

# KNOWLEDGE, AWARENESS AND EXPECTATIONS OF ROOT CANAL TREATMENT: PATIENTS' PERSPECTIVE

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## ABSTRACT

Root canal treatment (RCT) is one of the common procedures done in order to retain the natural tooth and avoid extraction. The major reason for patient not opting for RCT is due to lack of knowledge. The factors that discourage the patient and hinder the treatment when identified will help the understanding of the clinician to adequately address the issue. Thus, this study with aim to assess the knowledge, awareness and expectation of RCT from patients' perspective was undertaken. This survey was conducted with pre-structured questionnaire consisting of 13 questions and were distributed to random 404 patients attending the department. The completed questionnaire was the analyzed. 61.4 % of participants had knowledge of RCT. Participants with previous experience of RCT were more likely to undertake the procedure again despite the cost issue, when required, then those who had no previous experience. 72% of the participants choose specialized service. In comparison to other studies the knowledge and awareness regarding RCT was higher in this study.

## KEYWORDS

Cost, Endodontist, Knowledge, Pain, Root canal treatment

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## INTRODUCTION

Oral diseases, while largely preventable, pose a major health burden for many countries and affect people throughout their lifetime, causing pain, discomfort, disfigurement and even death. Toothache is the most common reason for patients to seek the dental treatment and consists primarily of root canal treatment (RCT) or tooth extractions of affected teeth.<sup>1</sup> RCT should always be considered if restorability of tooth is achievable as it has excellent clinical outcomes and preserves the natural dentition.<sup>2,3</sup>

If due to various reasons extraction of the tooth/teeth is done, it comes with consequences like displacement of adjacent or contralateral teeth, improper mastication, and impaired patient's natural smile and aesthetics. So, the conservative approach of securing the diseased tooth with root canal treatment is effective and achievable method.<sup>1,4</sup>

Contemporary endodontics practice has encouraged clinicians to provide effective treatment to the patient by reducing pain during treatment. However, difficulties associated with RCT, including the pain that accompanies, remains among patients. Fear and anxiety are main elements discouraging for RCT.<sup>5,6</sup> These fears are due to patient ignorance about procedure and not being able to understand the nature of endodontic treatment and what it comprises.<sup>7,8</sup> If patients are not managed appropriately, it is quite possible to establish what has been referred to as a vicious cycle of dental fear and anxiety.<sup>9,10</sup>

Also, patient often seeks the treatment due to dental pain and root canal treatment is usually considered as a procedure to treat but many patients admit that they feel stress related with the planned endodontic treatment.<sup>11</sup> Thus there is need for providing more information to the patients about the advantages of retaining teeth via endodontic therapy.<sup>12</sup>

A study done by American Association of Endodontics concluded that 76% of participants choose root canal treatment over extraction.<sup>2</sup> But, in case of south east countries like India, in various studies, 16%-38.5 % of participants choose extraction, similarly in Pakistan 30% of the participants chose extraction.<sup>3,13</sup> These variability may be due to attitude toward oral health and socio-demographic might influence behavior of patient seeking root canal treatment.<sup>4</sup> Studies done in various part of the world in past has shown distinctly positive impact of RCT, regardless of cultural background of the patient group or the measure used.<sup>14,15</sup>

So, aim of this study was to assess the knowledge, attitude and expectation of the patients regarding RCT which will help us to understand the patients' perspective and understand where the clinician

is lacking in making patient aware about the procedure.

## MATERIALS AND METHODS

The questionnaire survey was carried out from January to March 2022, on the patients coming to the outpatient department of Conservative dentistry and Endodontics in Nepal Medical College Teaching Hospital, Pvt. Ltd. and Department of Conservative Dentistry and Endodontics, National Academy of Medical Sciences, Bir Hospital. A prestructured questionnaire consisting of 13 questions was given to 404 patients meeting inclusion and exclusion criteria after obtaining their informed consent.

Persons over the age of 18 years who were willing to participate in the study were included. Uncooperative patients and those below the age of 18 years were excluded.

Ethical clearance from the Institutional Review Committee of Nepal Medical College was taken before the start of the study.

