

Original article

Patient Perception, Awareness, and Attitudes Toward Root Canal Treatment in Tobruk, Libya: A Cross-Sectional Study.

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Abstract

Root canal treatment (RCT) is a fundamental procedure in endodontics aimed at preserving natural dentition. However, patient acceptance is often hindered by misconceptions, fear of pain, and socioeconomic factors. This study aimed to evaluate patients' knowledge and awareness of root canal treatment at public and private dental centers in Tobruk, Libya. A multiple-choice questionnaire regarding knowledge and awareness of root canal treatment was distributed to 101 patients. The questionnaire comprised questions ranging from personal and social details to specific questions about endodontic treatment. The questionnaire was circulated to the sample population through a Google Docs link. Pie and bar charts with a frequency table were created once the survey data were acquired. The data were then subjected to statistical analysis using the chi-square test and Fisher's exact test, and $P < 0.05$ was considered statistically significant. The survey found that a significant majority, 83.2%, of patients familiar with root canal treatment procedures believe such treatment helps preserve the tooth. 86.1% of patients were familiar with the term root canal treatment. According to our study, it was clear that most of the people had good knowledge and awareness regarding root canal treatment and had undergone an RCT procedure

Keywords: Root Canal Treatment, Knowledge, Awareness, Tobruk.

Introduction

Oral diseases, while 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 seeking dental treatment and consists of primarily of root canal treatment (RCT) or tooth extractions of affected teeth. Root canal treatment is the field of dentistry that deals with diseases of the dental pulp, surrounding tissue, and the root of the teeth in humans. If neglect of oral hygiene causes tooth caries to advance and reach the pulpal area, then root canal treatment is necessary.[1]

The Role of Endodontics In modern dentistry, the preservation of natural dentition is considered the primary therapeutic goal. Root Canal Treatment (RCT), or endodontic therapy, is the gold standard procedure for the management of irreversible pulpitis and pulp necrosis. Historically, teeth with diseased pulp tissues were condemned to extraction; this leads to multiple complications, including tooth drifting, collapsing occlusion, opening of contacts, loss of masticatory effectiveness, and loss of aesthetics, all signs of tooth loss that signal.[2] However, contemporary endodontic techniques have rendered RCT a highly predictable procedure, with success rates frequently exceeding 90%. Despite these clinical advancements, the procedure's success relies heavily on the patient's acceptance and compliance.[1,3]

Globally, RCT is often stigmatized as one of the most painful and feared dental procedures. This phenomenon, often fueled by "dentophobia," creates a significant barrier to care. Research indicates that patient perception is frequently shaped not by personal experience, but by anecdotal evidence—"horror stories" shared by friends and family—which propagate myths regarding the duration, cost, and pain associated with the treatment. Consequently, patients often delay seeking care until pain becomes unbearable, or they opt for extraction as a "quicker" and "cheaper" alternative, leading to the eventual loss of function and esthetics.[4] There aren't many studies of patient views and understandings regarding endodontic therapy carried out in Libya. Thus, the purpose of the current study is to explore patients' knowledge and attitudes about root canal treatment at public and private dental centers in Tobruk /Libya.

Methods

A cross-sectional, questionnaire-based study was carried out on a group of 101 patients (16–37 years) in Tobruk / Libya. The questionnaire was conducted over a period of four months, beginning in October 2025 and ending in January 2026. The questionnaire consisted of 15 multiple-choice questions covering topics such as demographic data, knowledge of RCT steps, history of previous treatment, anxiety levels (measured via the Modified Dental Anxiety Scale), and reasons for refusing root canal treatment. The questionnaire was reevaluated, and changes were made to make the questions clearer and eliminate ambiguous responses. An online survey platform was used to distribute the questionnaire to the participants.

Descriptive statistics were used for frequency with percentages for categorized variables. Categorical variables were compared using the chi-square test and Fisher's exact test, and a p-value < 0.05 was considered to be statistically significant.

Results

The current study was a survey that evaluated the knowledge and awareness of 101 patients in Tobruk/Libya, about root canal treatment. The results were statistically analyzed and studied when participants were asked about their knowledge, awareness, and perception of root canal treatment.

Participant demographic characteristics:

The survey's participants, 46 (45.5%) were males and 55 (54.5%) were females. With an age range of 16 to 31 years, of these, 47 (46.5%) were aged 16–20 years, 30 (29.7%) were 21–25 years, 17 (16.8%) were 26–30 years, and 7 (6.9%) were 31 years and above. A summary of the participants' descriptive statistics is presented in (Table 1). An association between gender and root canal treatment showed that the T value (-1.519) at a significance level of (0.132) is greater than 0.05. Therefore, there are no statistically significant differences in patients' confidence in root canal treatment attributable to gender (Table 2).

