

EVALUATION OF KNOWLEDGE, ATTITUDE AND PRACTISE ON ARMAMENTARIUM FOR ENDODONTIC SURGERY AMONG UNDERGRADUATE DENTAL STUDENTS

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ABSTRACT:

INTRODUCTION: Armamentarium in dentistry refers to the equipment and instruments used in dental care. These instruments are mainly used to examine, clean, cut and restore the teeth during any procedure. Endodontic armamentarium mainly deals with the use of ultrasonics which are primarily known for its magnification and illumination, which are essential parameters to identify anatomical details found in the root canals. The aim of the study is to assess the knowledge, attitude and practice about the armamentarium used in endodontic surgery among undergraduate dental students.

MATERIALS AND METHODS: The present study is a cross sectional survey conducted among the age group 18-25 years to analyse their knowledge, attitude and practise about armamentarium for endodontic surgery. A self administered questionnaire was prepared which included 13 questions and was circulated among the students through google docs. The data was collected and statistically analyzed using SPSS software.

RESULTS: Majority of the students were aware about the armamentarium used in endodontic surgeries. Majority of the third year students were aware about the instruments used in endodontic surgery (45.25%) followed by the interns (14.29%, 0.000 (p value < 0.05, statistically significant). Third year students were aware that teflon coated sutures are stronger than silk (46.43%) followed by the interns (14.29%, 0.002 (p value < 0.05, statistically significant). Majority of the third year students were aware that MTA was gold standard material in root end filling followed by second year students (0.560, p value > 0.05, statistically insignificant).

CONCLUSION: Within the limitations of the study, it can be concluded that undergraduate dental students were aware about the importance of armamentarium in endodontic surgery. Around 81.2% of the students were aware about the instruments used in endodontic surgery. 42% of the study population are aware about the difference between traditional and micro endodontic surgery. 89% of the participants were aware that MTA was the gold standard material for root end filling. Majority of the students practising clinical dentistry were aware of the armamentarium used for endodontic surgery.

KEYWORDS: Endodontic instruments, Endodontic armamentarium, MTA, Innovative technology, Innovative technique.

INTRODUCTION:

Endodontics is the branch of dentistry that deals with dental pulp and tissues that surround the roots of a tooth. Endodontists are dentists who specialize in conditions such as tooth pain, disease, and infection. They specialise in treatment plans such as root canals that help in removing infected or decayed teeth. Endodontic surgery are the surgeries that can be used to identify small fractures. Endodontic Surgery can also be done to remove calcium deposits in root canals and to treat damaged root surfaces. It is believed that the main aim of endodontic treatment is to prevent apical periodontitis by controlling asepsis (1). Endodontic surgery is known to be one of the most difficult surgeries because the surgeon must be sure about the location of anatomical structures like large blood vessels, the mental foramen, and the maxillary sinus.

Endodontic treatments are risky as they do not have a positive idea in dentistry mainly because of its invasive nature and the outcome can be uncertain (2). Endodontic surgery is now emerging into endodontic microsurgery where a single tooth can be managed using endodontic surgery without extracting the tooth (3). Armamentarium in dentistry refers to the instruments that are used to examine, clean, cut, and restore the teeth. It is mainly divided into three types, hand instruments, auxiliary instruments and rotary instruments. The branch of endodontics requires specific instruments in its practise.

The instruments that are mainly concerned with endodontic microsurgery are microsurgical blades, tissue elevator, tissue retractor, micro explorer, micro curettes, micro mirror and a micro plugger (4). Some of the modern techniques in

endodontics involve the use of the operating microscope, micro-surgical instruments, refining hard and soft tissues management techniques, and the use of more biologically acceptable root-end filling materials(4,5). Our team has extensive knowledge and research experience that has translate into high quality publications (6)(7-17). The aim of the present study is to assess the knowledge, attitude and practice about the armamentarium used in endodontic surgery among undergraduate dental students.

