Nat. Volatiles & Essent. Oils, 2021; 8(4): 8658-8683

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Natural Volatiles &
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Comparison Of Tooth Carving Technique Between Various Academic Year Students Of Dental College In Chennai

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ABSTRACT

Background:

Tooth carving on wax/ plaster/plastic to reproduce reference models of teeth is used to teach dental students anatomy of the tooth. Carving has been advocated for developing cognitive and motor skills.By carving teeth anatomy, the dental student begins to develop psychomotor skills for restoring the teeth to proper form and function. Students acquire the knowledge to identify teeth, recognize and diagnose tooth anomalies and treat or manage dental pathology. Aim of the study is to compare tooth carving technique between various academic year students of dental college in Chennai

Materials and methods:

The sample size used is 100. A self structured questionnaire is prepared and uploaded in Google forms. This standard questionnaire in Google forms was circulated among the sample study population through WhatsApp and at the end of the survey, all the data were collected and analysed by using Chi square analysis which was done using the software IBM SPSS

Result:

The present study reported that 60% of females and 3% of males carved the teeth during undergraduation. 52% of females and 4% of males reported that amalgam was the hardest material. 77.67% of the subjects think the mandibular molar is the hardest material to carve. 50% of females and 3% of males reported that lecron is the instrument used to carve teeth. 60% of females and 3% of males think tooth carving will be useful in the future. 60% of females and 3% of males reported that tooth carving

helps to understand dental occlusion. 64% of females and 4% of males reported that tooth carving should be done in undergraduate.

Conclusion:

The final year students have more knowledge and awareness about tooth carving due to many years of experience and better academic reinforcement

Keywords: Tooth carving, techniques, undergraduate, dental students, innovative technique

INTRODUCTION

Dental anatomy, taught within the preclinical years, forms the inspiration of sound routine practice in later years(1,2).Students learn the external and internal morphology of every individual tooth and therefore the relationship between teeth within the arch and between arches of both teeth and permanent dentition.(3)Tooth carving on wax/ plaster/plastic to breed reference models of teeth is employed to show dental students anatomy of the tooth. Carving has been advocated for developing cognitive and motor skills.(3)By carving teeth anatomy, the dental student begins to develop psychomotor skills for restoring the teeth to proper form and function. Students acquire the knowledge to spot teeth, recognize and diagnose tooth anomalies and treat or manage dental pathology.(3,4)

Dental anatomy or oral anatomy may be a science which concentrates mainly on the study of the anatomical and morphological characteristics of human dentition. (3,5)It also deals with their positions and relationship with each other and with the surrounding structures. It is therefore a fundamental course for establishing a solid dental background. (3,4,6)Dental anatomy taught in the preclinical years forms the foundation of sound routine dental practices in later years.(7) Students learn the external and internal morphology of each individual tooth and their relationship between teeth within the arches and between arches of both primary and permanent dentition. (8)Tooth carving on wax/plaster/plastic to breed reference models of teeth is used to mean dental students anatomy of the tooth.(9) There is an ongoing discussion about the value of tooth carving exercise in the undergraduate dental curriculum .The aim of the study was to analyse the perceived importance of tooth carving among undergraduate dental students during their training. (10)

The aesthetic sense of a dentist must be developed from the aim where the undergraduate student starts learning gross anatomy and tooth morphology.(11) A dentist should have comprehensive

knowledge regarding the morphology and performance of teeth because it provides the idea for a dentist to be ready to restore the missing tooth structure with the help of restorative material.(10,12). The aesthetic sense of a dentist must be developed from the aim where the undergraduate student starts learning gross anatomy and tooth morphology. A dentist should have comprehensive knowledge regarding the morphology and performance of teeth, because it provides the idea for a dentist to be ready to restore the missing tooth structure with the help of restorative material.(13) Along with the theoretical knowledge of tooth structure and its function, for proper restoration, it is crucial to have technical skills, manual dexterity and above all an artistic sense.Only then a clinician will be able to reproduce anatomical details to make the dental restoration appear as natural as possible. (14)Psychomotor skills of dental students associated with dental carving got to be developed early in order that dexterity in recreating adequate tooth form could also be achieved for restorative clinical procedures and functional purposes.(1). Our team has extensive knowledge and research experience that has translated into high quality publications. (15) (16) (17)(18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33)

The aim of the study is to compare tooth carving technique among various year students of dental college in Chennai

MATERIALS AND METHODS

The study was approved by SRB Saveetha Dental College.The sample size used for the study is 100. A self structured questionnaire is prepared and uploaded in Google forms. This standard questionnaire in Google forms has been circulated among the sample study population through WhatsApp and at the end of the survey, all the data were collected and analysed by using Chi square analysis which was done using the software IBM SPSS. Inclusion and exclusion criteria includes all those who are willing to participate were included in this study. Those who were not willing and had a language barrier in answering the English version of the questionnaire were excluded from the study.

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

- Did you carve teeth during your undergraduate dental study?
- Which is the hardest material ?

- Which tooth is more difficult to carve?
- Which instrument do you use for carving ?
- Will carving be useful in the future ?
- Does tooth carving help in understanding dental occlusion ?
- Do you think carving should be continued in undergraduate dental syllabus ?
- Do you Think carving an exact tooth and making a model would be enough ?
- Was carving exercise useful ?
-

RESULT

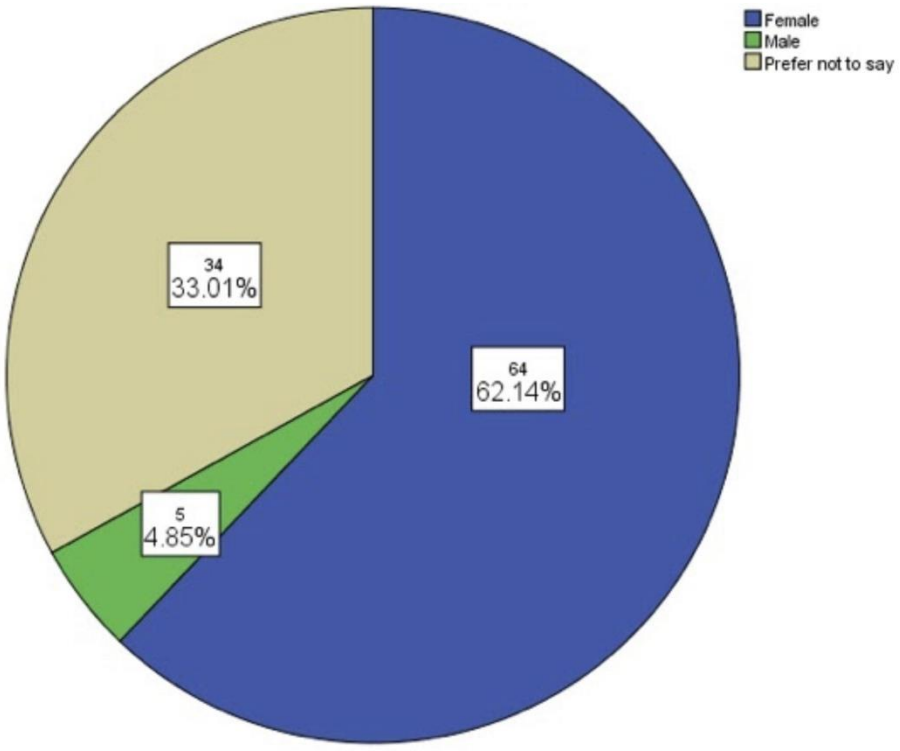

Figure1: Pie chart showing the percentage distribution of Comparison of tooth carving technique between various academic year students of dental college in chennai. Whereas , 62% (blue) participants

are female, 4.85% (green) participants are male, 33.01% (beige) participants prefer not to say their age. Majority of the participants were female.

