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EVALUATION OF DENTAL STUDENT'S PERCEPTION AND SELF CONFIDENCE LEVELS REGARDING ENDODONTIC TREATMENT

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ABSTRACT:

Aim: This article aims to gain understanding into the perception and self confidence levels of undergraduate dental students at performing root canal treatment and their perception of the quality of endodontic education.

Methods: An anonymous survey questionnaire was distributed to all final year and interns' dental students at Riyadh colleges of dentistry and pharmacy. The questionnaire utilized both scaled response and open questions to gain an insight into undergraduate opinion and their perception about endodontic treatment.

Results: Out of a possible 72 students, 65 responses were obtained (response rate = 90%).

Perception of competence and confidence were significantly greater amongst the more senior year groups ($P < 0.01$). However, , 20% of students felt little confidence in treating mandibular and maxillary molar, while 23% felt very confident in treating maxillary anterior teeth, followed by mandibular teeth 21.2%, then 12.3% mandibular Premolar, 1.5% mandibular molar.

Improvements that were suggested by the students included the most efficient way to increase their endodontic skills during early learning period,92.3% felt the number of teeth to be completed rather than point based system should be followed and 90.8% felt there should not be a limitation or pre-requisite in number of teeth to be done.

76.9% felt they wish to continue to further specialize in endodontics.

Conclusion: nhancing undergraduate education in endodontics is necessary to increase students' perception of their confidence and competence when performing root canal treatment.

Key words : Dental education, Endodontics, root canal preparation, root canal therapy, teaching

INTRODUCTION:

Dental students' perspectives on their educational experiences are an essential component of curriculum planning [1]; they can direct program changes that enhance learning. Students consider dentistry one of the most difficult programs. Within the field of dentistry, Endodontic treatment can be one of the most difficult dental procedures a practitioner encounters during clinical practice. Due to the increase life expectancy in the population and the desire of individuals to preserve their natural teeth, there is an increasing demand for endodontic treatment and this will presumably increase in the years

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ahead [2]. This reality necessitates dental students to be satisfactorily equipped with knowledge as well as experience in endodontic procedures prior to working independently. A dental student, upon graduation should have acquired the skills to make a sound diagnosis regarding endodontic cases, implement a reasonable treatment plan and carry out a qualified and safe endodontic treatment. Because of the anatomical diversity of root canals, the need to provide care to patients and the students' lack of self-confidence, several students do not feel adequately prepared for their assessments in the more difficult procedures, such as molar endodontic treatment. This insecurity may reflect insufficient clinical and didactic teaching in the dental curriculum. The number of endodontic treatments a student is obliged to complete to be eligible for graduation differs from school to school and various factors such as the proportion of patient frequency to the number of enrolled clinical students of the related dental school may have impacts on this difference. On the other hand, there are some requirements and established competencies advocated by dental authorities and organizations that describe the minimum number of cases required to be completed prior to being licensed as a dental practitioner. Students' perceptions of the instruments and techniques used for endodontic treatments must be collected to provide feedback about the quality of endodontic education [3].

Therefore, The aim of this survey was to gather information about the general opinion of senior dental students enrolled in Riyadh colleges of dentistry and pharmacy, Riyadh, KSA, regarding endodontic treatment, to analyze their perception of this significant branch of dentistry and how they self-evaluate their confidence level in endodontic treatment a few months prior to graduation.

MATERIAL AND METHODS:

The study was registered with the research centre of Riyadh colleges of dentistry and pharmacy . Ethical approval was obtained from the ethical committee. An informed consent signed by the students were also taken.

Anonymous survey forms were handed to out to 65 senior year dental students enrolled in Riyadh colleges of dentistry and pharmacy, Riyadh, KSA. An information sheet was provided to each student explaining the purpose of the study, that the study was completely confidential, that participation was voluntary and that no names would be used in the report. A self-administered questionnaire consisting of 34 open-ended questions and 6 multiple-choice items was used for data collection. Prior to the study, students were informed that they were not held obliged to complete and return the forms and completion of the survey would have no influence on their overall academic grading or performance.

Following some demographic information such as age and gender, the students

were asked to score some endodontic procedures with different diagnosis, different steps of endodontic treatment as well as types of teeth according to their self-confidence levels. The students used the Lickert's scoring system from 1-5 to indicate their level of confidence as follows: 1 = Very little confidence, 2 = Little confidence 3 = Neutral 4 = Confident 5 = Very confident.

The survey continued with some multiple choice questions regarding students' opinion about whether they intend to carry on performing their endodontic cases while working independently, whether they plan to continue using rotary in endodontics, and most importantly some questions regarding suggestions and ideas to improve their endodontic skills, like during their learning period, to follow the point based system for requirements or to be based on number of teeth to be completed.

