Nat. Volatiles & Essent. Oils, 2021; 8(5): 6740 - 6755

Kap Survey On Experience And Difficulties In Tooth Carving Classes Vs Clinical Practice

Pavithra Sekhar, Palati Sinduja, Lakshmi.T.A

1 Saveetha Dental College
Saveetha Institute of Medical and Technical Science
Saveetha University, Chennai
Email : pavithrasekhar97@gmail.com

2 Senior lecturer,
Department of Pathology,
Saveetha Dental College,
Saveetha Institute of Medical and Technical Sciences,
Chennai-77
Tamil Nadu, India
Email: sindujap.sdc@saveetha.com

3 Senior Lecturer,
Department of Oral Pathology and Microbiology ,
Saveetha Dental College,
Saveetha Institute of Medical and Technical Sciences,
Chennai-77
Tamil Nadu, India
Email: lakshmita.sdc@saveetha.com

ABSTRACT

Introduction: Carving is the act of using tools to shape. Shaping of wax using tools associated with machining: rotary tools, saws, gravers, files and burins. In dentistry, tooth carving is one of the most important parts without which the dentist's job is not possible. It is a study which enables the dentist to gain knowledge about a tooth's form. The aim of the study is to evaluate the experience and difficulties in tooth carving.

Materials and methods : A cross sectional survey was conducted. The sample size used for the study is 102. A self structured Questionnaire has been prepared and uploaded in google forms. This standard Questionnaire in google forms is being circulated among the population and at the end of the survey, all the data were collected and the data is been analysed by using chi-square analysis. The chi square analysis was done using the software IBM SPSS.

Results : 67.00% of participants were females and 33.00% of participants were male. 67.00% of participants had carved teeth during their undergraduate study. Females are more knowledgeable about carving and have carved teeth during their

undergraduate study. 77.00% of participants have said that carving helps in restorative dentistry. The test is significant with p value less than 0.05.

Conclusion: The study concluded that the overall knowledge and awareness about the experience and difficulties in tooth carving was good and females have more knowledge about carving than males.

KEYWORDS : Knowledge, Tooth carving, wax blocks, innovative technique

INTRODUCTION

Dental anatomy concentrates mainly on anatomical and morphological characteristics of human dentition. Oral anatomy is taught in preclinical years that provides essential information which students will apply in their dental practice. Most dental schools continue to teach oral anatomy in a two-phase manner.(1) Psychomotor skills are a blend of two-dimensional artistic projects and exercises to carve teeth from wax block. Though carving exercises concentrate on training manual dexterity, these established methods reveal some weak points that can cause frustration in students at a tertiary hospital in eastern Nepal(2). Carving is the function of using tools to shape. Shaping of wax using tools associated with machining: rotary tools, saws, gravers, files and burins. In dentistry, tooth carving is one of the most crucial things without a dentist's job is not possible. It is a study which enables the dentist to gain knowledge about a tooth's form.

Knowing tooth morphology is important in the field of dentistry(3). Dental carving plays a major role in training dental students as it develops their manual dexterity.(4). Tooth carving through wax blocks is a mandatory preclinical exercise. It is an important practical preclinical exercise in Indian dental education. In many dental schools, teaching dental anatomy is a double fold process.(5). Collecting intact natural human teeth is becoming more difficult with increasing tooth retention in the country with industries.(6). Carving to produce a plug model introduces geometric references for bringing back the teeth. There is an ongoing conversation regarding the value of tooth carving exercise in the undergraduate dental curriculum. Thoughts vary on the effectiveness of the tooth carving exercise and its importance to students later dental practice.(3).

Tutoring dental anatomy comprises monitoring and analysis of natural teeth and carving wax models to precisely reproduce the morphology of teeth.(7). Studying tooth carving involves observing the natural teeth and analyzing drawings and carving various materials like wax, plastic or plaster.(5).The key goal of tooth carving is to establish students to cognitive and psychomotor skills related to the morphology and spatial and practical relationships of human dentition. Our team has extensive knowledge and research experience that has translated into high quality publications.(8).(9),(10),(11),(12),(13),(14),(15),(16),(17),(18),(19),(20),(21),(22),(23),(24),(25),(26),(27).
The aim of the study is to evaluate the experience and difficulties in tooth carving.

MATERIALS AND METHODS

A cross sectional survey was conducted. The sample size used for the study is 102. A self structured Questionnaire has been prepared and uploaded in google forms. This standard Questionnaire in google forms was circulated among the sample study population and at the end of the survey, all the data were collected and the data was analysed by using chi-square analysis. The chi square analysis was done using the software IBM SPSS. The study was a voluntary anonymous online survey, distributed to the dental students of Saveetha Dental College. This study was approved by SRB Saveetha Dental College. The inclusion criteria is all the postgraduate dental students were included and exclusion criteria is undergraduate dental students were not included in the survey.

The questionnaire comprised a series of questions including their demographic characteristics like age and gender. The other questions are as follows:

1) Are you interested in carving teeth during your undergraduate dental study?
2) Does tooth carving help in understanding dental occlusion?
3) Do you think carving should be continued in undergraduate dental study?
4) Do you think computer software with image stimulation techniques will help in learning tooth anatomy better?
5) Does carving help you to restorative dentistry?
6) Do you think dentists should have knowledge on the tooth morphology and anatomy to guide their respective teaching?
7) Did carving exercise help you to grasp the instrument's proper grip?
8) Should carving be removed as an assessment parameter in end- yearly exams?

