

## **Assessment of Depression Among Dental Students in Chennai**

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**Kritheka CK**

Saveetha Dental College and Hospitals,  
Saveetha Institute of Medical and Technical Sciences,  
Saveetha University,  
Chennai- 77

E-mail ID: [Kritheka30bds@gmail.com](mailto:Kritheka30bds@gmail.com)

**L. Leelavathi**

Reader  
Department of Public Health Dentistry  
Saveetha Dental College and Hospitals,  
Saveetha Institute of Medical and Technical Science,  
Saveetha University,  
Chennai-77

E-mail ID: [leelavathi.sdc@saveetha.com](mailto:leelavathi.sdc@saveetha.com)

Corresponding Author

**L. Leelavathi**

Reader, Department of Public Health Dentistry  
Saveetha Dental College and Hospitals,  
Saveetha Institute of Medical and Technical Sciences,  
Saveetha University, Chennai- 77

E-mail ID: [leelavathi.sdc@saveetha.com](mailto:leelavathi.sdc@saveetha.com)

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### **ABSTRACT:**

**Background:** Depression, anxiety and stress are recognized by the World Health Organisation as important mental disorders. Depression causes sadness and loss of interest in activity. It can also cause physical problems and reduce performance.

### **Aim:**

The aim of the study was to assess the depression among dental students in Chennai

### **Materials And Methods:**

A cross-sectional study was conducted with dental students in Chennai. A self-completed questionnaire was used to assess depressive symptoms using the Beck Depression Scale. The association of depression with non-academic and academic factors was assessed using the chi-square test and the data analysed using the SPSS version of the program.  $P < 0.05$  was considered significant

## **Results:**

The prevalence of depression was found to be 57% among the study participants. Significantly higher proportion of male study participants were more depressed than female study participants (p value is 0.042). Fear of failure was more among male study participants (p value is 0.035). More than half (56.48 %) of students don't have difficulty in understanding subjects.

## **Conclusion:**

Within the limits of the study, it can be concluded that depression was more prevalent among male study participants than female study participants.

**KEY WORDS:** Depression, beck's depression inventory, innovative analysis, dental students

## **INTRODUCTION:**

Depression is a mental and mood disorder that can affect a person's daily life. It negatively affects the personal, social, and professional areas of a student's life. Around the world, in many countries Depression, stress and anxiety are common psychological disorders among dental students (1). In fact, mood disorders are the most common cause of persistent feelings of sadness and loss of interest. It can even cause severe symptoms that affect the way you feel, think, and manage everyday activities, such as eating, sleeping, or working. fatigue and lack of concentration. (2) (3) Dental students face challenges in their academic and clinical processes that can lead to depression and anxiety. (2,4). Dental students are particularly vulnerable due to the highest debt burden, blood-borne pathogens, and chronic pain frequency (5). Depression affects a significant proportion of dental students to health. In the medical profession, the majority of dental students are more prone to depression than other young people of the same age (6). It is due to various sources of stress such as the volume of material to be learned in a short time, the learning outcomes, and the preclinical or clinical practices during their training. We also found that students with both anxiety and depression were more likely to do worse in school. Although many learning factors such as high workload, long study time with no rest days to relax and high number of tests have been reported as poor psychological health of medical students and dentistry (7). Among dental students, problems such as exams, fear of falling behind in class, lack of time to visit the dentist and uncertain work are common causes of stress for them. although with each consecutive school year there is an increase in stress levels and is associated with higher levels of psychological distress. (8) It is therefore important to identify depressed individuals before serious mental disorders arise, as students with depression need serious attention. Our team with in-depth knowledge and research experience has produced high quality publications (9 - 28) Therefore, the aim of the study was to determine the depression among dental students in Chennai.