Table 1. Demographic data

Percentage %	Number	Age	Gender
46.5%	47	20 – 16years	%45.5 males
29.7%	30	25 – 21years	%54.5 female
16.8%	17	30 – 26years	
6.9%	7	31 years and above	
%100	101	Total	

Table 1. patients' confidence in root canal treatment attributable to gender

Significance level	P value	Degrees of freedom	Standard deviation	Mean	Number	Gender
0.132	-1.519	99	0.401	1.80	46	Male
			0.290	1.90	55	Female

Knowledge of the patient regarding root canal treatment:

Out of 86 (86.1%) replied yes and 15(14.9%) said no when asked have you ever heard about root canal treatment while 57(56%) had previously undergone root canal treatment, whereas (44%) had not (Table 3).

Table 2. Had you previously undergone root canal treatment

Percentage %	Number	Heard about a root canal
%86.1	86	Yes
%14.9	15	No
Percentage %	Number	Previous root canal treatment
%56	57	Yes
%44	44	No

When participants were questioned about the most common reason for visiting the dentist, (65.3%) said pain, (15.8%) said tooth fracture, (8.9%) said Swelling, while (8%) said they did not visit the dentist on that day. When people were asked about What is the level of pain you are currently experiencing, (45.5%) said severe pain, (29.7%) said moderate pain, while 24.8% said mild pain (Table 4).

Table 3. Reason for visit and Pain level

Percentage %	Number	Reason for visit
%65.3	66	Pain
%15.8	16	Tooth fracture
%8.9	9	Swelling
%8	7	Did not visit today
%1	1	Dental check-up
%1	1	Cleaning
%100	101	Total
Percentage %	Number	Pain level
45.5	46	mild
%29.7	30	Moderate
%24.8	25	Severe
%100	101	Total

When questioned about the fear and anxiety from root canal treatment, 54 (53.5%) said yes, while 47(46.5%) said no (Figure 1). When questioned about the source of their information on root canal treatment, it was

found that 55(54.5%) were sourced from the doctor, 23(22.8%) came from the Internet, 19(18.8%) came from friends, and only 4 came from other sources, such as Family Experiences or Classmates (Figure 2)