*Statistical Analysis:* Data was entered in Microsoft Excel version 16.45 and analyzed using Statistical Package of Social Services (SPSS) version 17. Descriptive statistics presented in the form of percentages. The answers of participants analyzed by Chi-square test with 5% level of significance and the reliability was determined using odds ratio.

## RESULTS

A total of 404 study participants were included in the study of which majority 259 (64.11%) were female and 145 (35.89%) were male. The age of the study participants ranged from 18 to 82 years with mean age 35±14.35 years. Of the total, majority 314 (77.7%) were Hindus, 77 (19.1%) were Buddhists, 5 (1.2%) were Christians, 4 (1.0%) were Kirants and 4 (1.0%) were Muslims.

**Table 1: Patients' knowledge about Root Canal Treatment**

Responses	n (%)
A lot	19 (4.7)
Average knowledge, I have to ask from the dentist	181 (44.8)
Average knowledge, I am not interested in the treatment procedure	10 (2.5)
I don't know anything	156 (38.6)
I take knowledge from media/internet	38 (9.4)

Of the total, 248 (61.4%) reported that they had knowledge about root canal treatment and majority 181 (73.0%) reported that they had average knowledge and had to ask from the

dentist. Whereas 156 (38.6%) reported that they did not know anything about root canal treatment (Table 1).

**Table 2: Patients' awareness about Root Canal Treatment**

Awareness related questions	Response	n (%)
Have you done any home remedy to relieve toothache?	Yes	124 (30.7)
	No	280 (69.3)
What is your perception/concern regarding root canal treatment?	Pain during treatment	116 (28.7)
	Long treatment time	200 (49.6)
	High cost	62 (15.3)
	Breakage of instrument during procedure	5 (1.2)
	Multiple x-rays	21 (5.2)
	Dental student	3 (0.7)
Who will you select for performing root canal treatment?	Dentist recommended by friends/ relatives	58 (14.4)
	Specialist in endodontics	291 (72.0)
	Dentists without specialization in endodontics	52 (12.9)
	Treatment free of cost	11 (2.7)
Criteria for selecting a dental office	Reasonable cost	78 (19.3)
	Friendly service	33 (8.2)
	Professional staff	104 (25.7)
	Painless treatment	41 (10.2)
	Easy access	137 (33.9)

**Table 3: Patients' experience regarding root canal treatment**

Experience related questions	Response	n (%)
Did you have root canal treatment done before?	Yes	262 (64.9)
	No	142 (35.1)
How do you recall your root canal treatment?	Good	216 (82.4)
	Bad	46 (17.6)
Was it a painful treatment?	Yes	168 (64.1)
	No	94 (35.9)
Who performed the treatment?	Student	3 (1.1)
	Intern	41 (15.7)
	Experienced Dentist	193 (73.7)
	Endodontist	25 (9.5)
Reason for Root Canal treatment	Toothache while eating	79 (30.2)
	Toothache while biting	44 (16.8)
	Strong spontaneous toothache	97 (37.0)
	Discoloration	15 (5.7)
	Others	27 (10.3)

**Table 4: Cost effectiveness to root canal treatment procedure from patients' perspective**

Criteria of selection between root canal treatment and tooth extraction	Yes, n (%)	No, n (%)
Will the price make any change to the decision of choosing root canal treatment?	105 (26.0)	299 (74.0)
Are you willing to pay high price for proper root canal treatment?	312 (77.2)	92 (22.8)
Would you opt for extraction rather than paying high for root canal treatment?	72 (17.8)	332 (82.2)

