



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

OPINION OF DENTAL STUDENTS ON THEIR EDUCATION DURING COVID-19 - A SURVEY

KETHISWAR RAJ¹, ANJANEYULU K^{2*} AND VINAY SIVASWAMY³

1: Saveetha Dental College, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai, Tamilnadu, India, 600077

2: Reader, Department of Conservative Dentistry and Endodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai, Tamilnadu, India, 600077

3: Senior Lecturer, Department of Prosthodontics and Implantology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical & Technical Sciences, Chennai, Tamil Nadu, India -600 077

*Corresponding Author: E Mail: Dr. Anjaneyulu K: Kanjaneeyulu.sdc@saveetha.com

Received 19th March 2021; Revised 25th April. 2021; Accepted 20th May 2021; Available online 1st Aug. 2021

<https://doi.org/10.31032/IJBPAS/2021/10.8.1055>

ABSTRACT

The aim of the study is to find out the opinion of dental students on their education during covid-19. Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China, and has resulted in an ongoing pandemic [10, 11]. The first case may be traced back to 17 November 2019. As of 14 June 2020, more than 7.83 million cases have been reported across 188 countries and territories, resulting in more than 431,000 deaths. More than 3.73 million people have recovered. A survey was conducted among 300 dental students from saveetha dental college by preparing a set of questions and the answers were collected through an online survey method. In this survey, online classes are more beneficial compared to regular classes as most of the students chose yes with 65.7%. The willingness to

attend any online classes showed 74.7%. Most of the students agreed that practical classes are as important as theory classes as 74.22%. Most of the students are able to keep up with the pace of the online classes being taken with 51.4%. Majority students able to comprehend the subject being taught online showing 51.9%. Comfortability during online classes shows 38% where most of the students are not comfortable. From this survey we can conclude that the current survey shows that majority of dental students prefer online classes compared to regular classes as they are more willing to attend online classes, but they are also very skeptical to treat patients and attend college even though proper PPE kit are provided during this pandemic.

Keywords: COVID-19, Education, Online classes

INTRODUCTION

These are unprecedented times. Although the necessary focus has been taken to care for patients [1] and communities [2], the emergence of severe acute respiratory syndrome coronavirus has disrupted dental education and require intense and prompt attention from dental educators [3]. The need to prepare future physicians has never been as focused as it is now in the setting of a global emergency. The profound effects of coronavirus disease 2019 COVID-19 [4] may forever change how future physicians are educated [5]. This pandemic presents practical and logistical challenges and concerns for patients safety [2, 6], recognizing that students of dental education, describes how COVID-19 for the future for medical education [7, 8].

For more than a decade, medical schools have been working to transform pedagogy by eliminating, reducing lectures;

using technology to replace/enhance anatomy and laboratories; implementing team-facilitated, active, and self-directed learning; and promoting individualized and interprofessional education [9]. The development of entrustable professional activities and competency-based learning with identified milestones for achievement have transformed the educational system. Many schools have decreased the basic science curriculum to 12 to 18 months while integrating clinical medicine this timeframe and revisiting the basic sciences later in dental school. Today, in most dental schools, students convene in physical settings during the first 12 to 18 months for interactive problem-solving or discussions in small groups; their physical presence in both inpatient and outpatient settings has been an unquestioned tenet of early [10]. The last 18 months of dental school may be

individualized, with students participating in advanced clinical rotations, subinternships prior to residency, or scholarly project. [11]. COVID-19 has the potential to affect students throughout the educational process [12]. The dental education environment is cross-generational [13]. The former mindset that physicians would work when they were ill [14] and was considered to be artistic and professional [15], with prioritization of the patient above the physician [16]. However, the situation that COVID-19 represents is different [4, 17]. Clinicians [18] who came to work while they are ill, as well as those who may be asymptomatic and silences incubating the virus, might facilitate transmitting the virus to others. Therefore the culture of professionalism and *altasim* must be redefined and take into consideration the effects of potential actions, even with good intention. This is all more difficult because of the lack of COVID-19 testing and limited availability of of PDE [19, 20]. Recognizing, the possibility of that the COVID-19 pandemic could result in a healthcare worker shortage, students may need to be engaged as part of the workforce and embedded in the clinical environment [21]. This situation could change [22] rapidly, and dental students will need to be humble and flexible in their response [23]. Some colleges are

considering early graduation with preparation of fourth-year students to engage as either volunteer or as residents earlier in the clinical environment [19]. The latter may require flexibility [24] with regard to the conferring of degrees as well as revised processes for license [25]. In a review of 5,025 cases of community-acquired bacterial pneumonia from FDA records from 1996-2007, only 44.7% of cases had a pathogen identified. Even when conventional culture-based methods are combined with newer molecular techniques such as multiplex PCR and *uri*Diagnosis of secondary bacterial infections typically require sample analysis from sputum induction, nasopharyngeal/oropharyngeal swabs of respiratory passages, bronchoscopy, thoracentesis, and/or lung tissue biopsy. Conventional diagnostic tests [26] have poor sensitivity in identifying the etiologic organisms responsible for respiratory infections one antigen testing, 62% of hospitalized patients with pneumonia remain without a microbiologic diagnosis [27]. Development of vaccines [28] and antiviral treatments to reduce the number of hospitalizations and deaths caused by this dangerous new coronavirus,[15]SARS-CoV-2 [29]. The biopharmaceutical industry has quickly responded and at least 80 candidates

are already in development [17]. With good luck, we will eventually have some of the tools we need to fight this new global threat. But there is an even larger threat lurking behind the current outbreak, one that is already killing hundreds of thousands of people around the world and that will complicate the care of many Covid-19 patients [30]. It is the hidden threat from antibiotic resistance of bacteria [30] that are not killed by standard antibiotics. Unfortunately, the pipeline of drugs to manage these deadly infections [31] is nearly dry. Although antibiotic resistance hasn't gotten our attention in the same way that SARS-CoV-2 [29, 32] has, antibiotic-resistant bacteria present a growing global menace. In the U.S. alone, we see 2.8 million antibiotic-resistant infections each year and more than 35,000 deaths, though experts fear that the real number is much higher. The so-called superbugs that cause these infections thrive in hospitals and medical facilities, putting all patients whether they're getting care for a minor illness or major surgery at risk.

MATERIALS AND METHODS

In materials and methods, a survey was done and the survey was taken by students who are studying in a dental college and took part in the survey. The data

obtained from the survey charts were valid as 300 students took part in the survey and finally statistical analysis was done from the data obtained. Under survey setting, the survey was given out to 300 students from Saveetha Dental College. From the data analysis, we can conclude that under pros there is reasonable data collected from the data of the survey charts and under cons, some of the survey questions were left unanswered. Before we can proceed with the materials and methods, it is important that we get the approval from the ethical committee and the represented guides from Saveetha Dental College and Hospitals. A total number of 3 people were involved, one guide, one retriever and one researcher. Under the conflict of interest disclosure, Dr. Rose reported receiving honour for educational consulting from another dental school and form an organization for specialising in leadership and leading a course, receiving royalties for 2 book on topics unrelated to the content of this article and leading the team at her prior institution to receive an American Medical associated accelerating change in Dental education grant in the second call for proposals for a project related to electronic health record training. The app used for this survey is google forms and the total number

of questions asked were 21 questions and the total responses were 300.

