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Research Article

The Effect of a Patient's Knowledge and Socioeconomic Status on Treatment Preference for Root Canal Versus Extraction in Jeddah, Saudi Arabia

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Abstract

Aim: To identify the effect of patient knowledge and socioeconomic status on treatment preferences for root canal treatment (RCT) versus extraction in Jeddah, Saudi Arabia.

Methods and Materials: 420 participants were recruited from four different malls and assessed using a self-reported questionnaire.

Results: Among participants, 80.70% preferred RCT, but only 47.9% correctly understood RCT. Participants who understood RCT, had higher income levels, were female, were Saudi, were married, and those with higher education levels preferred RCT. Some participants changed the preferred option to extraction after learning the estimated price and time required for RCT.

Conclusion: Many patients prefer extraction, even when unnecessary.

Keywords: *Socioeconomic Status; Knowledge; Treatment Preference; Root Canal Treatment; Extraction*

Introduction

Toothache is one of the most annoying pains that cause patients to seek urgent pain-relieving treatment [1,2]. Some cases might need a specific intervention such as root canal treatment (RCT), but sometimes, patients choose not to treat their condition or to extract the tooth. A dentist cannot choose to treat his patient without the patient's approval of the treatment option. Patients' decisions regarding the choice of root canal treatment or extraction can vary according to the knowledge and socioeconomic status of the patient [3,4]. For example, one study in Kenya indicated that lack of patient knowledge was one of the most common reasons people avoided RCT [5]. In the same study, 43.2% of participants had heard of RCT, and 56.8% had not heard about it before [4]. In a recent study in England, most of the patients refused to treat an inflamed tooth due to high treatment costs and instead opted for single-tooth edentulism [6]. Parents' education level and their income level to seek dental treatment can affect even children and they may face early tooth extraction [7].

Also, patients for low socioeconomic classes in India who were unable to pay for RCT chose extraction over RCT [4,8]. The same study evaluated patient preferences before and after receiving information about cost and number of visits for RCT and found the percentage changed from 69.5% before receiving information to 62.2% after information was given among middle-class patients. One of the study that aimed to investigate the patient's treatment preferences in Toronto, Canada they found that the patients with high income level, who visits the dentist regularly, who did RCT before and with excellent oral health they were associated with higher preferences for RCT [9]. However, to the best of the authors' knowledge, no study has yet been conducted to assess knowledge and socioeconomic factors in patient treatment preferences between RCT and extraction in Saudi Arabia. The aim of this study was to identify the effect of a patient's level of knowledge about RCT and their socioeconomic status on their treatment preference for RCT versus extraction in Jeddah, Saudi Arabia.

Methods and Materials

A cross-sectional study was conducted to investigate the effect of a patient's socioeconomic status and knowledge about dental care options on their treatment preferences between RCT and extraction among a population sample in Jeddah, Saudi Arabia. The participants were adults 18 years of age or older from the general population. Dentists, dental students, and people who did not sign the consent form were excluded. A quota sampling technique was used in this study. Data were collected from four malls (the Red Sea Mall, Al Salam Mall,

Aziz Mall, and Mall of Arabia). These were included as community gathering places providing a large number of participants and a variety of socioeconomic levels. Data were collected on weekends via a 10-minutes, face-to-face questionnaire. All participants were briefed about the goal and the process of the study and they signed the consent form before answering the questionnaire. All data were treated with confidentiality, and any incomplete data were discarded. The participants completed the questionnaire without receiving any incentives. It was a hard copy self-reported questionnaire divided into three sections.

Section one contained six demographic questions that included age, gender, marital status (single, married), nationality (Saudi or non-Saudi), level of education (bachelor, below bachelor), and income level (classified as high, medium, or low).

Section two is measuring knowledge via seven multiple-choice questions, taken from various validated questionnaires, to investigate participants' existing knowledge about RCT. For example, have you heard about RCT before? Has a dentist before advised you for RCT? Have you ever undergone RCT before? The answers for the questions were classified as 1 = YES, 2 = NO. Four questions about previous knowledge of RCT were taken from [10] and two questions about the definition of RCT, brushing frequency and the frequency of dentist visits were taken from [5].

