

An evaluation of the knowledge and attitude of school teachers regarding root canal therapy in Kerman, Iran

Azin Mirzadeh DDS¹, Saeid Gholami DDS¹, Foroozan Rafiee MS¹,
Arash Shahravan DDS, MS²

Original Article

Abstract

BACKGROUND AND AIM: The aim of this cross-sectional study was to evaluate the knowledge and attitude of school teachers regarding root canal therapy (RCT) in Kerman, Iran.

METHODS: 403 teachers participated in this study (49.9% were female and 46.9% were male). Data collection was performed by a researcher-made questionnaire. After checking the validity and reliability of the questionnaire, it was distributed among teachers. The questionnaire consisted of three parts: demographic information, knowledge, and attitude. To analyze data, descriptive statistic and inferential analysis were done by two-sample t-test and one-way analysis of variance.

RESULTS: Mean scores of knowledge questions regarding RCT in men and women were 57.23% and 48.97% ($P < 0.05$), respectively. In addition, mean scores of the attitude of men and women were 70.53% and 71.07%, respectively ($P > 0.05$). In the knowledge part, it was shown that education level influences the knowledge of the participants being studied ($P < 0.05$). There was no significant correlation between the amount of knowledge and attitude ($P > 0.05$).

CONCLUSION: The knowledge level of the school teachers was moderate and their attitude was good.

KEYWORDS: Knowledge, Attitude, Teachers, Root Canal Therapy (RCT)

Citation: Mirzadeh A, Gholami S, Rafiee F, Shahravan A. **An evaluation of the knowledge and attitude of school teachers regarding root canal therapy in Kerman, Iran.** *J Oral Health Oral Epidemiol* 2013; 2(2): 56-63.

One of the most important factors in improving oral health is enhancing knowledge and the view of the society about the importance of teeth and their role in general health of an individual. Oral and dental diseases have had an increasing rate in recent years. The most important factor in this regard is general ignorance or unawareness about the importance of oral health in the maintenance of teeth.¹

Knowledge, attitude, and, subsequently, appropriate treatment of teeth with extensive care can prevent the unnecessary

extraction of these teeth. Teachers, as an important and influential part of the society play an important role in formation and modification of behaviors. Therefore, their knowledge about root canal therapy (RCT) and other dental procedures seems to be important for both their own oral health and the people that they are interacting with and teaching.²⁻⁷

Since RCT is one of the most prevalent procedures run in clinics and private offices, increasing knowledge and creating a positive view regarding it might help patients accept this procedure much more rationally. In

1- Dentist, Kerman Oral and Dental Diseases Research Center AND Kerman Social Determinants on Oral Health Research Center, Kerman University of Medical Sciences, Kerman, Iran

2- Associate Professor, Kerman Oral and Dental Diseases Research Center AND Kerman Social Determinants on Oral Health Research Center AND Department of Endodontics, Kerman University of Medical Sciences, Kerman, Iran

Correspondence to: Arash Shahravan DDS, MS
Email: arashahravan@gmail.com

addition, it may help their expectation from RCT become more realistic.⁸⁻¹⁰

Masoodi et al., in their study, evaluated the attitude and knowledge of patients about RCT, and they found that patients had a high attitude score, while their knowledge score was moderate.⁸ Eskandari in their study about the reason of tooth extraction performed in Kerman showed that 57.3% of the extraction cases had caries and most of them were treatable.¹¹ Ramezani and Alizadeh also showed that 50% of tooth extractions were because of caries, while most of them were treatable.¹² Tanni showed that 56.4% of extracted teeth were carious and most of them were treatable.¹³ Almas et al. showed that knowledge of men and women about oral diseases and oral health is similar. Furthermore, the authors emphasized the need for education regarding oral health.¹⁴

Awareness about dental procedure can assist patients in learning the importance of preventive health behaviors, considering treatment options, and deciding what interventions might be best and why. Moreover, it may increase knowledge about procedures and may reduce procedure-related distress, such as fear and anxiety.⁸⁻¹⁰ Teachers are considered as persons of high standing in the society and their wrong concepts can affect a high number of people within the society. Therefore, their knowledge and attitude regarding RCT can eventually improve social knowledge. There are not enough data which assess the knowledge and attitude of Iranian teachers about procedures, like RCT, that can be performed to maintain a tooth. Hence, the goal of our study is to evaluate knowledge and attitude of teachers about RCT in Iran.