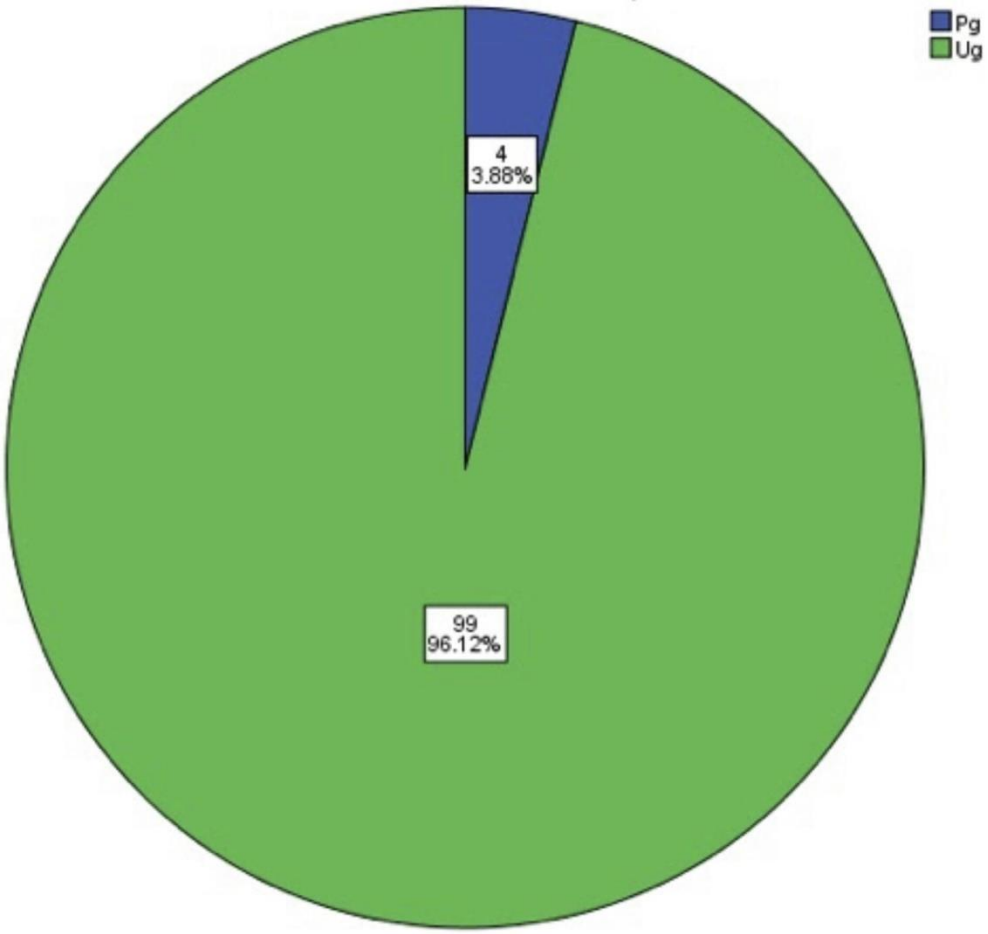

Figure2: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. Whereas ,96%(green) participants are undergraduates, 4%(blue) participants are post graduates. Majority of the participants were undergraduates.

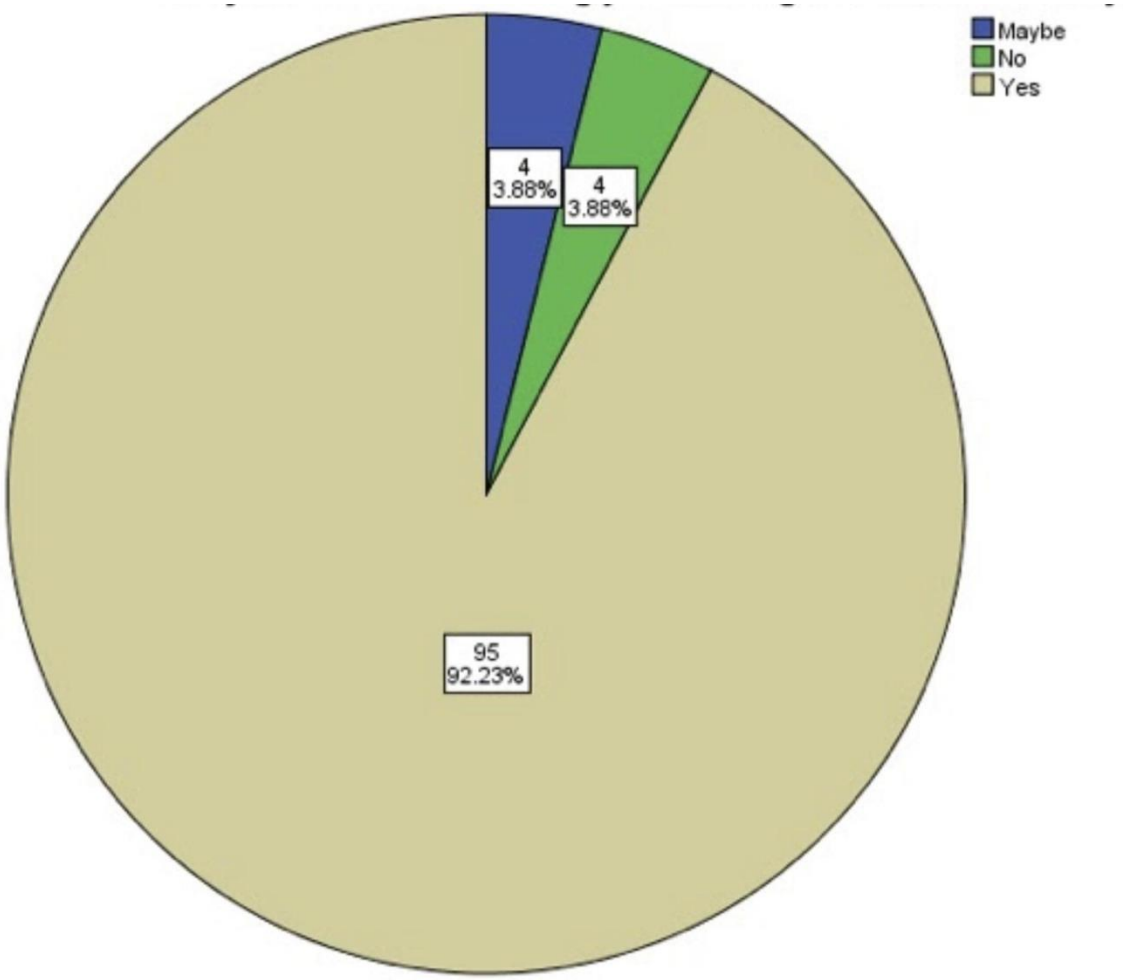

Figure3: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. Whereas, 92.23% (beige) participants have done tooth carving during undergraduation, 3.88% (green) participants haven't done tooth carving during undergraduation, 3.88% (blue) participants might have done tooth carving during undergraduation. Majority of the participants have done tooth caring during undergraduation.

