ORIGINAL ARTICLE

Root Canal Therapy or Implant? Patients' Level of Awareness in Choosing Treatment to Preserve or Replace the Tooth

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Abstract

Background: Some patients still choose to have their teeth extracted, even though root canal therapy (RCT) has been shown to have high success rates. The decision is frequently impacted by low public awareness and the high costs of root canal therapy (RCTs), which serve as major obstacles to their wider implementation. **Objectives:** To identify the knowledge, attitude and factors that influence the patient's decision to undergo endodontic treatment or implants. **Methods:** A cross-sectional study conducted between July 2024 and February 2025, based on self-structured questionnaire, A sample recruiting strategy will rely on social media channels (e.g., Twitter, Snapchat, Instagram, WhatsApp, etc.) to source people from across Saudi Arabia (aged between 18 and 50). The sample size was determined using a Rao soft sample size calculator. Keeping an indicator percentage of 0.50, margin of error of 5% and confidence interval of 95%, the calculated sample size was 384. **Results:** In 529 participants, 65.2% did not have sufficient information about RCT, although 53.9% recognized its indications. About half of the decisions were motivated by financial concerns, which 82.4% chose RCT over extraction. 72.4% favored implants for tooth replacement, but only 15.9% said they knew implants "very well." In cases of 42.9%, attitudes towards RCT were moderate, and in 45.7% its were positive. More importantly, income influenced knowledge levels, and age, and education responses to both treatments. **Conclusion:** Although RCT was the strongest preference for preserving natural teeth, many participants were concerned with pain, the cost of treatment, and the surgical procedures accompanying dental implants. Finding that economic factors were an important barrier to dental care access, there is a clear need for better communication and educational initiatives by the dental profession.

Key words: Attitude, awareness, extraction, implant, questionnaire, root canal treatment

INTRODUCTION

One of the most prevalent dental conditions in the world is dental caries, which, if left untreated, will irritate the pulp, leaving a discomfortable sensation and swelling that force the patient to see a dentist.[1] Preserving the original dentition in cases with pulpal or periapical pathosis is one of the goals of root canal treatment (RCT), which has a 92.6% estimated success rate. Nevertheless, the number of patients who refuse root canal therapy in teeth with periapical or pulpal pathosis, even though the teeth's restorability and prognosis are favorable.[2] Loss of teeth can cause decreased function, speech abnormalities, aesthetic issues, adjacent teeth drifting,

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supra-eruption of the opposing teeth, loss of confidence, and more.[3] While there are several treatment options for this problem, dental implants are becoming a more and more common way to restore missing teeth. It's safe and practical approach to replace missing teeth with results that look natural, but there are a few factors that can limit its applicability, including fear of surgery, lack of knowledge, patient perception, and treatment costs.[4]

A study done in 2017 showed that in terms of the degree of acceptability of the suggested therapies overall, 76% (n = 78) of patients said they would rather have endodontic therapy, while the remaining 24% (n = 25) said they would rather have dental surgery and not a single person selected "no treatment."[5] Research conducted in 2022 showed that 20% of patients thought that endodontic therapy was a failure, 5% believed that the treatment would result in the extraction of the tooth, 2% assumed that RCT would cause cancer and other health problems, 15% suspected that the cost of root canal treatment and the crown was excessive, 10% thought that the dentist had given them a compromised prognosis, 25% belief they needed immediate pain relief but weren't concerned about losing their teeth, 2% thought they couldn't cooperate and extended treatment times, 4% thought they were too old for RCT and wanted extraction, and 17% thought they had a bad experience with endodontic therapy in the past.[6]

Due to the small number of research pertaining to our subject, particularly in Saudi Arabia. We did this study, which aimed to identify and investigate the knowledge, attitude, and factors that influence the patient's decision to undergo endodontic treatment or implants.

Objectives

To identify the knowledge, attitude, and factors that influence the patient's decision to undergo endodontic treatment or implants.