RESULTS AND DISCUSSION

From this survey we can understand that the online classes are more beneficial compared to regular classes as most of the students chose yes with (65.7%). The willingness to attend any online classes showed (74.7%). Most of the students agreed that practical classes are as important as theory classes as (74.22%). Most of the students are able to keep up with the pace of the online classes being taken with (51.4%). Majority students able to comprehend the subject being taught online showing (51.9%). Comfortability during online classes shows (38%) where most of the students are not comfortable. Most of the students agree on missing out on practical lessons with (75.5%). The most common online quiz app commonly used for your activities is Kahoot with (90.7%). Most of the students agree that the activities given during the online classes are helpful showing (55.4%).

Most of the students also agree that online tests and online evaluation quizzes are helpful - (55.7%). Most of the students are not willing to treat a covid-19 infected patient with a proper PPE kit that shows 42%. And most of the students agree that the PPE kit that has been used before the covid-

19 useful and beneficial with a value of (82.8%). The mode of transportation used commonly to travel around during this pandemic is by car showing (63%). The prevention of transmission of covid-19 with PPE shows (56%). Not many students are willing to attend regular classes and clinics during covid-19 showing (49.5%). And finally a question was asked if the students like the online classes that are given – showing (52%) and the satisfaction of the approach of online classes showing (57%).

From this summary, we also can refer to the supportive study where Pranav D. Modi, 2020 and 1562 responders from Mumbai Metropolitan Region came up with a questionnaire based survey for the awareness and knowledge and infection control practices for COVID-19 infection with proper healthcare setting. The contradicting studies shows that Emine M. Al Hamdan, 2016 questionnaire which developed 345 male and female undergraduate from two major dental schools and a majority shows that lecture schedule announced advance females and morning lectures where male students participate more in afternoon lectures. The Limitations of the study are the study reports that are limited to the state and limited study population. And finally the future scope of this study is Future

scope is the findings that were conveyed to dental students mostly know about how to handle patient during the pandemic and much more large scale study to determine the clinical protocol changes in the future.

Previously our team had conducted numerous clinical trials (citations [1-7]) and

in-vitro students [13, 14, 15] over the past 5 years. Now we are focusing on epidemiological surveys. The idea for this survey stemmed from the current interest in our community.

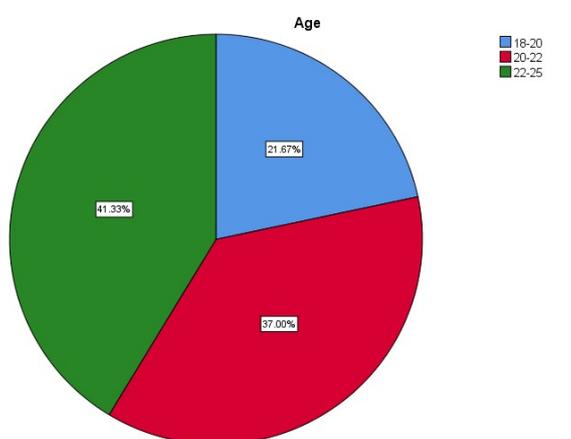


Figure 1. Pie chart represents the age group of students who participated in this survey, 'Blue' colour denotes age group between (18-20) years of age, 'Red' colour denotes age group between (20-22) and 'Green' colour denotes age group between (22-25). Higher percentages of responses were seen in the green colour chart with a value of (41.7%).

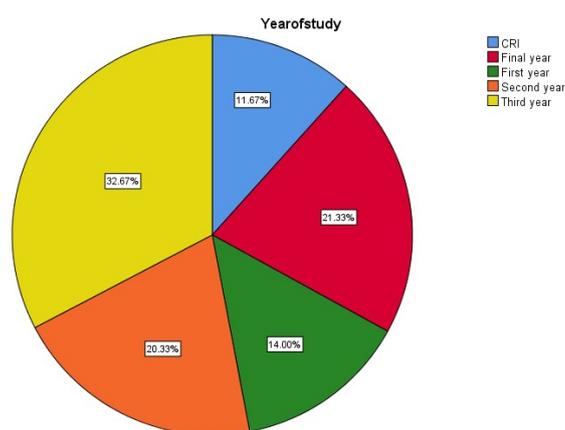


Figure 2. Pie chart represents the year of study of students who participated in this survey. 'Blue' colour denotes to CRI, 'Red' colour denotes to Final years, 'Green' colour denotes to First years, 'Orange' colour denotes to second years and 'Yellow' colour denotes to Third years. Highest no of study participants were seen in Third years with with a value of (32.67%).

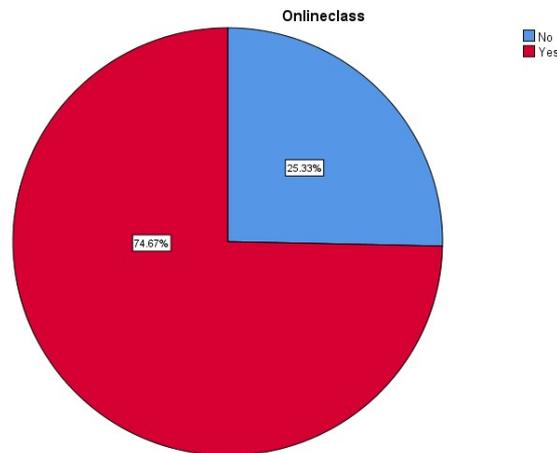


Figure 3. Pie chart represents students attending online classes. 'Blue' colour denotes for 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in red as (74.77%) of students are attending online classes.

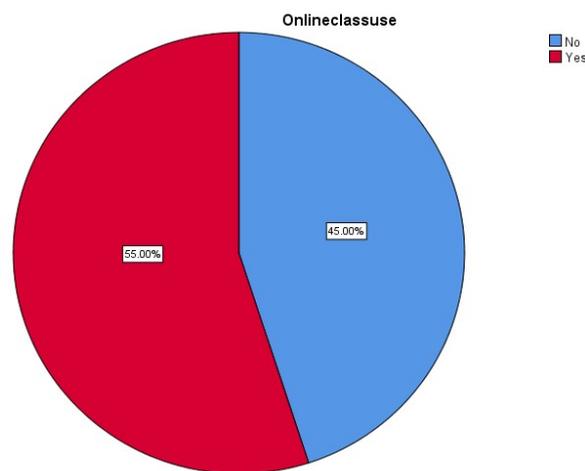


Figure 4. Pie chart represents if the activities given during online classes are useful. 'Blue' colour denotes 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in red as (55%) of students find the activities given useful.

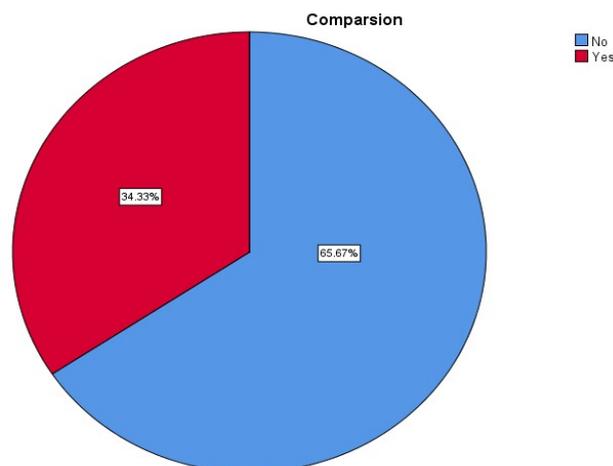


Figure 5. Pie chart represents the comparison if online classes are more beneficial compared to regular classes. 'Blue' colour denotes 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in blue as (66.57%) of students do not agree.