**Table 5: Responses between patients who had and who did not have knowledge on Root canal treatment**

Patients' responses	Knowledge on Root canal treatment		P value	Odds ratio	
	Yes n (%)	No n (%)			
<b>Awareness</b>					
Home remedy to relieve toothache (N=404)	Yes	77 (31.0)	47 (30.1)	0.85	NA
	No	171 (69.0)	109 (69.9)		
Perception regarding root canal treatment (N=404)	Pain during treatment	70 (28.2)	46 (29.5)	0.001*	NA
	Long treatment time	132 (53.2)	68 (43.6)		
	Others	46 (18.6)	42 (26.9)		
Personnel selection for performing root canal treatment† (N=401)	Dentists recommended by friends/ relatives	37 (15.1)	21 (13.5)	0.66	NA
	Specialists in endodontics	174 (71.0)	117 (75.0)		
	Dentists without specialization in endodontics	34 (13.9)	18 (11.5)		
Criteria for selecting dental office (N=404)	Reasonable cost	52 (21.0)	37 (23.7)	0.59	NA
	Patient friendly service/ Professional staff	83 (33.5)	54 (34.6)		
	Painless treatment	29 (11.7)	12 (7.7)		
Experience	Easy access	84 (33.8)	53 (34.0)		
	Root canal treatment done before (N=404)	Yes	180 (72.6)	82 (52.6)	<0.001*
	No	68 (27.4)	74 (47.4)		
Recalling experience root canal treatment (N=262)	Good	152 (84.4)	64 (78.0)	0.21	NA
	Bad	28 (15.6)	18 (22.0)		
Was it painful? (N=262)	Yes	116 (64.4)	52 (63.4)	0.87	NA
	No	64 (35.6)	30 (36.6)		
Who performed the treatment? ‡ (N=259)	Intern	27 (15.1)	14 (17.5)	0.44	NA
	Experienced dentist	132 (73.7)	61 (76.3)		
	Endodontist	20 (11.2)	5 (6.2)		
Reason for Root Canal treatment (N=262)	Toothache while eating/ biting	85 (47.2)	38 (46.3)	0.98	NA
	Strong spontaneous toothache	66 (36.7)	31 (37.8)		
	Others	29 (16.1)	13 (15.9)		
<b>Cost effectiveness of root canal treatment</b>					
Decision of choice depends on price? (N=404)	Yes	49 (19.8)	56 (35.9)	<0.001*	2.27
	No	199 (80.2)	100 (64.1)		
Pay high price for proper root canal treatment? (N=404)	Yes	214 (86.3)	98 (62.8)	<0.001*	0.27
	No	34 (13.7)	58 (37.2)		
Opt for extraction rather than paying high for root canal treatment? (N=404)	Yes	24 (9.7)	48 (30.8)	<0.001*	4.15
	No	224 (90.3)	108 (69.2)		

Chi square test, p-value<0.05 statistically significant\*,NA;Not Applicable

In awareness section, only 30.7% of participants used home remedy to relieve toothache. Participants were more concerned with long treatment time (49.6%) and pain during treatment (28.7%). 72% participants wanted to choose specialist to treat them. Professional staff (25.7%) and reasonable cost of treatment (19.3%) was

the factors considered while choosing the dental office (Table 2).

In patients experience section, 64.9% (262) participants had undergone RCT before and among them 82.4% (216) had reported to have a good experience during the treatment. At the

same time 64.1% (168) remember it to be a painful process. Regarding the treatment provider 73.7% (193) reported being seen by experienced dentist and only 9.5% (25) were seen by endodontist. The main reason for doing RCT as reported by participants was strong spontaneous toothache (37.0%) followed by toothache while eating (30.2%) (Table 3).

When cost effectiveness of the procedure was seen from patient's perspective, 74% said price will not make any change in decision of undergoing RCT, also 77% were willing to pay high price for proper RCT. Only 17.8% opted for extraction rather than paying high price for RCT (Table 4).

There was a statistically significant association of knowledge with perception regarding RCT (p-value 0.001). There was a statistically significant association of knowledge between those who had and who had not undergone RCT before (p-value < 0.001). Those who did not have knowledge on RCT were 2.38 times more likely of not having undergone RCT than having undergone RCT (Odds Ratio 2.38). Statistically significant association was seen between knowledge and cost-effectiveness. Those who had knowledge regarding RCT were 2.27 times more likely of not having their decision depend on the price than having decision depend on price (Odds Ratio 2.27). Those who did not have knowledge on RCT were 3.70 times more likely of not paying high price for RCT than paying high price for RCT (Odds Ratio 0.27). Those who had knowledge regarding RCT were 4.15 times more likely of not opting for extraction than opting for extraction due to high payment for RCT (Odds Ratio 4.15) (Table 5).