METHODS

Study design

A cross-sectional study conducted between July 2024 and February 2025, based on self-structured questionnaire, a sample recruiting strategy will rely on social media channels (e.g., Twitter, Snapchat, Instagram, WhatsApp, etc.) to source people from across Saudi Arabia (aged between 18 and 50). The result was to investigate the knowledge, attitude, and factors that influence patient's decision to undergo endodontic treatment or implants.

Sample size

The sample size was determined using a Raosoft sample size calculator. Keeping an indicator percentage of 0.50, margin of error of 5% and confidence interval of 95%, the calculated sample size was 384.

n = P(1-P) * Zα 2/d 2 with a 95% confidence level.

n: Calculated sample size.

Z: The z-value for the selected level of confidence (1-a) = 1.96.

P: An estimated prevalence of knowledge.

Q: (1-0.50) = 50%, i.e., 0.50.

D: The maximum acceptable error = 0.05.

Therefore, the calculated minimum sample size was n = (1.96)2 × 0.50 × 0.50/(0.05) 2 = 384.

Inclusion and exclusion criteria

The Saudi population, both male and female, aged 18–50, from all provinces in the KSA, as well as general population subjects with or without knowledge of implants and root canal therapy, were included in the study provided they agreed to participate and fill out questionnaires. Males and females under the age of eighteen were excluded, as were dental practitioners.

Method for data collection, instrument, and score system

The information was collected by a self-explanatory questionnaire based on previous studies.[7,8] To match with the community in Saudi Arabia. Arabic and English versions of the questionnaires were provided. A patient's gender, age, degree of education, employment, and monthly income were all included in Part 1 of the questionnaires. Patients' knowledge and awareness of root canal treatment were covered in part 2 of the questionnaires, whereas their attitude to do root canal treatment was covered in part 3. Patients' knowledge and awareness of implants were covered in part 4. Moreover, their attitude toward implant was mentioned in part 5. To ensure that the questionnaires will go through a pilot study involving 20 patients before starting the survey.

Scoring system

In all, 22 statements served to assess the participants' attitudes and degree of knowledge. 4 statements for demographics, 5 statements for knowledge of Patient Toward Root Canal Treatment, and 6 statements of Knowledge of patients towards implants, 3 statements for Attitude of patient towards choosing RCT and 4 statements for Attitude of patient towards choosing Implant. 1 point is given for correct answers, and zero points are given for incorrect answers or "I don't know." For scoring, we utilized Likert scales (Dichotomous, Three-Point, and Quality Scales) The maximum-score was 37 and divided as follows: The original Bloom's cut-off points, 80.0–100.0%, 60.0–79%, and 59.0%, The participants will be divided into three groups based on their scores.

Knowledge of Patient Toward Root Canal Treatment score varied from 0 to 5 points and was classified into three levels as follows: Those with a score of 2 or less were classified as having a low level of knowledge, those with scores 3 as having a moderate level of knowledge, and those with scores more than 3 has a high level of knowledge.

Knowledge of patients toward implants score varied from 1 to 6 points and was classified into three levels as follows: Those with a score of 2 or less were classified as having a low level of knowledge, those with scores between 3 and 4 as having a moderate level of knowledge, and those with scores more than 4 has a high level of knowledge.

Attitude of patients toward choosing RCT score varied from 0 to 3 points and was classified into three levels as follows: Those with a score of 1 or less were classified as having a low level of attitude, those with scores 2 as having a moderate level of attitude, and those with scores more than 3 has a high level of attitude.

Attitude of patients toward choosing Implant score varied from 0 to 4 points and was classified into three levels as follows: those with a score of 1 or less were classified as having a low level of attitude, those with score of 2 as having a moderate level of attitude, and those with scores 3 or more has a high level of attitude.

Analyzes and entry method

With Windows (2021), the "Microsoft Office Excel Software" was used to input the data into the gadget. The Statistical Package for the Social Science Software (SPSS) tool, version 20 (IBM SPSS Statistics for Microsoft Windows, Version 21.0), was then used to receive the obtained data and analyze it statistically.