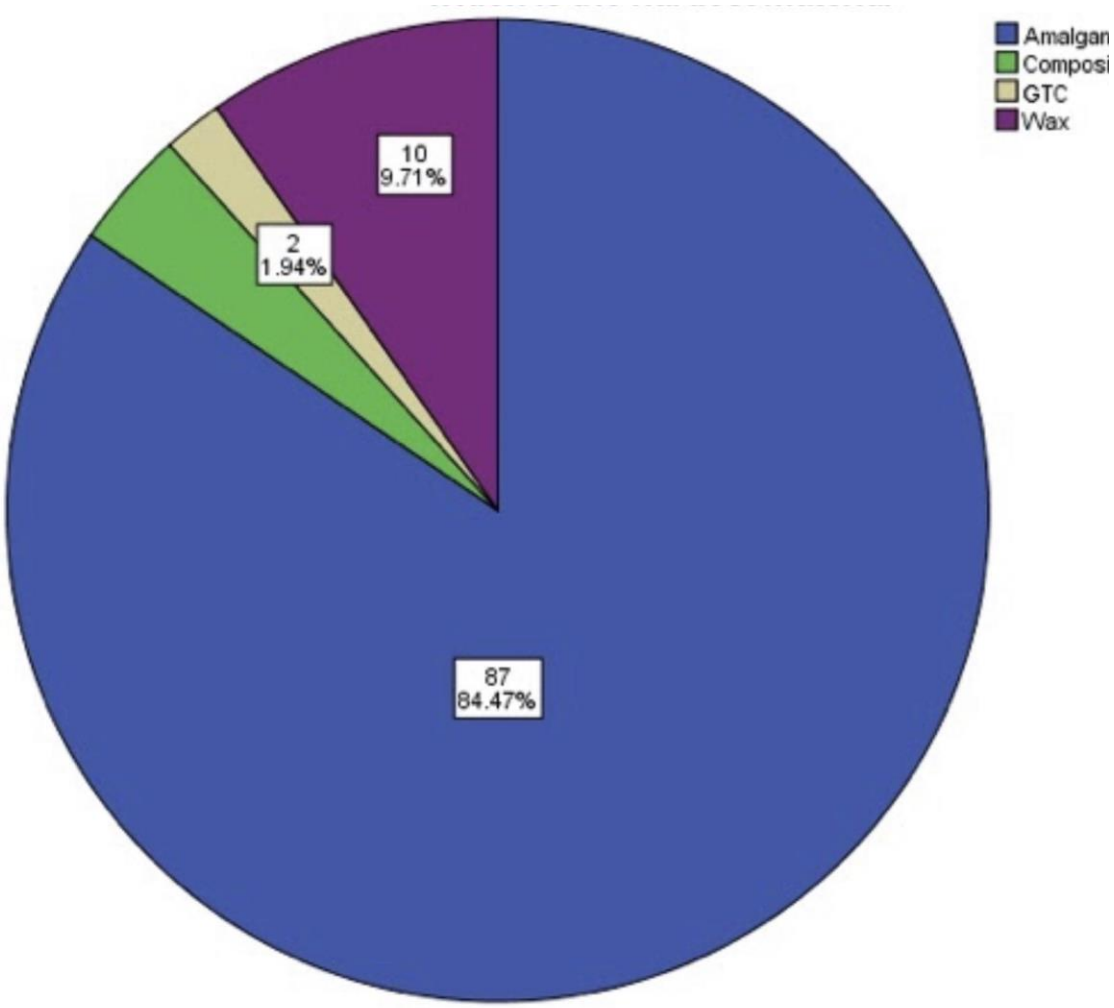

Figure4: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. 84.47% (blue) participants think amalgam is the hardest material,1.94% (beige) participants think GTC is the hardest material, 1.94%(green) participants think composite is the hardest material, 9.71% (violet) participants think wax is the hardest material. Majority of the participants think amalgam is the hardest material.

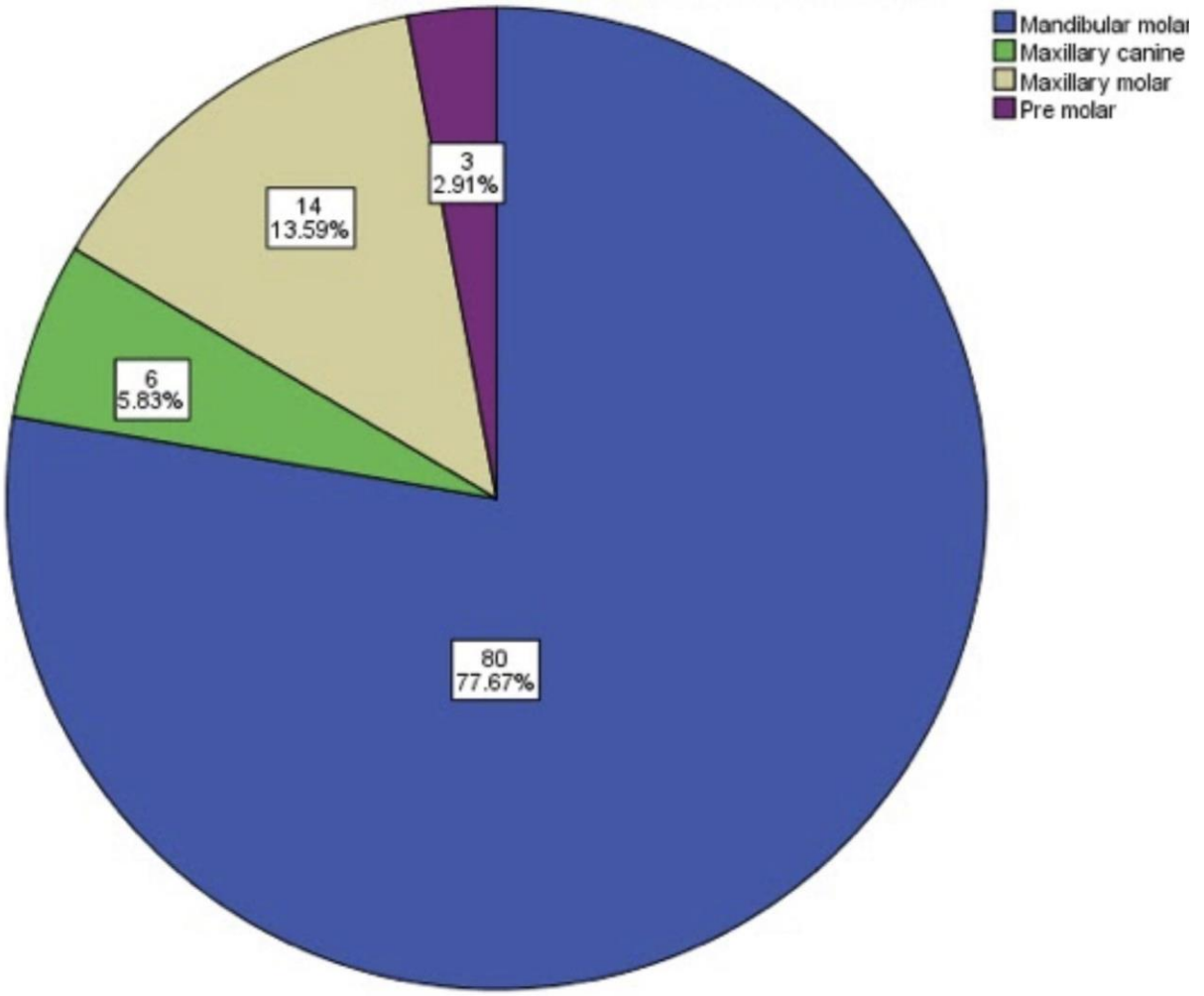

Figure 5: Pie chart showing the percentage distribution of comparison of tooth carving technique between various academic year students of dental college in chennai. 77.67% (blue) participants think mandibular molar is the most difficult tooth to carve,14.59% (beige) participants think maxillary molar is the most difficult tooth to carve, 5.83% (green) participants think maxillary canine is the most difficult tooth to carve, 2.19% (violet) participants think premolar is the most difficult tooth to carve. Majority of the participants think the maxillary molar is the most difficult tooth to carve.