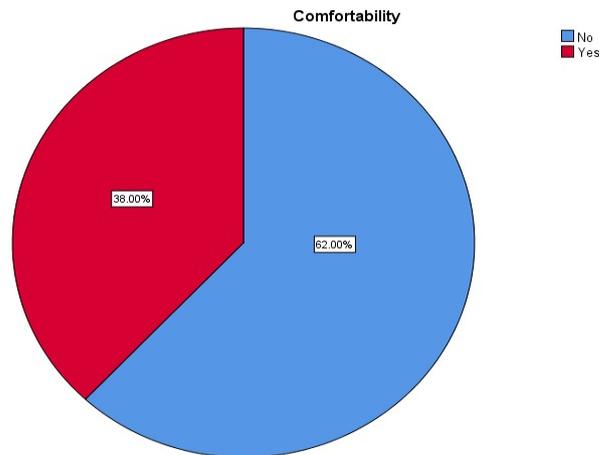


Figure 6. Pie chart represents the comfortability of students during online classes. 'Blue' colour denotes 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in blue as (82%) of students are not comfortable during online classes.

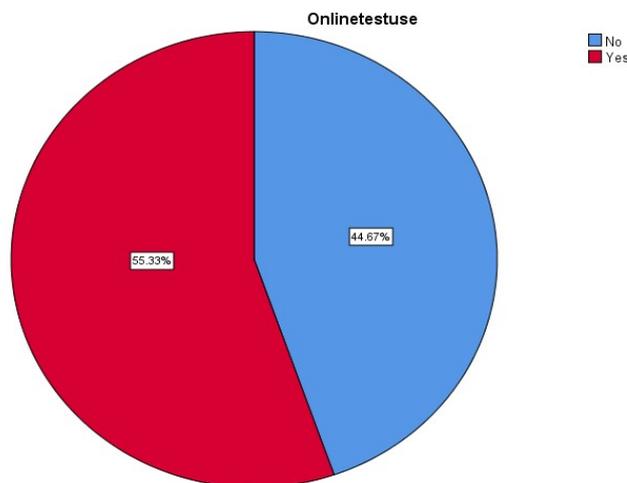


Figure 7. Pie chart represents if online tests and online evaluation quizzes helpful. 'Blue' colour denotes for 'No' and 'Red' colour denotes for 'Yes'. Highest percentage is seen in red as (55.33%) of students agree that it is helpful.

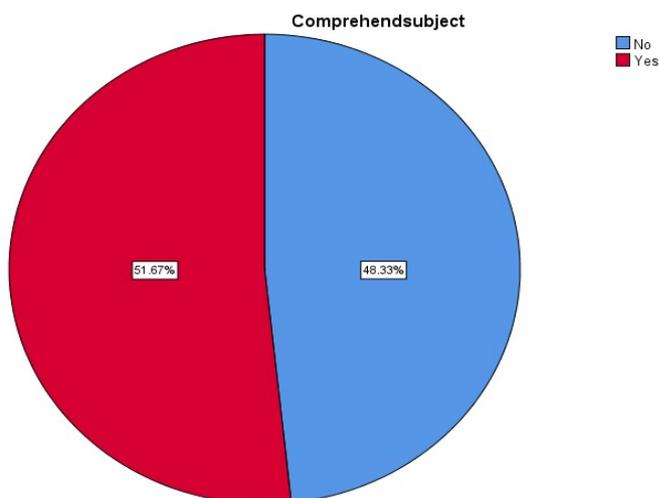


Figure 8. Pie chart represents if students are able to comprehend the subject being taken. 'Blue' colour denotes for 'No' and 'Red' colour denotes for 'Yes'. Highest percentage is seen in red as (51.57%) of students are able to comprehend.

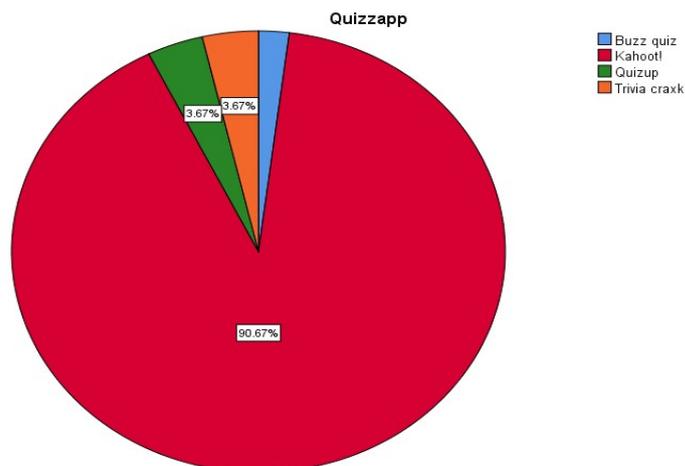


Figure 9. Pie chart represents which online quiz app has been used for online classes .’Blue’ colour denotes for ‘Buzz quiz’, ‘Red’ colour denotes for ‘Kahoot’ , ‘Green’ denotes for ‘Quizup’ and ‘Orange’ for ‘Trivia check’ .Highest percentage is seen in red as (90.57%) of students use Kahoot for online classes

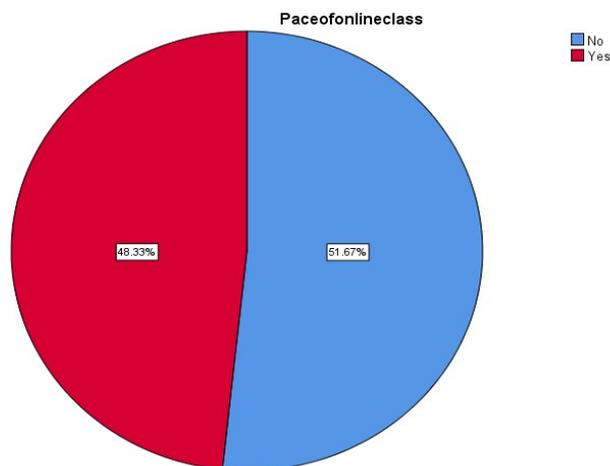


Figure 10. Pie chart represents if students are able to keep up with the pace of the online classes being taken .’Blue’ colour denotes ‘No’ and ‘Red’ colour denotes ‘Yes’. Highest percentage is seen in blue as (51.67%) of students are not able to keep up with the pace.