RESULTS

In the present study, the percentage of 67.00% of participants are interested in tooth carving during their undergraduate dental study and 27.00% of participants are not interested in tooth carving during their undergraduate dental study(Figure 1). 61.00% of participants have said that carving helps in understanding dental occlusion and 16.00% of participants have said that carving doesn't help in understanding dental occlusion (Figure 2). 32.00% of participants think that computer software with image stimulation techniques will help in learning tooth anatomy better and 18.00% of participants have said that computer software with image stimulation techniques will not help in learning tooth carving (Figure 3). 82.00% of participants think that dentists should have knowledge on the tooth morphology and anatomy to guide their teaching (Figure 4). 8.00% of participants disagree that dentists should have knowledge on the tooth morphology and anatomy to guide their respective teaching (Figure 5). Green colour represents yes (44%) of females and blue colour represents no (21%), brown colour represents Don't remember (4.00%), p value 0.103 (>0.05) statistically non-significant (Figure 6). Blue colour represents no (11.00%) and green colour represents yes (14.00%). Chi square test value: 6.715, p value: 0.152(>0.05) indicating statistically non significant (Figure 7). Blue colour represents no (11.00%) and green colour represents yes (14.00%). Chi square test value: 6.715, p value: 0.152(>0.05) indicating statistically non significant (Figure 8).

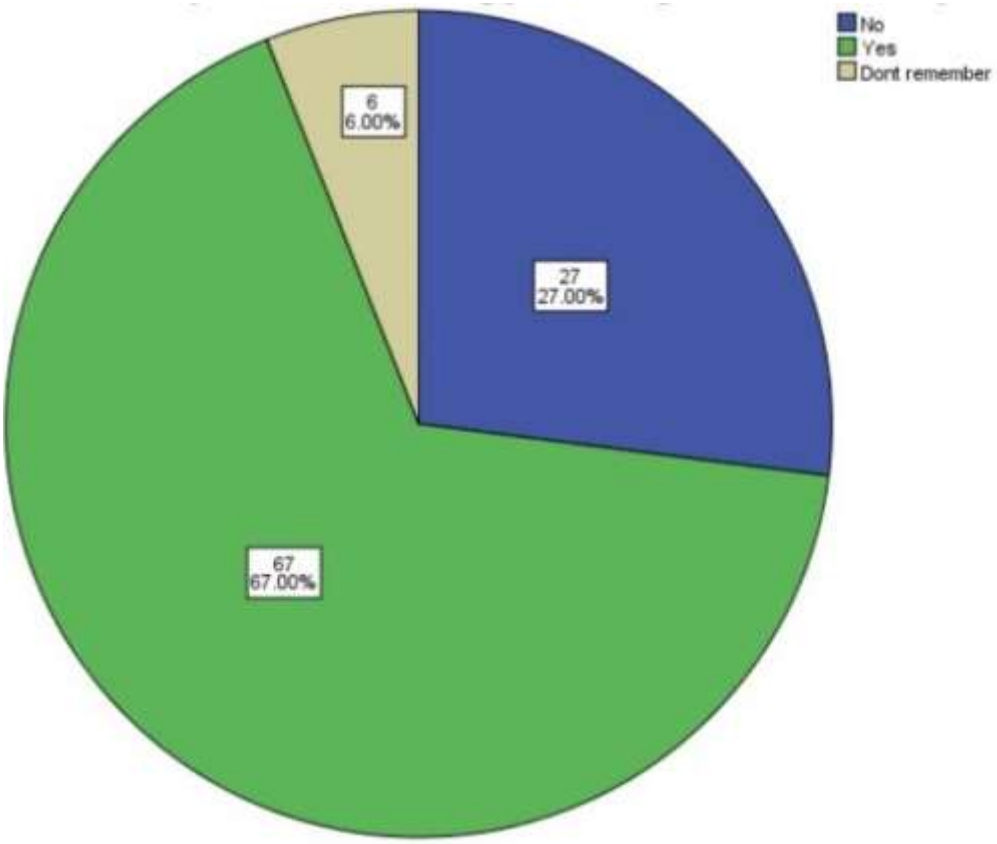

FIGURE 1: The above pie chart represents the percentage distribution of interest in carving teeth during undergraduate dental study, 67.00% (green) of participants have said yes, 27.00% (blue) of participants have said no, 6.00% (brown) of participants have responded as neither of the above .Majority of the participants are interested in carving teeth during their undergraduate study.