RESULTS

Table 1 displays various demographic parameters of the participants with a total number of (529). Age distribution suggests that there are more participants who are young, 48.0% were 29 years or younger. Gender representation is disproportionately female, 68.6% of the sample. Educationally, attainment rates are very high, with 50.9% having either a bachelor's degree or more, and only 14.0% having completed high school. It indicates that one is overall a well-educated cohort. Particularly when considering 0–1,000 SAR, a whopping 28.5% of individuals are earning <1,000 SAR, possibly indicative of economic odds that individuals in their younger stages of employment face.

As shown in Figure 1, the data on what participants prefer in replacement for lost teeth offer valuable clues about their choices. Among the 529 respondents, 72.4% (383 respondents), preferred implants as the best replacement of the tooth, which reveals a strong preference for modern, durable solution. Of 103, or 19.5%, the second most preferred option was fixed dentures or bridges. However, only 6.6% (35) selected removable dentures, contrary to their once popular status. Only 3 people, at least 1.5% (8 individuals),

Table 1: Socio demographic characteristics of participants (*n*=529)

Parameter	No.	Percentage
Age (Mean: 34.1, STD: 12.7)		
23 or less	120	22.7
24–29	134	25.3
30–39	104	19.7
40–49	90	17.0
50 or more	81	15.3
Gender		
Female	363	68.6
Male	166	31.4
Educational qualification		
High school	74	14.0
Diploma	44	8.3
College student	96	18.1
Bachelor	269	50.9
Master	29	5.5
Doctorate	14	2.6
None	3	0.6
Monthly income in SAR		
<1,000	151	28.5
1,000–5,000	134	25.3
5,001–10,000	95	18.0
10,001–15,000	59	11.2
More than 15,000	73	13.8
No income yet	17	3.2

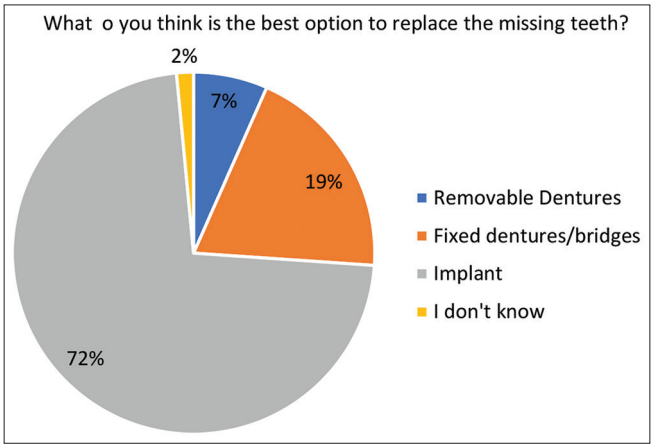

Figure 1: Illustrates best option to replace missing teeth among participants

were uncertain, suggesting modest lack of knowledge or indecision.

Table 2 presents a wealth of data about the knowledge and perceptions around the treatment of endodontic and dental implants in a sample of 529 individuals. This is specifically because a large 65.2% of respondents reported that they did not have enough information regarding root canal treatment, which may be an important thing for patient education that might affect treatment results and patient satisfaction. In addition, although a majority (53.9%) of interviewees were aware of indications for root canal therapy, only 37.4% understood costs associated with root canal therapy, which suggests that communication of the financial side of treatment should be further enhanced by dental professionals. The necessity of replacing missing teeth is an overwhelming consensus (89%) that dental practice should focus on this. Interestingly, a lot of people chose dental implants (72.4%) as the best method to replace a tooth, which reflects an increasing awareness of their benefits, while only 15.9% rated their knowledge regarding dental implants as "very well."

As shown in Figure 2, Key concerns of the 529 participants regarding root canal treatment (RCT) data are revealed. The most common concern was pain, which was cited by 49.5% (262 individuals) and thus a major hurdle to acceptance. The second most common concern was cost of treatment (18.1% [96] individuals) and that the procedure takes a long time (11.3% [60] individuals). Apprehension about the reliability of the procedure was cited as the reason for 18.9% (100 people) indicating chance of treatment failure. 11 persons, or 2.1% of the selected individuals, had chosen "all of the above."