Section three contains two questions taken from [8] about patient preference for either RCT or extraction before and after giving the information about the time and price for both options. The statistical analysis was done using the Statistical Package for Social Science (SPSS). The McNemar's and Chi-square test were used to compare between categorical variables. Statistical significance was taken at < 0.05.

Results and Discussion

Data were taken from 420 participants. Demographic variables, which include gender, income level, marital status, nationality and education level are detailed in table 1. The study consisted of (49.8%) males and (50.2%) females of mean age 34.10 years (SD = 11.39).

Variable		Count	%
Gender	Male	209	49.8%
	Female	211	50.2%
Nationality	Saudi	314	74.8%
	Non-Saudi	106	25.2%
Marital Status	Single	194	46.2%
	Married	226	53.8%
Income	Less than 5,000 SR	102	24.3%
	5,000 - 15,000 SR	217	51.7%
	More than 15,000 SR	101	24.0%
Education	Less than college	160	38.1%
	College or higher	260	61.9%

Table 1: *Participant demographic data.*
SR: Saudi Riyal.

There were 77.4% of the participants heard about RCT before and 52.9% advised by a dentist before while 50.0% of participants never undergone for RCT. The results assessing patient knowledge and socioeconomic status with regard to treatment preference are detailed in table 2. These results show that participants who correctly answered the meaning of RCT, as well as participants with higher income levels, female participants, Saudis, married participants, and those with higher education levels preferred RCT over extraction. Among the participants, 80.70% preferred RCT, while 19.30% preferred extraction before they knew the information about the time and price for both options, however, 67.9% of participants preferred RCT even after they knew the information.

		RCT	Ext	p-value*
Definition of RCT	Correct	172	29	0.016
	Incorrect	167	52	
Gender	Male	160	49	0.032
	Female	179	32	
Nationality	Saudi	265	49	0.001
	Non-Saudi	74	32	
Marital Status	Single	146	48	0.009
	Married	193	33	
Income	Less than 5,000 SR	68	34	< 0.001
	5,000 - 15,000 SR	188	29	
	More than 15,000 SR	83	18	
Education	Less than college	114	46	< 0.001
	College or more	225	35	

Table 2: *The relationship between sociodemographic variables and patient preference.*

SR: Saudi Riyal.

Additionally, 47.9% knew the correct meaning of RCT, as shown in figure 1. McNamar's test revealed that there was significant change ($p < 0.001$) in participant choice between extraction and RCT after knowing the average cost and time required for each. Participants who knew the correct meaning of RCT, who did RCT before and who heard about it before preferred RCT as a treatment option compared to other participants who didn't know anything about RCT.