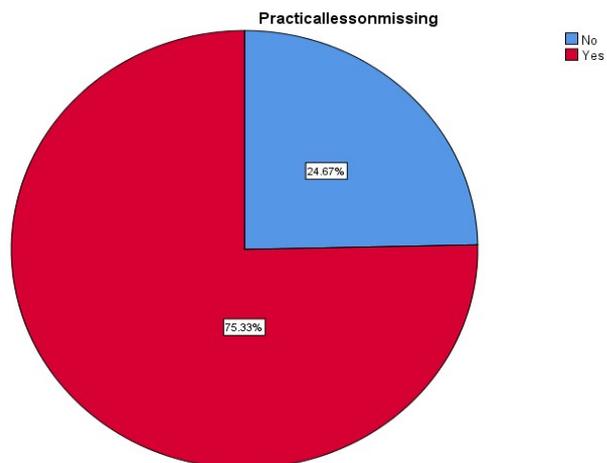


Figure 11. Pie chart represents if students are missing out on the practical lessons.’Blue’ colour denotes for ‘No’ and ‘Red’ colour denotes for ‘Yes’.Highest percentage is seen in red as (75.33%) of students agree.

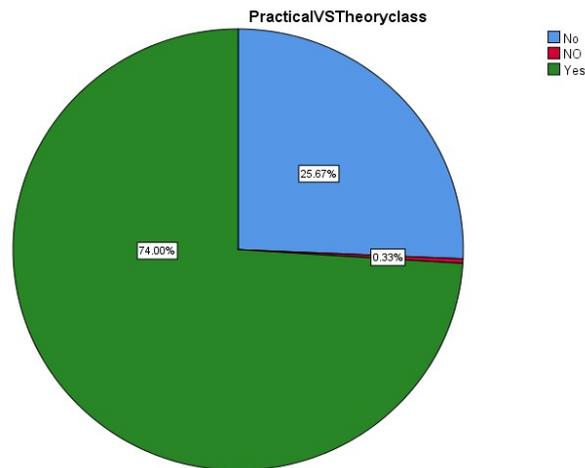


Figure 12. Pie chart represents if practical classes are as important as theory classes.'Blue' colour denotes 'No' and 'Green' colour denotes 'Yes'.Highest percentage is seen in green as (74.07%) of students agree .

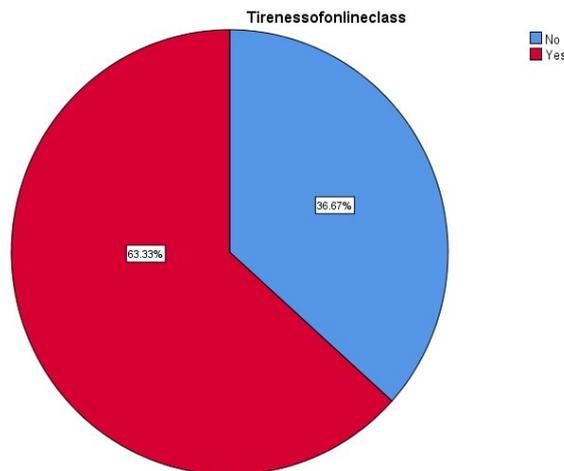


Figure 13. Pie chart represents if online classes are more tiring compared to offline classes .'Blue' colour denotes for 'No' and 'Red' colour denotes for 'Yes'.Highest percentage is seen in red as (63.33%) of students agree that online classes are tiring.

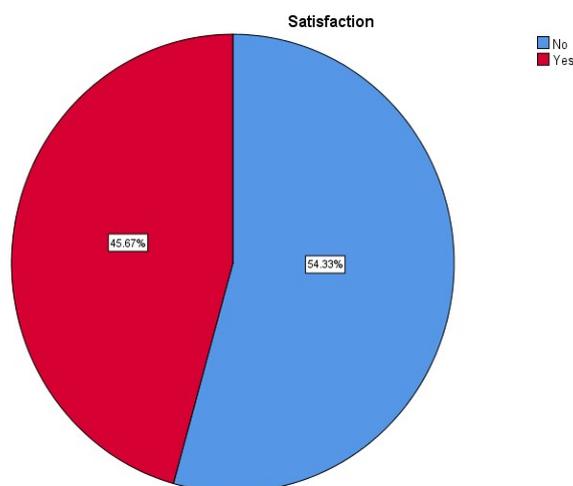


Figure 14. Pie chart represents satisfaction of students in online classes .'Blue' colour denotes for 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in blue as (54.37%) of students are not satisfied

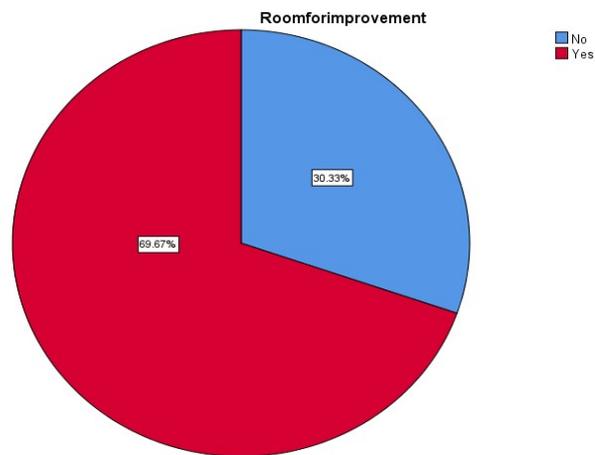


Figure 15. Pie chart represents if students think there is room for improvement .’Blue’ colour denotes for ‘No’ and ‘Red’ colour denotes for ‘Yes’.Highest percentage is seen in red as (68.67%) of students agree that there is room for improvement.

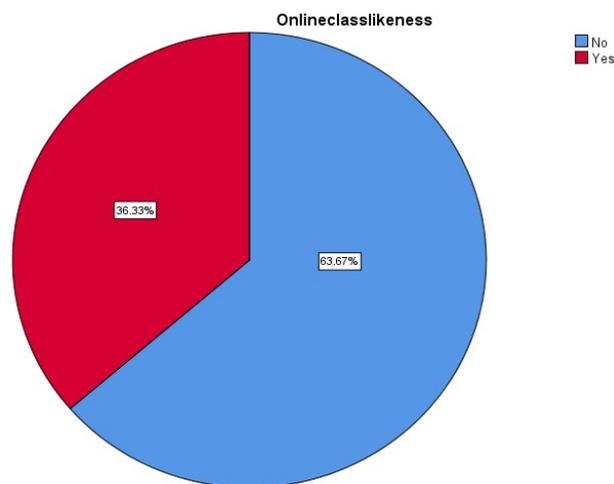


Figure 16. Pie chart represents if students like the online classes given .’Blue’ colour denotes for ‘No’ and ‘Red’ colour denotes for ‘Yes’.Highest percentage is seen in blue as (63.67%) of students do not like it.

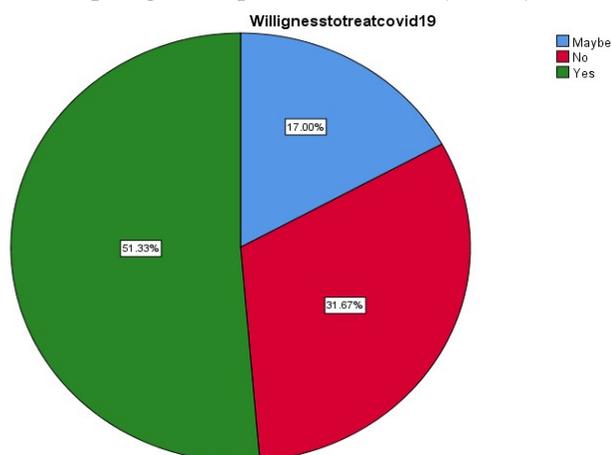


Figure 17. Pie chart represents if students are willing to treat patients who are infected by COVID-19 with a proper PPE kit .’Blue’ colour denotes for ‘Maybe’ , ‘Red’ colour denotes for ‘No’ and ‘Green’ denotes for ‘Yes’.Highest percentage is seen in green as (51.3%) of students are willing to.