Table 3 presents data that provide significant information about participants' attitudes toward endodontic treatment and dental implants based on a sample of 529 people. Specifically, the data show that, not surprisingly, a slim majority, 50.7%, have had a root canal treated (RCT), and that most concerns regarding RCT are about pain (49.5%) and treatment failure (18.9%). Despite this, almost half of the participants (nearly 50%) claim that the cost of treatment serves to influence their decision about whether to choose RCT or not, but a vast majority (82.4%) would prefer RCT over extraction, demonstrating considerable sentiment to conserve natural teeth when feasible. In contrast, opinions on implants tend to polarize negatively, with 50.1% of the polled expressing reservations about implantation, primarily because it is extremely expensive (28.9%) and reveals a fear of surgical procedure (71.6%).

Table 4 shows that a sample group of 529 participants' knowledge of endodontic treatment has a distribution as presented. A large share of 57.5% had a relatively low level of knowledge in this major field of dental care — endodontic practices. On the other hand, only 30.2% of participants

Table 2: Parameters related to knowledge of endodontic treatment and implants (*n*=529)

Parameter	No.	Percentage
Do you have enough information about root canal treatment?		
No	345	65.2
Yes	184	34.8
Do you know about the Indications of root canal treatment?		
No	244	46.1
Yes	285	53.9
Do you know how much the treatment costs?		
No	331	62.6
Yes	198	37.4
Do you know how many visits you need?		
No	313	59.2
Yes	216	40.8
From where you got the information about root canal treatment?		
Dentist	275	52.0
Social media	95	18.0
Friends/relatives	110	20.8
From my study as a dentist or dentistry student	8	1.5
Personal experience	4	0.8
I don't know	37	7.0
Do you think it's necessary to replace the missing teeth?		
No	58	11.0
Yes	471	89.0
What do you think is the best option to replace the missing teeth?		
Removable dentures	35	6.6
Fixed dentures/bridges	103	19.5
Implant	383	72.4
I don't know	8	1.5
From where you have heard about dental implants?		
Dentist	259	49.0
Relatives and friends	146	27.6
Internet	107	20.2
From my study as a dentist or dentistry student	6	1.1
I don't know	9	1.7
Personal experience	2	0.4
In your opinion, how well is your information about dental implants?		
Very well	84	15.9
Well	125	23.6
Moderately well	217	41.0

(Contd...)

Table 2: *(Continued)*

Parameter	No.	Percentage
Poorly	103	19.5
What do you think is the biggest advantage of dental implant supported. Dentures/bridges?		
Fixed replacement is better.	120	22.7
Comfortable and Good in function	148	28.0
Looks better.	85	16.1
Improved quality of life.	161	30.4
I don't know	15	2.8
How long do you think a dental implant lasts for?		
Up to 5 years	83	15.7
Up to 10 years	157	29.7
Up to 20 years	108	20.4
Lifetime	181	34.2

would be classified as having a high level of knowledge and only 12.3% would belong to those who have moderate level of knowledge.

As shown in Table 5, a sample of 529 study participants displays widely varying levels of knowledge of implants. A very sizeable portion of 59.9% indicates a moderate level of understanding of implants, which indicates a starting base from which more educational efforts could be developed. Those considered high knowledge make up only 21.9% of the sample and need targeted educational programs to boost knowledge in this demographic. In addition, 18.1% of respondents showed low knowledge.

Table 6 allows the data presented to highlight the distribution of attitudes towards endodontic treatment among a sample of 529 participants. The high attitude endodontic treatment attitude was found to 28.9% (153) individuals and moderate attitude endodontic treatment attitude 42.9% (227) individuals in the total sample. There 28.2% (149 individuals) of a low attitude while the others showed a high attitude.

Table 7 shows how a sample of 529 participants distributed their opinions about dental implants. A high attitude toward implants was shown by 45.7% (242) of the sample, which constituted a significant proportion, and demonstrated strong acceptance or preference. Another 43.1% (228 people) expressed a moderate opinion and a smaller group 11.2% (59 people) composed a low opinion. About an 88.8% of respondents fall in the high or moderate attitude categories, which indicates that the majority tend to have positive perception towards dental implants.