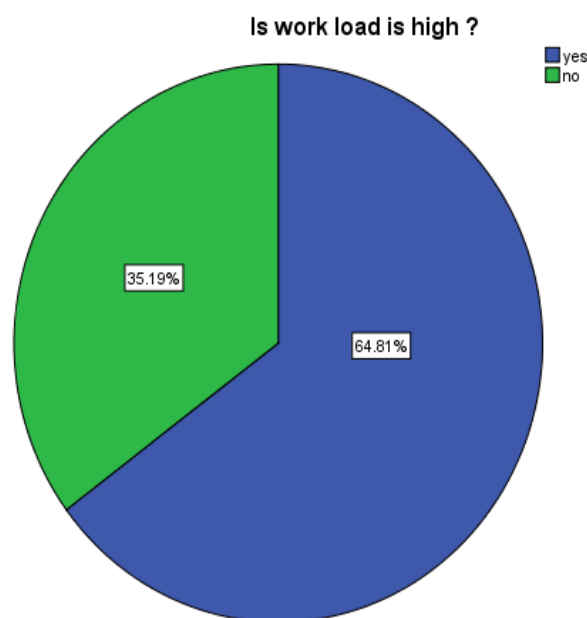
## **MATERIALS AND METHODS:**

A cross-sectional study was conducted with dental students in Chennai. Ethical approval was obtained from the Institutional Ethics Committee. In this study, the validity of the content was ensured by evaluating depression using the Beck-2 Depression Inventory. The questionnaire was created based on the results of the literature review of previous studies on depression. The questionnaire was modified to include dental students who were present on the day of the study. The search tool consisted of demographic profiles organised by age, gender, and year of study. BDI-2 is a 21 item questionnaire with 4 responses ranging from 0 to 3. A score of 0 to 21 is considered depressed and a score of 21 to 40 or greater than 40 is considered depressed. Non-academic factors include staying in a hostel, reducing free time, and substance abuse. Academic factors included interest in the course, expertise, workload, peer pressure, and fear of failure. The answers to the questions were marked as yes or no. The sample size was estimated using the formula  $N = Z\alpha^2Pq / L^2$  based on the study conducted using equation (29), resulting in a total sample size of 108. Data was collected and participants were asked to fill out a form, which took 15-20 minutes. Then all forms were collected on the same day to ensure completeness and the response rate was 100%. The data were analysed using the statistics package for the social science version (spss). Descriptive statistics were performed and a chi-square test was used to compare the prevalence of depression by gender and year.

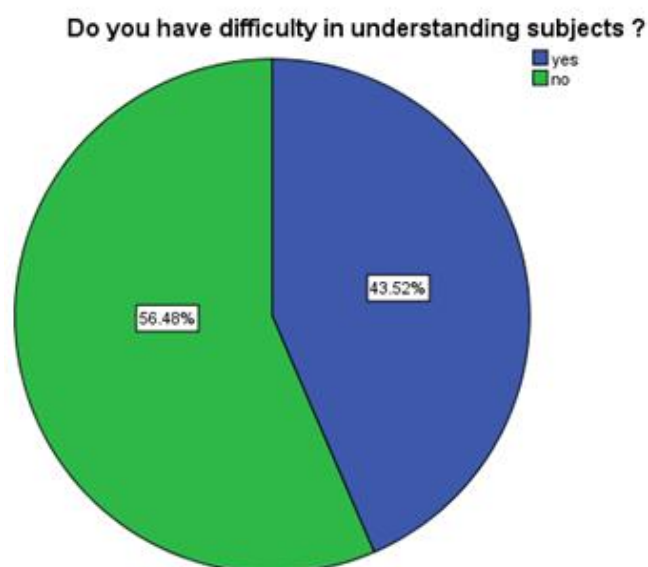
## RESULTS:

In February 2021, a survey was conducted on 108 dental students. The distribution of study participants showed that 51% of study participants were male and 49% were female. The study found that the prevalence of depression was 57%. There were statistically significant differences between BDIs in terms of age, gender, and year of study. The answer to the question was recorded as "yes" or "no".