MATERIALS AND METHODS:

A cross sectional study was conducted among undergraduate dental students in a dental institution. This was done in the form of a questionnaire that was circulated online. The dental students were of the age group 18 to 25 years. The study protocol was approved by the institutional review board and the questionnaire was validated. The sample size of this study was 101. The questionnaire consisted of 13 questions that mainly focused on knowledge, awareness and practice of armamentarium used in endodontic surgery among undergraduate dental students. The questionnaire was distributed among the students through an online survey website called google forms. The data was collected, compiled and was arranged in a systematic manner and was analysed according to SPSS software. The Pearson Chi Square test was also done. The confidence interval was found to be 95% and statistical significance of $p < 0.05$. The independent variable of the study was gender. The results were then represented in the form of pie charts and bar charts.

Inclusion criteria: The participants should be dental students.

Exclusion criteria:

Students who were not available to take the survey.
Students who were not willing to participate.
Dentists who had completed the period of study.

Study Setting:

The study was conducted with the approval of the Institutional Ethics Committee. The study consisted of one assessor and one guide .

Study method:

Self administered questionnaire of 13 close-ended questions was prepared and was validated by the Institutional Review Board (IRB). The questionnaire was distributed among undergraduate dental college students of private dental college institutions through an online survey form "GOOGLE FORMS" . Demographic details were also included in the questionnaire.

Sampling Technique:

The study was based on a non probability consecutive sampling method.

Ethical considerations:

Returning the filled questionnaire was considered as implicit consent with no need for signing for a return consent. Ethical approval of study is obtained from the Institutional Review Board (IRB)

Statistical analysis:

Data was analysed with the SPSS version (22.0). Descriptive statistics as number and percent were calculated to summarize qualitative data. Chi square test was used to analyze and compare the education level of students and their knowledge, attitude and practise on armamentarium for endodontic surgery among undergraduate dental students. The confidence level was 95% and the statistical significance $p < 0.05$ was considered statistically significant. Finally the results were represented by using bar charts and frequency tables.

RESULTS:

The results of the study are presented as bar diagrams below. The majority of the third year students were aware about the instruments used in endodontics (**figure 1**), of the third year students were aware that teflon coated sutures are stronger than silk (**figure 2**), Majority of the third year students said it is true that mineral trioxide aggregate is the gold standard for root end filling in endodontics (**figure-3**)