Table 8 shows that knowledge of endodontic treatment has a statistically significant relation to monthly income ($P = 0.026$). It also shows statistically insignificant relation to age, gender, and educational qualifications. Participants with

Table 3: Participants' attitude towards endodontic treatment and implants (n=529)

Parameter	No.	Percentage
Have you had a root canal treatment?		
No	261	49.3
Yes	268	50.7
What is your concern toward RCT?		
Pain	262	49.5
Cost of the treatment	96	18.1
Takes a long time.	60	11.3
The chance of treatment failure	100	18.9
All of the above	11	2.1
Does the price of treatment affect your decision about taking RCT?		
No	264	49.9
Yes	265	50.1
What do you prefer, RCT or extraction?		
RCT	436	82.4
Extraction	86	16.3
I don't know	7	1.3
Would you choose the dental implant as a treatment of choice if needed?		
No	265	50.1
Yes	264	49.9
What is your reason not to choose dental implants as a treatment?		
High cost	153	28.9
Lack of knowledge	35	6.6
Surgery	49	9.3
Do implant either way	28	5.3
My answer was yes	264	49.9
Are you afraid of dental implant treatment procedures?		
No	150	28.4
Yes	379	71.6

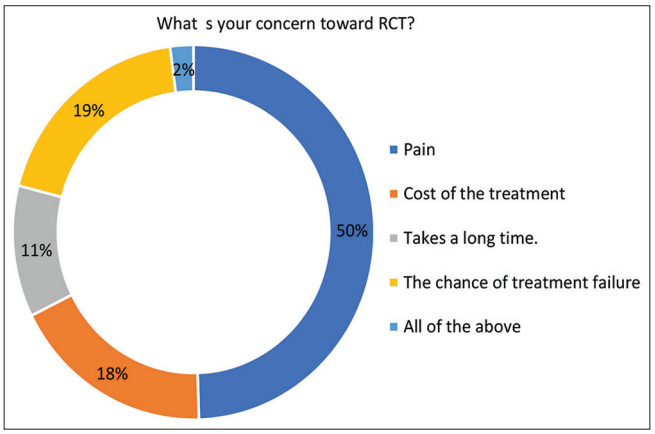

Figure 2: Illustrates concern towards RCT among participants

Table 4: Knowledge of endodontic treatment score results

Knowledge level	Frequency	Percentage
High knowledge of endodontic treatment	160	30.2
Moderate knowledge	65	12.3
Low knowledge of endodontic treatment	304	57.5
Total	529	100.0

Table 5: Knowledge of implant score results

Knowledge level	Frequency	Percentage
High knowledge of implant	116	21.9
Moderate knowledge of implant	317	59.9
Low knowledge of implant	96	18.1
Total	529	100.0

Table 6: Attitude towards endodontic treatment score results

Attitude level	Frequency	Percentage
High attitude toward endodontic treatment	153	28.9
Moderate attitude towards endodontic treatment	227	42.9
Low attitude towards endodontic treatment	149	28.2
Total	529	100.0

Table 7: Attitude towards implants score results

Attitude level	Frequency	Percentage
High attitude towards implants	242	45.7
Moderate attitude toward implants	228	43.1
Low attitude towards implants	59	11.2
Total	529	100.0

monthly incomes between 1,000 and 5,000 SAR were found to have higher knowledge levels.

Table 9 shows that knowledge of implants has a statistically insignificant relation to age, gender, monthly income, and educational qualifications.

Table 10 shows that attitude towards endodontic treatment has a statistically significant relation to age ($P = 0.0001$) and educational qualification ($P = 0.011$). It also shows a statistically insignificant relation to gender and monthly income. Participants aged 40–49 and those holding a bachelor's degree were found to have a better attitude towards endodontic treatment.

Table 11 shows that attitude toward implants has a statistically significant relation to gender ($P = 0.001$) and monthly income ($P = 0.046$). It also shows a statistically insignificant relation to age and educational qualification. Female participants were found to have better attitudes towards dental implants.