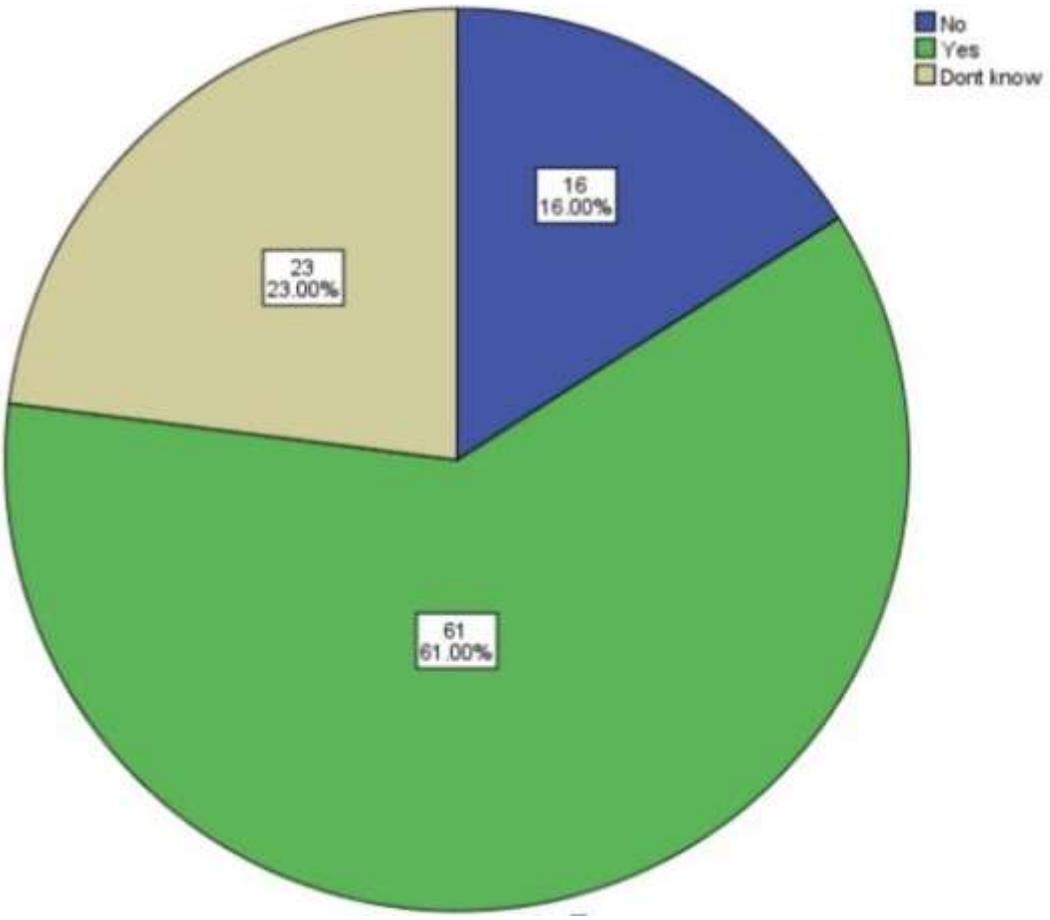

FIGURE 2: The above pie chart represents the percentage distribution of understanding dental occlusion through tooth carving. 61.00% (green) of participants have said yes, 16.00% (blue) of participants have said no, 23.00% (brown) of participants have said they don't know. Majority of the participants are able to understand the dental occlusion through tooth carving.

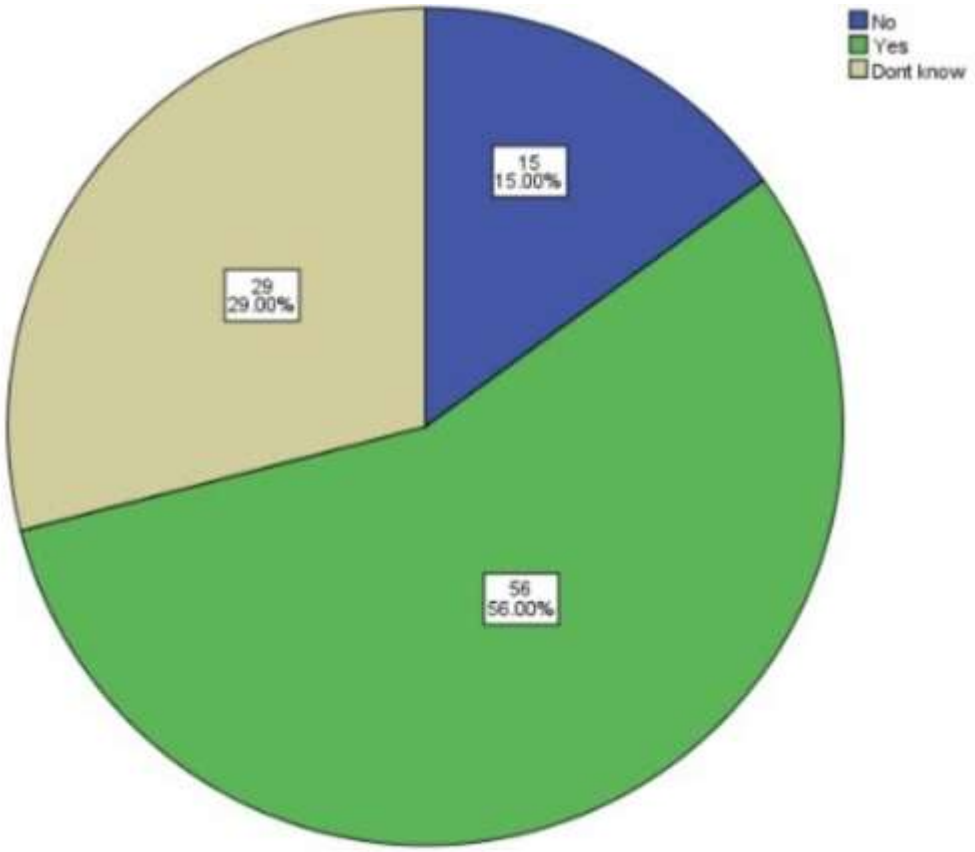

FIGURE 3 : The above pie chart represents the percentage distribution of carving to be continued in undergraduate dental study. 56.00% (green) of participants responded as yes, 15.00% (blue) of participants responded as no, 29.00% (brown) of participants responded as they didn't know. Majority of participants considered carving should be continued in the undergraduate dental study.