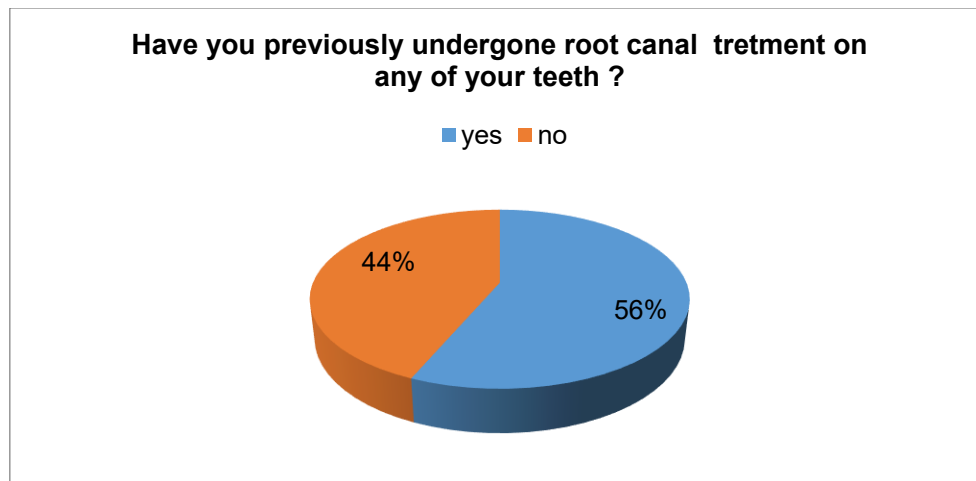


Figure 1. Distribution of the history of RCT among participants

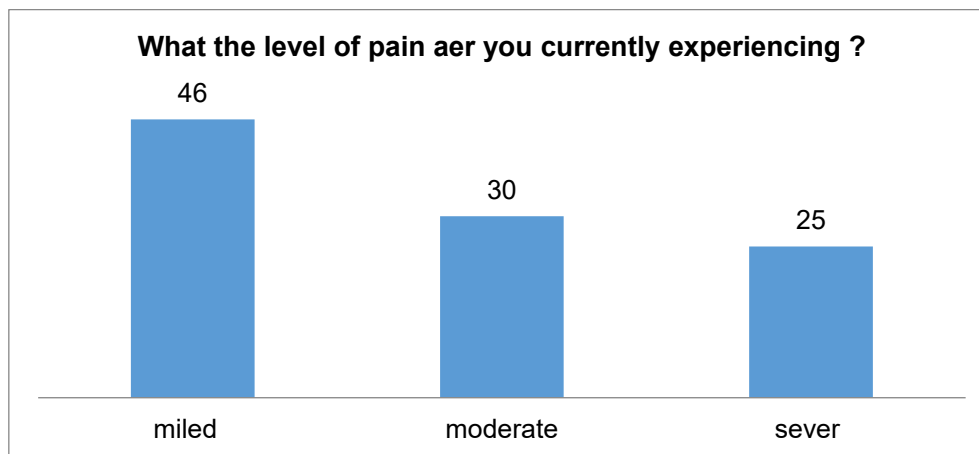


Figure 2. Level of pain among participants

Nearly about 73% (72.3%) believe that root canal treatment is painful, while 28 (27.7%) do not think so. However, when questioned about how many sessions the patient needs for root canal treatment, it was found that (9.7%) see one session as sufficient, 41(40.6%) believe that two sessions are necessary for nerve treatment, 44 (43.6%) said three sessions, while 7(7.9%) do not know how many sessions are necessary for nerve treatment. Most of them reported that they prefer explaining the steps of the treatment by doctors before starting (Table 5).

Table 4. Do you think root canal treatment is painful

Do you think root canal treatment is painful	Number	Percentage %
yes	73	%72.3
no	28	%27.7
Total	101	%100
How many sessions does root canal treatment usually need?	Number	Percentage %
One visit	8	%7.9
2 visits	41	%40.6
3 visits	44	%43.6
I don't know	7	%7.9
total	101	%100
Your doctor should explain the steps of treatment before starting	Number	Percentage %
Yes	97	%96
No	4	%4
Total	101	%100

It was found that half of the participants had noticed swelling or abscesses around the affected tooth, while others did not notice any swelling or abscess. In contrast, the majority believed that installing a crown to protect the tooth after the root canal treatment (86.1%) (Figure 3.4).