DISCUSSION

The objectives of the present study were to determine the knowledge and attitudes with respect to root canal therapy (RCT) and dental implants, as well as to explore factors that influenced the choice of patients regarding root canal therapy (RCT) and dental implants, among a group of 529 participants in Saudi Arabia. This investigation is relevant because of the trend of increasing prevalence of dental caries and the need for effective treatments, such as RCT and implants. A significant gap in knowledge and awareness about both treatment modalities was found, which might influence patients' decision process. This will discuss to existing literature and the similarities and differences of these findings, and the limitations of the study. Overall, our results showed that a considerable portion of participants (65.2) felt that they did not have enough information about RCT. This concurs with Doumani *et al*.'s[9] findings that most patients in the Saudi population had not been properly informed by doctors about RCT, its indications and its benefits. Janczarek *et al*.[10] also found, similarly, that patients often had misconceptions about the pain associated with RCT and this could deter them from seeking needed treatment. As documented by Klages *et al*.,[11] patients have been known to overestimate the pain they will experience during treatment, and find the process as painful. This misperception can result in avoidance of dental care which will only make the problem worse concerning oral health. On the other hand, while our study saw that 72.4% of participants perceived dental implants as the best-chosen form of tooth replacement, 15.9% marked their knowledge of implants as "very well." But this discrepancy implies a crux between conscious and unconscious, which has also been pointed out in other studies. As a hypothetical example, in a study performed by Purra *et al*.[12] The authors pointed out that most of the patients appreciate the advantages of dental implants but had no sufficient data about the procedure as well as the consequences it can result in. A lack of understanding about that gap can be associated with unrealistic expectations and disappointment in outcome following treatment. In addition, we also found that patients' economic status played an important role in their treatment decisions, with 28.5% of the participants

Table 8: Relation between knowledge of endodontic treatment and sociodemographic characteristics

Parameters	Knowledge of endodontic treatment		Total (*n*=529)	*P*-value*
	High or moderate knowledge of endodontic treatment	Low knowledge of endodontic treatment		
Age				
23 or less	48	72	120	0.106
	21.3%	23.7%	22.7%	
24–29	66	68	134	
	29.3%	22.4%	25.3%	
30–39	47	57	104	
	20.9%	18.8%	19.7%	
40–49	39	51	90	
	17.3%	16.8%	17.0%	
50 or more	25	56	81	
	11.1%	18.4%	15.3%	
Gender				
Female	158	205	363	0.494
	70.2%	67.4%	68.6%	
Male	67	99	166	
	29.8%	32.6%	31.4%	
Educational qualification				
High school	29	45	74	0.467
	12.9%	14.8%	14.0%	
Diploma	16	28	44	
	7.1%	9.2%	8.3%	
College student	49	47	96	
	21.8%	15.5%	18.1%	
Bachelor	111	158	269	
	49.3%	52.0%	50.9%	
Master	11	18	29	
	4.9%	5.9%	5.5%	
Doctorate	8	6	14	
	3.6%	2.0%	2.6%	
None	1	2	3	
	0.4%	0.7%	0.6%	
Monthly income				
<1,000	60	91	151	0.026
	26.7%	29.9%	28.5%	
1,000–5,000	66	68	134	
	29.3%	22.4%	25.3%	
5,001–10,000	40	55	95	
	17.8%	18.1%	18.0%	
10,001–15,000	17	42	59	
	7.6%	13.8%	11.2%	
More than 15,000	38	35	73	
	16.9%	11.5%	13.8%	
No income yet	4	13	17	
	1.8%	4.3%	3.2%	

**P*-value was considered significant if ≤0.05

Table 9: Knowledge of implants in association with sociodemographic characteristics