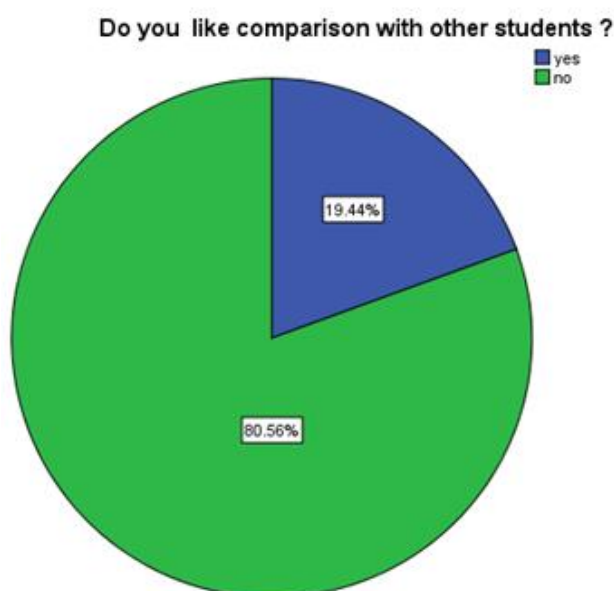
In the present study, the majority of students 64.81% reported their workload is high, whereas 35.19 % don't feel their workload is high (figure 1) and 51.85 % are fearful of academic failure, whereas 42.59 % are not worried of academic failure. As shown by this study, 56.48 % of students don't have difficulty in understanding subjects (figure 2) and Following (figure3) shows that 80.56 % of students like the comparison with other students whereas 19.44% of students don't like the comparison with other students. In this study, 56.88% of respondents said they were depressed (Figure 4). Pearson's chi-square test was used to determine the association between gender and the proportion of study participants who have fear of academic failure. the majority (31.48%) of the male study participants have fear of failure in academics than female (20.37%) study participants. Pearson's chi-square test score is 4.459, p-value is 0.035, ( $p < 0.05$ ) (Fig. 5). Association between gender and the percentages of the study participants who liked to compare them with other students showed that 13.89% of the male study participants liked to compare them with other students whereas only 5.56% of female study participants were willing to be compared with others. Pearson's chi-square test value is 4.385, indicating that the p-value is 0.0036 ( $p < 0.05$ ) (Fig. 6). When asked about peer pressure, there was a link between the year of research and the responses of research participants around it (13.89%) of 3rd year students experience higher peer pressure than 1st year students (12.96%), 2nd year students (5.56%), 4<sup>th</sup> year students (10.19%) and interns. The pressure from peers was reported to be greater in third year students than in other students, and this difference was found to be statistically significant (Pearson's chi-square test value 12.424; p-value 0.014 (p-value).  $p < 0.05$ )) (Fig. 7)



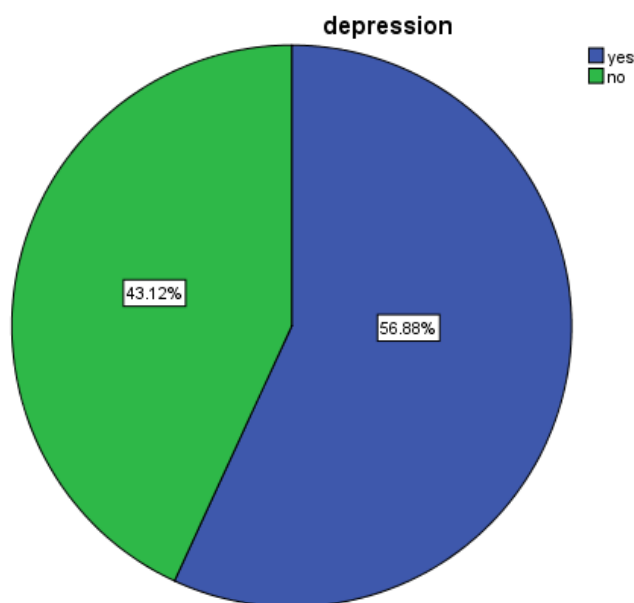
**Figure 1:** The pie chart shows students who feel that work load is high. Here blue indicates yes and green indicates no. The majority of students (64.81%) say their workload is high, whereas 35.19 % don't feel their workload is high.