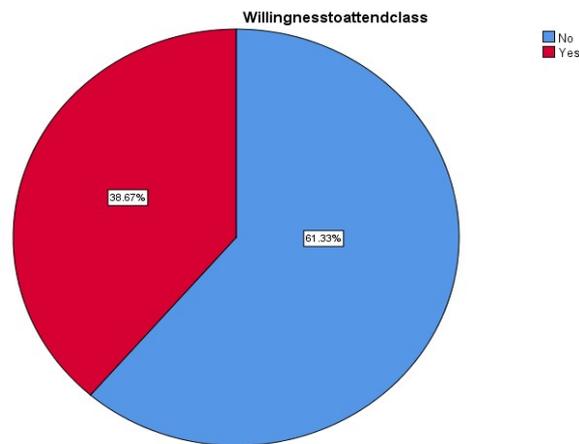


Figure 18. Pie chart represents the willingness of students to attend regular classes and clinics during COVID-19. 'Blue' colour denotes 'No' and 'Red' colour denotes 'Yes'. Highest percentage is seen in blue as (51.3%) of students are not willing to attend.

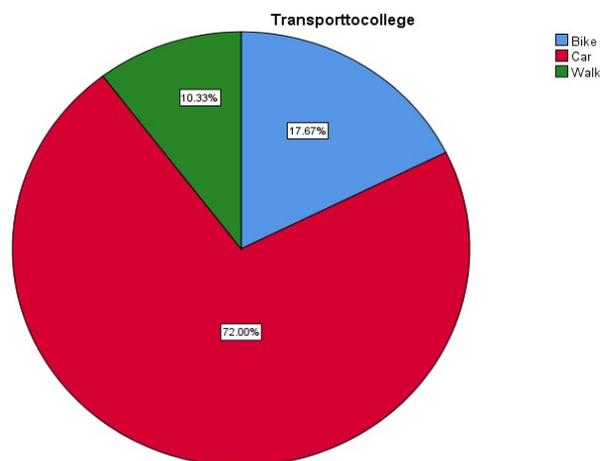


Figure 19. Pie chart represents if students are attending to college which mode of transport would they prefer. 'Blue' colour denotes for 'Bike', 'Red' colour denotes for 'Car' and 'Green' denotes for 'Walking'. Highest percentage is seen in red as (72%) of students are prefer coming by car.

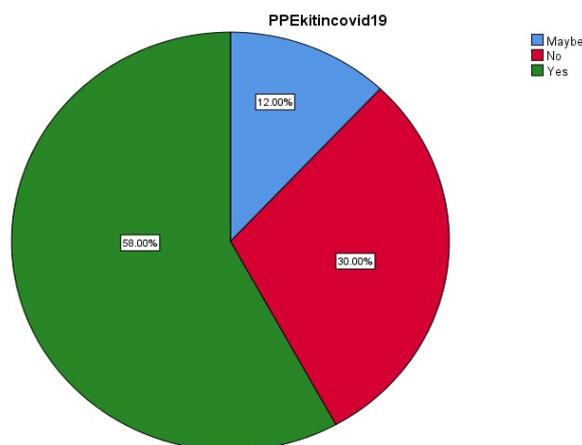


Figure 20. Pie chart represents if the PPE kit prevents the mode of transmission of COVID-19. 'Blue' colour denotes for 'Maybe', 'Red' colour denotes for 'No' and 'Green' denotes for 'Yes'. Highest percentage is seen in green as (58%) of students agree.

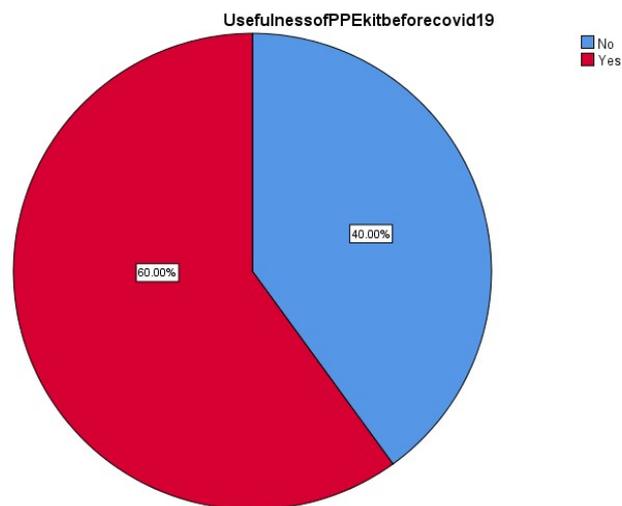


Figure 21. Pie chart represents if students think that the PPE kit that has been used before the COVID-19 useful and beneficial. 'Blue' colour denotes for 'No' and 'Red' colour denotes for 'Yes'. Highest percentage is seen in red as (60%) of students agree that it is useful.

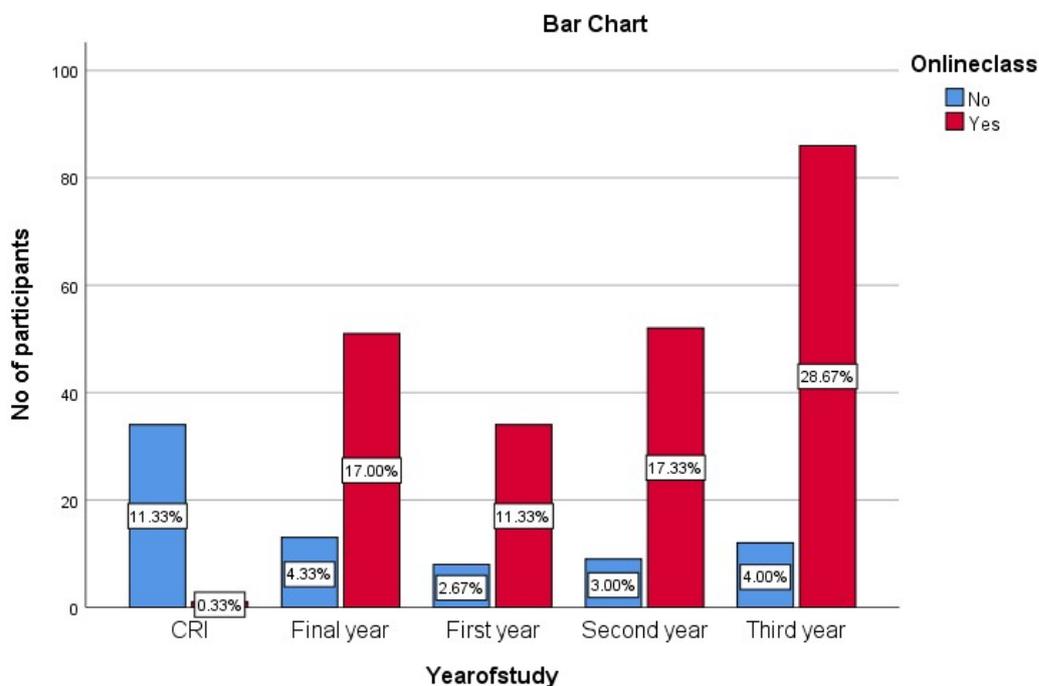


Figure 22. Bar charts showing the comparison of year of study and the response to the question “If students are attending any online classes”. The X axis represents the year of study and Y axis represents the number of participants. Response from third year students was found to be more when compared to other years, however the difference is not statistically significant (Chi square value - 0.75 p value = 0.4 (>0.05)).