The survey was completed with a question which asked whether students wished to further specialize in endodontics.

The responses were selected on scales, and categorical responses were collated and analyzed using Statistical Package for the Social Sciences (SPSS) version 17.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were obtained for all variables. Counts and percentages are reported for categorical variables, and mean and standard deviation are reported for continuous variables. The data obtained were subjected to Spearman's correlation for the test of significance to determine their distribution.

RESULTS:

Among the 72 students who were handed out the survey, 65 (90%) returned the forms.

On evaluation of the preliminary phases in root canal therapy, like endodontic evaluation and patient history with the diagnosis and treatment planning, there was a positive correlation between the two, which has a statistical significance ($p<.05$)

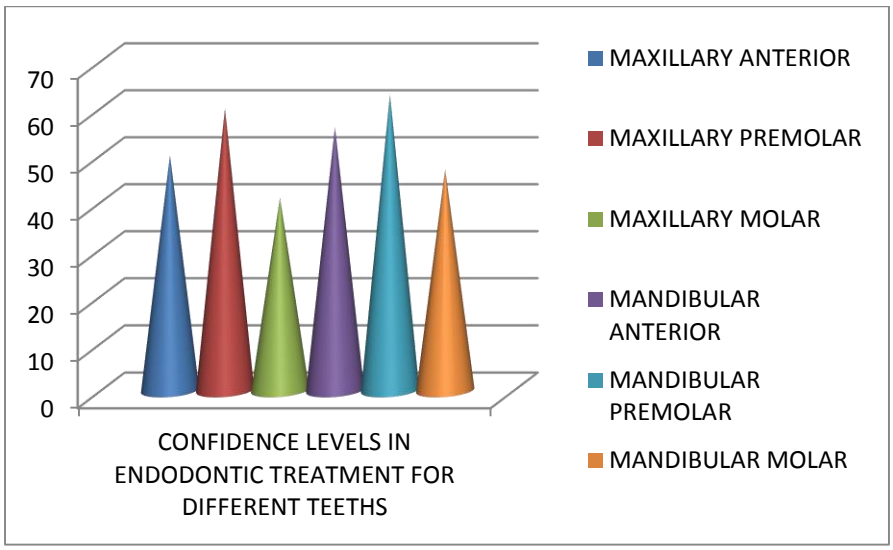
While scoring different types of teeth in terms of confidence level to perform endodontic treatment, 20% of students felt little confidence in treating mandibular and maxillary molar, while 23% felt very confident in treating maxillary anterior teeth, followed by mandibular teeth 21.2%, then 12.3% mand. Premolar, 1.5% mand.molar.. With regards to performing the different steps in root canal treatment, 1.5% had little confidence in root canal obturation.51% of the students felt confidence in diagnosis and evaluation of endodontic cases,45% were confident in achievement of anesthesia for endo treatment. With regards to the confidence levels in endodontic cavity preparation, 43% of the students felt confident in it, while 19% felt still not confident in access opening, which indicates more focus has to be given in access opening during the learning periods. With regards to the different steps in root canal procedure, 56% were confident in working length

determination, 50% in instrumentation, and 51% in root canal obturation. with respect to the management of different situations, 24% felt confident, while 34% of students had little confidence in managing interappointment flare ups,30% confident in managing case of irreversible pulpitis, least confidence level was observed in management of situations like Abscess (3%), Cyst (6%), Endo perio lesions (1%) , Root resorption (2%), open apex cases(2%).the majority of students (53%)reported that they would attempt all cases, while 36% felt they would treat within their limit of expertise, however planned to refer difficult cases to specialist when confronted with challenging situations beyond their expertise. Regarding some suggestions to increase their endodontic skills, majority of students(60%)felt the requirement has to be based on the number of teeth completed rather than point based system during the learning period in each levels, and majority of students (96%) plan to continue with using rotary instruments in endodontics and among the rotary instruments used, students felt very little confidence in using profile system 63%, followed by Race 7.7%, then WAVEONE 4.6%.they felt very confident in using PROTAPER 86.2% followed by WAVEONE 56.9% then RACE4.6%. 75% of the students wish to continue to further specialize in endodontics.