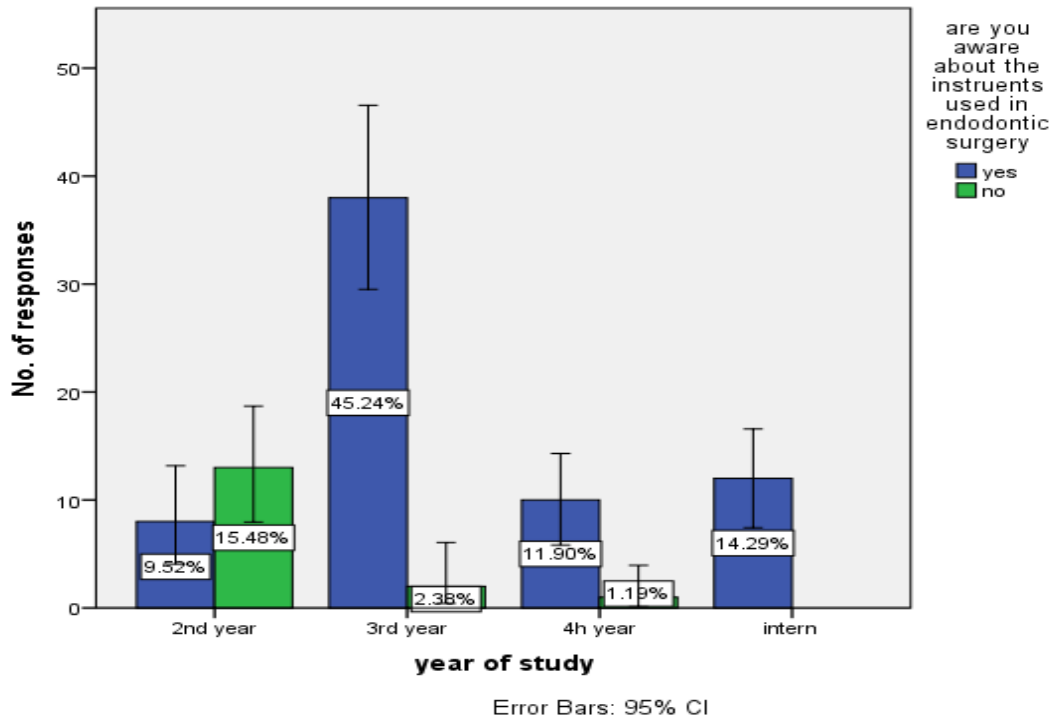


Figure 1: Bar chart depicting the association between year of study and the awareness of the students about the instruents used in endodontic surgery. X axis represents the year of study and Y axis represents the number of responses. Majority of the third year students were aware about the instruents used in endodontic surgery(45.25%) followed by the interns(14.29%).The P value was found to be 0.000(p value<0.05) which was found to be statistically significant.

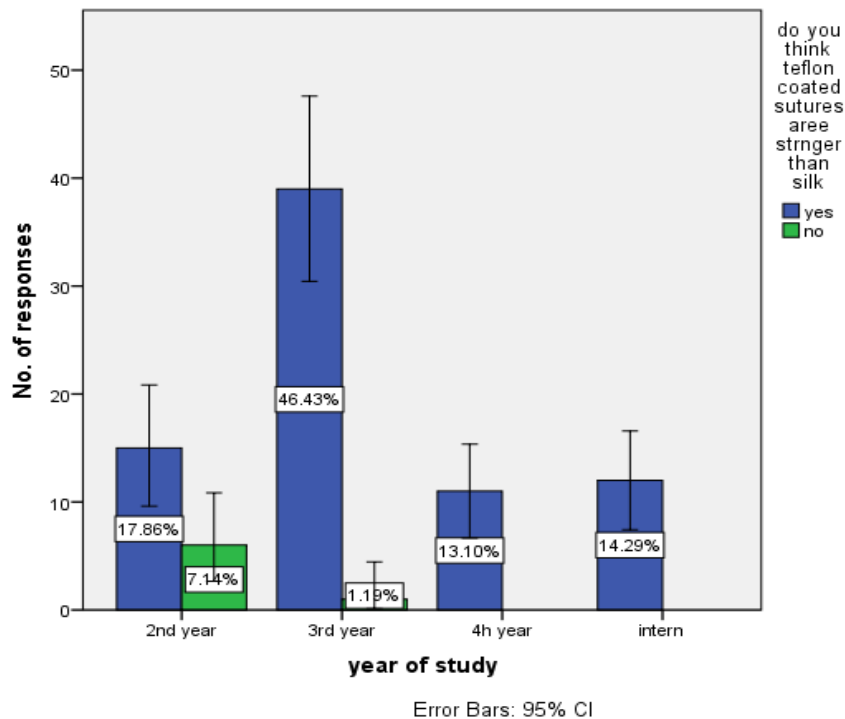


Figure 2: Bar chart depicting the association between year of study and the knowledge of students on what suturing material is stronger. X axis represents the year of study and Y axis represents the number of responses. Majority of the third year students were aware that teflon coated sutures are stronger than silk (46.43%) followed by the interns(14.29%).The P value was found to be 0.002(p value<0.05) which was found to be statistically significant.

