



## DIFFICULTIES IN PERFORMING ROOT CANAL TREATMENT AMONG UNDERGRADUATES OF DENTAL COLLEGES IN SOUTH INDIA - A QUESTIONNAIRE BASED STUDY

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### ABSTRACT

**Aim:** The aim of this study is to investigate the difficulties and amount of time encountered by undergraduate dental students during performing root canal treatment.

**Objective:** The objective of this study deals with the difficulty level of students in isolation of the operating field, access cavity, locating root canal orifice, instrumentation of root canal, obturation and also the time taken for access cavity preparation, canal preparation and obturation.

**Methods:** A questionnaire is distributed to 200 dental undergraduates in South India. The levels of difficulties during performing access cavity preparation, instrumentation, isolation and obturation of the root canals and also information regarding the time spent on procedures will be recorded based on categorised groups.

**Background:** A root canal is a treatment used to repair and save a tooth that is badly decayed or becomes infected. During a root canal procedure, the nerve and pulp are removed and the inside of the tooth is cleaned and sealed. Without treatment, the tissue surrounding the tooth will become infected and abscesses may form. Steps can be taken to eliminate or reduce the difficulties of students in performing RCT.

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## INTRODUCTION

Endodontics is one of the fastest-growing disciplines in daily clinical practice<sup>(1)</sup> which involves the introduction of many new instruments, materials and techniques. Root canal treatment is technically demanding and it fails when treatment falls short of acceptable standards. In an effort to provide patients with most recent and predictable treatment planning, clinicians must be well informed about the outcome of endodontic treatment. It is important to acknowledge that outcome of root canal treatment is dependent not only on specific factors like root canal infection, complexity of root canal morphology, but is also very much influenced by less specific, more distinct causes such as dentist's skills and attitudes.<sup>(2)</sup> Dentistry is an extensive program that requires a lot of efforts, encouragement, and clinical exposure. The anatomical diversity of root canals, the need to provide adequate care to the patients and the lack of self-confidence among students led many of them to consider endodontics to be difficult and stressful discipline, while performing the endodontic treatment.<sup>(3)</sup> Information related to technical difficulties and time devoted to root canal treatment may help emphasize points of weakness and lead to improving teaching and training methods. The present study aimed to identify the difficulties and amount of time

encountered by undergraduate dental students in performing root canal treatment based on their perceptions and to remove these shortcomings by laying more emphasis on these areas, at the same time, create better skills among students to perform quality endodontic procedures.

## MATERIALS AND METHODS

A questionnaire survey dealing with the difficulties and the amount of time encountered by undergraduates in performing root canal treatment is conducted among dental colleges in South India. A structured questionnaire with 17 questions was distributed to 200 dental students from various dental colleges. The questionnaire contained information regarding the amount of weekly working hours in the endodontic department. Information regarding the level of difficulty experienced by the student during creating access cavity, maintaining an aseptic field, locating the canal orifice and obturating the root canal was recorded in a categorised manner from a scale of (0-4) (0 defined as very easy, 1-easy, 2-moderate, 3-difficult and 4-very difficult). Additional information considering the amount of time spent on access cavity preparation, mechanical root canal preparation and obturation of the root canal were also recorded.

## RESULT

In this study, students do not feel any difficulties in performing root canal treatment in the anteriors. 52.5% of students feels difficult in making access cavity in

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**Table 1**

Scale	Access cavity		Aseptic operating field	Locating canal orifice	Instrumentation of root canal
	In anteriors	In posteriors			
0	11%	0%	23%	11.50%	9.50%
1	75%	5%	45%	15%	27.50%
2	14%	25%	25%	62.50%	48%
3	0%	52.5%	7.50%	11%	12.50%
4	0%	17.5%	0%	0%	2.50%

**Table 2** Time devoted by undergraduate students for endodontic treatment

Time	Time taken for access cavity preparation	Time taken for canal preparation	Time taken for canal obturation
0-15 min	38%	6%	0%
16-30 min	45.50%	42%	49%
31-45 min	12.50%	30%	32%
Above 45 minutes	4%	22%	19%

posteriors. 45% of them feels it's easy to make an aseptic operating field. 48% of students gave a moderate scale for the instrumentation of root canal. Coming to the time devoted by the students for endodontic treatment, 83.5% of them spend half an hour or less than that for making an access cavity. 22% of them takes more than 45 minutes for canal preparation. 49% of the undergraduate spend half an hour for the obturation of the canal whereas 19% of them spend more than 45 minutes for canal obturation.

