
Research Article**Knowledge and Awareness of root canal therapy for population in Saudi Arabia: A questionnaire-based study****Zeeshan H Ahamed¹, Abdulaziz Alwakeel², Abdulelah Alrshedan³, Fahad Altimsah⁴**¹Assistant consultant, Restorative dentistry, Dental college, King Saud University, Riyadh ,Saudi Arabia²Resident, Saudi board Oral medicine and Pathology, Dental college, King Saud University ,Riyadh ,Saudi Arabia³Dentist, Saudi National Guard,Riyadh, Saudi Arabia⁴Dentist, Ministry of Health, Saudi Arabia

ABSTRACT:**Objective:** The present study was planned with an aim to evaluate the knowledge and awareness regarding root canal treatment in a sample of Saudi population.**Material and methods:** A cross-sectional questionnaire-based survey was conducted among a sample of participants in the Saudi population. Participants were asked questions to assess their knowledge about endodontic treatment.**Results:** A total of 568 patients (343 males and 225 females) participated in the study. When the patient's responses were analyzed regarding endodontic treatment, it was found that 68.55 % of participants had a good experience of root canal treatment in the past. 27.9% of the respondents describe their knowledge of root canal treatment as average. Spontaneous toothache was considered the most important factor to seek endodontic treatment in majority (40.1%) of the participants and 86.6% of the participants preferred a specialist to undergo a root canal treatment.**Conclusion:** Pain associated with root canal treatment was the most important factor that dithered the surveyed participants from root canal treatment. The results of the survey reveal an improvement of knowledge and awareness of patients about root canal treatment

Introduction

Providing information to patients in oral health care settings can be helpful and can serve multiple functions if it is sensitively and appropriately presented, attended to, and processed by the patient and transforming it into patient knowledge. Information can assist patients in learning the importance of preventive health behaviors in considering treatment options, and in deciding what interventions might be best and why. Information may increase knowledge about procedures and this may reduce procedure-related distress as fear and anxiety (1)

It is now a very common occurrence for a clinician and a patient to be confronted by the following treatment question should a tooth be saved through root canal treatment and restoration or to be extracted and replaced with a single implant-based supported prosthesis. Every patient has a unique case prohibiting a perfect answer that fits everyone's situation. (4)

Endodontics is the branch of dentistry that deals with diseases of the pulp, tooth root and surrounding tissue in human. It is a profession based with the coordination of other specialties, so several factors should be considered during clinical decision-making process. The process of clinical decision-making is the essence of everyday clinical practice. (2)

Root canal treatment refers to a procedure in which the damaged and diseased dental pulp is removed and replaced by

a sterile and biocompatible material simultaneously it heals the focus of infection, improving the overall function and aesthetics. (5)

The basic principle of modern endodontics is painlessness and effectiveness of the treatment. Properly conducted interview with the patient helps in deciding on the appropriate therapeutic treatment, especially with regard to endodontics, which often prevents tooth loss.

Pain associated with endodontic procedures, although still arousing the strongest emotions, is felt as moderate, rarely sharp (3). Clinicians are ethically bound to inform patients of all reasonable treatment options, inform them of benefits and risk factors involving available treatment options, and obtain informed consent before initiating treatment (4). The aim of the present study was to assess the level of knowledge and awareness about root canal therapy in a population of Saudi Arabia.

Material and methods

A cross-sectional questionnaire-based survey was carried out to assess the level of knowledge and awareness of root canal therapy among the general population in various provinces in Saudi Arabia. An electronic form (Google Form) of the questionnaire was designed and distributed by social media

such as Twitter and Facebook to all the participants after informing them regarding the study and obtaining their consent.

The questionnaire used in this study was based on the questionnaire in a study by Janczarek et al with some minor modifications (3).

The questionnaire comprised of a total of 19 multiple-choice questions with the first 6 questions related to demographic data and other questions relating to root canal treatment. The questions were a yes/ no pattern. The questions related to demographic data included information regarding age, gender, nationality and place of work. Questions related to root canal therapy were addressed to assess the level of awareness and knowledge among the participants related to root canal therapy.

Statistical analysis

The analysis of data was performed by descriptive statistics as

Table 1: The demographic data of participants.

Nationality	Percentage	Participants career and proficiency.	Percentage
Saudi	87.5	Student	52
Non Saudi	12.5	Health care	6.6
Geographic area of Saudi Arabia	Percentage	Practice managements	8.7
Central Region.	45	Engineering	6.2
Northern Region.	12.3	Academic work	7.1
Eastern Region.	15	House keeper	3.9
Southern Region.	6.8	Military	2.7
Western Region.	20.9	Non worker	3.2
Gender	Percentage	Level of education	Percentage
Male	79.5	Under graduate level	40.9
Female	20.5	Post graduate level	59.1
Participants age	Percentage		
9-15 years old	4.2		
16-20 years old	45.5		
21-40 years old	38.9		
41-60 years old	6.4		
More than 61	1.9		

Analysis of the participants responses regarding the symptoms that confirm the need for a root canal treatment have revealed that a strong spontaneous toothache (40.1%) was the most important factor that was pivotal in motivating the participants to seek root canal treatment. When the participants were assessed for their behavior in case of toothache, it was found that majority (42%) of them have opted to use an analgesic at home to get relieved of the toothache. These results are reflected in table 2.

percentage/proportions. The answers of the participants were analyzed by Chi-square test with a 5% level of significance using IBM Statistical Program for Social Sciences Version 22.0 (SPSS Inc, Chicago Illinois, USA).