Methods

Samples

This study is a cross-sectional survey, assessing knowledge and attitude of school teachers regarding RCT, performed in 2005 in Kerman, which is one of the biggest cities in

the south-east of Iran. The target population was all the school teachers currently working and teaching at schools of Kerman city. They were chosen randomly with a multi-stage sampling method from 22 primary, guidance, and high schools of Kerman. The sample size for this study was calculated to be 400 persons due to values of $P < 0.05$ being considered as significant and considering maximum acceptable error as 10% of standard deviation of knowledge score.

Methods

A researcher-made self-administered questionnaire was distributed among participants. This questionnaire consisted of three parts. The first part included demographic information regarding age, gender, and level of education. The second part included 10 questions which evaluated the attitude of teachers regarding RCT, scoring of these questions was based on Likert scale and the answers were as follows: agree (2 scores), disagree (0 score), and no idea (1 score). The third part of the questionnaire included 9 multiple choice questions regarding knowledge of the teachers about RCT. Questions regarding knowledge were designed with different taxonomy to evaluate the knowledge of subjects on different levels. To minimize the time needed to answer the questions and to make the questions more comprehensible, all the knowledge questions were designed as multiple choice questions. Each correct answer was given 1 score and wrong answers received 0 score. The questionnaire is attached as appendix 1.

At first, the goal of the study was explained to the participants and an oral consent was achieved from them to cooperate in this study, and then, the questionnaire was completed by them. Teachers were allowed to complete the questionnaire anonymously, and they were assured that their answers would remain confidential. There was a preliminary explanation for participants to increase their motivation in filling questionnaires accurately.

To assess the validity and reliability of the questionnaire, a primary version of the questionnaire was completed by 15 teachers in a one-month interval. Reliability of the questionnaire was assessed by Cronbach's alpha, and an acceptable reliability was shown ($\alpha = 0.7$). To assess validity and relevance of questions, five endodontics were consulted. After discussion with the experts, the final questionnaire consisted of 19 questions, which was the modified version of the primary questionnaire, and no irrelevant question was detected.

Data analysis

To analyze data, after descriptive statistics, an inferential analysis by two-sample t-tests, one-way analysis of variance and Tukey analysis for post Hoc evaluation were done. Moreover, values of $P < 0.05$ were considered statistically significant. In the analysis section of the study the association among age, gender and education level were evaluated and the score of the questionnaire to evaluate the association between knowledge and attitude. Data analysis was done by SPSS for Windows (version 11; SPSS Inc., Chicago, IL., USA).

Results

In this study 403 teachers were surveyed, of which 189 (46.90%) were female and 212

(46.90%) were male. Mean age of the participants was 38.8 ± 4.6 . Moreover, 17.60% of the participants had a diploma, 37.55% Bachelor of Arts (B.A), 41.20% Bachelor of Sciences (BSc), and 3.00% Master of Sciences (MSc).

The average score of attitude and knowledge in men and women are shown in table 1. Regarding the association between gender and knowledge, men had more knowledge than women about RCT (t-test, $P < 0.05$). It was also shown that education level influences the knowledge of the participants being studied. Teachers with a BSc degree had a higher knowledge about RCT compared to individuals with BA and diploma ($P < 0.01$). However, individuals with MSc and BSc degrees had no significant differences in knowledge ($P > 0.05$) (Table 2).

Table 3 shows the participants' responses to each attitude question. No differences were observed between men and women in attitude questions. However, a significant difference was observed in question 9; 27.64% of teachers agreed that RCT post-operative pain exists ($P < 0.05$). Regarding the association between level of education and attitude score, there were significant differences in questions 6 and 9. Therefore, participants with a higher level of education believed that teeth structure becomes fragile

Table 1. Mean scores of attitude and knowledge questions, separated by gender

Questions	Gender	Number	Mean score	Standard deviation
Attitude	Women	188	70.53	13.86
	Men	210	71.07	11.90
	Overall	398	70.76	12.83
Knowledge	Women	189	48.97	21.70
	Men	212	57.23	22.10
	Overall	401	53.33	21.90

Table 2. Mean scores of attitude and knowledge questions, separated by level of education