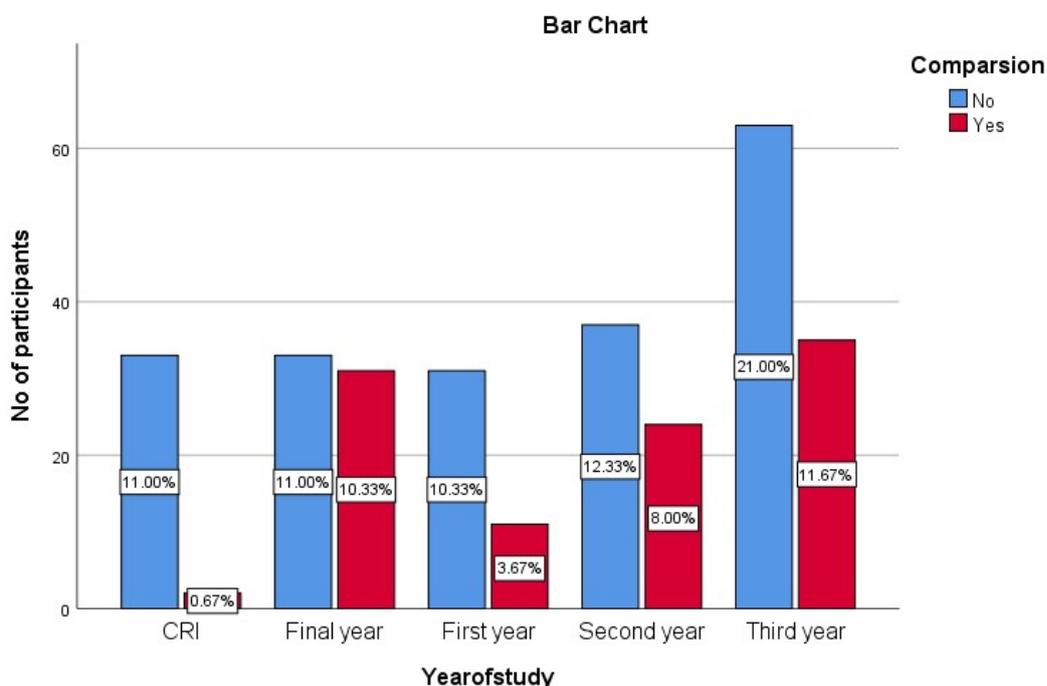


Figure 23. Bar charts showing the comparison of year of study and the number of responses to the question ‘If online classes are more beneficial compared to regular classes’. Third year students have the opinion online classes are not more beneficial to regular classes than other years, however the difference is not statistically significant (Chi square value - 0.24 p value = 0.203 (>0.05-indicating statistically not significant)).

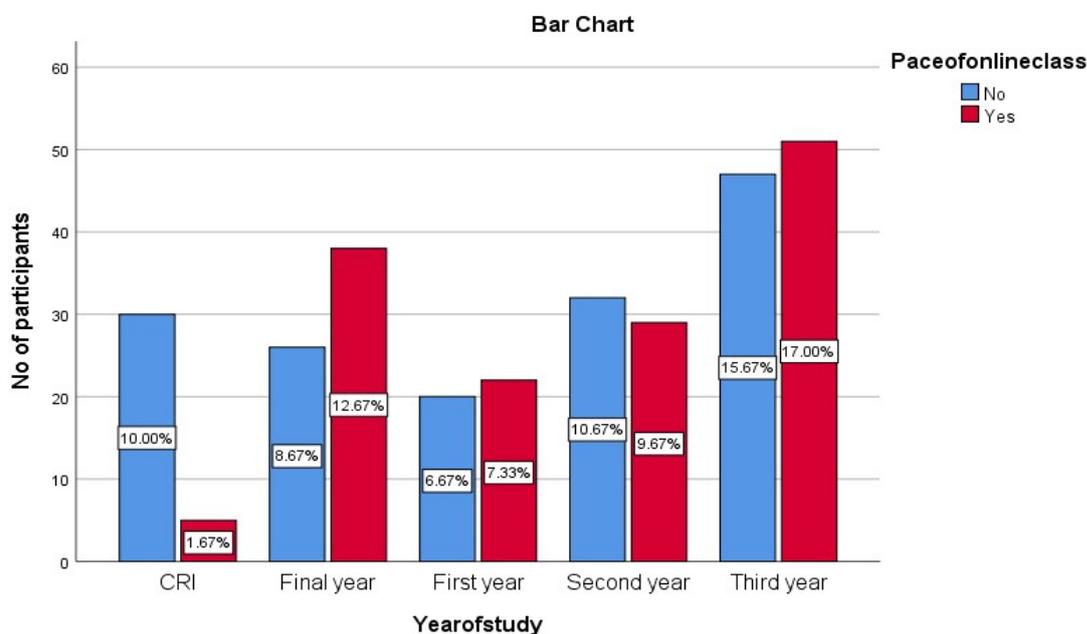


Figure 24: Bar charts showing the comparison of year of study and the number of participants based on the question ‘If students are able to keep up with the pace of the online classes being taken’. The X axis represents the year of study of students and the Y axis represents the number of participants. Red colour denotes ‘Yes’ and blue colour denotes ‘No’. Majority of the third year (17.07%), first year (7.33%), final year (12.67%) responded “yes” to the given question and most of the interns (10%) and second years (10.67%) responded “no”. However the difference is not statistically significant (Chi square value - 0.20 p value = 0.000 (>0.05-indicating statistically not significant)).