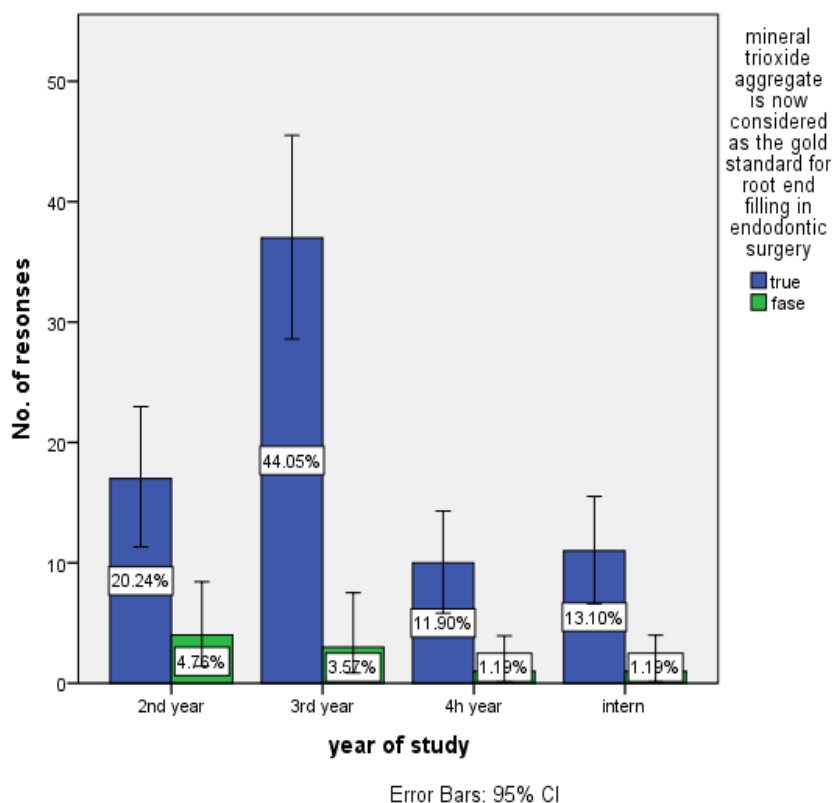


Figure 3: Bar chart depicting the association between year of study and the knowledge of students about mineral trioxide being considered as the gold standard for root end filling in endodontic surgery. X axis represents the year of study and Y axis represents the number of responses. Majority of the third year students said yes (44.05%) followed by the second years(20.24%).The P value was found to be 0.560(p value>0.05) which was found to be statistically insignificant.

DISCUSSION:

The results were collected and the data was analysed from the study. The study was mainly done to focus on the knowledge, awareness and practise on the armamentarium used in endodontic surgery. The students were asked to fill a questionnaire based on this. The study sample consisted of dental students of the age group 18 to 25 years. Table -1 represents the responses of the study population to the respective questionnaire. Around 50% male students and 50% of the female students participated in the study. 47.62% of the students that participated in the study were third years, 25% were second years, 14.29% were interns and 13.10% were fourth years. When the students were asked on what are the major differences between traditional root end surgery and endodontic microsurgery, 42.86% said all of the above, 17.86% of the students said access armamentarium, 14.28% of the students said flap design, 13.10% of the students said instruments used and 11.90% of the students said the size of osteotomy. Around 25% of the students said that ultrasonics are used in endodontic surgery in recent times due to fractured instruments, 22.62% of the students said it is used for irrigation, 20.24% of the students said it is used for metallic posts. When the students were asked if NiTi rotary has gained widespread popularity due to its super elasticity and effective instrumentation, 89.29% of the students said yes and 10.71% said no.

TABLE-1 REPRESENTING RESPONSES OF THE STUDY POPULATION TO THE QUESTIONNAIRE

S.NO	QUESTIONS	CHOICES	RESPONSES
1.	Gender	<ul style="list-style-type: none"> • Male • Female 	<ul style="list-style-type: none"> • 50% • 50%
2.	Year of Study	<ul style="list-style-type: none"> • 2nd Year • 3rd Year • 4th Year • Intern 	<ul style="list-style-type: none"> • 25% • 47.62% • 13.10% • 14.29%
3.	Are you aware about the instruments	<ul style="list-style-type: none"> • Yes 	<ul style="list-style-type: none"> • 81.2%