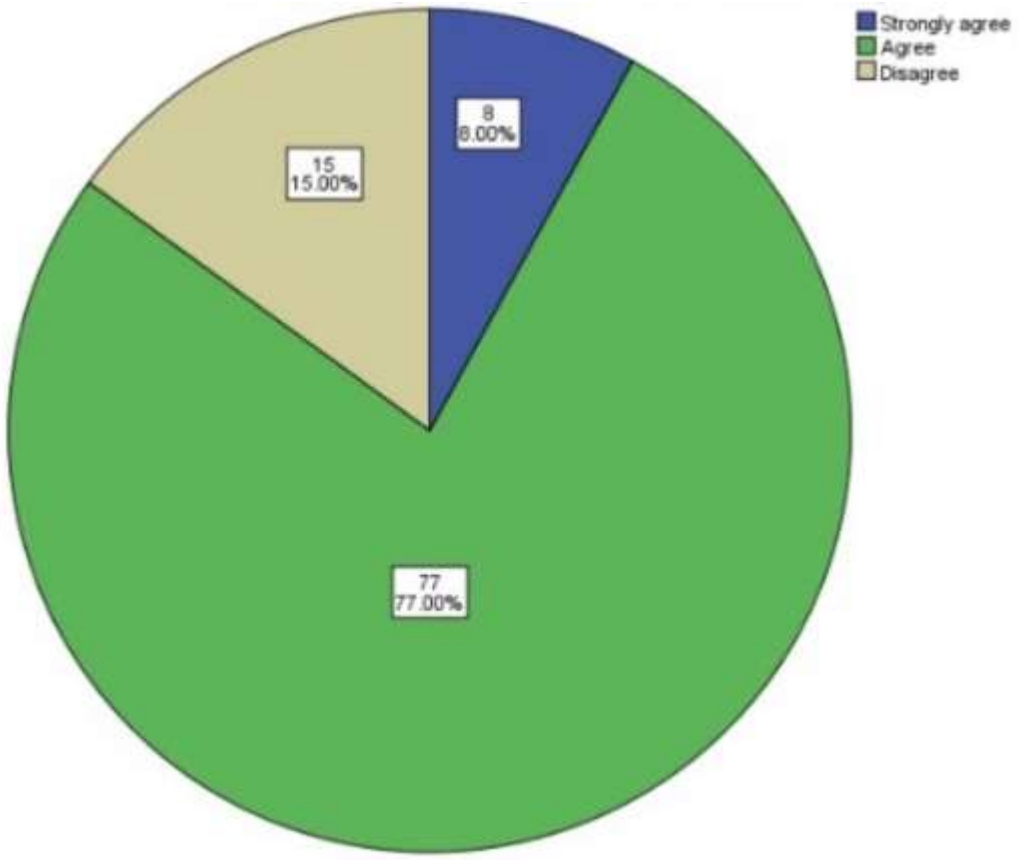

FIGURE 4 : The above pie chart represents the percentage distribution of use of learning tooth carving and its need in restorative dentistry. 77.00% (green) of participants have agreed, 15.00% (brown) of participants have disagreed, 8.00% (blue) of participants have strongly agreed. Majority of the participants agreed that tooth carving is useful and is needed in restorative dentistry.

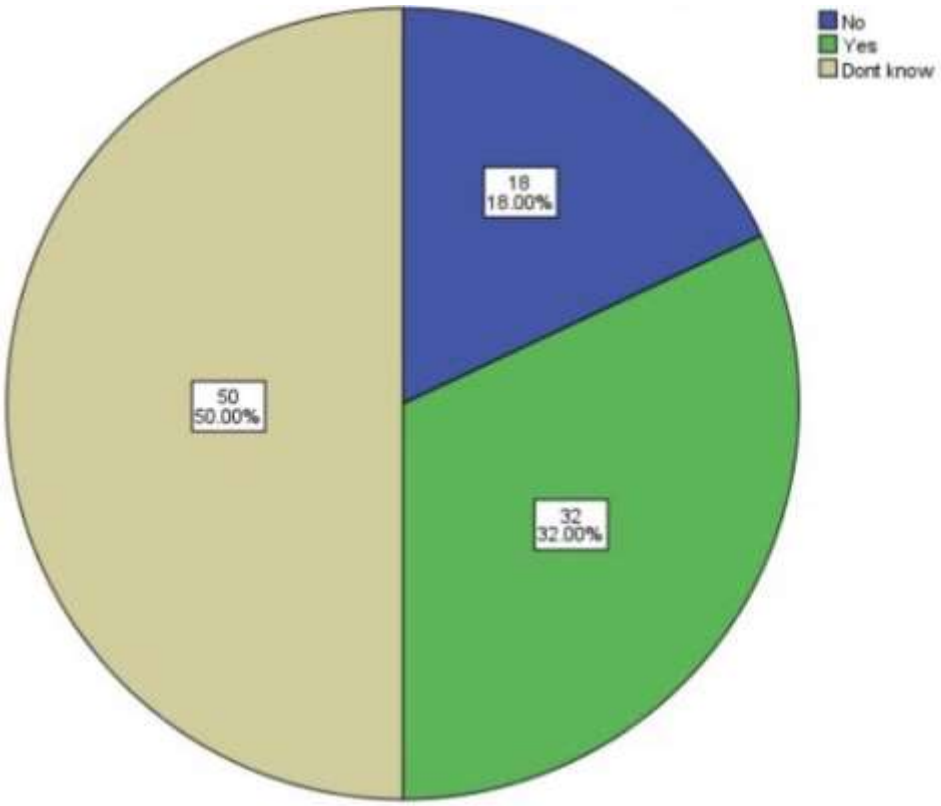

FIGURE 5 : The above pie chart represents the percentage distribution of Usage of computer software in learning tooth anatomy. 32.00 % (green) of participants have said yes, 18.00% (blue) of participants have said no, 50.00% (brown) of participants have said they don't know. Majority of the participants don't know whether computer software with image stimulation techniques will help in learning tooth anatomy better.