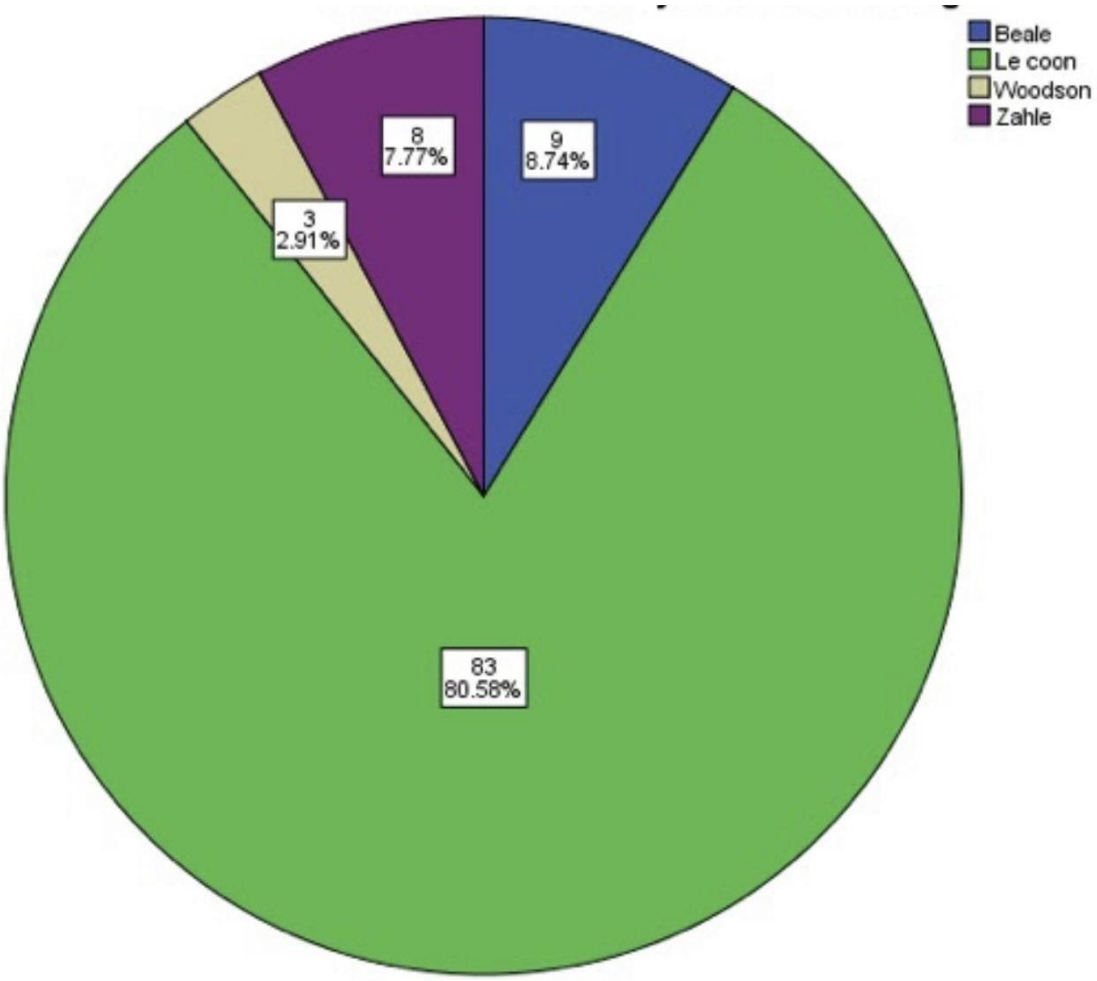

Figure6: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. 8.74% (blue) participants use Beale as an instruments for tooth carving , 80.58% (green) participants use lecron as an instruments for tooth carving ,7.77% (violet) participants use zahle as an instruments for tooth carving, 2.91% (beige) participants use Woodson as an instruments for tooth carving. Majority of the participants think the le cron is the instrument used for tooth carving.

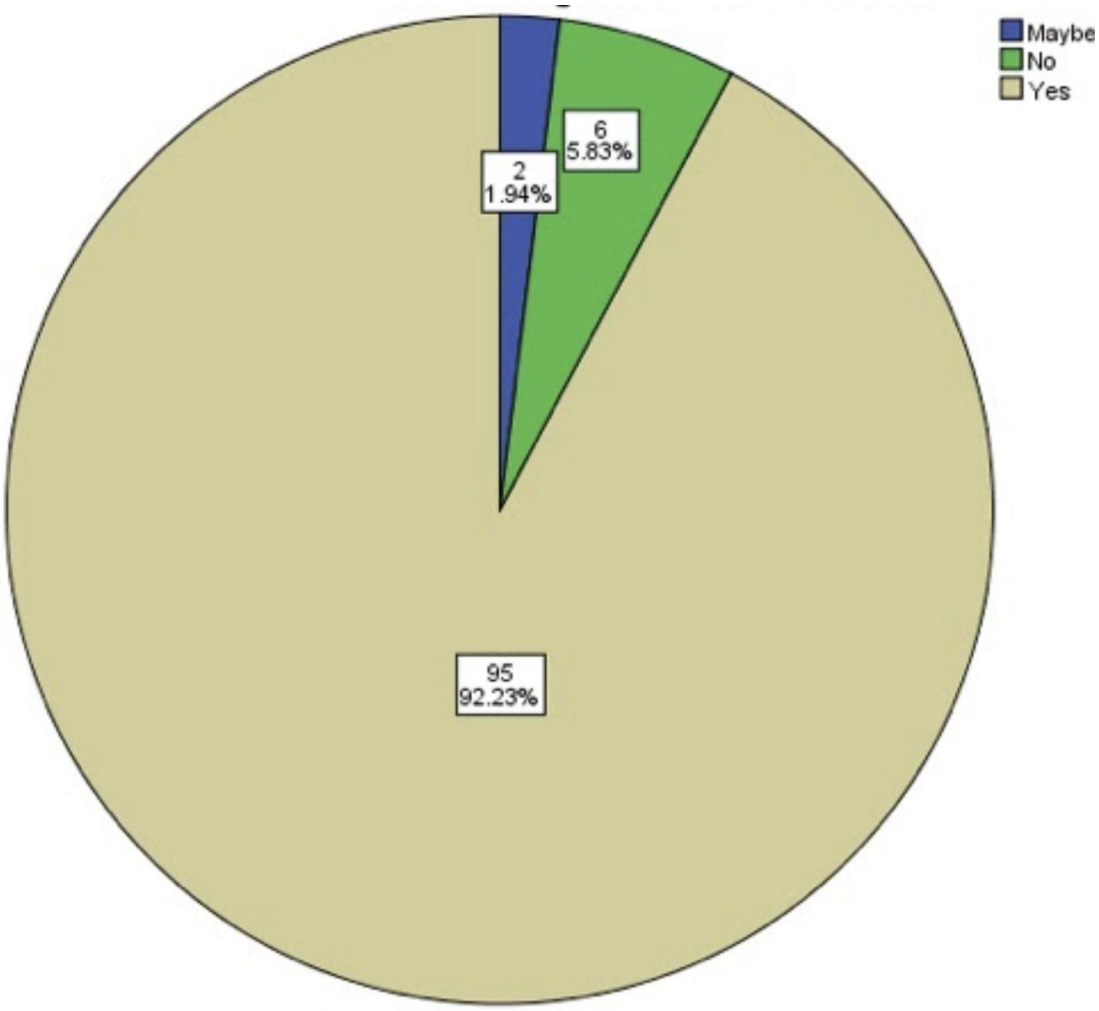

Figure 7: Pie chart showing the percentage distribution of comparison of tooth carving technique between various academic year students of dental college in chennai. 92.23% (beige) participants think carving will be useful in the future ,5.83% (green) participants think carving won't be useful in the future,1.94% (blue) participants think carving might be useful in the future. Majority of the participants think carving will be useful in the future