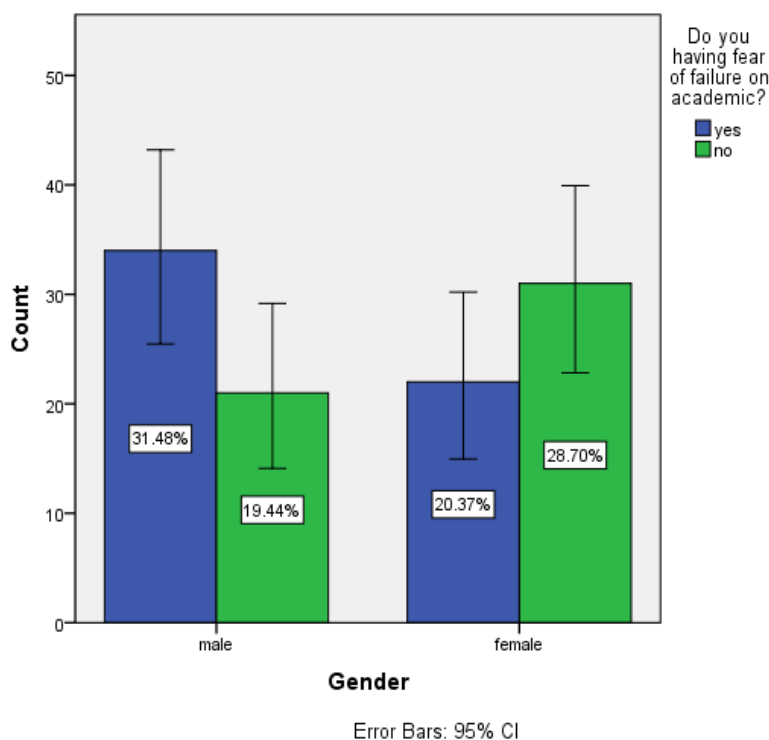
**Figure 2:** The pie chart shows students who have difficulty in understanding subjects. Here blue indicates Yes and green indicates No. Majority (56.48 %) of students don't have difficulty in understanding subjects whereas 43.52 % students have difficulty in understanding subjects.



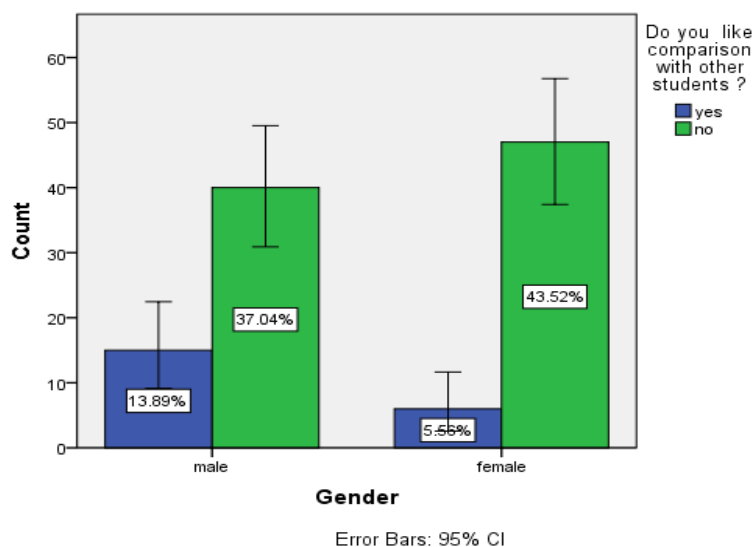
**Figure 3:** The pie chart shows students who like the comparison with other students. Here blue indicates Yes and green indicates No. Majority (80.56 %) of students like the comparison with other students whereas 19.44 % of students don't like the comparison with other students.



