(19.5)	4(9.8)	1(2.4)
	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	33(80.5)	4(9.8)	1(2.4)	1(2.4)
	I experienced trembling (e.g. in the hands)	32(78.0)	7(17.1)	2(4.9)	--
	I was worried about situations in which I might panic and make a fool of myself	21 (51.2)	16(39.0)	3 (7.3)	1 (2.4)
	I felt I was close to panic	22 (53.7)	15 (36.6)	3(7.3)	1 (2.4)
	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	31(75.6)	8(19.5)	2 (4.9)	--
	I felt scared without any good reason	19(46.3)	19 (46.3)	3 (7.3)	--

Table 3: Assessment of Stress among study participants using DASS 21 during COVID 2nd pandemic situation.

Variable	Questions	Did not apply to me at all n(%)	Applied to me to some degree, or some of the time n(%)	Applied to me to a considerable degree or a good part of time n(%)	Applied to me very much or most of the time n(%)
Stress	I found it hard to wind down	16 (39)	20(48)	4(9.8)	1 (2.4)
	I tended to over-react to situations	15(36.6)	18(43.9)	6(14.6)	2 (4.9)
	I felt that I was using a lot of nervous energy	20 (48.8)	14 (34.1)	6 (14.6)	1 (2.4)
	I found myself getting agitated	15(36.6)	17 (41.5)	9 (22.0)	--

	I found it difficult to relax	12 (29.3)	19 (46.3)	9(22.0)	1(2.4)
	I was intolerant of anything that kept me from getting on with what I was doing	23(56.1)	15 (36.6)	3 (7.3)	--
	I felt that I was rather touchy	31(75.6)	9(22.0)	1 (2.4)	--

Table 4: Levels of Depression, Anxiety and Stress among Study Participants.

Levels	Depression n(%)	Anxiety n(%)	Stress n(%)
Normal	37(90.3)	39(95.1)	32(78.0)
Mild	1 (2.4)	1(2.4)	1 (2.4)
Moderate	3(7.3)	1(2.4)	1 (2.4)
TOTAL	41 (100)	41(100)	41 (100)

Table 5: Association of Depression with Anxiety and Stress.

Levels	Stress			Anxiety		
	Df	chi square	p value	Df	chi square	p value
Depression	120	201.1	.000	156	211.0	.002
	Highly Significant			Highly Significant		

Conclusion

From the present study, a strong association of mild to moderate level of depression with stress and anxiety was found to be highly significant among dental post graduates during COVID 19 second outbreak. The most psychological level of impact was depression followed by both anxiety and stress.

The facts that the dental postgraduates being exposed earlier to first wave of COVID 19, have experienced the pandemic situation, suffered from it, got adapted to it and started continuing to lead life together with this pandemic may be the reason for lesser number of participants having psychological problems in this study. However, there is a need for psychological intervention and mental health programs to promote mental well being of dental postgraduates at institution level.

The present study fills the gap in the literature on psychological impact among post graduate dentists posted for COVID duty during second wave. Also, suggests a focus on preparation and interventions to aid in psychological recovery after possible exposure to sources of COVID infection.

Research Quality and Ethics Statement

The authors of this manuscript declare that this scientific work complies with reporting quality, formatting and reproducibility guidelines set forth by the EQUATOR Network. The authors also attest that this clinical investigation required Institutional Review Board / Ethics Committee review. As this study is not a clinical trial, it has not been registered in the clinical trial registry.