	used in Endodontic surgery?	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> 18.8%
4.	What are the Major differences between traditional root end surgery and endodontic microsurgery?	<ul style="list-style-type: none"> Flap design Access Armamentarium Size of Osteotomy Instruments used All of the above 	<ul style="list-style-type: none"> 14.29% 17.86% 11.90% 13.10% 42.86%
5.	Why is Ultrasonics used in endodontic surgery in recent times?	<ul style="list-style-type: none"> Refining of access cavities <ul style="list-style-type: none"> Irrigation Removal of pupal stones <ul style="list-style-type: none"> Metallic posts Fractured instruments 	<ul style="list-style-type: none"> 16.67% 22.62% 15.48% 20.24% 25.00%
6.	Has NiTi Rotary instruments gained widespread popularity due to its super elasticity and effective instrumentation ?	<ul style="list-style-type: none"> True False 	<ul style="list-style-type: none"> 89.29% 10.71%
7.	What are the main objectives of non surgical endodontic therapy?	<ul style="list-style-type: none"> To entirely remove pulpal debris To remove microbes and microbial by products from the root canal system Three dimensionally seal the affected root canal space <ul style="list-style-type: none"> All of the above 	<ul style="list-style-type: none"> 11.90% 25.00% 22.62% 40.48%
8.	What are the common methods used for obturation?	<ul style="list-style-type: none"> Lateral condensation Continuous wave 	<ul style="list-style-type: none"> 88.10% 11.90%
9.	Mineral trioxide aggregate is now considered as the gold standard for root end filling in endodontic surgery?	<ul style="list-style-type: none"> True False 	<ul style="list-style-type: none"> 89.29% 10.71%
10.	What do you think is the most commonly used elevator for elevating the flap	<ul style="list-style-type: none"> Creyers elevators Periosteal elevator Straight elevator None of the above 	<ul style="list-style-type: none"> 15.48% 66.67% 11.90% 5.95%
11.	What is the size of the BP blade used for incision?	<ul style="list-style-type: none"> 15a 15b 15c 	<ul style="list-style-type: none"> 83.33% 11.90% 4.76%
12.	How many endodontic surgeries are you aware of ?	<ul style="list-style-type: none"> 0 1 2 3 	<ul style="list-style-type: none"> 64.29% 21.43% 9.52% 4.76%
13.	Do you think teflon coated sutures are stronger than silk?	<ul style="list-style-type: none"> Yes No 	<ul style="list-style-type: none"> 91.67% 8.33%

Around 40.48% of the students said that the main objective of non surgical endodontic therapy is all of the above, 22.62% of the students said it is because of the three dimensional seal around the affected root canal space, and 25% of the students said it is remove microbes and microbial by products from the root canal system. 88.10% of the students said the most common method used for obturation is lateral condensation, whereas 11.9% of the students said continuous wave. When the students were asked if mineral trioxide aggregate is considered as the gold standard for root end filling in endodontic surgery, 89.29% students said yes while 10.71% said no. 66.67% of the students think the most commonly

used elevator for elevating the flap is periosteal elevator, 15.48% of the students said it is cryers elevator, 11.9% of the students said straight elevator and 5.95% of the students said none of the above. Around 83.33% of the students answered 15a when they were asked what is the size of BP blade used for incision, 11.9% of the students said 15b and 4.76% of the students said 15c. When the students were asked how many endodontic surgeries they are aware of, 64.29% of the students said 0, 21.43% of the students said 1, 9.52% of the students said 2 and 4.76% of the students said 3. The students were asked if they felt teflon sutures are stronger than silk, 91.67% of the students said yes and 8.33% of the students said no. The association between year of study and the awareness of students on the instruments used in endodontic surgery was and the chi square test was also done. The value was found to be 0.000(p value<0.05) which was found to be statistically significant. The association between years of study and the knowledge of students about the suturing material and the chi square test was done. The p value was found to be 0.002(p value<0.05) which was found to be statistically significant.

Previous articles suggest that only few of the dental practitioners were aware about the latest technology that was introduced in endodontics(18). A study by Talha M Siddiqui, concludes that many of the dental practitioners and surgeons experienced K file separation than H files during root canal treatment(19). A study reveals that the US has become one of the developed countries that has been using ultrasonics for gaining access to canal openings, cleaning and shaping, obturation of root canals, removal of intracanal materials and obstructions, and endodontic surgery(20). It is believed that the use of endodontic surgery enhances the retention of many teeth which could have been extracted before(21).

CONCLUSION:

Within the limitations of the study, it can be concluded that undergraduate students are aware about the importance of armamentarium in endodontic surgery. Around 81.2% of the students were aware about the instruments used in endodontic surgery. 42% of the study population are aware about the difference between traditional and micro endodontic surgery. 89 % of the participants were aware that MTA was the gold standard material for root end filling. Majority of the students practising clinical dentistry were aware of the armamentarium used for endodontic surgery. Further the survey can be done among a wide scale population to increase the knowledge, awareness and practise on armamentarium used in endodontic surgery.

ACKNOWLEDGMENT: I would like to thank Saveetha Dental College for giving this wonderful opportunity to do this study.

SOURCE OF FUNDING:

- Saveetha Dental College
- SIMATS, Saveetha University
- SBR Auto components Ltd, Hosur.

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