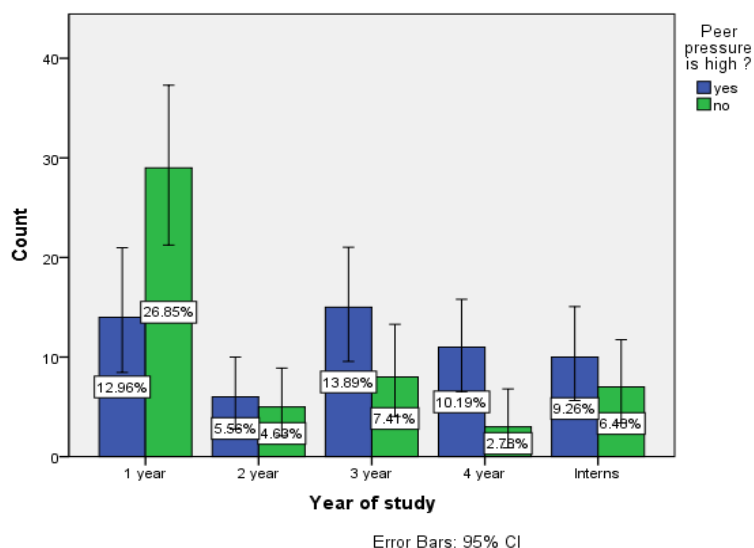
**Figure 4:** The pie chart shows the students who are in depression. Here blue denotes yes and green denotes no. More than half (56.88%) of the respondents reported to be in depression whereas 43.21% were not in depression.



**Figure 5:** The bar graph shows the relationship between gender and research participants' answers to questions about the risk of failure in academics. The x-axis represents gender and the y-axis represents the percentage of study participants' respondents. Here, blue indicates "yes" and green indicates no". About (31.48%) of the male study participants have fear of failure in academics when compared with female study participants (20.37%). This suggests that the risk of failure was greater in male study participants, and this difference was found to be statistically significant (Pearson's chi-square test value 4.459; p-value 0.035 (p). <0.05)).



**Figure 6:** The graph represents the association between gender and the responses of the study participants for the question related to the students who like to compare them with other students. X axis represents the gender and the Y axis represents the percentage of the study participants' responses. Blue colour indicates yes and green indicates no. About (13.89%) of the male study participants liked to compare them with other than female (43.52%) study participants. This suggested that males were very likely to compare them with other students than females and this difference was found to be statistically significant (Pearson chi square test value - 4.385; p value is 0.036 ( $p < 0.05$ ))



**Figure 7:** The bar chart shows the relationship between the academic year and the research participants for the question related to whether peer pressure is high. The x-axis represents the academic year and the y-axis represents the percentage of responses. Here, blue stands for "yes" and green stands for "no" 1st year students reported lesser peer pressure than 2nd, 3rd, 4th year students and interns, and this difference was found to be statistically significant.

(Pearson chi - square test value - 12.424; p value is 0.014 ( $p < 0.05$ ))

## DISCUSSION:

Depression has a detrimental effect on the individual's mental health. It is characterised by persistent grief and a lack of interest and joy in previously rewarding or enjoyable activities. It can also disturb your sleep and appetite. Fatigue and

lack of concentration are common. Depression is a major cause of disability worldwide and an important cause of the global burden of illness. The effects of depression can be long-term or relapsed and can dramatically affect a person's functioning and ability to lead a valuable life (30,31). A professional qualification is considered a positive experience with new opportunities, but it can also be challenging. Adaptation to new conditions, different lifestyles and increased responsibilities(7). About 57 % of the respondents are under depression. Dentistry is the most stressful profession than other occupations. Another possible reason could be the effect of Covid pandemic that has a major impact on everyone's mental health.