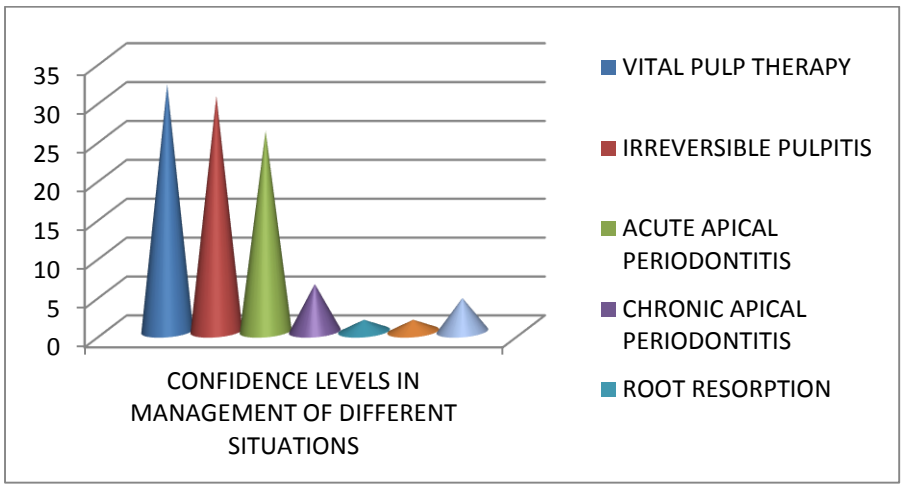
Statistical analysis was performed using Spearman's correlation for the test of significance.

The overall confidence levels in endodontic practice is depicted in the following graphs.

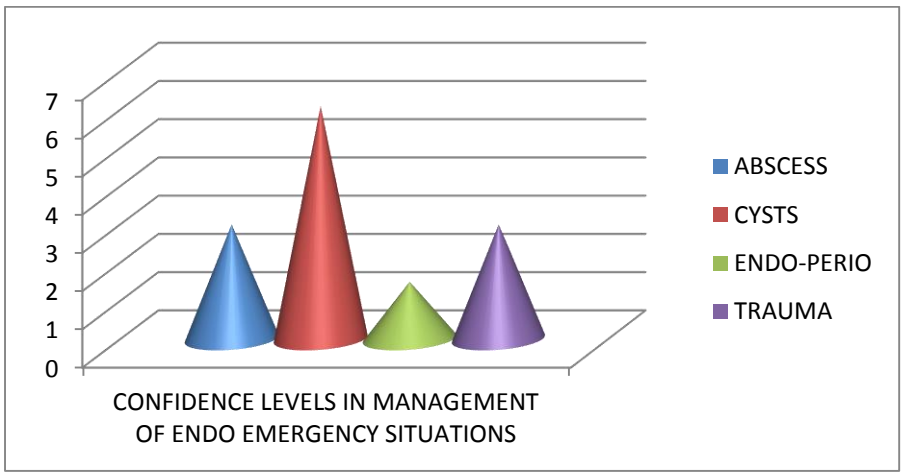
Graph 1: confidence level in treating different teeth.



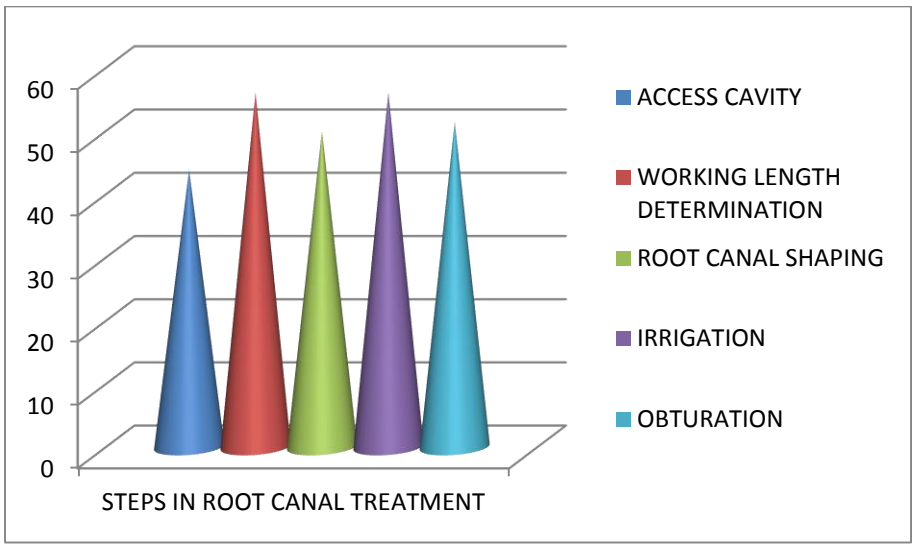
Graph 2: confidence level in managing different endodontic situations