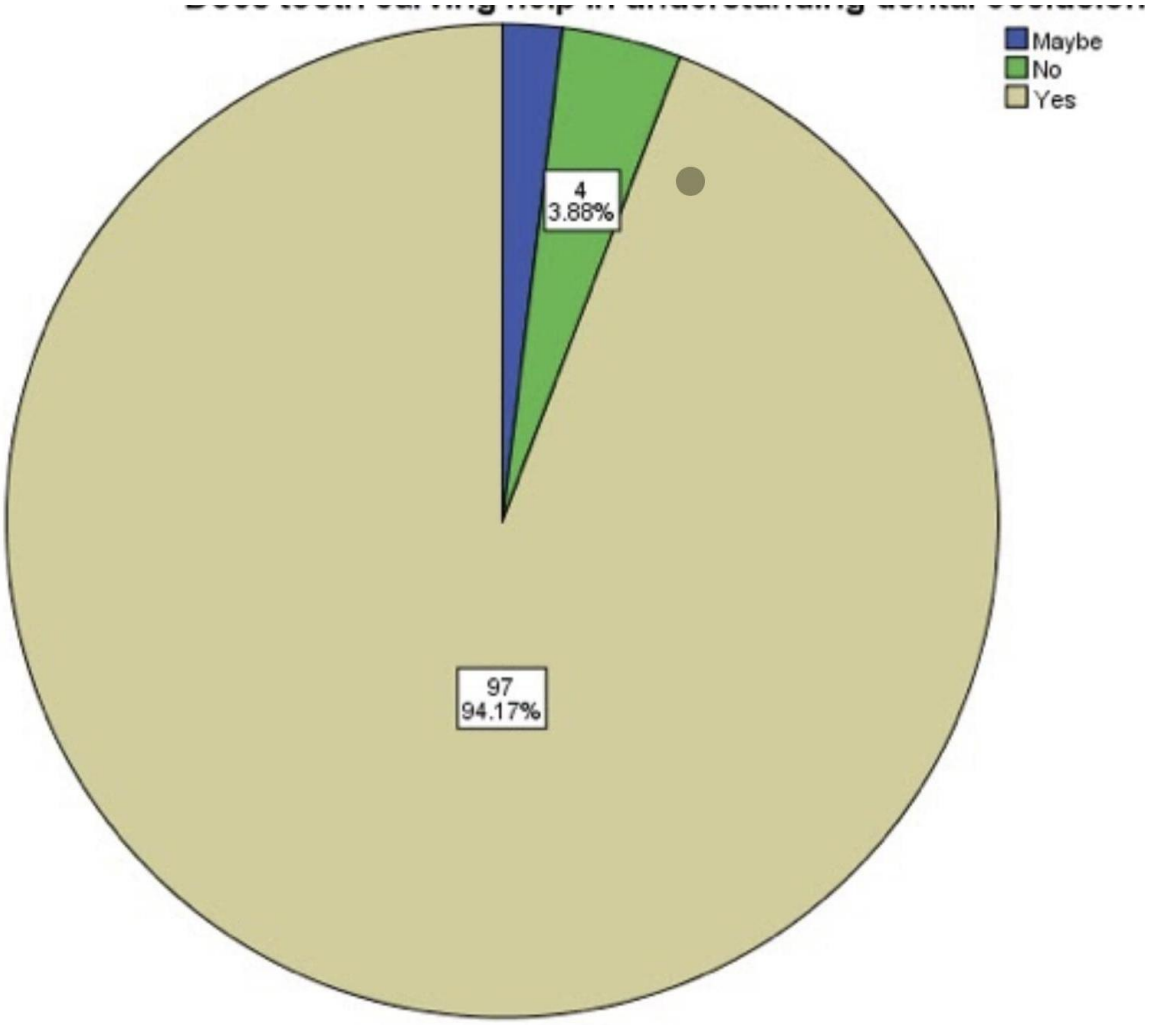

Figure8: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. 94.17% (beige) participants think that carving will be helpful In understanding dental occlusion, 3.88% (green) participants think carving won't be helpful In understanding dental occlusion, 3.38% (blue) participants think carving might be helpful In understanding dental occlusion. Majority of the participants think that carving will be helpful In understanding dental occlusion.

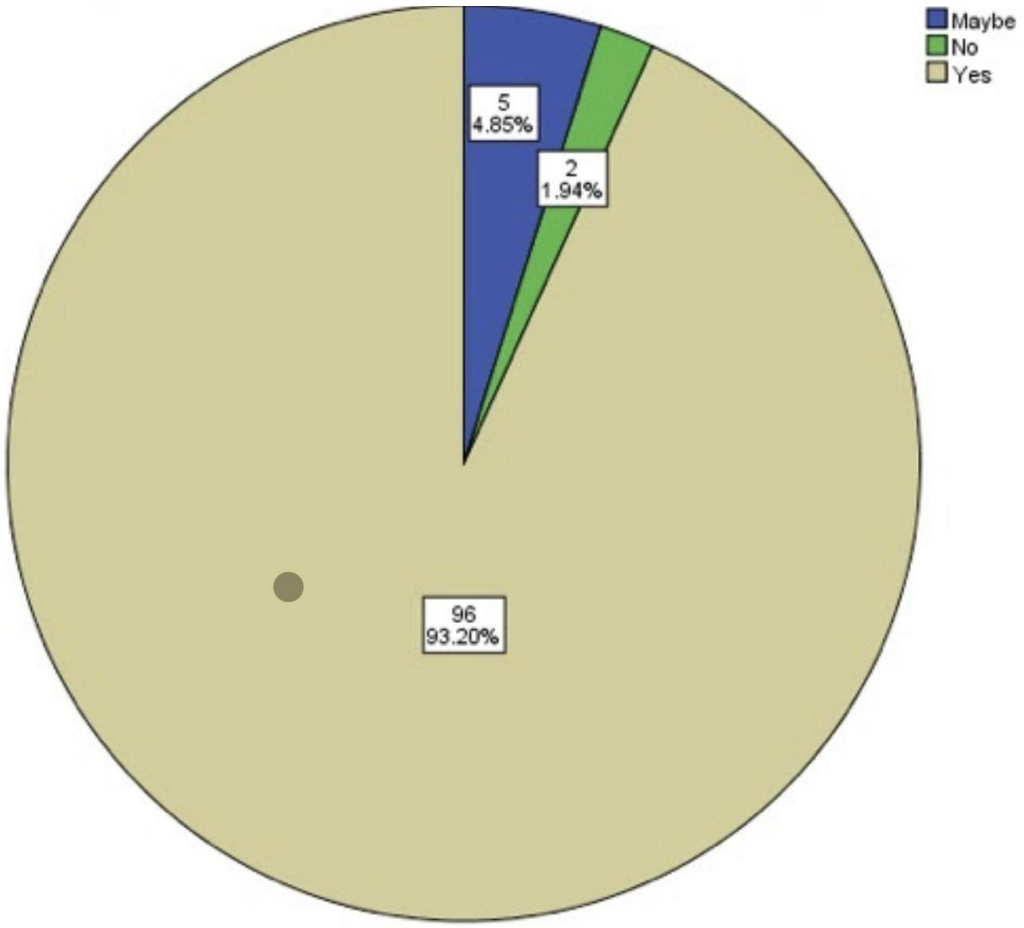

Figure9: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. 93.20%(beige)participants think that carving should be continued in undergraduate dental syllabus, 4.85% (blue) participants think that carving may be continued in undergraduate dental syllabus, 1.94% (green) participants think that carving shouldn't be continued in undergraduate dental syllabus. Majority of the participants think that carving should be continued in undergraduate dental syllabus.

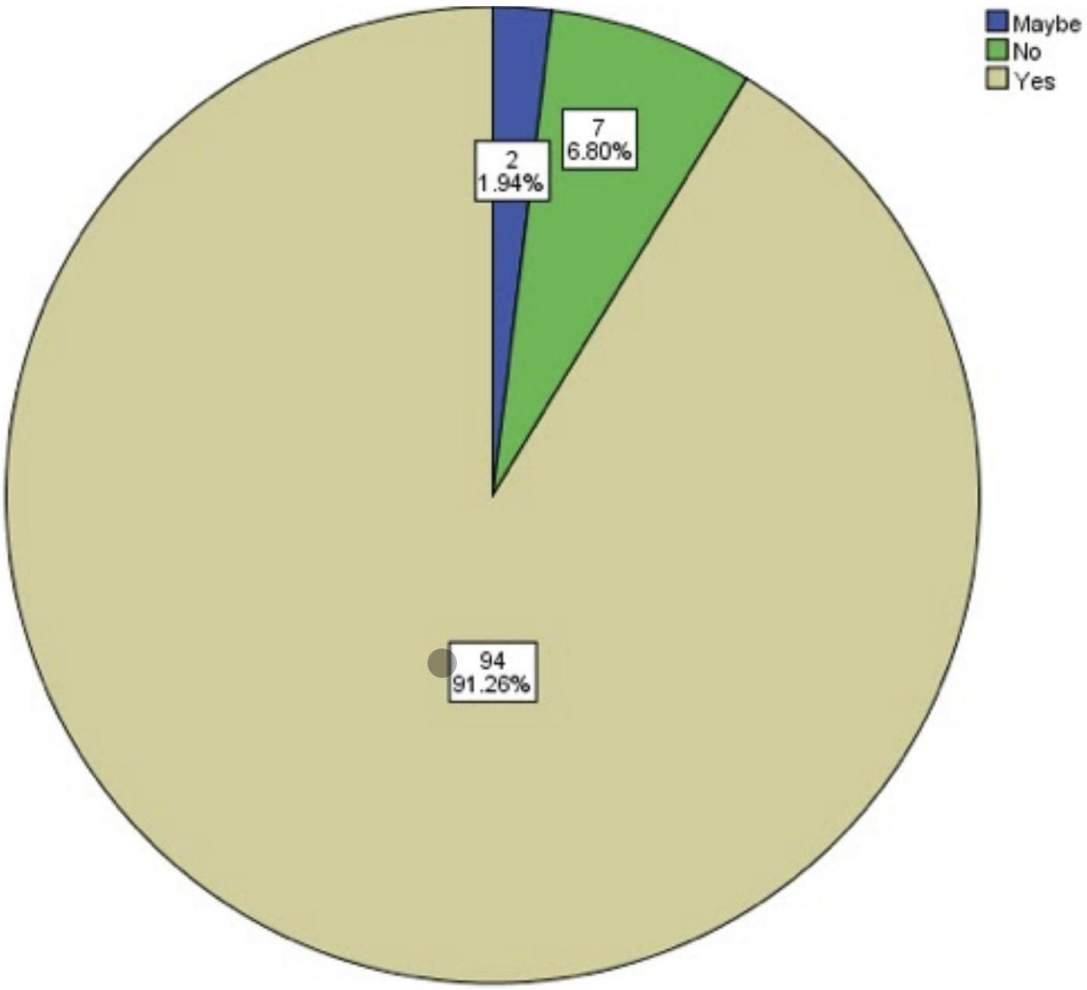

Figure10: Pie chart showing the percentage distribution about Comparison of tooth carving technique between various academic year students of dental college in chennai. 91.26% (beige) participants think that carving an extract teeth and making a model would be enough, 6.80% (green) participants think that carvingan extract teeth and making a model wouldn't be enough, 1.94% (blue) participants think that carving an extract teeth and making a model might be enough. Majority of the participants think that carving an extract of teeth and making a model would be enough.