In the present study males were more depressed when compared to females and this association was found to be significant. The prevalence of depression in this study was 57%, almost in line with previous literature data, and approximately 48% of the respondents suffered from depression(32). The Beck's depression inventory -2 self reporting rating study that measures characteristics, attitudes and symptoms of depression(33), in which 21 questions tap psychological ways are rated by the respondents according to how each applied within the past 2 months, using 0–3-point scale. The choice of BDI is based on factors from cognitive studies of the symptoms of depression, and the view of depression that is perpetuated by intrusive negative cognition is particularly applicable to cognitive-behavioural therapy. High levels of depression may be due to the pressure exerted on dental students due to their workload, clinical requirements, trials and grades (34). The results of the present study provide some gender differences regarding anxiety and depression. This research revealed a significant association between age and gender, as well as significant values. In the current study, the majority of male study participants are more depressed than female study participants. Men are relatively more depressed than women, and this difference was found to be statistically significant. Furthermore, in the current study, third-year students were subjected to greater peer pressure, which was very identical to a previous study (2). Younger students had a higher average BDI and were more likely to develop depression (35). Here, gender played an important role in the degree and degree of depression. Male students had a high average BDI and were more likely to develop depression. We suggest that a mentoring system should be manifested which might be helpful to reduce stress and anxiety. The mental health of dental students is a very important aspect of their overall health, and the top priority of educational institutions around the world is to address student mental health.

#### **LIMITATIONS :**

A limitation includes the lack of baseline information concerning students' mental health, which should be collected at student orientation at dental college .

#### **FUTURE SCOPE :**

This study only has 109 participants and in the future, the number of students should be increased so that we can establish more representative findings that will help to enhance the mental health of students and, eventually, improve the patient treatment. Extra-curricular activities and stress reduction programmes should be offered on a regular basis to motivate students. Gender, year of study and certain non academic and academic factors influenced the severity of depression.

#### **CONCLUSION:**

Within the limits of the study, it can be concluded that depression was more prevalent among male study participants than female study participants.

#### **ACKNOWLEDGEMENT:**

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#### **AUTHOR CONTRIBUTIONS:**

C K Krithika: Literature search, survey, data collection, analysis, manuscript writing.

L. Leelavathi: Study design, Data verification, manuscript drafting.

## CONFLICTS OF INTEREST:

The authors declare that there are no conflicts of interest in the present study.

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## REFERENCES:

1. Aboalshamat K, Al-Zaidi D, Jawa D, Al-Harbi H, Alharbi R, Al-Otaibi S. The effect of life coaching on psychological distress among dental students: interventional study. *BMC Psychol.* 2020 Oct 14;8(1):106.
2. Basudan S, Binanzan N, Alhassan A. Depression, anxiety and stress in dental students [Internet]. Vol. 8, *International Journal of Medical Education*. 2017. p. 179–86. Available from: <http://dx.doi.org/10.5116/ijme.5910.b961>
3. Shankar S, Leelavathi L. Assessment of depression and attitude towards missing teeth replacement in geriatric patients. *Indian j public health res dev.* 2019;10(11):3727.
4. Stormon N, Ford PJ, Kisely S, Bartle E, Eley DS. Depression, anxiety and stress in a cohort of Australian dentistry students [Internet]. Vol. 23, *European Journal of Dental Education*. 2019. p. 507–14. Available from: <http://dx.doi.org/10.1111/eje.12459>
5. Lerman AR, Yamamoto KK, Taylor GW, Saeed SG. High depressive symptom prevalence in dental students associated with lifestyle and well-being characteristics. *J Dent Educ.* 2020 Jul;84(7):771–80.
6. Mohebian M, Dadashi M, Motamed N, Safdarian E, Zums, Zums, et al. Evaluation of Depression, Anxiety, Stress levels and Stressors among Dental Students of Zanjan University of Medical Sciences in Academic Year of 2015-2016 [Internet]. Vol. 10, *Journal of Medical Education Development*. 2017. p. 60–71. Available from: <http://dx.doi.org/10.29252/edcj.10.26.60>
7. Sabbarwal B, Puranik MP, Sowmya KR. Prevalence of depressive symptoms and associated factors among dental students: A cross sectional study [Internet]. Vol. 2, *Journal of Global Oral Health*. 2019. p. 16–22. Available from: [http://dx.doi.org/10.25259/jgoh\\_30\\_2019](http://dx.doi.org/10.25259/jgoh_30_2019)
8. 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 [Internet]. Vol. 16, *Journal of Indian Association of Public Health Dentistry*. 2018. p. 26. Available from: [http://dx.doi.org/10.4103/jiaphd.jiaphd\\_10\\_17](http://dx.doi.org/10.4103/jiaphd.jiaphd_10_17)
9. Mathew MG, Samuel SR, Soni AJ, Roopa KB. Evaluation of adhesion of *Streptococcus mutans*, plaque accumulation on zirconia and stainless steel crowns, and surrounding gingival inflammation in primary molars: randomized controlled trial [Internet]. Vol. 24, *Clinical Oral Investigations*. 2020. p. 3275–80. Available from: <http://dx.doi.org/10.1007/s00784-020-03204-9>
10. Samuel SR, Kuduruthullah S, Khair AMB, Al Shayeb M, Elkaseh A, Varma SR, et al. Impact of pain, psychological-distress, SARS-CoV2 fear on adults' OHRQOL during COVID-19 pandemic. *Saudi J Biol Sci.* 2021 Jan;28(1):492–4.
11. Samuel SR, Kuduruthullah S, Khair AMB, Al Shayeb M, Elkaseh A, Varma SR. Dental pain, parental SARS-CoV-2 fear and distress on quality of life of 2 to 6 year-old children during COVID-19 [Internet]. Vol. 31, *International Journal of Paediatric Dentistry*. 2021. p. 436–41. Available from: <http://dx.doi.org/10.1111/ipd.12757>
12. Samuel SR. Can 5-year-olds sensibly self-report the impact of developmental enamel defects on their quality of life? *Int J Paediatr Dent.* 2021 Mar;31(2):285–6.
13. Samuel SR, Acharya S, Rao JC. School Interventions-based Prevention of Early-Childhood Caries among 3-5-year-old children from very low socioeconomic status: Two-year randomized trial. *J Public Health Dent.* 2020 Jan;80(1):51–60.
14. Vikneshan M, Saravanakumar R, Mangaiyarkarasi R, Rajeshkumar S, Samuel SR, Suganya M, et al. Algal biomass as a source for novel oral nano-antimicrobial agent [Internet]. Vol. 27, *Saudi Journal of Biological Sciences*. 2020. p. 3753–8. Available from: <http://dx.doi.org/10.1016/j.sjbs.2020.08.022>



