

# Evaluation of Dental Interns' Perception and Self-Confidence Levels Regarding Endodontic Treatment"- A Questionnaire Study

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## ABSTRACT

**Objective:** To evaluate the perception and self-confidence of Dental interns regarding endodontic treatment performed on patients. **Material and Methods:** A total of 111 dental interns from 5 different educational institutes of a state in South India participated in a questionnaire-based survey. The questionnaire consisted of 12 questions related to root canal procedures performed on patients. Analysis was done using SPSS version 17.0. **Results:** Sixty-five interns (59%) performed less than 10 root canal treatments on patients during the course of the internship. Twenty-eight interns (25% of the intern population) took up more than 10 root canal treatment cases, whereas only 18 interns (16%) did not perform the treatment on patients and answered the questionnaire based on their experience with extracted teeth model work. Only five interns out of 111 were 'Very confident' and 22 were 'Confident' in performing the root canal treatment. **Conclusion:** The present study indicates that the self-perceived confidence level among dental interns can affect their clinical performance. It also recommends additional hands-on workshops, problem-based learning and clinical guidance for the dental interns to become more confident with the root canal procedure.

**Keywords:** Education; Research; Endodontics; Health Services Research; Self Concept.

## Introduction

Dentistry is the art and science of diagnosis, prognosis, and treatment planning of defects of the tooth which require restoration. It requires good clinical skills, a strong theoretical base and practical knowledge [1]. Endodontics is a branch of dentistry that deals with dental pulp and its main concern is to maintain the health of the periradicular tissue. The aim of the Endodontist is to create an aseptic environment through root canal treatment, which promotes healing of the diseased area [2]. The work done by Endodontists can be quite challenging at times, mainly due to factors such as the complex anatomy of the root canal system, having to work in a confined canal space, ever-changing techniques of practice, and new, upcoming dental materials to work with [3].

With increasing patient awareness and improved technologies, more patients now opt for endodontic therapy as a choice of treatment [4]. In India, dental Interns are expected to have acquired sufficient knowledge and expertise through the four years training course to perform simple root canal cases. Recent graduates are also expected to have fine judgement and a good understanding of concepts to correctly diagnose cases requiring root canal therapy and also determine the prognosis and form a reasonable treatment plan for the patient [5].

Interns may face several obstacles while performing root canal therapy on the patient [6]. Some of them may be administering local anesthesia, rubber dam application, access cavity preparation, working length determination, root canal instrumentation, obturation and reading radiographs [1]. A crucial aspect in developing and updating teaching methodologies is the perspective of dental graduates about their educational and clinical experience. Factors that affect learning are self-confidence, student dedication, problem-based learning, teaching pattern and teacher/student/patient communication [7]. Low self-confidence among dental students will have a negative impact on their clinical practice. Timely feedback from the dental interns regarding their self-perceived confidence and competency related to performing root canal treatment on patients helps improve the educational curriculum and teaching practice [8].

Therefore, the ongoing state of affairs of acquiring knowledge and skills of performing root canal treatment in dental schools and the right attitude toward actually performing the procedure on patients in the clinical situation needs to be understood. Since self-perceived confidence is one of the major contributing factors that determine confidence, the present questionnaire-based study was designed to evaluate the dental interns' perception and self-perceived confidence levels regarding endodontic treatment. The survey was commenced to analyse the problem faced by the students and to have a discourse about feasible solutions. It was hypothesised that there is no correlation between the learnt knowledge and skills of performing root canal treatment and the self-perceived confidence amongst the dental interns.

## Material and Methods

### Study Design and Ethical Clearance

A cross-sectional questionnaire-based study was conducted in five dental colleges in a coastal city of South India after approval from Institutional Ethics Committee (Reference No 19012).

### Sampling and Data Collection

A total of 111 dental interns who had successfully completed their rotational posting in the Department of Conservative Dentistry and Endodontics were randomly selected to participate in the survey. The survey was conducted in the respective colleges for about a month duration of time where the interns (upon written consent) were given 10 minutes to fill out the questionnaire form, which was later collected and analysed.

The content and construct validity of the questionnaire were checked by subject experts. In addition, the internal validity was checked by administering the questionnaire to five interns. These interns were excluded from the final study.

The questionnaire consisted of 12 close-ended questions. The first few questions had only one option and the last two questions had multiple options for answers. Demographic details, such as data regarding age and gender, were obtained along with the responses to the questionnaire. Informed consent was taken from all the students before the survey.