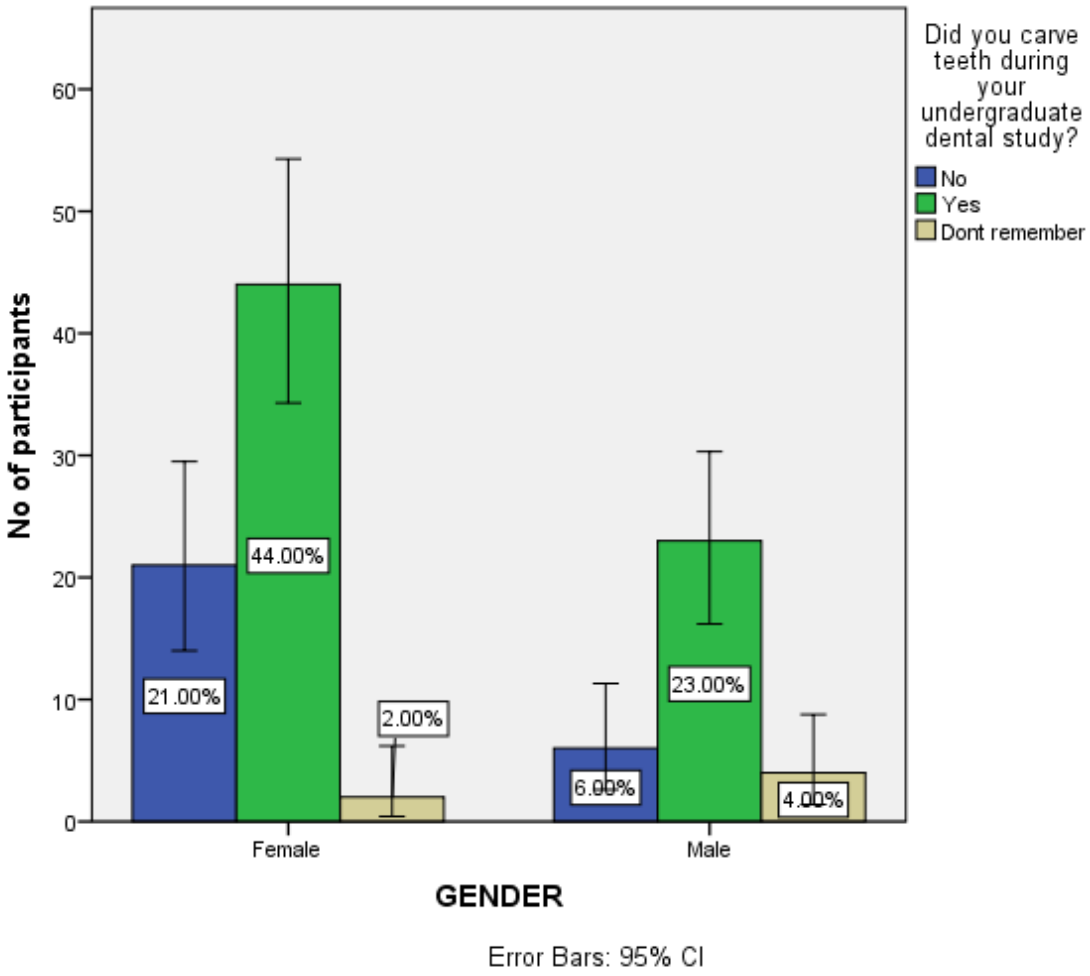

FIGURE 6: Depicts the bar chart showing association between the respondents based on gender with carving teeth during undergraduate dental study. X axis represents the gender and Y axis represents the percentage of responses for carving teeth during undergraduate dental study. Green colour represents yes (44%) of females and blue colour represents no (21%), brown colour represents Don't remember (4.00%) Higher number of females have said yes. Chi square test value: 4.548, p value:0.103(>0.05) indicating statistically non significant.