## DISCUSSION

In present scenario the practice of endodontics has been one of the fastest growing area in dentistry, with the use of newer biomaterials, technologies like use of cbCT and dental operating microscope, rubber dam and improved local anesthesia has helped the clinician to perform the predictable treatment of highest quality. This in turn has also led to change in perception of patient and mostly do not consider it to be unpleasant experience.<sup>6</sup>

61.4% of participants claimed to have knowledge about root canal treatment which in our opinion is a good step forward in preserving the natural dentition. On the contrary, in previous studies only 23% and 25.3% of the subjects had a good knowledge about root canal treatment.<sup>5,16</sup>

As for the awareness of the root canal treatment, 30.7% used home remedy of some kind, mostly clove oil to relieve the pain and also self-medication of analgesics and antibiotics from pharmacies which is similar to other studies where it ranged from 40%-91.6%.<sup>3,6</sup> Participants reported of mostly long treatment time and pain

during the procedures carrying out root canal treatment as a major concern which is similar to previous studies.<sup>12,16</sup>

Anything unfamiliar and new may cause anxiety, in case of endodontic treatment, pain is shown to be the most common cause.<sup>17-20</sup> Pain associated with endodontic procedures is felt as moderate, rarely sharp although strong emotions are aroused due to it. It's this fear of pain which causes patients to avoid further dental visits or delay their visits leading to long treatment duration.<sup>5</sup>

It has been suggested that providing affirmative data to patient both before and during treatment can stop the vicious cycle of pain and anxiety. So, providing information to the patients regarding the steps of RCT and making them aware of their existing condition can help decrease the anxiety and accept the procedure.<sup>21</sup>

Majority of participants (72%) wanted to get treatment from endodontist which in other studies ranged from 38% (Poland), 50% (Pakistan), 86.6% (Saudi Arabia), 92% (India).<sup>1,3,6,13</sup> This goes on to show that slowly people are getting aware of specialized treatment. Patients also preferred easy access in choosing dental clinic for treatment followed by professional staff which is similar to other previous study.<sup>22</sup>

Reason for undergoing root canal treatment as stated by participants in our study was due to pain be it a strong spontaneous toothache or toothache while eating or biting which is similar to previous studies.<sup>1,3,6</sup>

64.9% of participants had already undergone RCT and recalls it to be good experience but at the same time they also share it to be a painful treatment which is similar to other studies. Majority of the procedure was carried out by experienced dental surgeon and very few by endodontist.<sup>1,3,6</sup>

When considering the cost of treatment, 74% participants would not change their decision of choosing RCT due to cost and 77.2% were willing to pay high price for proper RCT and 82.2% would not opt for extraction of the tooth similar to study done in various part of world.<sup>1,3</sup> This is very encouraging and shows patients are very motivated to conserve their natural teeth.

There was statistically significant association when comparison was done between patients who did have and did not have the knowledge of RCT. Those who did not have knowledge of RCT were 2.38 times more likely of not doing RCT than who had (Odds Ratio 0.42), which shows that awareness among patients who do not have knowledge of RCT is still lacking and need of awareness campaign cannot be less valued.

Those who had knowledge of RCT were 2.27 times more likely of not having their decision

depend on the price compared to those who had no knowledge (Odds Ratio 2.27). Those who did not have knowledge of RCT were 3.70 times more likely of not paying high price for RCT than who had knowledge and were willing to pay high price for RCT (Odds Ratio 0.27). Those who had knowledge of RCT were 4.15 times more likely of not opting for extraction than opting for extraction due to high payment for RCT (Odds Ratio 4.15). This shows that those of whom who had knowledge of treatment are well aware of the procedure and this altered their behavior towards conserving their natural dentition. Although majority of patients derive their information from mass media as television, radio, newspaper, internet, importance of educating the general

public regarding RCT procedure cannot be understressed in this condition.<sup>6</sup>

Within the limitation of this questionnaire survey, it is seen that participants have good knowledge about the root canal treatment which is a good step forward to conserve the natural dentition. Patients who had knowledge of the treatment were more aware of the procedure and its benefit and for them cost was not a major hindrance to get the proper root canal treatment. Majority of the participants wanted to be treated by Endodontist shows people are getting aware towards specialized services.

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