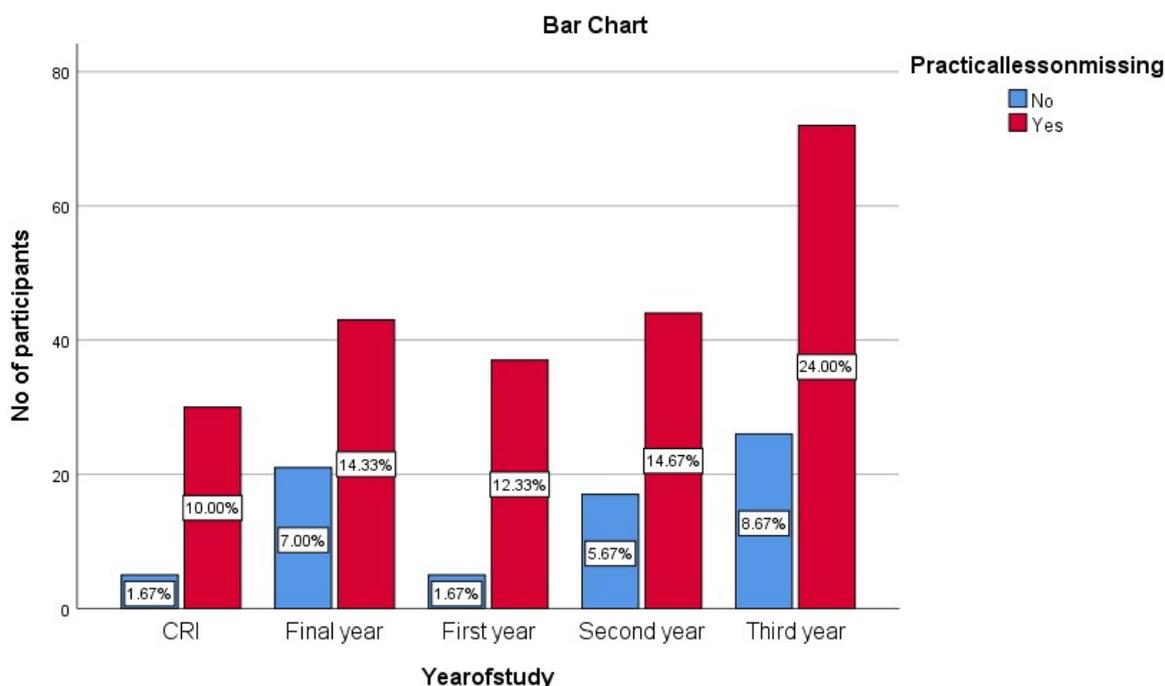


Figure 25. Bar charts showing the comparison of year of study and the number of participants based on the question ‘If students think that they are missing out on practical lessons’. The X axis represents the year of study and Y axis represents the number of participants. Third year students think they miss more practical lessons than other other years .However the difference is not statistically significant (Chi square value - 0.40 p value = 0.074 (<0.05-indicating statistically not significant)).

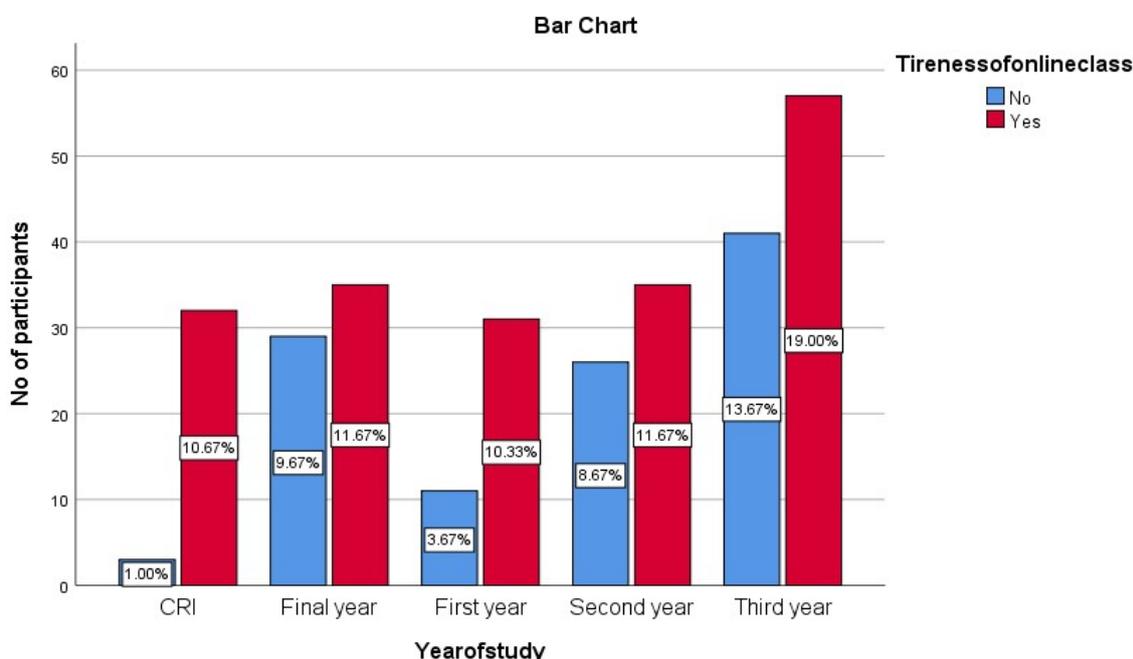


Figure 26. Bar charts showing the comparison of year of study and the number of participants based on the question ‘If online classes are more tiring compared to regular classes’. Third year students feel online class are more tiring than regular class than other year students, However the difference is not statistically significant (Chi square value - 0.18 p value = 0.001 (>0.05-indicating statistically not significant)).

CONCLUSION

Within the limitations of this study it can be concluded that most of the dental students felt that the online classes were very useful to them when compared to the regular classes and they felt that the activities given during the online classes are very interesting. But most of the students felt that they were missing the practical work during online classes

Conflict of interest: Nil

Acknowledgement: Nil

Author contributions: All authors played equal role in bringing out this research

REFERENCES

- [1] Shahana RY, Muralidharan NP. Efficacy of mouth rinse in maintaining oral health of patients attending orthodontic clinics [Internet]. Vol. 9, Research Journal of Pharmacy and Technology. 2016. p. 1991. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00406.6>
- [2] Teja KV, Ramesh S, Priya V. Regulation of matrix metalloproteinase-3 gene expression in inflammation: A molecular study. J Conserv Dent. 2018 Nov;21(6):592–6.
- [3] Iyer P, Aziz K, Ojcius DM. Impact of COVID-19 on dental education in the United States. J Dent Educ. 2020 Jun;84(6):718–22.
- [4] Priyadharsini JV, Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. In silico analysis of virulence genes in an emerging dental pathogen *A. baumannii* and related species [Internet]. Vol. 94, Archives of Oral Biology. 2018. p. 93–8. Available from: <http://dx.doi.org/10.1016/j.archoralbio.2018.07.001>
- [5] Jose J, P. A, Subbaiyan H. Different Treatment Modalities followed by Dental Practitioners for Ellis Class 2 Fracture – A Questionnaire-based Survey [Internet]. Vol. 14, The Open Dentistry Journal. 2020. p. 59–65. Available from: <http://dx.doi.org/10.2174/1874210602014010059>
- [6] Janani K, Palanivelu A, Sandhya R. Diagnostic accuracy of dental pulse oximeter with customized sensor holder, thermal test and electric pulp test for the evaluation of pulp vitality - An in vivo study [Internet]. Vol. 23, Brazilian Dental Science. 2020. Available from: <http://dx.doi.org/10.14295/bds.2020.v>
-