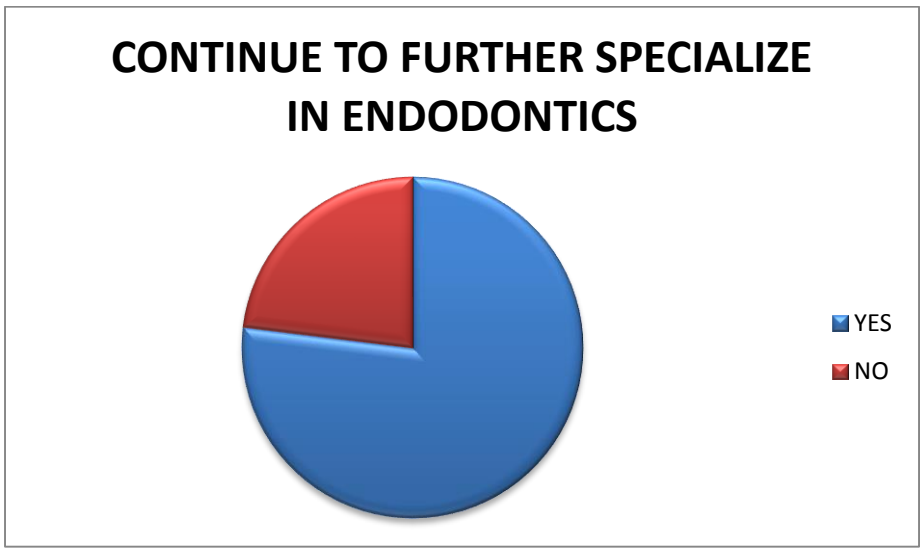
Graph 3: confidence level in managing endodontic emergency situations.



Graph 4: confidence level in performing different steps in root canal treatment.



Graph 5: whether wish to further specialize in Endodontics.



DISCUSSION:

Competency is most often used to describe the skills, understanding and professional values of an individual ready for beginning independent dental or allied oral health care practice. Competencies are essentially the standards for graduation from dental school. The American Dental Education Association has developed general statements of competencies for dentists and dental hygienists. The Commission on Dental Accreditation (CODA) requires that all dental schools develop their own set of competencies (including certain basic ones established by CODA) and provide evidence that students have met the schools' competency statements.

Competency-based education is based upon the early identification, at the course-planning stage, of clearly specified outcomes of learning. Statements of competence and attainment define what students are expected to learn [4]. Endodontics is that branch of dentistry that deals with not only the understanding and obtaining the knowledge but also other qualifications like patient approach and management.

It has been proven that Questionnaires based study to obtain information about students confidence levels and their perceptions is an effective method for capturing data related to educational issues. In this study, had a response rate of 90%, which is adequate to provide meaningful data. For this study, the questionnaire was administered to undergraduate students senior level students, in the classroom and clinics.. The high response rate may be attributed to this fact. In the present institution where the study was conducted, the grading system was a point based system and the students were introduced first to the preclinical learning in the 6th and 7th semesters, and they start on patients in

clinics from 8th semester. Students were introduced first to the preclinical learning in endodontics in the 6th semester, on natural teeth with single canal and two canals. In the 7th semester, they will be performing on multi rooted teeth and retreatment excercises. In the 8th semester, students are allowed to work on single, and two rooted teeth's on patients. From 9th semester, they start on molars, and retreatment cases are performed only from the 10th semester.

Generally dental students, perceived clinical experience to be the most important aspect of their education [5-7].They are more eager to have as much exposure to patients and as much experience in the clinical setting as feasible [6,7]. They feel less prepared for exercises that are perceived to be more difficult, such as endodontic treatments in multi rooted teeth's. The limited time for preclinical and clinical training in endodontics can result in low self-confidence during clinical practice. These facts could explain in this study, the low level of confidence in some of the aspects in endodontics during treatment. Certain Comments have been made by some authors regarding the factors that may influence students' self-confidence levels in clinical . Murray, *et al* [8] defined one of the limits to developing confidence in performing clinical practices as insufficient clinical exposure within the undergraduate curriculum. Lynch, *et al* [9] on the other hand, suggested that insufficient number of patients, lack of adequate physical space within the dental school, limitations posed by the busy curriculum and lack of well-trained staff are major obstacles, which may hamper high clinical self-confidence levels.