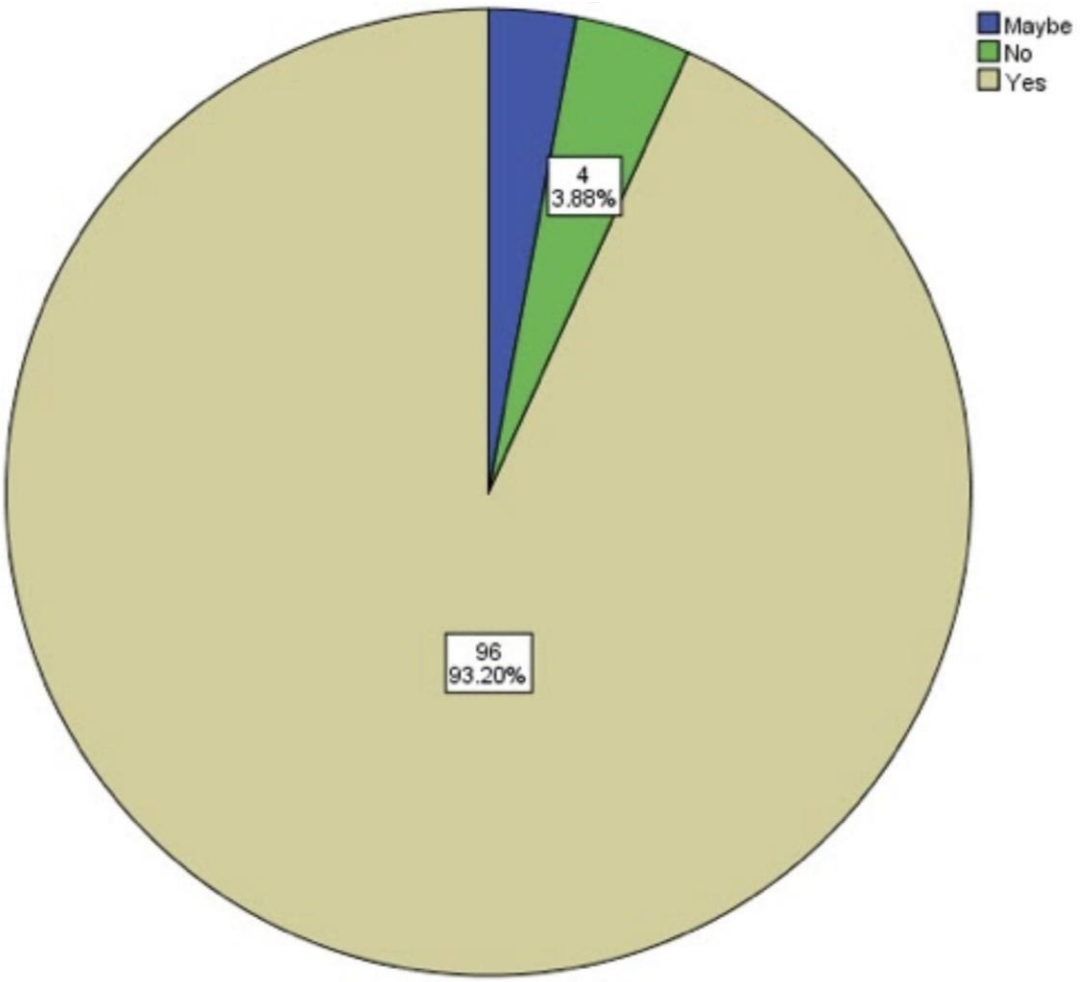

Figure11: Pie chart showing the percentage distribution of Comparison of tooth carving technique between various academic year students of dental college in chennai. 93.26% (beige) participants find carving exercise useful ,3.88% (green) participants find carving exercise not useful, 1.94%(blue) participants think carving exercise might be useful. Majority of the participants find carving exercise useful.

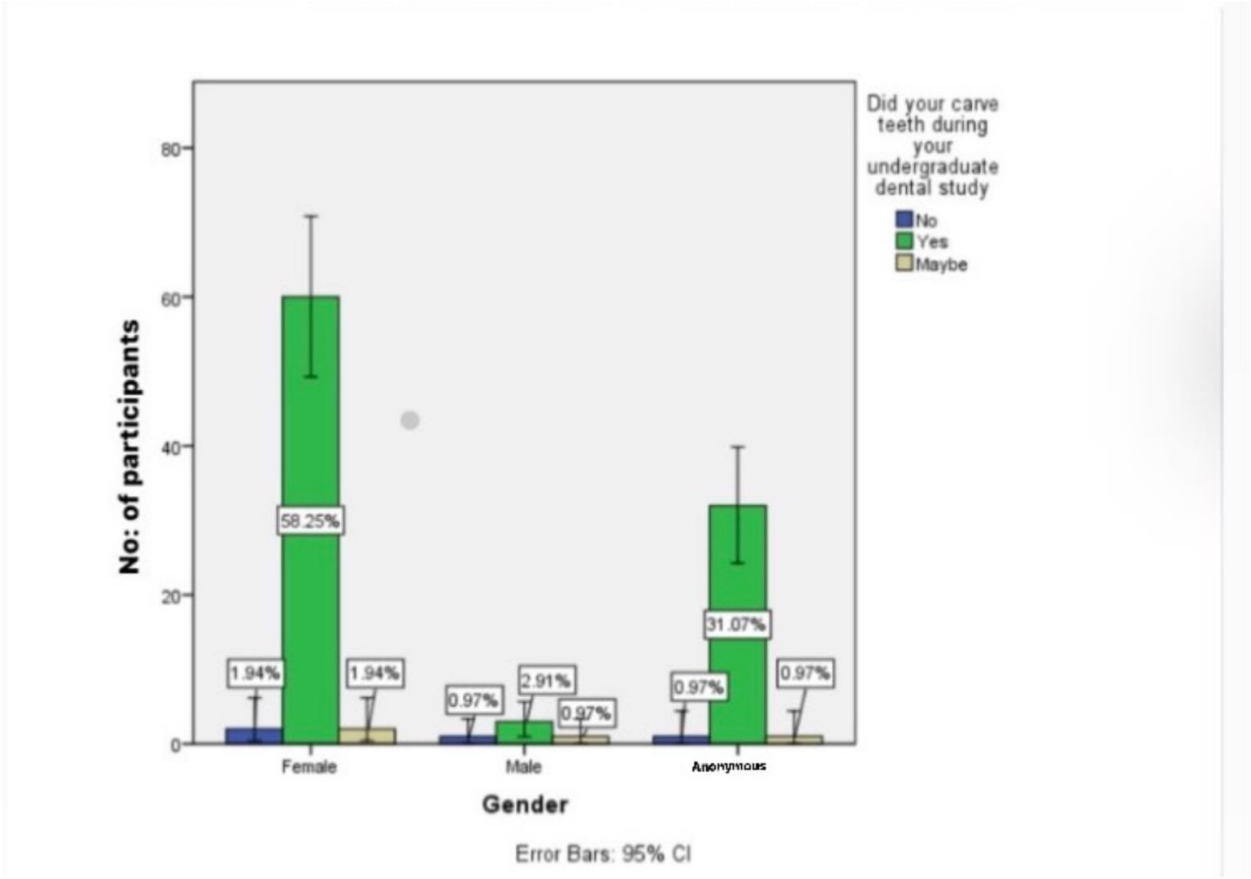

Figure 12: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of response. 58.25%(green) of females reported that they did tooth carving in their undergraduate, 1.94% (blue) of females reported no , 1.94% (beige) of females responded as maybe and 2.91% (green) of males responded as yes, 0.97% (blue) of males responded as no, 0.97% (blue) of males responded as maybe, 31.07% (green) of anonymous participants responded as yes, 0.97% (blue) of anonymous participants responded as no, 0.97% (beige) of anonymous participants responded as maybe. The p value found to be 0.299 ($P > 0.05$), hence proving the study is not statistically significant.