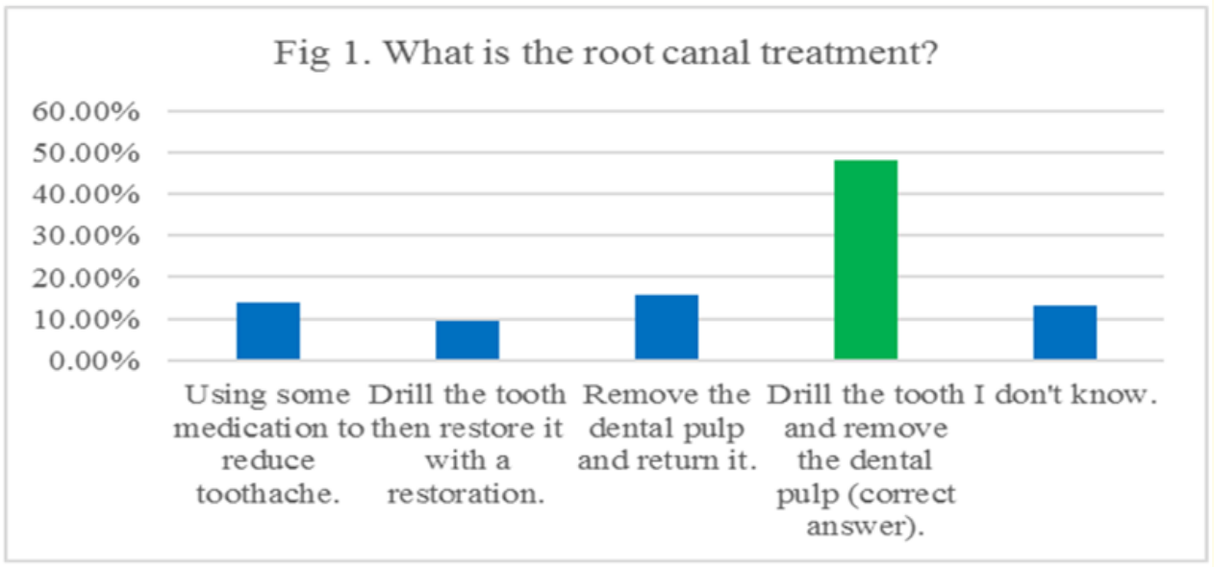

Figure 1: *What is the root canal treatment?*

In this study we figured that the SES and knowledge played important role which effect the patients choice either RCT or extraction. The findings were similar to previous study done by Singla N., *et al* [4].

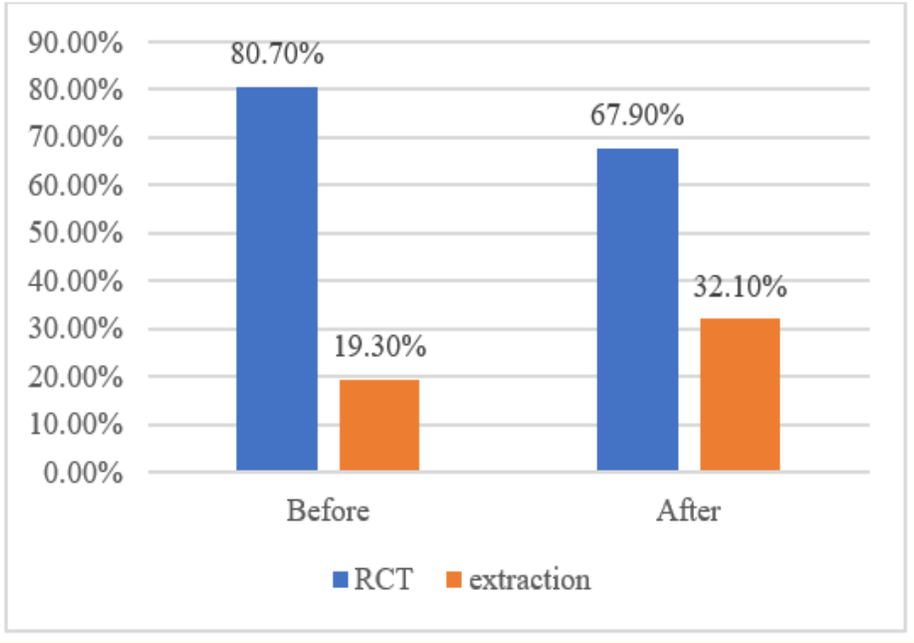

Figure 2: *Participant preferred treatment before and after knowing the average difference in cost and time for RCT vs. extraction.*

In reported similar study suggested that the knowledge, attitude and income level determined the participants' accessibility to dental services. The participants with low attitude level toward dental health were less likely to visit a dentist includes the participants with middle or high-income level [11].

In other studies which showed that the participants with low socioeconomic status (SES) found difficulty in access to dental services due to low income level so they can't pay to receive any dental services even the preventive treatments, these studies done by [3,12,13].

In this study participant with low-income level opted extraction rather than RCT due to the high cost compared to extraction. Previous studies showed similar results done by [8,14,15]. While, participants with high or middle-income level and high educational level were more likely to visit the dental clinic regularly and to choose RCT as a treatment choice instead of extraction. One of the goals of this study was to determine the effect of SES and knowledge toward patient's preference for RCT versus extraction.

Finally, we can find that the socioeconomic status and knowledge played important role in patient's preference toward RCT/EXT while patients with low income level and low educational level were less accessible to dental services compared to patients with high income level and high educational level.

Conclusion

Four-fifths of the participants preferred RCT, while only half of participants knew the correct description of RCT. Those participants who correctly answered the meaning of RCT, in addition to participants with higher income levels, female participants, Saudis, married participants, and those with higher education levels, preferred RCT over extraction. However, a significant number of participants changed their minds, favoring extraction over RCT, after knowing the cost and number of visits required for RCT. It is recommended to educate the public about RCT by making more educating campaigns about the value of natural teeth and the bad sequences that affiliate tooth extraction and increase the accessibility for patients who need endodontic treatment, especially for low socioeconomic levels.

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