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References

1. Mishra S, Singh S, Tiwari V, Vanza B, Khare N, Bharadwaj P. Assessment of level of perceived stress and sources of stress among dental professionals before and during the COVID -19 outbreak. *J IntSoc Prevent Communit Dent.* 2020;10:794-802.
2. Kharma MY, Koussa B, Aldwaik A, Yaseen J, Alamari S, Alras H et al. Assessment of Anxiety and Stress among Dental Students to Return to Training in Dental College in COVID-19 Era. *Eur J Dent.* 2020;14:S86-S90.
3. Khanagar SB, Alfadley A. Psychological Impact of the COVID-19 Pandemic on Dental Interns in Riyadh, Saudi Arabia: A Cross-sectional Survey. *Int J ClinPediatr Dent.* 2020; 13:508-512.
4. Cuschieri S. The STROBEguidelines. *Saudi J Anaesth* 2019;13(Suppl 1): S31-34.
5. Lovibond SH, Lovibond PF (1995). *Manual for the Depression Anxiety and Stress Scales.* 2nd Ed. Sydney: Psychology Foundation.
6. Valekar SS, Phaphe SA, Sarode KR. Mental status of dental students during lockdown due to covid-19 pandemic - A cross sectional study in Western Maharashtra. *J Evolution Med Dent Sci.* 2021;10:532-35.
7. Sravani A, Doshi D, Kulkarni S, Reddy P, Reddy S. Depression, anxiety, and stress among undergraduate dental students in Hyderabad City, Telangana, India: A cross-sectional study. *J Indian Assoc Public Health Dent.* 2018;16:26-9.
8. Atas O, Yildirim TT. Evaluation of knowledge attitudes and clinical education of dental students about COVID-19 pandemic. *Peer J.* 2020;8:(e95751)1-15.
9. Sarapultseva M, Zolotareva A, Kritsky I, Nasretdinova N, Sarapultseva A. Psychological distress and post traumatic symptomatology among dental healthcare workers in Russia: Results of a Pilot study. *Int j Environ Res Public Health.* 2021;18:708.
10. Ammar N, Aly NM, Folayan MO, Khader Y, Vitanen JI, Al-Batayneh OB et al. Behavior change due to COVID-19 among dental academics – The theory of planned behavior: Stresses, worries, training and pandemic severity. *Plos One.* 2020;15:9:(e0239961)1-13.
11. Mekhemar M, Attia S, Dorfer C, Conrad J. The psychological impact of the COVID-19 pandemic on dentists in Germany. *J Clin Med.* 2021;10:1008.
12. Hakami Z, Khanagar SB, Vishwanathaiah S, Hakami A, Bokhari AM, Jabali AH et al. Psychological impact of the coronavirus disease 2019 (COVID-19) pandemic on dental students: A nationwide study. *J Dent Edu.* 2021;85:494-503.
13. Juchnowicz D, Baj J, Forma A, Karakuła K, Sitarz E, Bogucki J et al. The Outbreak of SARS-CoV-2 Pandemic and the Well-Being of Polish Students: The Risk Factors of the Emotional Distress during COVID-19 Lockdown. *J Clin Med.* 2021;10:944.
14. Sarawathi I, Saikarthik J, Kumar KS, Srinivasan KM, Ardhanaari M, Gunapriya R. Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. *Peer J.* 2020;8:e10164.

15. Ajwa N, Al Rafee A, Al Rafie H, Alrafee N, Alduhaimi N, Zainaldeen F et al. Psychological status assessment of medical and dental staff during the COVID-19 outbreak in Saudi Arabia. *Med Sci.* 2020;24:4790–797.
16. Owen C, Seddon C, Clarke K, Bysouth T, Johnson D. The impact of the COVID -19 pandemic on the mental health of dentists in Wales. *Br Dent J.* 2022;232:44-54.
17. Morales-Montoya M, Cordova-Limaylla N, Briceno-Vergel et al. Psychological impact on dental students and professionals in a Lima population during COVID-19s wave: a study with predictive models. *Sci Rep.* 2022;12:14752-764.
18. Tao J, Lin Y, Jiang L, Zhou Z, Zhao J, Qu D, Li W, Zhu Y. Psychological Impact of the COVID-19 Pandemic on Emergency Dental Care Providers on the Front Lines in China. *Int Dent J.* 2021;71:197-205.
19. Kondhalkar S, Happy D. Impact of COVID -19 Pandemic on dental practice: A questionnaire survey. *J ClinDiagn Res.* 2022;16: ZF06-ZF11.
20. Rahman S, Vanishree N, Venkatesh CH. Perceived Stress and Psychological Impact among practicing dentist in Bengaluru city during the COVID 19 pandemic. *Int J Clin Med Edu Res.* 2022;1:175-182.