Questions	Level of education	Number	Mean score	Standard deviation
Attitude	Diploma	71	66.05	16.68
	BA	149	70.67	11.79
	BSc.	165	72.21	11.52
	MSc.	12	80.00	6.39
	Diploma	71	44.44	21.16
knowledge	BA	149	51.72	23.37
	BSc.	166	58.56	20.77
	MSc.	12	52.77	19.60

Table 3. Responses of participants to the attitude questions

Questions	Agree		Disagree		No idea		Response rate (%)
	Number	Percent	Number	Percent	Number	Percent	
Q1. Maintaining normal teeth has a significant importance.	396	99.00	3	0.75	1	0.25	99.25
Q2. Dental diseases have less importance compared to other aspects of health.	119	30.06	270	68.18	7	1.76	98.26
Q3. Keeping prosthesis needs less effort compared to normal human teeth.	90	22.61	273	68.59	35	8.80	98.75
Q4. The tooth that aches must be extracted.	44	11.11	346	87.37	6	1.52	98.26
Q5. Root canal therapy is a painful procedure.	115	28.75	247	61.75	38	9.50	99.25
Q6. A RCT-treated tooth becomes fragile and is lost easier.	168	42.32	166	41.82	63	15.86	98.51
Q7. In all cases of RCT, a general dentist can perform the procedure.	45	11.39	323	81.77	27	6.84	98.01
Q8. In case of infection and swelling near a tooth, the best option is to extract it.	27	6.77	360	90.23	12	3.00	99.00
Q9. A tooth may become painful for a while after RCT*.	110	27.64	224	56.28	64	16.08	98.75
Q10. Expense of extracting a tooth and replacing it with a bridge is higher than performing RCT and placing a crown.	151	38.52	108	27.55	133	33.93	97.27

*RCT: Root canal therapy

after RCT, and that post-operative pain exist after RCT ($P < 0.05$). The correlation between knowledge and attitude was assessed by Pearson Correlation. This revealed no significant relationship between knowledge and attitude ($r = 0.05$, $P > 0.05$).

Discussion

The mean scores of attitude and knowledge were 70.76 and 53.33, respectively. Regarding the association between gender and knowledge questions, men had more knowledge than women about RCT. However, in attitude questions, no differences were observed between men and women.

Teachers with a BSc degree had a higher knowledge about RCT compared to those with BA and diploma degrees, but those with MSc and BSc degrees had no significant differences in knowledge.

Teachers have an important role in enhancing knowledge and attitude of people in society in many aspects, including oral health. Knowledge and attitude of people

about RCT helps them to avoid unnecessary extraction of teeth that can be kept by appropriate treatment, and teachers' knowledge regarding RCT can eventually improve social knowledge.

Knowledge of females was 48.97%, while male's knowledge was 57.23%, which was statistically significant. According to the results of this study, enhancing knowledge of teachers should be considered by general health decision makers. Masoodi et al. showed that patients have a high level of attitude and moderate level of knowledge, which is almost similar to this study. In the study of Masoodi et al., the level of education was correlated with the score of knowledge and attitude. He also demonstrated that there is no correlation among gender, and knowledge and attitude.⁸

Knowledge increases by rise in educational level of the teachers, which is an acceptable fact since by receiving more education teachers develop more deductive power and more knowledge. In this study,

99.00% of the participants agreed with the fact that healthy teeth should be kept, which is a positive point for dental society. About 30.00% of participants believed that oral health is not as important as general health, which emphasized the necessity of increasing people's knowledge about the importance of oral health and its impact on general health.

22.60% of participants believed that keeping prosthesis is easier than maintaining normal teeth, which is a negative point for peoples attempt to keep their teeth. 11.00% of teachers believed that a painful tooth should be extracted, which is a misleading belief and should be corrected. Lack of knowledge about root canal therapy and dental treatments, or disbelief in these procedures causes the majority of patients to choose inappropriate ways of treatments, such as extraction. Ramezani and Alizadeh showed that 50.00% of dental extractions are due to caries and could be save by RCT and further restorative treatment. This rate of extracting treatable teeth can be reduced by enhancing knowledge and attitude of the society.¹²

28.80% of the participants knew RCT as a painful procedure, which can have a negative effect on their behavior in keeping their teeth. Another important fact is that 42.20% of teachers believed that a tooth that undergoes RCT becomes fragile and is lost sooner. Consequently, they consider RCT as a temporary treatment, and this attitude should be corrected. Only 11.40% of the teachers believed that all types of RCT treatments can be performed by a general dentist. This fact shows that most people accept specialized treatment as a good choice. 6.80% of the participants believed that swelling and infection necessitate extraction. 27.60% of the subjects believed that a tooth after RCT becomes painful, which is a wrong belief and should be corrected.