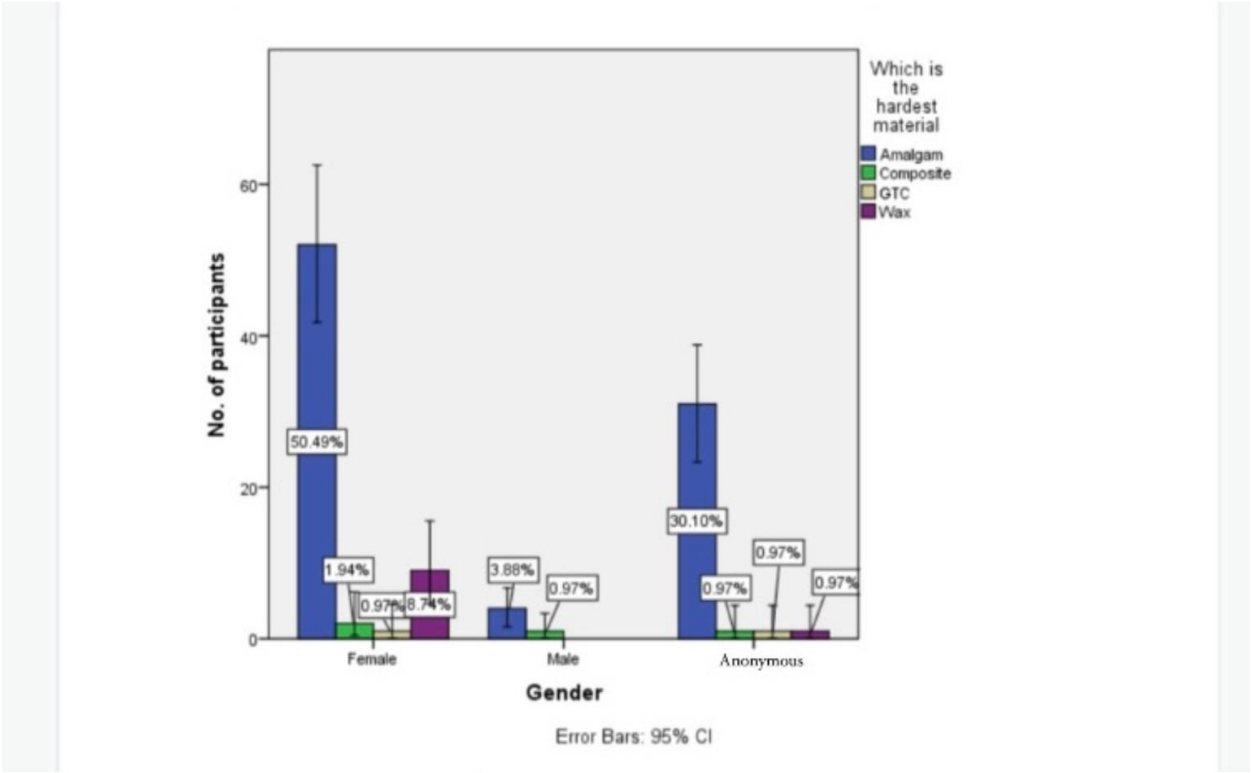

Figure 13: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of response. 50.49% (blue) of females reported amalgam as the hardest material, 1.94% (green) of females reported composite, 0.97% (beige) of females reported GTC, 8..74% (violet) of females reported wax and 3.88% (blue) of males reported amalgam as the hardest material,0.97% (green) of males reported composite. 30.10% (blue) of anonymous participants reported amalgam as the hardest material, 0.97%(green)of anonymous participants reported composite, 0.97% (beige) of anonymous participants reported GTC, 1% (violet) of anonymous participants chose wax. The p value found to be 0.222 ($P > 0.05$), hence proving the study is not statistically significant.

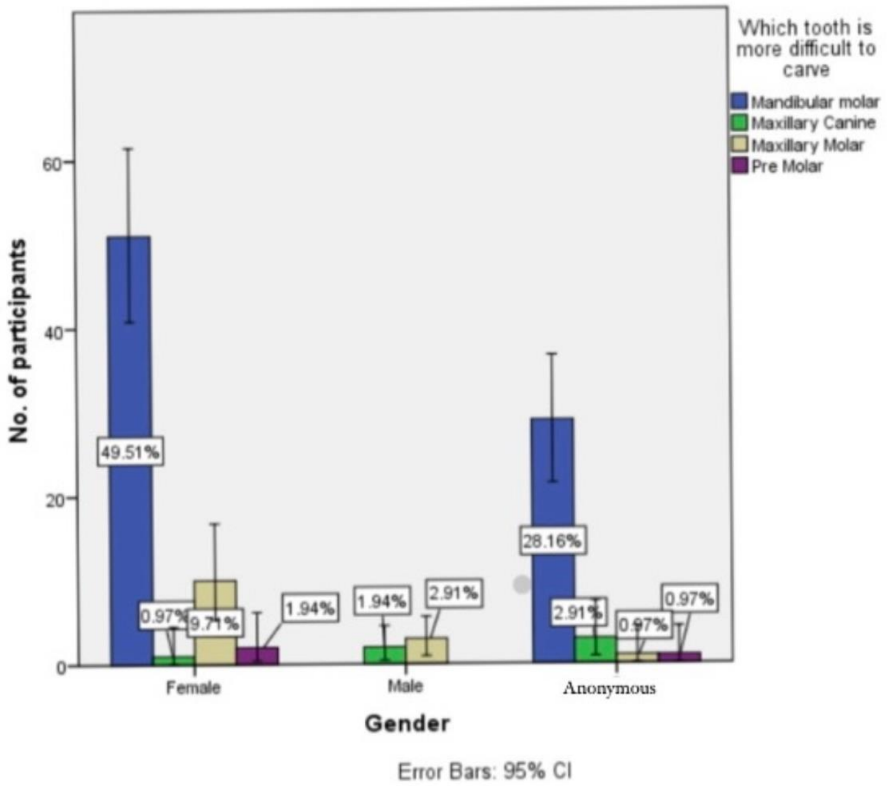

Figure 14: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of response. 49.51%(blue) of females reported mandibular molar is the hardest tooth to carve, 0.97% (green) of females reported maxillary canine, 9.71% (beige) of females reported maxillary molar, 1.97% (violet) of female reported premolar and 291% (beige) of males reported maxillary molar, 1.94% (green) of males reported maxillary canine, 26.16% (blue) of anonymous participants reported mandibular molar, 2.91% (green) of anonymous participants reported maxillary canine, 0.97% (beige) of anonymous participants reported maxillary molar, 1% (violet) of anonymous participants reported as premolar.The p value found to be 0.453 ($P > 0.05$), hence proving the study is not statistically significant.

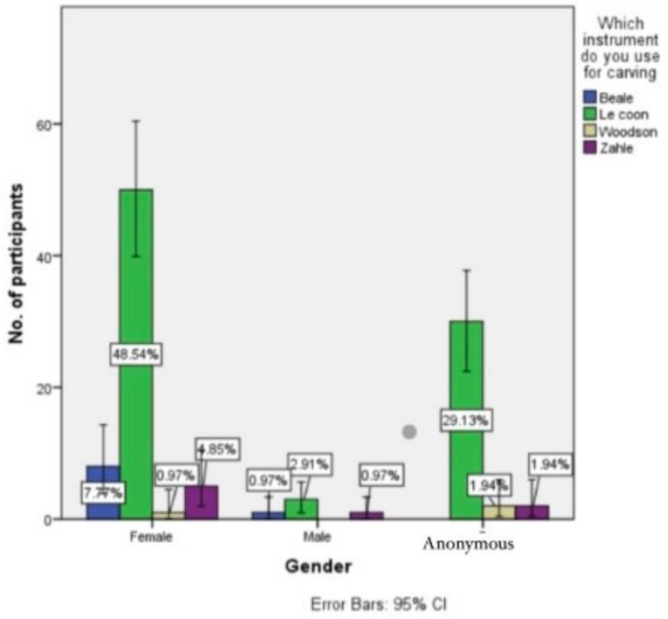

Figure 15: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of responses. 48.54% (green) of females reported lecron as tooth carving instrument, 0.97% (beige) of females reported Woodson, 7.77% (blue) of females reported Beale, 4.85% (violet) of female reported zahle and 2.91% (green) of males reported lecron, 0.97% (blue) of males reported Beale, 29.13% (green) of anonymous participants reported lecron, 1.94% (beige) of anonymous participants reported Woodson, 1.94% (violet) of anonymous participants reported zahle. The p value found to be 0.347 ($P > 0.05$), hence proving the study is not statistically significant.