- 23i1.1805
- [7] Bertolami CN. Creating the dental school faculty of the future: a guide for the perplexed. *J Dent Educ.* 2007 Oct;71(10):1267–80.
- [8] Emanuel EJ. The Inevitable Reimagining of Medical Education [Internet]. Vol. 323, *JAMA.* 2020. p. 1127. Available from: <http://dx.doi.org/10.1001/jama.2020.1227>
- [9] Desai BK. Clinical implications of the COVID-19 pandemic on dental education. *J Dent Educ.* 2020 May;84(5):512.
- [10] Noor SSSE, S Syed Shihaab, Pradeep. Chlorhexidine: Its properties and effects [Internet]. Vol. 9, *Research Journal of Pharmacy and Technology.* 2016. p. 1755. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00353.x>
- [11] Pratha AA, Ashwatha Pratha A, Geetha RV. Awareness on Hepatitis-B vaccination among dental students-A Questionnaire Survey [Internet]. Vol. 10, *Research Journal of Pharmacy and Technology.* 2017. p. 1360. Available from:
- <http://dx.doi.org/10.5958/0974-360x.2017.00240.2>
- [12] Ojeda GD. University Dental Care Clinics and Education in Times of COVID-19 [Internet]. *Odvotos - International Journal of Dental Sciences.* 2020. p. 11–3. Available from: <http://dx.doi.org/10.15517/ijds.2020.41732>
- [13] Suh M. Dental and Medical Collaboration During COVID-19 [Internet]. *Journal of Dental Education.* 2020. Available from: <http://dx.doi.org/10.1002/jdd.12251>
- [14] Vaishali M, Geetha RV. Antibacterial activity of Orange peel oil on *Streptococcus mutans* and *Enterococcus-An* In-vitro study [Internet]. Vol. 11, *Research Journal of Pharmacy and Technology.* 2018. p. 513. Available from: <http://dx.doi.org/10.5958/0974-360x.2018.00094.x>
- [15] Marickar RF, Geetha RV, Neelakantan P. Efficacy of contemporary and novel Intracanal medicaments against *enterococcus faecalis*. *J Clin Pediatr Dent.* 2014 Autumn;39(1):47–50.
- [16] R R, Rajakeerthi R, Ms N. Natural

- Product as the Storage medium for an avulsed tooth – A Systematic Review [Internet]. Vol. 22, Cumhuriyet Dental Journal. 2019. p. 249–56. Available from: <http://dx.doi.org/10.7126/cumudj.525182>
- [17] Shahzan MS, Sohaib Shahzan M, Smiline Girija AS, Vijayashree Priyadharsini J. A computational study targeting the mutated L321F of ERG11 gene in *C. albicans*, associated with fluconazole resistance with bioactive compounds from *Acacia nilotica* [Internet]. Vol. 29, Journal de Mycologie Médicale. 2019. p. 303–9. Available from: <http://dx.doi.org/10.1016/j.mycmed.2019.100899>
- [18] Barabari P, Moharamzadeh K. Novel Coronavirus (COVID-19) and Dentistry-A Comprehensive Review of Literature. Dent J [Internet]. 2020 May 21;8(2). Available from: <http://dx.doi.org/10.3390/dj8020053>
- [19] Manjeet R, D'mello K, Singh A, Srivastava S. Infection Control In Dental Clinics During Covid 19 – Original Review [Internet]. Journal of Indian Dental Association. 2020. Available from:
- <http://dx.doi.org/10.33882/jida.14.25811>
- [20] Az ZAA, Gülsüm AK. Oral and Dental Health Practice During The COVID-19 Pandemic [Internet]. Anadolu Kliniği Tıp Bilimleri Dergisi. 2020. p. 312–22. Available from: <http://dx.doi.org/10.21673/anadoluklin.741519>
- [21] Saeed SG, Bain J, Khoo E, Siqueira WL. COVID-19: Finding silver linings for dental education. J Dent Educ [Internet]. 2020 Jun 2; Available from: <http://dx.doi.org/10.1002/jdd.12234>
- [22] Selvakumar R, Np M. Comparison In Benefits Of Herbal Mouthwashes With Chlorhexidine Mouthwash: A Review [Internet]. Vol. 10, Asian Journal of Pharmaceutical and Clinical Research. 2017. p. 3. Available from: <http://dx.doi.org/10.22159/ajpcr.2017.v10i2.13304>
- [23] Torabinejad M, Walton RE, Fouad A. Endodontics - E-Book: Principles and Practice. Elsevier Health Sciences; 2014. 496 p.
- [24] Hussainy SN, Nasim I, Thomas T, Ranjan M. Clinical performance of

- resin-modified glass ionomer cement, flowable composite, and polyacid-modified resin composite in noncarious cervical lesions: One-year follow-up. *J Conserv Dent*. 2018 Sep;21(5):510–5.
- [25] Quinn B, Field J, Gorter R, Akota I, Manzanares M-C, Paganelli C, *et al*. COVID-19: The Immediate Response of European Academic Dental Institutions and Future Implications for Dental Education. *Eur J Dent Educ* [Internet]. 2020 May 11; Available from: <http://dx.doi.org/10.1111/eje.12542>
- [26] M MA, Geetha RV, Thangavelu L. Evaluation of anti-inflammatory action of *Laurus nobilis*-an in vitro study of anti-inflammatory action of *Laurus nobilis*-an in vitro study [Internet]. Vol. 10, *International Journal of Research in Pharmaceutical Sciences*. 2019. p. 1209–13. Available from: <http://dx.doi.org/10.26452/ijrps.v10i2.408>
- [27] Paramasivam A, Vijayashree Priyadharsini J, Raghunandhakumar S. N6-adenosine methylation (m6A): a promising new molecular target in hypertension and cardiovascular diseases. *Hypertens Res*. 2020 Feb;43(2):153–4.
- [28] Ashwin KS, Muralidharan NP. Vancomycin-resistant enterococcus (VRE) vs Methicillin-resistant *Staphylococcus Aureus* (MRSA). *Indian J Med Microbiol*. 2015 Feb;33 Suppl:166–7.
- [29] Girija SAS, Jayaseelan VP, Arumugam P. Prevalence of VIM- and GIM-producing *Acinetobacter baumannii* from patients with severe urinary tract infection [Internet]. Vol. 65, *Acta Microbiologica et Immunologica Hungarica*. 2018. p. 539–50. Available from: <http://dx.doi.org/10.1556/030.65.2018.038>
- [30] Girija ASS, Smiline Girija AS, Vijayashree Priyadharsini J, Paramasivam A. Plasmid-encoded resistance to trimethoprim/sulfamethoxazole mediated by *dfrA1*, *dfrA5*, *sul1* and *sul2* among *Acinetobacter baumannii* isolated from urine samples of patients with severe urinary tract infection [Internet]. Vol. 17, *Journal of Global Antimicrobial Resistance*. 2019. p.

-
- 145–6. Available from: <http://dx.doi.org/10.1016/j.jgar.2019.04.001>
- [31] Priyadharsini JV, Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. An insight into the emergence of *Acinetobacter baumannii* as an oro-dental pathogen and its drug resistance gene profile – An in silico approach [Internet]. Vol. 4, *Heliyon*. 2018. p. e01051. Available from: <http://dx.doi.org/10.1016/j.heliyon.2018.e01051>
- [32] Smiline A, Vijayashree JP, Paramasivam A. Molecular characterization of plasmid-encoded blaTEM, blaSHV and blaCTX-M among extended spectrum β -lactamases [ESBLs] producing *Acinetobacter baumannii*. *Br J Biomed Sci*. 2018 Oct;75(4):200–2.