#### Data Analysis

Descriptive statistics were performed. Statistical analysis was carried out using SPSS 17.0 version (IBM Corp., Armonk, NY, USA).

### Results

A 100% response rate was observed. Out of 111 interns, 65 interns (59%) performed less than 10 root canal treatments on patients during the internship and 28 interns (25% of the intern population) took up more than 10 root canal treatment cases (Table 1). Only 18 interns (16.2%) did not perform the treatment on patients and answered the questionnaire based on their experience with extracted teeth model work.

When dental interns were asked about their level of confidence while performing root canal treatment on patients, only five interns out of 111 were 'Very confident', 22 were 'Confident' and 'Neutral' was marked by 48 interns. Twenty-nine interns felt that they were 'Not very confident', along with seven who were 'Not at all confident' while taking up root canal procedures on patients. Dental interns were analysed based on their confidence level while reading radiographs to provide the correct endodontic diagnosis. Fifty-six interns (51%) answered 'Yes' and 47% answered 'Not always'.

Sixty-five (70%) of interns who participated in the study felt they were thorough with the various techniques of administering local anaesthesia required in endodontic therapy, whereas 28 (30%) of them felt that they were not. As tabulated in Table 1, out of 111 dental interns, only 23 (21%) thought that their knowledge with respect to endodontic instruments and the technique of use was sufficient. Forty-one interns (37%) felt that it was not sufficient and 47 (42%) picked the 'maybe' option meaning they were not sure. When asked about confidence at the time of choosing intracanal medicament and while handling emergency cases, only 18 interns (16%) answered 'Yes', while 55 (50%) of them answered 'No' and the rest 38 (34%) selected 'Maybe' as their final answer. According to 8 interns, sufficient time for each appointment would be 15 minutes. Whereas 45, 31, and 9 interns thought it would be 30, 45 and 60 minutes, respectively. When asked about handling cases with perforations, ledges, or flare-ups, only five respondents (4%) felt confident enough to handle them. The majority, i.e., 68 (61%) said they were not confident handling such cases. Thirty-eight (34%) participants selected 'Maybe' option.

As calculated in Table 1, only 1 (1%) student was confident enough to practice single-visit root canal treatment case. Ten (11%) respondents thought they would require at least '2 appointments', 64 interns (69%) answered '3 appointments' and lastly, 18 interns (19%) chose '4 appointments'. According to 42 (45%) of them, the patient should be first recalled for follow-up after '1 month', 10 (11%) answered '2 months', 27 (29%) answered '3 months' and 14 interns (15%) felt it should be '4 months'. The most challenging step that the interns find while practicing root canal treatment is working length determination. The other steps that the students find difficulty in performing are instrumentation, obturation, irrigant manipulation and access opening. When dental interns

were asked what would help them become more confident while performing root canal treatment, 88.28% thought the clinical supervision of staff or a teaching member guiding them through the procedural step would benefit them the most, 48% of the intern population said that practicing more on extracted teeth would better whereas 6% of them thought that additional endodontic theory classes should be conducted.

**Table 1. Results from Q1 to Q10 and Q12.**

Questions		Categories			
Q1	How many root canal treatments have you performed till date?	Less than 10 65 (58.6%)	More than 10 28 (25.2%)	Not performed 18 (16.2%)	
Q2	Do you feel that you are confident to perform root canal therapy?	Very confident 5 (4.5)	Confident 22 (19.8)	Neutral 48 (43.2)	Not very confident 29 (26.1)
Q3	Do you feel that you are confident in endodontic diagnosis especially in reading radiographs?	Yes 56 (50.5)	No 3 (2.7)	Always 52 (46.8)	
Q4	Are you thorough with the various techniques of administering anesthesia required in endodontic therapy?	Yes 65 (69.9)		No 28 (30.1)	
Q5	Do you feel your knowledge with respect to endodontic instruments and techniques of use is sufficient?	Yes 23 (20.7)	No 41 (36.9)	Maybe 47 (42.3)	
Q6	Are you confident in choosing intracanal irrigant and medicament and handle emergencies related to it?	Yes 18 (16.2)	No 55 (49.5)	Maybe 38 (34.2)	
Q7	What will be the duration of each appointment?	15 min 8 (8.6)	30 min 45 (48.4)	45 min 31 (33.3)	60 min 9 (9.7)
Q8	Would you be able to handle cases such as perforations, ledge formation, flare-ups, etc.?	Yes 5 (4.5)	No 68 (61.3)	Maybe 38 (34.2)	
Q9	How many appointments do you think you require to complete a root canal therapy?	1 1 (1.1)	2 10 (10.8)	3 64 (68.8)	4 18 (19.4)
Q10	After how many month(s) do you think the first recall appointment should be placed?	1 month 42 (45.2)	2 months 10 (10.8)	3 months 27 (29)	4 months 14 (15.1)
Q12	According to you, what would help you become more confident in performing endodontic treatment?	Practicing more on extracted teeth 53 (47.74)	Additional theory classes 7 (6.30)	Clinical supervision 98 (88.28)	