Results

A total of 568 persons responded to the questionnaire and after evaluation of the adequacy of the responses, the data was subjected for statistical analysis. Among these 568 subjects, 343 were males and 225 were females.

In the present study, majority of the males (71.8%) and females (65.3%) had reported a good experience with root canal treatment, but an overall 78% opined that root canal treatment was painful. When the participants were questioned related to whom they consulted for a root canal treatment, it was found that 42.5% of the participants sought care from a general dentist, while 28.5% sought care from a specialist. The descriptive analysis is reflected in table 1.

Table 2

		MALES (343)	FEMALES (225)	Total (568)	P Value
<u>How do you recall root canals treatment?</u>	Good	(246)71.8%	(160)65.3%	(389)68.55 %	0.035*
	Bad	(97)28.2 %	(65)34.7 %	(178)31.45%	
<u>Was it a painful treatment?</u>	Yes	(264) 77.1%	(177) 79 %	(443) 78%	0.047*
	NO	(78) 32.9 %	(47) 21 %	(124) 22%	
<u>Who performed the treatment?</u>	Specialist	(80) 23.5 %	(75) 33.5 %	(161) 28.5	0.086
	General dentist	(138) 40.3 %	(100) 44.7 %	(241) 42.5%	
	I don't know	(124) 36.2 %	(49) 21.8 %	(165) 29%	

When analyzing the participants responses regarding their level of knowledge and awareness regarding root canal treatment, it was found that an overall 14.7% of subjects did not know anything about root canal treatment and among the genders, female respondents (21.1%) comprised the higher percentage when compared to males (11%) related to absolute lack of knowledge about RCT. The respondents were questioned for reasons that make them apprehensive of RCT and the analysis of the results have shown that pain after RCT (30.28%) was considered as the most important fear associated with RCT. The results are shown in table 3.

Table 3

		MALES (343)	FEMALES (225)	Total (568)	P Value
<u>How do you know you need root canal treatment (symptoms)?</u>	Toothache during eating	(54) 16 %	(49) 21.5 %	(103) 18.8 %	0.048*
	Toothache when biting	(43) 12.8 %	(36) 16.1 %	(79) 14 %	
	Strong spontaneous toothache	(143) 41.8 %	(85) 37.8 %	(228) 40.1%	
	Felt pain during sleep	(64) 18.7 %	(48) 21.7 %	(112) 20%	
	The dentist advised me for root canal treatment	(33) 9.7 %	(6) 2.9 %	(39) 7%	
<u>What you did when you feel pain (Patients' behavior of in case of toothache)?</u>	I use home analgesic to relieve toothache	(163)47.6 %	(75)33.5 %	(238) 42%	0.095
	I went directly to the dentist	(103) 30.3 %	(98) 43.4 %	(201) 35.3%	
	I use home analgesics and I went to dentist	(75) 22.1 %	(52) 23.1%	(127) 22.3%	

Most of the participants (67.4%) preferred to get their tooth extracted rather than going for RCT if the treatment cost was high and the majority of them (81.1%) preferred to pay a higher price to receive proper treatment. When asked if in case an RCT is indicated, whom would they contact to get their treatment done and they responded by revealing that a majority (86.6%) preferred a specialist whereas 11% chose a general dentist [Table 4].

Table 4

		MALES (343)	FEMALES (225)	Total (568)	P Value
What do you know about Root canal treatment?	I know a lot	(145) 42.4 %	(53) 23.7%	(198) 34.8%	0.12*
	Average knowledge, I ask for details	(66) 19.5 %	(93) 41.6%	(159) 27.9	
	Average knowledge, I am not interested in the course	(92) 27.1 %	(30) 13.6 %	(122)21.47%	

	I do not know anything	(37) 11%	(47) 21.1%	(84) 14.7%	
What is the important thing that makes you scare of root canal treatment?	Pain after treatment.	(100) 29.3 %	(72) 32.1 %	(172) 30.28%	0.059
	b. Breaking the instrument in the root canal.	(46) 13.6 %	(37) 16.4%	(83) 14.6%	
	c. Swallowing the chemical irrigation solution	(29) 8.3 %	(9) 4.2 %	(38) 6.6%	
	d. Cost of treatment	(49) 14.5 %	(12) 5.7%	(61) 10.7%	
	e. Long treatment time.	(68) 19.9 %	(28) 12.5%	(96) 16.9%	
	f. Pain during treatment	(49)14.4 %	(65) 29.1%	(114) 20.1%	

The results revealed that an overall 23.2% of the participants (21.8 % males and 24.9% females) knew that X-ray was necessary to perform a proper RCT. When the participants were enquired about the need of community education project related to RCT, majority of them (92.6%) opined the necessity of a community project to bring an awareness regarding RCT (Table 5).