Parameters	Knowledge of implants		Total (*n*=529)	*P*-value*
	High knowledge of implant	Moderate or low knowledge of implant		
Age				
23 or less	20	100	120	0.518
	17.2%	24.2%	22.7%	
24–29	31	103	134	
	26.7%	24.9%	25.3%	
30–39	23	81	104	
	19.8%	19.6%	19.7%	
40–49	24	66	90	
	20.7%	16.0%	17.0%	
50 or more	18	63	81	
	15.5%	15.3%	15.3%	
Gender				
Female	81	282	363	0.751
	69.8%	68.3%	68.6%	
Male	35	131	166	
	30.2%	31.7%	31.4%	
Educational qualification				
High school	15	59	74	0.720
	12.9%	14.3%	14.0%	
Diploma	12	32	44	
	10.3%	7.7%	8.3%	
College student	17	79	96	
	14.7%	19.1%	18.1%	
Bachelor	60	209	269	
	51.7%	50.6%	50.9%	
Master	6	23	29	
	5.2%	5.6%	5.5%	
Doctorate	5	9	14	
	4.3%	2.2%	2.6%	
None	1	2	3	
	0.9%	0.5%	0.6%	
Monthly income				
<1,000	38	113	151	0.522
	32.8%	27.4%	28.5%	
1,000–5,000	29	105	134	
	25.0%	25.4%	25.3%	
5,001–10,000	16	79	95	
	13.8%	19.1%	18.0%	
10,001–15,000	12	47	59	
	10.3%	11.4%	11.2%	
More than 15,000	19	54	73	
	16.4%	13.1%	13.8%	
No income yet	2	15	17	
	1.7%	3.6%	3.2%	

*P-value was considered significant if ≤ 0.05

Table 10: Attitude towards endodontic treatment in association with sociodemographic characteristics

Parameters	Attitude towards endodontic treatment		Total (*n*=529)	*P*-value*
	High attitude toward endodontic treatment	Moderate or low attitude toward endodontic treatment		
Age				
23 or less	20	100	120	0.0001
	13.1%	26.6%	22.7%	
24–29	30	104	134	
	19.6%	27.7%	25.3%	
30–39	37	67	104	
	24.2%	17.8%	19.7%	
40–49	40	50	90	
	26.1%	13.3%	17.0%	
50 or more	26	55	81	
	17.0%	14.6%	15.3%	
Gender				
Female	107	256	363	0.678
	69.9%	68.1%	68.6%	
Male	46	120	166	
	30.1%	31.9%	31.4%	
Educational qualification				
High school	25	49	74	0.011
	16.3%	13.0%	14.0%	
Diploma	16	28	44	
	10.5%	7.4%	8.3%	
College student	12	84	96	
	7.8%	22.3%	18.1%	
Bachelor	84	185	269	
	54.9%	49.2%	50.9%	
Master	11	18	29	
	7.2%	4.8%	5.5%	
Doctorate	4	10	14	
	2.6%	2.7%	2.6%	
None	1	2	3	
	0.7%	0.5%	0.6%	
Monthly income				
<1,000	36	115	151	0.512
	23.5%	30.6%	28.5%	
1,000–5,000	39	95	134	
	25.5%	25.3%	25.3%	
5,001–10,000	32	63	95	
	20.9%	16.8%	18.0%	
10,001–15,000	18	41	59	
	11.8%	10.9%	11.2%	
More than 15,000	21	52	73	
	13.7%	13.8%	13.8%	
No income yet	7	10	17	
	4.6%	2.7%	3.2%	

*P-value was considered significant if ≤0.05

Table 11: Attitude towards implants in association with sociodemographic characteristics

Parameters	Attitude towards implants		Total (*n*=529)	*P*-value*
	High attitude toward implants	Moderate or low attitude toward implants		
Age				
23 or less	57	63	120	0.541
	23.6%	22.0%	22.7%	
24–29	56	78	134	
	23.1%	27.2%	25.3%	
30–39	53	51	104	
	21.9%	17.8%	19.7%	
40–49	43	47	90	
	17.8%	16.4%	17.0%	
50 or more	33	48	81	
	13.6%	16.7%	15.3%	
Gender				
Female	183	180	363	0.001
	75.6%	62.7%	68.6%	
Male	59	107	166	
	24.4%	37.3%	31.4%	
Educational qualification				
High school	33	41	74	0.891
	13.6%	14.3%	14.0%	
Diploma	19	25	44	
	7.9%	8.7%	8.3%	
College student	43	53	96	
	17.8%	18.5%	18.1%	
Bachelor	126	143	269	
	52.1%	49.8%	50.9%	
Master	11	18	29	
	4.5%	6.3%	5.5%	
Doctorate	8	6	14	
	3.3%	2.1%	2.6%	
None	2	1	3	
	0.8%	0.3%	0.6%	
Monthly income				
<1,000	68	83	151	0.046
	28.1%	28.9%	28.5%	
1,000–5,000	67	67	134	
	27.7%	23.3%	25.3%	
5,001–10,000	44	51	95	
	18.2%	17.8%	18.0%	
10,001–15,000	30	29	59	
	12.4%	10.1%	11.2%	
More than 15,000	22	51	73	
	9.1%	17.8%	13.8%	
No income yet	11	6	17	
	4.5%	2.1%	3.2%	