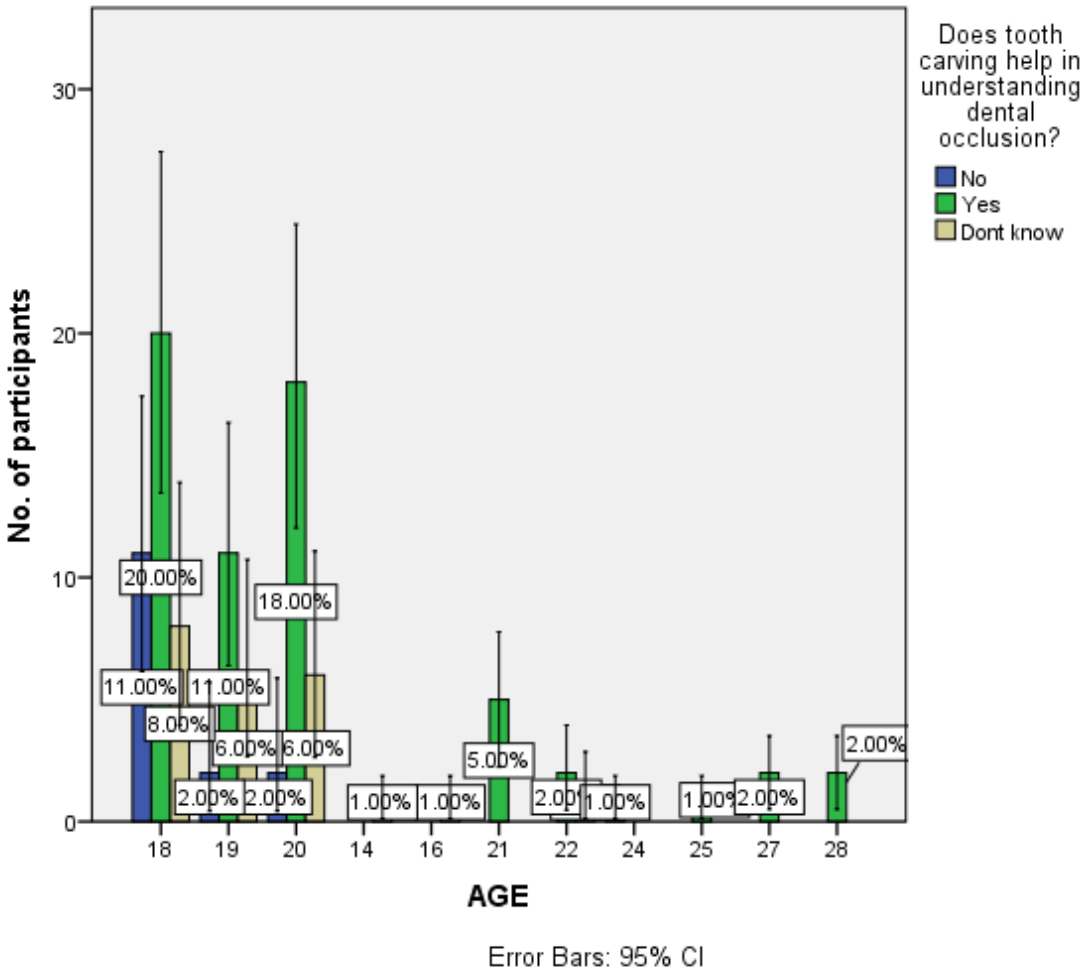

FIGURE 7: Depicts the bar chart showing association between the number of responses based on the age with understandment of dental occlusion with the help of tooth carving. X axis represents the age and Y axis represents the percentage of responses for understanding of dental occlusion with the help of tooth carving. Blue colour represents no and green colour represents yes and brown colour represents don't know. Majority of the participants of the 18 years age group(20%) consider tooth carving helps in understanding dental occlusion when compared to other age groups. Chi square test value: 6.715, p value: 0.152(>0.05) indicating statistically non significant.