When the results presented as graphs were evaluated, it is observed that the confidence levels in performing the different steps in root canal treatment; more confidence was seen in working length, then irrigations methods. The confidence levels in cleaning and shaping of canals were found to be in the slightly lower side. This can be due to the anatomic complexity of the canals and lack of experience. Preparation of curved canals presents one of the greatest challenges in endodontics and is fraught with difficulties. The failure of root canal treatment inn curved canals is mainly due to procedural errors like ledges, fractured instruments, canal blockage, zip and elbow creation [10]. This indicates that more thorough knowledge of root and root canal morphology, and the different techniques to clean them are to be mastered. With respect to the confidence levels in treating different teeth, molar root canal treatment was found to be with the least confidence. This can be attributed to the difficulty in terms of its location and morphologic characteristics. Another factor that supports this is the requirement based on points to complete the semester which makes students to do the number of cases based on their point's requirement. The students felt more confidence in application of rubber dam. This can be attributed to the reason in the institution were this study was conducted the students, start using rubber dam from their 6th semester itself

from the preclinics. And here, rubber is mandatory for both the endo and resto procedures even in the clinics. Confidence levels in bleaching of teeth was found to be significantly low as this is not a procedure under taken by the undergraduate students, only very rarely by the intern students under the supervision of the instructor. With regards to the management of endodontic conditions and emergency situations students felt the least confidence levels . This is due to lack of experience, and the fear of any complications to occur.

The question regarding students' intention of using rotary instruments in their future clinical practice was presented in an attempt to acquire a general idea regarding their attitude towards newer developments in the field of endodontics. It is promising that 95.5% of the students expressed their wish in utilizing rotary instrumentation in their future practices. Since rotary instrumentation techniques have gained widespread usage in dentistry, students' willingness to incorporate these useful and time-saving tools in their routine care is an indication of their tendency towards using contemporary methodologies [11]. This is also reflected in their ranking rotary instrumentation systems as the top in terms of beneficial innovations introduced in the branch of endodontology recently. When the confidence levels in handling the different rotary instruments were scored, students felt very little confidence in using profile system 63%, followed by Race 7.7%, then WAVEONE 4.6%.they felt very confident in using PROTAPER 86.2% followed by WAVEONE 56.9% then RACE 4.6%.

To know the students, eagerness to go further with the endodontic skills students were asked whether they wish to further specialize in this field, 76% of the students showed willingness and interest to continue.

In summary, it can be concluded that, the results from this study, reflects the general picture regarding student's perception about their capabilities and limitations in the field on endodontics, just before graduation [12].

CONCLUSION:

Studies done in other schools will be helpful in comparing the student's perception on skills levels and find out the missing areas that need further improvement. In general, the students were found to be more confident in simpler procedures, in comparison to more complicated procedures were they felt least confident. Students' self-confidence can be increased by greater clinical exposure to more complex procedures in their learning period itself.

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TABLES:

TABLE: 1		
	FREQUENCY	PERCENTAGE
endodontic evaluation of patients and patient history	34	51.5
diagnosis of endodontic treatment	29	43.9
endodontic cavity preparation	29	43.9
placement of rubber dam	44	66.7
measurement of working length	37	56.1
root canal shaping	33	50
root canal irrigation	37	56.1
root canal obturation	34	51.5
management of interappointment flare ups	16	24.2
restoration of endodontically treated teeth	25	37.9

bleaching of endodontically treated teeth	21	31.8
endodontic treatment in maxillary anterior	33	50
endodontic treatment in maxillary premolar	8	12.1
endodontic treatment in maxillary molar	7	10.6
endodontic treatment in mandibular anterior	14	21.2
endodontic treatment in mandibular premolar	8	12.1
endodontic treatment in mandibular molar	1	1.5
management of vital pulp therapies	21	31.8
management of irreversible pulpitits	20	30.3
management of acute apical periodontitis	17	25.8
management of abscess	2	3
management of chronic apical periodontitis	4	6.1
management of cysts	4	6.1
mangement of endo-perio lesions	1	1.5
management of traumatic cases	2	3
management of root resorptions	1	1.5
management of open apex cases	1	1.5
management of endodontic retreatment	1	1.5
management of emergency cases in general	1	1.5
how do you intend to carry on with your endodontic cases?	53%,n=35: attempt all cases; 36.4%,n=24:within your limit of expertise; 9%,n=6:refer difficult cases	
should there be a limitation or pre-requisite in number of teeth to be done	89.4%,n=59:	
more efficient way to increase endodontic skills during learning period	90.9%,n=60:number of teeth to be completed rather than point	
do you plan to continue with using rotary instruments in endodontics	63	95.5
Which rotary instrument are you more confident? protaper	56	84.8
Which rotary instrument are you more confident? profile	8	12.1
which rotary instrument are you more confident? RACE	24	36
Which rotary instrument are you more confident? WAVE ONE	17	25.8
Do you wish to continue to further specialize in endodontics?	50	75.8