In this study, students do not feel any difficulties in performing root canal treatment in the anteriors. 52.5% of students feels difficult in making access cavity in posteriors. 45% of them feels it's easy to make an aseptic operating field. 48% of students gave a moderate scale for the instrumentation of root canal. Coming to the time devoted by the students for endodontic treatment, 83.5% of them spend half an hour or less than that for making an access cavity. 22% of them takes more than 45 minutes for canal preparation. 49% of the undergraduate spend half an hour for the obturation of the canal whereas 19% of them spend more than 45 minutes for canal obturation.

## DISCUSSION

In recent years, endodontics has been one of the fastest growing areas of dentistry. The use of modern tools, rubber dam and the microscope in daily practice, significantly influence the quality and durability of treatment effects. Patients more often do not identify the endodontic treatment as the most unpleasant procedure. Pain associated with endodontic procedures, although still arousing the strongest emotions, is felt as moderate, rarely sharp. A study conducted by Klages *et al.* demonstrates that patients visiting the dental office expect pain usually larger than that actually experiencing during treatment.<sup>(4)</sup>

Undergraduate endodontic teaching has an important role in the practice of endodontic by general practitioner. One reason for the relatively poor technical standard of root canal treatment among the general practitioner may be the limited endodontic teaching received at dental schools.<sup>(5,6)</sup>

difficulties at undergraduate might faces during their endodontic practice. Abier Ali Ibrahim *et al.*<sup>(7)</sup> stated in their study that maintaining an aseptic field was the most difficult procedure among vast majority of students. Similarly this survey shows that undergraduates do not practice single-visit root canal treatment and majority of them uses rubber dam for isolation. The use of the rubber dam during root canal treatment offers three main advantages: control of cross-infection, protection and improving treatment efficiency.<sup>(8)</sup> Due to these benefits, proper infection control by isolating the operating field with a well-fitting rubber dam has been strongly recommended by professional organisations. (European Society of Endodontology 1992, 2006, American Association of Endodontists 2004).

In this study, regarding the percentage of difficulties encountered by the students during access cavity, 72.5% of them having difficulty in reaching the pulp chamber. 43% of students having difficulty to feel the apical constriction during working length determination. Similarly, [Mubashir Baig Mirza]<sup>(9)</sup> in his study stated that the maximum level of difficulty faced by the students was to detect the apical constriction during working length determination. In this study, 85% of them never experienced strip perforation before and 22% of them having difficulty in flaring up the canal during cleaning and shaping. In a study conducted by [Mubashir Baig Mirza]<sup>(9)</sup> 43.5% of the students also frequently experiencing difficulty in flaring up of the canal. Whereas, for the percentage of difficulties encountered by students during obturation, 40% of them have experienced master cone beyond apex during obturation.

Recent literature validate that root canal treatment at the present is mostly carried out in molar teeth.<sup>(8)</sup> However, a molar tooth is probably a much technically challenging tooth to due to its complex anatomy, hence expectedly higher technical quality of root canal fillings were recorded for single rooted teeth in opposition to multi rooted teeth.<sup>(10)</sup> Similarly, in this study undergraduates feels it's difficult to perform access cavity in posteriors. Time for completing root canal treatment is an important factor that might hypothetically influence the treatment outcome. Instrumentation of the root canal and obturation the root canal

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was the most time demanding procedure, rather than time needed to open the access cavity.<sup>(11)</sup> In this study, there is noticeable obstacles among undergraduate students where 52.5% of the them rated a scale of 3 (difficult) in making access cavity in posteriors. Also obturating the root canal appeared to be the most time demanding procedure.

### CONCLUSION

In conclusion, the survey helped to find out about difficulties faced by the students in endodontic treatment. Undergraduate students are spending more time for the obturation of the root canal and having a difficulty in flaring up during instrumentation of the canal. Students should be encouraged and guided properly to overcome these errors and perform a better treatment. Further research with larger number of sample need to be done to get even more accurate results.

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