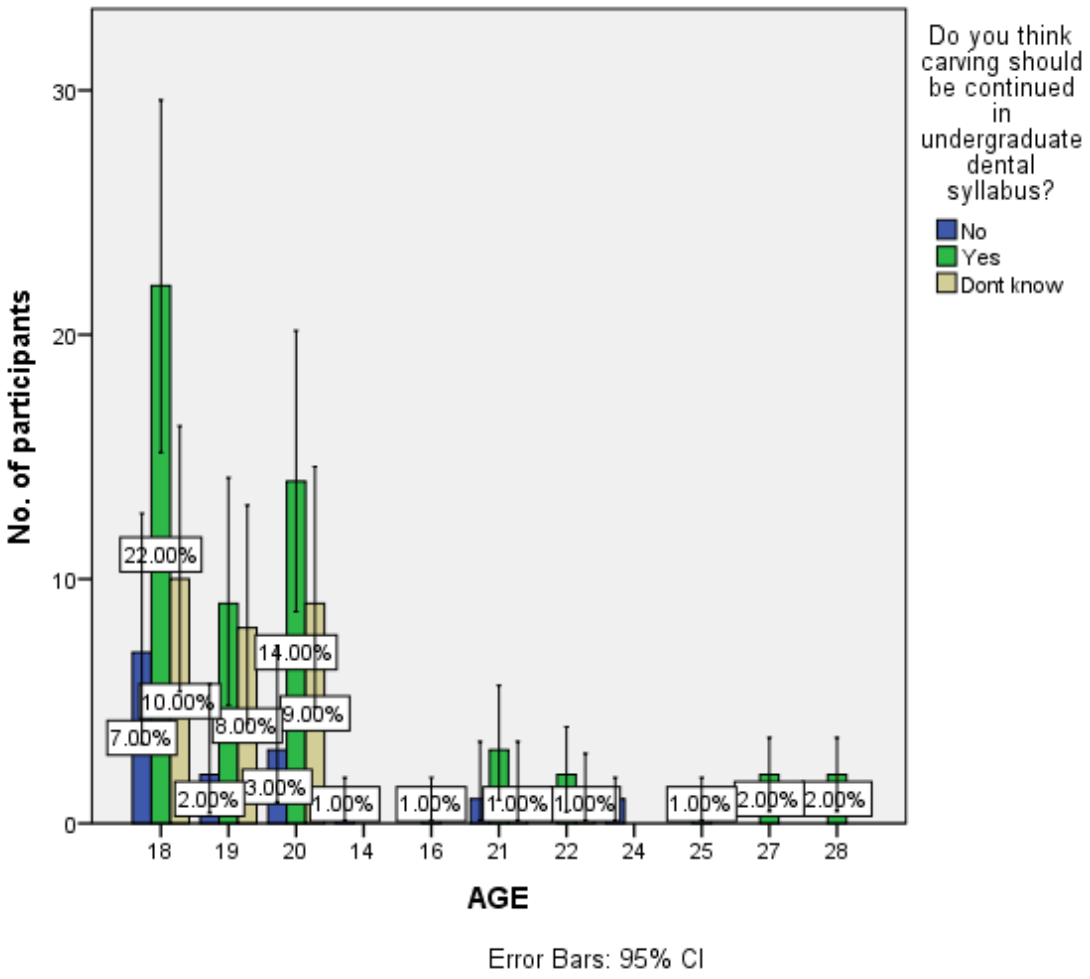

FIGURE 8 : Depicts the bar chart showing association between the number of responses based on the age with Computer software for learning tooth anatomy better. X axis represents the age and Y axis represents the percentage of responses for computer software for learning tooth anatomy better. Blue colour represents no, green colour represents yes and brown colour represents don't know. Chi square test value: 1.501, p value: 0.472(>0.05) indicating statistically non significant. Majority of the participants (22%) of the 18 years age group consider carving should be continued in undergraduate dental syllabus when compared to others.

DISCUSSION

In the present study 67.00% of participants are interested in tooth carving during their undergraduate dental study and 27.00% of participants are not interested in tooth carving during their undergraduate dental study. In another study, 1.00% of participants are interested in doing tooth carving during their undergraduate dental study(28). 61.00% of participants in our study have said that carving helps in understanding dental occlusion and 16.00% of participants have said that carving doesn't help in understanding dental occlusion. This is in contradiction to another study, where 23.02% of participants have said that carving doesn't help in understanding dental occlusion(4). 32.00% of participants think that computer software with image stimulation techniques will help in learning tooth anatomy better and 18.00% of participants have said that computer software with image stimulation techniques will not help in learning tooth carving. In another study, 65.00% of participants think that computer software with image stimulation techniques helps in learning tooth carving(29). Student viewpoint of the benefit of computer-aided learning compared to conventional teaching differs. Many studies have suggested that students prefer technology as an addition to traditional didactic sessions(30).

82.00% of participants think that dentists should have knowledge on the tooth morphology and anatomy to guide their teaching. 8.00% of participants disagree that dentists should have knowledge on the tooth morphology and anatomy to guide their respective teaching. Carving involves the following steps: knowledge about the tooth morphology and anatomy, proper instruments for hand grasp practice and artistic skill development to reproduce the tooth.(5). The study data are self-reported with small sample size and thus are subject to social desirability biases are the limitations of our study. Future studies have to be conducted with multiple questionnaire settings among large sample size population,

CONCLUSION

Majority of participants found tooth carving helpful in their undergraduate studies and wanted it to continue in the undergraduate dental syllabus. The study concluded that the overall knowledge and awareness about the experience and difficulties in tooth carving was good and females have more knowledge about carving than males.

AUTHOR CONTRIBUTION

Pavithra: Literature search, data collection analysis, manuscript drafting.
Dr Sindhuja: Aided in conception of the topic, has participated in the study design, statistical analysis and has supervised the preparation and final corrections of the manuscript.
Dr Lakshmi: Data verification, manuscript drafting, preparation of the manuscript.

ACKNOWLEDGEMENT- Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science, Saveetha University

CONFLICT OF INTEREST

The authors reported the conflict of interest while performing this study to be nil

SOURCE OF FUNDING

The present study was supported by the following agencies

- Saveetha Institute of Medical and Technical Sciences
- Saveetha Dental College and Hospitals
- Saveetha University
- Yesen heaters.

REFERENCES

1. Chatterjee K. Method of Tooth Carving. Essentials of Dental Anatomy and Oral Histology. 2014;61–61.

2. Anwar M, Bahria University Medical & Dental College, Alam BF, Zaidi SJA. Tooth Carving as a Teaching Modality in the Study of Tooth Morphology: Students' Perception and Performance. Journal of the Pakistan Dental Association. 2020;29(04):249–53.

3. Shivappa AB. An Illustrated Atlas of Tooth Carving and Wax-Up Techniques. 2020;5(3)(2):22–5.

4. Azevedo RA de, de Azevedo RA, Correa MB, Torriani MA, Lund RG. Optimizing quality of dental carving by preclinical dental students through anatomy theory reinforcement. Anatomical Sciences Education. 2018;11(4):377–84.

5. Palhares WR. [The practice of tooth carving in clinical dentistry]. Rev Bras Odontol. 1965 Jan;24(133):21–9.

6. Conte DB, Zancanaro M, Guollo A, Schneider LR, Lund RG, Rodrigues-Junior SA. Educational Interventions to Improve Dental Anatomy Carving Ability of Dental Students: A Systematic Review. Anat Sci Educ. 2021 Jan;14(1):99–109.

7. Rajkumar K, Ramya R. Quick Review of Oral Anatomy, Histology, Physiology and Tooth Morphology. Vol. 2. Wolters kluwer india Pvt Ltd; 2018.

8. Princeton B, Santhakumar P, Prathap L. Awareness on Preventive Measures taken by Health Care Professionals Attending COVID-19 Patients among Dental Students. Eur J Dent. 2020 Dec;14(S 01):S105–9

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. Clin Oral Investig. 2020 Sep;24(9):3275–80.

10. 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.