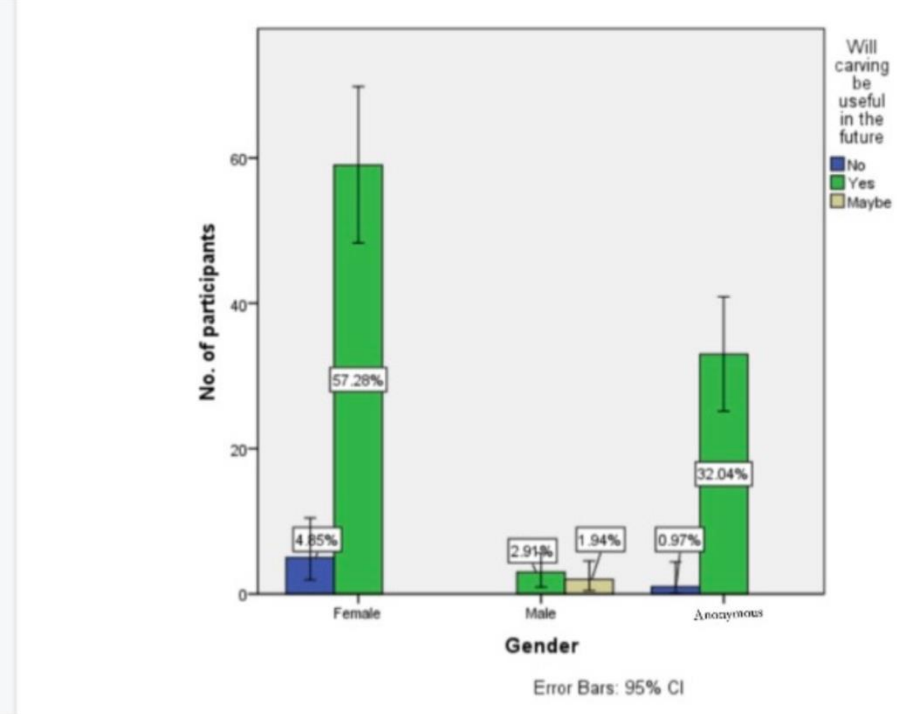

Figure 16: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of response . 57.28% (green) of females reported that tooth caring will be useful in the future ,4.85% (blue) of females reported that tooth carving won't be useful in the future and 2.91% (green) of males reported that tooth carving will be useful in the future, 1.94% (beige) of males reported that it might be useful, 32.04% (beige) of anonymous participants reported that tooth caring will be useful. In the future, 0.97% (green) of anonymous participants reported it won't be useful in the future. The p value found to be 0.03 ($P > 0.05$), hence proving the study is not statistically significant.

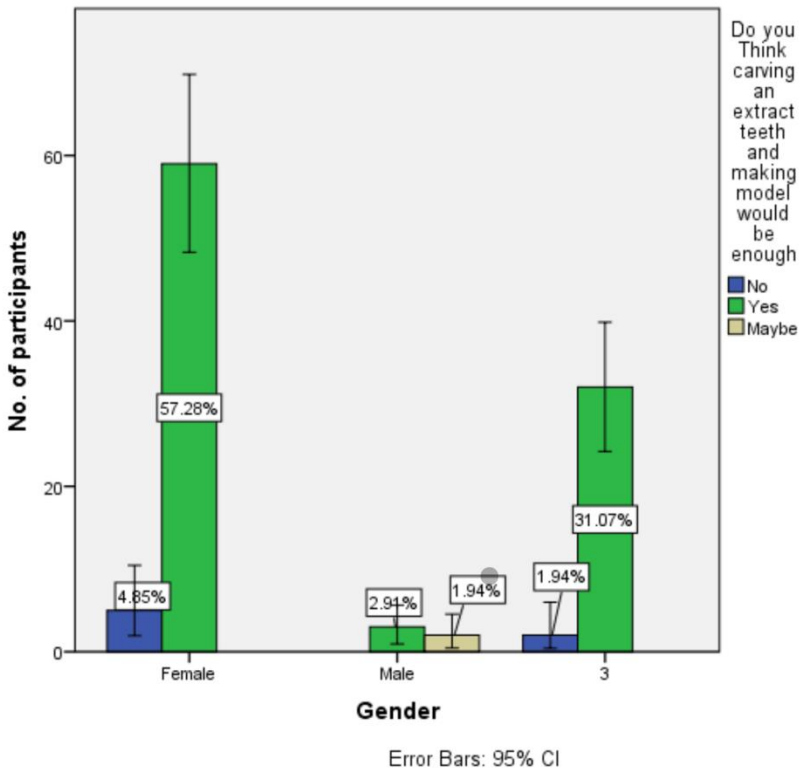

Figure 19: Bar graph showing association between gender and count. X-axis represents gender and Y-axis represents percentage of response. 57.28%(green) of females reported yes ,4.95% (blue)of females reported No and 2.94% (green)of males reported maybe,2.94%(green)of male reported yes and 31.07%(green)of anonymous participants reported yes,1.94%(blue)of anonymous participants reported no.The p value found to be 0.210 (P > 0.05), hence proving the study is not statistically significant.

DISCUSSION

The basic requirement for commencement of clinical skills training in dentistry includes knowledge and identification of individual teeth along with the skill to recreate these anatomical variations clinically.(34) Knowledge of tooth morphology is also very important in prevention of various dental diseases, endodontic treatments, forensics and anthropological studies. (19)Therefore, dental anatomy is considered a foundational course in dentistry that helps to link all these specialities together.(17) Most dental schools use lectures for the knowledge component and a combination of anatomical drawings and wax carvings of teeth to develop psychomotor skills of students.(35)

About 82% of both male and female students perceived that course content on carving was advanced. (20)However 10% of students did not agree to the same. Both male and female students were of the opinion that attending workshops would improve their knowledge of carving.(36) When the students were enquired whether they found the crown or root part difficult in carving they had mined responses. In general, students found carving the root part difficult as compared to the crown. (35,37)

This could be attributed to the fact that the root is thinner than the crown part and hence more difficult to carve and manage as it can easily be chipped off during carving. R, Chandrasekhar S, Sundari KKS, Ravi P.(36) Development and validation of a formula for objective assessment of cervical vertebral bone age. (36,38)The basic requirement for commencement of clinical skills. (39)Training in dentistry includes knowledge and identification of individual teeth along with the skills to recreate these anatomical variations clinically.(3) knowledge of tooth morphology is also very important in prevention of various dental diseases, endodontic treatment, forensic, anthropological studies.(40)

This survey was taken among dental students in dental college 61% of the people were from the age group 18, out of which 96% were male students and the remaining female.(25) 92.2% did tooth carving during their UG.(3,25) 84.5% think amalgam is the hardest material. 77.7% think lecron is the instrument used for carving.(41) 92.2% think carving teeth and making a model would be enough. 43.2% think carving exercise was useful.The limitations of this survey lies in the fact that cross-sectional survey was done among a restricted population of 100 dental students. (42)Further research is needed on this topic by including a wider range of students to get a better view on this topic.

CONCLUSION

There is a need to revise the curriculum emphasizing on the utility of tooth carving in clinical practice. Also there is a need to adopt new innovative methods at teaching dental carving, improving on carver design and enriching the course content with emphasis on competency and skills since many students even after having exposure to carving felt the need for further workshops. Students agreed that it helped to develop their tooth identification knowledge and clinical skill which was one of the main objectives of carving exercise. Further introducing new methods of teaching technique is required to make it more interesting to the students.

AUTHORS CONTRIBUTION

Jessly Daniel: Literature search, data collection analysis, manuscript drafting.

Dr. Palati Sinduja : 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.T.A: Data verification, manuscript drafting, preparation of the manuscript.

ACKNOWLEDGMENT

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

CONFLICT OF INTEREST

The author declares that there was no conflict of interest in the present study.

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
- Kuwait oil company, Kuwait.

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