A very important fact is that 57.60% of the participants knew that replacing teeth with bridge is cheaper than RCT and replacing with a crown. This may decrease their enthusiasm for RCT and encourage them to extract their teeth, while the fact is that in many cases, RCT is cheaper than bridge restorations. The number of those who believed that the tooth becomes fragile decreased with increase in education level, but overall, the majority of participant had this wrong belief.

One important matter is the fact that teachers are considered as persons of high standing in the society and their wrong concepts can affect a high number of people in the society. Thus, teachers' knowledge and attitude regarding RCT can eventually improve social knowledge. No similar study or published articles are available in this field at this specific location (Iran); therefore results of this study can be comprehensive and worthwhile.

Education on root canal therapy and appropriate ways of maintaining the tooth has an essential role to improvement of oral hygiene in the society. Furthermore, teachers have a basic role in the education, which makes their role of greater importance.

Conclusion

The knowledge level of the teachers was moderate and the level of their attitude was good; the more knowledge they had, the better attitude they showed.

Conflict of Interests

Authors have no conflict of interest.

Acknowledgements

This project was supported financially by the Kerman Research Center, Kerman University of Medical Sciences, Kerman, Iran.

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Appendix 1

Questionnaire

Attitude questions

- 1- Maintaining normal teeth has a significant importance.

Agree	disagree	no idea
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- 2- Dental diseases have less importance compared to other aspects of health.

Agree	disagree	no idea
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- 3- Keeping prosthesis needs less effort compared to normal human teeth.

Agree	disagree	no idea
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- 4- The tooth that aches must be extracted.

Agree	disagree	no idea
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- 5- Root canal therapy is a painful procedure.

Agree	disagree	no idea
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- 6- A RCT-treated tooth becomes fragile and is lost easier.

Agree	disagree	no idea
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- 7- In all cases of RCT, a general dentist can perform the procedure.

Agree	disagree	no idea
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- 8- In case of infection and swelling near a tooth, the best option is to extract it.

Agree	disagree	no idea
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- 9- A tooth after RCT may become painful for a while.

Agree	disagree	no idea
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- 10- The expense of extracting a tooth and replacing it with a bridge is higher than performing RCT and placing a crown.

Agree	disagree	no idea
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Knowledge questions

- 1- What is root canal therapy?
 - Taking the tooth nerve out of the tooth and filling the canal.
 - Killing the tooth nerve with chemical agents and filling the canal.
 - Killing the tooth nerve using temperature.
 - Extracting the tooth from the bone.
- 2- Which one of these factors harms the tooth nerve?
 - Tooth caries, gingival diseases, and trauma
 - Caries, cold drinks, and hot drinks
 - Gingival disease, trauma, and tooth worm
 - Tooth worm, cold drinks, and gingival diseases
- 3- Which of these symptoms is more indicative of the need for RCT?
 - Passive severe pain
 - Continuous severe pain
 - Passive mild pain
 - Continuous mild pain
- 4- How much is the appropriate success rate of RCT?
 - Low success
 - Moderate success
 - High success
 - Always with success
- 5- Is RCT a painful procedure these days?
 - Usually yes
 - Usually no
 - Always yes
 - Always no

6- Which one is correct?

- Due to the fragility of the tooth which has undergone RCT treatments, this tooth will not last long.
- If an appropriate restoration is performed after RCT, these teeth will be lost as vital teeth.
- Crowning the teeth, which have undergone RCT, is not an appropriate treatment plan.
- It is better not to perform restorative treatment on a tooth which has undergone RCT.

7- Does the tooth color change after RCT?

- Usually yes
- Usually no
- Always yes
- Always no

8- Is it possible for an abscess to form a longtime after RCT?

- A tooth with RCT will not have pain anymore.
- It is possible for an abscess to form if RCT is not performed well.
- The life-time of RCT treatment is not very long and it will fail after a period of time.
- Despite a good RCT, the tooth will have pain and abscess for a period of time.

9- In what conditions should the RCT be repeated?

- 5 years after RCT
- 10 years after RCT
- In the tooth, in which an abscess or pain emerges after a few months
- A tooth which has undergone RCT and the pain still persists should be extracted