**Table 2. The most challenging steps listed by the interns.**

Q11 - According to you, which of the following steps are the most challenging?	N (%)
Case Selection	24 (21.62)
Anesthesia Administration	01 (0.90)
Rubber Dam Application	18 (16.21)
Access Opening	21 (18.91)
Working Length Determination	42 (37.83)
Instrumentation	36 (32.43)
Irrigant Manipulation	20 (18.01)
Selection of Intracanal Medicament	16 (14.41)
Obturation	27 (24.32)

## Discussion

Traditional dental education has always focused more on theoretical knowledge, but it has been replaced by a modern system of education that focuses more on clinical-based practices and developing skills in the students.

Dental interns, before graduating, are expected to attain a certain level of confidence and competence to perform well when they step out into the real world. This includes preparing them in the field of endodontics

[9,10]. In the present study, around 25% of the interns performed more than 10 RCTs, which when compared with a previous study [3] it was observed in only 9% of the sample size.

When the interns were asked about their confidence level to perform root canal treatment, 27% were 'confident' enough to perform RCT on patients. Whereas, in the survey done by Alshahrani et al. [1] majority of the interns had a high level of confidence while performing most of the steps of the root canal procedure. This could be because of less clinical exposure of interns to root canal patients in this study.

As seen from the results, 50% of the dental intern population who took the survey were confident while making an endodontic diagnosis (especially while reading a radiograph), which is in accordance with the survey done by Murray and Chandler et al. [10] where 79.7% final year students felt confident and Alshahrani et al. [1] survey found that most students are '4' on a Likert scale which means they are 'Confident' in their ability to correctly diagnose endodontic pathology.

Concerning achievement of anesthesia, the majority (86.53%) of the students were 'confident', which is similar to the results seen in our study (69.9%). In the current study, 50% of the intern population felt that they are not confident enough to choose the suitable intracanal irrigant and/or medicament for the patient. This could be because of the huge diversity of dental materials, as explained by Tavares et al. [7]. The confidence level of interns of handling complications such as perforation and ledges was similar to that in other studies [4,5,10-12]. Murray and Chandler et al. [10] suggested that handling perforation in cases was one of the top three procedures where students face difficulty. According to Tanalp et al. [5], perforation outnumbered other problems faced by 5<sup>th</sup> year students, attributing it to their higher self confidence-level and less clinical supervision than 4<sup>th</sup> year students.

Most dental interns (45%) felt that the first recall appointment should be placed after one month of the root canal procedure completion. The second most common answer was 3 months recall period, answered by 20% of the interns. The difference could be due to insufficient clinical exposure [3].

In the present study, the most difficult step of root canal procedure is working length determination and root canal obturation, in accordance with Alrahabi [3]. Students in the 4<sup>th</sup> and 5<sup>th</sup> year students find working length difficult, possibly due to the wide variation among individuals and obturation challenging may be due to insufficient clinical exposure.






In the current study, when asked what additional steps would help them become more confident, the majority answered clinical supervision by a tutor or staff member and more practice on extracted teeth would benefit them. Tavares et al. [7] mentioned low "faulty supportiveness", as reported by junior-year students. Alrahabi [3] focused more on increasing credit hours for the endodontic course in their survey.

The present study included only five dental colleges in a given area, which were deemed universities. The difference in the responses could be due to different systems of delivering the subject (Problem-based learning, case-based learning, etc.), which influence the confidence levels. Further studies are required to evaluate the effects of supervision and different methods of clinical teaching and self-confidence.

## Conclusion

The present study indicates that the self-perceived confidence level among dental interns can affect their clinical performance. Therefore, the study recommends additional hands-on workshops, problem-based learning and clinical guidance for the dental interns to become more confident.

## Authors' Contributions

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None.

## Conflict of Interest

The authors declare no conflicts of interest.

## Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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