**P*-value was considered significant if ≤0.05

making <1,000 SAR a month. The findings of Hasan *et al*.[13] also match this financial barrier, as he found that patients are concerned about cost and who will be able to afford dental implants. When patients encounter high dental implant costs or lack insurance, they may well be driven away from this treatment. Both attitudes concerning RCT and dental implants added to the complexities of patient decision making. Around half (52%) of the respondents had a history of RCT with pain and treatment failure being most commonly reasons. This is in concordance with the finding of Badole *et al*.,[14] which showed that patients often worry about pain and also complications occurring with the endodontic procedure.[14] Interestingly enough, though, a large percentage of people (82.4%) preferred RCT over tooth extraction knowing that is possible when feasible. (These results are as follows: RCT M markets: 73.7%, M markets: 78.7%, tooth extraction: 11.3%, RCT F markets: 87.5%, open: 20.7%, RCT others: 72.7%) RCT has a high success rate of 92.6%, the percent of which is supported by the given studies.[15] The motivation for RCT is rooted in a push to preserve the natural dentition and an essential relationship between dental professionals and patients regarding the benefits and risks of RCT. Opinions about dental implants were more polarised, with 50.1% expressing reservations, mostly about the cost and fear of their surgical procedures. The research conducted by Tiwari and Meena,[16] corroborates that fear of surgery is a great factor that keeps patients from considering implants. The study by Khoonsari and Ghamari[17] illustrated that having to address patients' fears and misconceptions of surgical treatments increases acceptance rates. Our findings suggest that targeted educational initiatives can reduce patients' fear of RCT, and increase patients' understanding of RCT and implants. Our demographic analysis showed there are significant relationships between knowledge and attitude toward treatment options and age, gender, and income. As an example, endodontic treatment knowledge was significantly associated with monthly income with subjects who included those earning 1,000–5,000 SAR earning higher levels of knowledge than those with lesser incomes. This is consistent with the work reported by Zhang *et al*.,[18] who found that socioeconomic status has a large influence on patients' access to dental care and their understanding of treatment options. Additionally, based on the higher correlation between age and attitudes toward RCT, especially with older patients may have different perceptions and experiences that impacts their treatment choice, consistent with what Manik[19] commented on the effect of age in treatment preference. Limitations on the insights gained from this study must be acknowledged. Bias may be introduced because participants may overestimate their knowledge or awareness of RCT and implants because they rely on self-reported data. The use of social media for participant recruitment may also further limit the generalizability of the findings in that, the use of social media may not adequately reflect all the people of Saudi Arabia. Also, as the study was a cross-sectional design, causal relationships can not be established between these identified factors and patients' treatment decisions. Further research should explore ways to study the evolution of knowledge and attitudes over time and how they impact treatment outcomes.

CONCLUSION

In conclusion, this study highlights significant gaps in knowledge and understanding regarding root canal therapy and dental implants among a predominantly young and educated population in Saudi Arabia. Despite a strong preference for preserving natural teeth through RCT, many participants expressed concerns about pain, treatment costs, and surgical procedures associated with dental implants. Economic factors emerged as a critical barrier to accessing dental care, underscoring the need for improved communication and educational initiatives from dental professionals. Addressing these gaps can enhance patient decision-making, ultimately leading to better oral health outcomes and increased acceptance of necessary treatments. Future research should focus on longitudinal studies to further explore these dynamics.

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ETHICAL APPROVAL

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

INFORMED CONSENT

Written informed consent was acquired from each study participant.

DATA AND MATERIALS AVAILABILITY

All data associated with this study are present in the paper.

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