Table 5

		MALES (343)	FEMALES (225)	Total (568)	P Value
Will you prefer to extract your tooth rather than do root canal treatment if the cost was high?	a. Yes.	(256) 74.9 %	(127) 56.7 %	(383)67.4%	0.027*
	No	(86) 25.1%	(98) 43.3%	(184) 32.3%	
Would you prefer to pay a high treatment price to make sure for the proper treatment?	a. Yes.	(281) 82.1 %	(180) 79.9 %	(461)81.1%	0.014*
	No.	(61) 17.9%	(47) 21.1%	(108) 19.1%	
How will you prefer to get you your root canal treatment done.	Specialist	(291) 84.8 %	(201) 89.7 %	(492) 86.6%	0.011*
	General dentist	(42) 12.4%	(20) 8.9 %	(62) 11%	
	Student	(10) 2.8%	(4) 1.4 %	(14) 2.4%	

Table 6

		MALES (343)	FEMALES (225)	Total (568)	P Value
Do you know if your tooth has good RCT by X-ray?	Yes	(75) 21.8 %	(57) 24.9%	(132) 23.2%	0.026*
	No	(268) 78.2%	(168) 75.1 %	(436) 76.7%	
Do you want community education project related to root canal treatment?	Yes	(323)94.3 %	(203)90.5 %	(526) 92.6%	0.003*
	No	(20) 5.7 %	(22) 9.5 %	(42) 7.3%	

Discussion

Dental fear is a normal emotional reaction to one or more specific threatening stimuli within the dental situation. Fear or anxiety about dental treatment is very common. Avoiding dental treatment due to anxiety and fear exacerbates problems related to patient's oral health. Treating anxious patients tends to be both difficult and time-consuming. (6)

The conviction of difficulties related to root canal treatment, including pain associated with it has been functioning among patients. It raises many concerns, which often lead to

cancelling the visits to the dental clinic. Many patients admit that they feel the stress related with the planned endodontic treatment. (3)

In the present study an overall 34.8% (42.4 % of males and 23.7% of females) of participants displayed a good knowledge regarding root canal treatment. On the contrary, in previous studies by Doumani et al and Habib et al only 23% and 25.3% of the subjects had a good knowledge about root canal treatment. The average knowledge of the participants

regarding RCT in our present study was 27.9% and this was in accordance with the study by Doumani et al, where they have reported the average knowledge as 27% among their participants.

Among the factors that were evaluated to assess the need for RCT, the present study reported that a strong spontaneous toothache was the leading cause that confirmed the need for endodontic treatment in the vast majority (40.1%) of patients. These findings are very much similar to the results observed in previous studies (2,3,5).

When questioned regarding the cost associated with endodontic treatment, the results of the present study have shown that 74.9% of the male and 56.7 % of the female participants prefer to extract the tooth if the cost was high for root canal treatment but at the same time a majority (82.1%) of them were ready to undergo treatment and accept the high cost, provided the treatment was done in a proper way. On the contrary, cost of endodontic treatment was never a serious barrier in a previous study by Doumani et al, but 67% of respondents were willing to pay a high price provided that the treatment was financed and were assured they receive a proper treatment.

In our present study, 71.8 % of the participants reported that they had a good experience after endodontic treatment, this was in accordance with the study by Doumani et al. In this study 77.1% of the participants reported pain after endodontic treatment, which is a higher percentage than the results reported in a study by Doumani et al.

When the participants were questioned regarding their choice of the doctor for RCT, majority of the patients (84.8% of males and 89.7 % of the females) in the present study preferred to get RCT done by an endodontist. On the contrary, previous studies by and Janczarek et al and Doumani et al demonstrated that 38% and 68% of the subjects preferred a specialist to carry out the treatment. The high percentage of the participants willing to get their treatment done by the specialist in our present study is attributed to an increased awareness and knowledge regarding root canal treatment.

Anxiety and pain are interlinked and considered pivotal factors that make the patients indecisive from undergoing a root canal treatment (Maggirias J and Locker D,2002, Klages U et al ,2004,). These findings are clearly evident in our study as 29.3% of the participants fear of pain after treatment and 14.4% fear of pain during treatment were important factors that made the respondents scared of root canal treatment.

Conclusion

Within the limitations of the present questionnaire survey, it was concluded that there was a considerable increase in knowledge and awareness regarding root canal treatment among the Saudi population. Majority of the population

preferred a specialized endodontist to undergo root canal treatment.

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