11. R H, Hannah R, Ramani P, Ramanathan A, Jancy MR, Gheena S, et al. CYP2C9 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

12. Antony JVM, Ramani P, Ramasubramanian A, Sukumaran G. Particle size penetration rate and effects of smoke and smokeless tobacco products - An in vitro analysis. Heliyon. 2021 Mar 1;7(3):e06455.

13. Sarode SC, Gondivkar S, Sarode GS, Gadbail A, Yuwanati M. Hybrid oral potentially malignant disorder: A neglected fact in oral submucous fibrosis. Oral Oncol. 2021 Jun 16;105390.

14. Hannah R, Ramani P, WM Tilakaratne, Sukumaran G, Ramasubramanian A, Krishnan RP. Author response for “Critical appraisal of different triggering pathways for the pathobiology of pemphigus vulgaris—A review” [Internet]. Wiley; 2021. Available from: https://publons.com/publon/47643844

15. Chandrasekar R, Chandrasekhar S, Sundari KKS, Ravi P. Development and validation of a formula for objective assessment of cervical vertebral bone age. Prog Orthod. 2020 Oct 12;21(1):38.

16. Subramanyam D, Gurunathan D, Gaayathri R, Vishnu Priya V. Comparative evaluation of salivary malondialdehyde levels as a marker of lipid peroxidation in early childhood caries. Eur J Dent. 2018 Jan;12(1):67–70.

17. Jeevanandan G, Thomas E. Volumetric analysis of hand, reciprocating and rotary instrumentation techniques in primary molars using spiral computed tomography: An in vitro comparative study. Eur J Dent. 2018 Jan;12(1):21–6.

18. Ponnulakshmi R, Shyamala Devi B, Vijayalakshmi P, Selvaraj J. In silico and in vivo analysis to identify

the antidiabetic activity of beta sitosterol in adipose tissue of high fat diet and sucrose induced type-2 diabetic experimental rats. Toxicol Mech Methods. 2019 May;29(4):276–90.

19. Sundaram R, Nandhakumar E, Haseena Banu H. Hesperidin, a citrus flavonoid ameliorates hyperglycemia by regulating key enzymes of carbohydrate metabolism in streptozotocin-induced diabetic rats. Toxicol Mech Methods. 2019 Nov;29(9):644–53.

20. Al Sawalha M, Rao CV, Al-Subaie AM, Haque SKM, Veeraraghavan VP, Surapaneni KM. Novel mathematical modelling of Saudi Arabian natural diatomite clay. Mater Res Express. 2019 Sep 4;6(10):105531.

21. Yu J, Li M, Zhan D, Shi C, Fang L, Ban C, et al. Inhibitory effects of triterpenoid betulin on inflammatory mediators inducible nitric oxide synthase, cyclooxygenase-2, tumor necrosis factor-alpha, interleukin-6, and proliferating cell nuclear antigen in 1, 2-dimethylhydrazine-induced rat colon carcinogenesis. Pharmacogn Mag. 2020;16(72):836.

22. Shree KH, Hema Shree K, Ramani P, Herald Sherlin, Sukumaran G, Jeyaraj G, et al. Saliva as a Diagnostic Tool in Oral Squamous Cell Carcinoma – a Systematic Review with Meta Analysis [Internet]. Vol. 25, Pathology & Oncology Research. 2019. p. 447–53. Available from: http://dx.doi.org/10.1007/s12253-019-00588-2

23. Zafar A, Sherlin HJ, Jayaraj G, Ramani P, Don KR, Santhanam A. Diagnostic utility of touch imprint cytology for intraoperative assessment of surgical margins and sentinel lymph nodes in oral squamous cell carcinoma patients using four different cytological stains. Diagn Cytopathol. 2020 Feb;48(2):101–10.

24. Karunagaran M, Murali P, Palaniappan V, Sivapathasundharam B. Expression and distribution pattern of podoplanin in oral submucous fibrosis with varying degrees of dysplasia – an immunohistochemical study [Internet]. Vol. 42, Journal of Histotechnology. 2019. p. 80–6. Available from: http://dx.doi.org/10.1080/01478885.2019.1594543

25. Sarode SC, Gondivkar S, Gadbail A, Sarode GS, Yuwanati M. Oral submucous fibrosis and heterogeneity in outcome measures: a critical viewpoint. Future Oncol. 2021 Jun;17(17):2123–6.

26. Raj Preeth D, Saravanan S, Shairam M, Selvakumar N, Selestin Raja I, Dhanasekaran A, et al. Bioactive Zinc(II) complex incorporated PCL/gelatin electrospun nanofiber enhanced bone tissue regeneration. Eur J Pharm Sci. 2021 May 1;160:105768.

27. Prithiviraj N, Yang GE, Thangavelu L, Yan J. Anticancer Compounds From Starfish Regenerating Tissues and Their Antioxidant Properties on Human Oral Epidermoid Carcinoma KB Cells. In: PANCREAS. LIPPINCOTT WILLIAMS & WILKINS TWO COMMERCE SQ, 2001 MARKET ST, PHILADELPHIA …; 2020. p. 155–6.

28. Lenci A. Carving verb classes from corpora. Word Classes. 2014;17–36.

29. Rao A. Tooth carving. Indian Journal of Dental Research. 2010;21(1):146.

30. Zhang M, Zhou J, Cheng F, Shi Z-M. [Comparison of two carving methods applied for triple-sized plaster tooth in dental anatomy teaching]. Shanghai Kou Qiang Yi Xue. 2006 Oct;15(5):551–4.