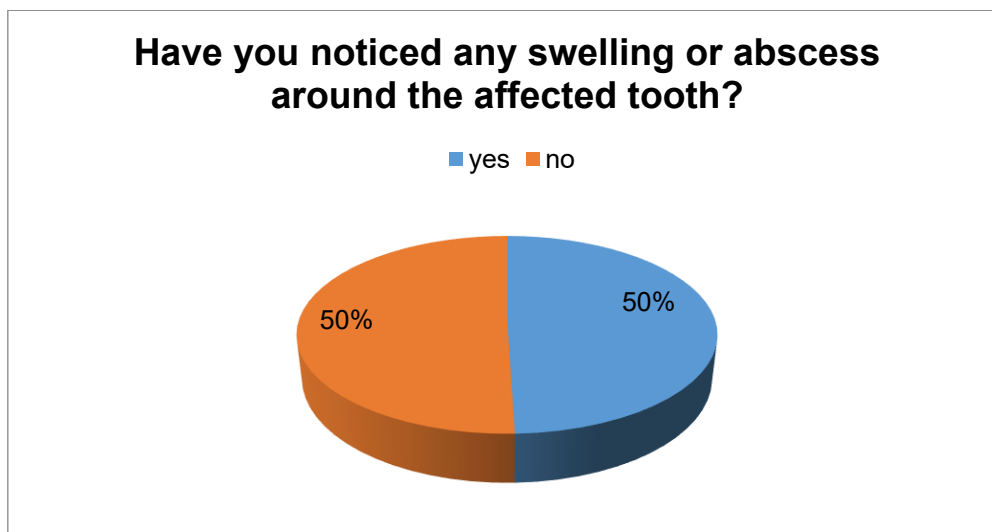


Figure 3. Participants' awareness of swelling or abscesses

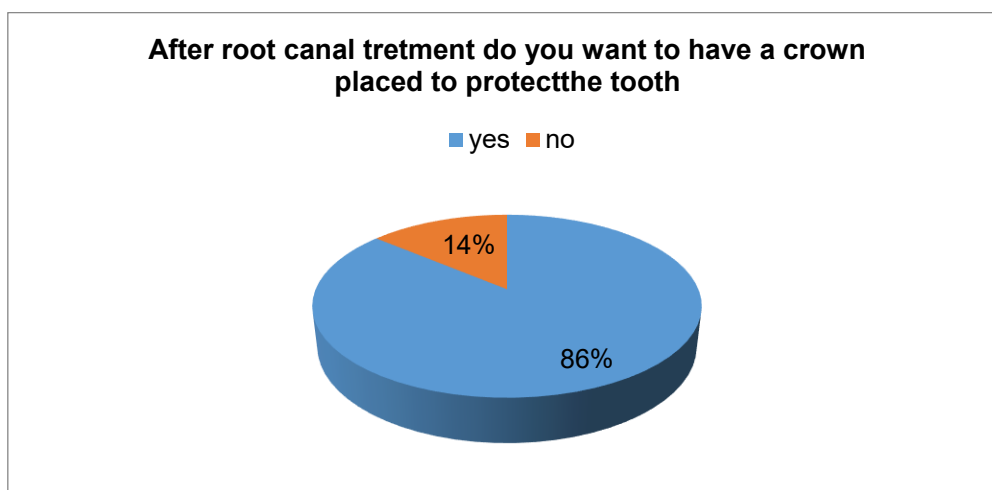


Figure 4. Patients' perception regarding the necessity of dental crowns

Most of the participants have confidence in the success of the root canal treatment, 87(86.1%), and they also know that endodontic therapy helps preserve the tooth (Table 6)

Table 5. Have confidence in the success of the root canal treatment

Have confidence in the success of the root canal treatment	Number	percentage%
Yes	87	%86.1
No	14	%13.9
Total	101	%100
Root canal treatment helps keep the tooth natural	Number	Percentage %
Yes	84	%83.2
No	17	%16.8
Total	101	%100

Discussion

Root canal treatment (RCT) represents a fundamental component of contemporary dental practice, primarily aimed at preserving natural dentition and maintaining oral function. However, patient-related factors—particularly knowledge, perception, and psychological attitudes—remain critical determinants of treatment acceptance and clinical outcomes.[5]

In the present study, a significant majority, 83.2% of patients familiar with root canal treatment procedures, believe such treatment helps to preserve the tooth, 86.1% of their patients were familiar with the term root canal treatment. These findings are consistent with other studies.[2,5] This awareness may be due to the spread of learning methods, taking care of health, and the high percentage of learners in the current study.

On the contrary, in previous studies, only 23% and 25.3% of the subjects had a good knowledge of root canal treatment.[6,7]

Anything unfamiliar and new may cause anxiety; in the case of endodontic treatment, pain is shown to be the most common cause.[8–11] 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 that causes patients to avoid further dental visits or delay their visits, leading to long treatment durations.[7] In the present study, the participants (53.5%) reported anxiety, while 72.3% believed that RCT is inherently painful. These findings are in agreement with existing literature, which consistently identifies fear of pain as the most influential deterrent in seeking endodontic care.[1,6,12]

It has been suggested that providing affirmative data to patients both before and during treatment can stop the vicious cycle of pain and anxiety. The present study also highlights the pivotal role of dental professionals in influencing patient perception. Dentists were identified as the primary source of information for 54.5% of participants. The overwhelming majority of participants (96%) expressed a preference for a detailed explanation prior to treatment, reinforcing the importance of effective communication in reducing anxiety and improving patient compliance. 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 help them accept the procedure.[13]

Despite the relatively high awareness observed, the present study reveals the persistence of notable misconceptions. A considerable proportion of participants (43.6%) believed that RCT requires three clinical visits, reflecting a misunderstanding of procedural complexity. Similar misconceptions have been documented in previous studies, where patients perceived endodontic treatment as lengthy and technically demanding.[1,14] These beliefs may contribute to a preference for tooth extraction, often perceived as a faster and less burdensome alternative.

In terms of treatment outcomes, a high level of confidence in the success of RCT was reported (86.1%), which is in agreement with previous studies demonstrating that patients generally exhibit trust in endodontic procedures when adequately informed.[12,15] This suggests that improving communication strategies may serve as a key intervention in bridging the gap between patient fear and acceptance.

A successful result can only be obtained when root canal treatment is coupled with a good coronal sealing that is provided by a properly placed restoration after the obturating material is placed, followed by a crown placement. In the present study, 86.1% interested in providing a good sealing with a crown after root canal treatment, while 13.9% are not interested in installing a crown. Sorenson et al, in their study, reported a failure rate of 24.2% for root canal-treated teeth without crowns.[16] In yet another study, it was demonstrated that endodontically treated teeth without a crown were extracted at 6 times the rate.[17] Another study reported that a good restoration combined with good endodontic treatment culminated in the nonappearance of periapical inflammation in 91.4% teeth. A combination of poor restoration and poor endodontic therapy showed absence of periapical inflammation in a meagre 18.1% of teeth examined.[3]

Conclusion

Collectively, the findings of this study show that a majority of dental patients in Tobruk had good knowledge and awareness regarding root canal treatment and had undergone an RCT procedure. Misconceptions regarding pain and procedural complexity continue to influence decision-making processes. Addressing these barriers through structured patient education, enhanced communication, and psychological reassurance is essential for improving treatment acceptance and reducing unnecessary tooth extractions.

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Conflicts of interest

There are no financial, personal, or professional conflicts of interest to declare.

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