15. Chellapa LR, Shanmugam R, Indiran MA, Samuel SR. Biogenic nanoselenium synthesis, its antimicrobial, antioxidant activity and toxicity. *Bioinspired, Biomimetic and Nanobiomaterials*. 2020 Sep 1;9(3):184–9.
16. Samuel SR, Mathew MG, Suresh SG, Varma SR, Elsubeihi ES, Arshad F, et al. Pediatric dental emergency management and parental treatment preferences during COVID-19 pandemic as compared to 2019 [Internet]. Vol. 28, *Saudi Journal of Biological Sciences*. 2021. p. 2591–7. Available from: <http://dx.doi.org/10.1016/j.sjbs.2021.02.002>
17. Barma MD, Muthupandian I, Samuel SR, Amaechi BT. Inhibition of *Streptococcus mutans*, antioxidant property and cytotoxicity of novel nano-zinc oxide varnish. *Arch Oral Biol*. 2021 Jun; 126:105132.
18. Muthukrishnan L. Nanotechnology for cleaner leather production: a review. *Environ Chem Lett*. 2021 Jun 1;19(3):2527–49.
19. Muthukrishnan L. Multidrug resistant tuberculosis - Diagnostic challenges and its conquering by nanotechnology approach - An overview. *Chem Biol Interact*. 2021 Mar 1;337(109397):109397.
20. Sekar D, K AP. Letter to the Editor: H19 Promotes HCC Bone Metastasis by Reducing Osteoprotegerin Expression in a PPP1CA/p38MAPK-Dependent Manner and Sponging miR-200b-3p. *Hepatology* [Internet]. 2021 Jan 18; Available from: <http://dx.doi.org/10.1002/hep.31719>
21. Ezhilarasan D, Lakshmi T, Subha M, Deepak Nallasamy V, Raghunandhakumar S. The ambiguous role of sirtuins in head and neck squamous cell carcinoma. *Oral Dis* [Internet]. 2021 Feb 11; Available from: <http://dx.doi.org/10.1111/odi.13798>
22. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma. *J Oral Pathol Med*. 2019 Apr;48(4):299–306.
23. J PC, Marimuthu T, C K, Devadoss P, Kumar SM. Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study. *Clin Implant Dent Relat Res*. 2018 Aug;20(4):531–4.
24. Wahab PUA, Madhulaxmi M, Senthilnathan P, Muthusekhar MR, Vohra Y, Abhinav RP. Scalpel Versus Diathermy in Wound Healing After Mucosal Incisions: A Split-Mouth Study. *J Oral Maxillofac Surg*. 2018 Jun;76(6):1160–4.
25. Mudigonda SK, Murugan S, Velavan K, Thulasiraman S, Krishna Kumar Raja VB. Non-suturing microvascular anastomosis in maxillofacial reconstruction- a comparative study. *Journal of Cranio-Maxillofacial Surgery*. 2020 Jun 1;48(6):599–606.
26. Shabgah AG, Amir A, Gardanova ZR, Zekiy AO, Thangavelu L, Nik ME, et al. Interleukin-25: New perspective and state-of-the-art in cancer prognosis and treatment approaches [Internet]. Vol. 10, *Cancer Medicine*. 2021. p. 5191–202. Available from: <http://dx.doi.org/10.1002/cam4.4060>
27. Website [Internet]. Available from: Kamala K, Sivaperumal P, Paray BA, Al-Sadoon MK. Author response for “Identification of haloarchaea during fermentation of *Sardinella longiceps* for being the starter culture to accelerate fish sauce production” [Internet]. Wiley; 2021. Available from: <https://publons.com/publon/47375106>
28. Website [Internet]. Available from: R H, Hannah R, Ramani P, Ramanathan A, Jancy MR, Gheena S, et al. CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene [Internet]. Vol. 130, *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*. 2020. p. 306–12. Available from: <http://dx.doi.org/10.1016/j.oooo.2020.06.021>
29. Raghunathan D, Ramakrishnan D, Iris Valsan KV, Ambika S. Prevalence of Depression among Students of a Dental Tertiary Care Center in Kerala. *Indian J Community Med*. 2019 Oct;44(Suppl 1): S14–8.
30. Website [Internet]. [cited 2021 Jul 11]. Available from: <http://isolar.info/index.php/ijphrd/article/view/195615>
31. Depression [Internet]. [cited 2021 Jul 11]. Available from: <https://www.who.int/health-topics/depression>
32. George B, Sebastian S, Mathen A, Soman R, Mulamootil V. Assessment of anxiety and depression among dental practitioners in a dental school in South Kerala [Internet]. Vol. 6, *International Journal of Community Dentistry*. 2018. p. 36. Available from: [http://dx.doi.org/10.4103/ijcd.ijcd\\_6\\_18](http://dx.doi.org/10.4103/ijcd.ijcd_6_18)
33. Steer RA. Mean Beck Depression Inventory-II Scores By Severity Of Major Depressive Episode [Internet]. Vol. 88, *Psychological Reports*. 2001. p. 1075. Available from: <http://dx.doi.org/10.2466/pr0.88.3.1075-1076>
34. Shah AG. Assessment of Dental Anxiety and its Impact on Dental Health Behaviour among Medical Undergraduate Students of Gujarat, India [Internet]. Vol. 3, *Annals of International medical and Dental Research*. 2017. Available from: <http://dx.doi.org/10.21276/aimdr.2017.3.6.de5>

35. Malicka J, Malicki D, Kurowska M, Potembska E, Tarach JS. Assessment of prevalence and severity of depressive symptoms in patients with acromegaly using the beck depression inventory II (BDI-II) - own observations [Internet]. Endocrine Abstracts. 2018. Available from: <http://dx.doi.org/10.1530/endoabs.56.p796>