



Original Article

Non-Clinical Factors Influencing Clinical Decision of Root Canal Treatment (RCT): A Survey of Patients Reasons for Avoiding RCT

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ABSTRACT

Root canal treatment (RCT) has high success rate, still many patients are apprehensive of this procedure. **Objective:** To determine the frequency of patients' avoiding RCT in endodontically treatable teeth and identify the reasons given by the patients to avoid RCT. **Methods:** This cross-sectional study was conducted at the department of operative dentistry at Margalla Institute of Health Sciences, Rawalpindi including patients who refused RCT in endodontically treatable teeth ($n=250$). Patient's demographics, tooth related variables and reason for not pursuing root canal treatment were recorded. Descriptive statistics and Chi-Square test were run to report sample characteristics with level of significance at ≤ 0.05 . **Results:** Two hundred and fifty (250, 21.09%) out of 1185 patients advised for RCT refused the procedure. Majority of the participants were female (169, 67.6%). The mean age of the patients was 32.66 years ($SD \pm 12.313$). The most common reason as reported by almost half of the patients (106, 43%) for avoiding RCT was "financial constraints" followed by a desire to take a "second opinion or advice" (46,18%). The majority of the male participants as compared to female participants refused RCT due to financial constraints with statistically significant association ($p<0.001$). A reasonable number of female patients also identified "want second opinion/advice" as a reason for avoiding RCT($p<0.001$). **Conclusions:** The frequency of patients avoiding RCT in endodontically treatable teeth was 21.09%. Financial constraints followed by seeking a second opinion or advice were the most common reasons identified by the patients avoiding RCT in endodontically treatable teeth.

INTRODUCTION

One of the objective of Root Canal Treatment (RCT) is to preserve the natural dentition when affected by pulpal or periapical pathosis through debridement of necrotic and vital pulp tissue followed by obturation of root canal with clinically acceptable material [1, 2]. RCT not only prevents severance of periodontal fibers that help in proprioception but also aid in the retention of tooth that might have extracted [3]. The reported success rate of RCT is around 86-98% according to observational studies [3, 4]. A recent meta-analysis also estimated RCT success rate to be 92.6% under 'loose criteria' and 82.0% under 'strict' criteria [5]. Despite these high figures many patients are apprehensive of the Root Canal Treatment. A study

conducted in Chettinai Dental College, India for five years concluded that "patient's disbelief that RCT will fail" was the major reason for avoidance of RCT [6]. Another questionnaire based survey on insight of patient's perception regarding root canal treatment showed that the "lack of awareness about RCT procedure" was the reason of avoidance of RCT and preference of extraction [3]. "Fear and anxiety" are also reported as major factors that result in avoidance of RCT and other dental treatments [7-10]. Although there are scarcity of the literature on this topic, still the existing studies recognized the fact that there is a need to create awareness among patients regarding RCT [9, 10]. In our clinical practice we have also observed a

number of patients avoiding root canal treatment in teeth with either pulpal or periapical pathosis despite the fact that teeth have good restorability and prognosis. The rationale of this study was to address patients' apprehension and negative perception regarding root canal treatment by identifying the factors that result in the avoidance of root canal treatment. The objective of this study was to determine the frequency of patients' avoiding root canal treatment in endodontically treatable teeth. The secondary objective was to identify the reasons given by patients to avoid root canal treatment.

METHODS

Ethical approval was taken from Institutional Ethical Review Committee (ERC Ref No: DB/173/22). This cross-sectional, observational study was conducted at the department of operative dentistry in a teaching institution at Margalla Institute of Health Sciences, Rawalpindi. Sample size was determined with the help of a study conducted by Bansal and Jain in which 16% of patients preferred extraction over RCT [3]. With known population proportion of 16%, confidence level of 95% and margin of error of 5%, population size or sample turned out to be minimum of 207. Non probability, convenience sampling technique was used. The inclusion criteria was patients 18 years or above in age, refusing to undergo RCT in teeth with adequate restorative and periodontal status, in which a clinical decision of root canal treatment was made, irrespective of the clinical diagnosis. However, the patients having cognitive impairment and open apex who refuse to undergo RCT treatment were excluded. Once identified the information was collected by one of the authors in a Performa containing closed ended questions regarding patient's demographics (age, gender, and education), tooth related variables (tooth number, pain intensity, pulpal diagnosis, periapical diagnosis) and reason for not pursuing root canal treatment. The researcher choose a reason as identified by the patient. SPSS version 16.0 was used for data analysis. Descriptive statistics (mean and standard deviation for age and frequencies with percentages for demographics variables, tooth related variable and patient's reasons for refusing RCT) were run to report sample characteristics. An association between demographic (and tooth related) variables and reasons for refusing RCT was made using Chi-Square Test (Fisher exact test where cell count was less than 5). Level of significance was kept at less than or equal to 0.05.

RESULTS

During 8 months of this research a total of 1185 patients were advised Root Canal Treatment by the dentists. Out of 1185, 250 refused to undergo RCT. The frequency of patients' refusing or avoiding RCT was 21.09%. Out of 250

patients, 81(32.4%) were male and 169(67.6%) were female. The mean age of the patients who refused RCT was 32.668 years ($SD \pm 12.313$). Majority of the patients 83(33.2%) were having moderate pain. Mandibular left quadrant (121, 48.4%) and molar teeth (162, 64.8%) were mostly involved. Acute irreversible pulpitis (116, 46.4%) and symptomatic apical periodontitis (121, 48.4%) were most common pulpal and periapical diagnosis. A detailed description of patients' demographics and tooth related variables is presented in Table 1.

Variable	n (%) Total = 250
Gender	
Male	169 (67.6)
Female	81 (32.4)
Age group (years)	
18-28	116 (46.4)
29-39	67 (26.8)
40-50	46 (18.4)
50 and above	21 (8.4)
Education	
Illiterate	44 (17.6)
Matric or intermediate	164 (65.6)
Graduate	41 (16.4)
Post-graduate	1 (0.4)
Tooth	
Molar	162 (64.8)
Premolar	42 (16.8)
Canine	7 (2.8)
Lateral Incisor	26 (10.4)
Central incisor	13 (5.2)
Quadrant	
Maxillary left	40 (16.0)
Mandibular right	47 (18.7)
Mandibular left	121 (48.4)
Pulpal diagnosis	
Reversible pulpitis	7 (2.8)
Acute Irreversible pulpitis	116 (46.4)
Chronic irreversible pulpitis	62 (24.8)
Necrosis	46 (18.4)
Primary endodontic secondary periodontal lesion	19 (7.6)
Periapical Diagnosis	
Normal apical tissue	59 (23.6)
Symptomatic apical periodontitis	121 (48.4)
Asymptomatic apical periodontitis	44 (17.6)
Acute apical abscess	01 (0.4)
Chronic apical abscess	02 (10.0)
Pain Intensity	
No pain (0)	37 (14.8)
Mild (1-3)	46 (18.4)
Moderate (4-6)	83 (33.2)
Severe (7-9)	79 (31.6)
Unbearable/worst (10)	5 (2.0)

Table 1: Demographic and tooth related variables of the

participants

Most common factor or reason as reported by almost half of the patients (106, 43%) for avoiding RCT was "financial constraints". The second most common reason identified in this research was a desire to take "second opinion or advice" before undergoing RCT which was chosen by 46 (18%) patients. Figure 1 shows the patients' reasons for avoiding RCT in a pie-chart.

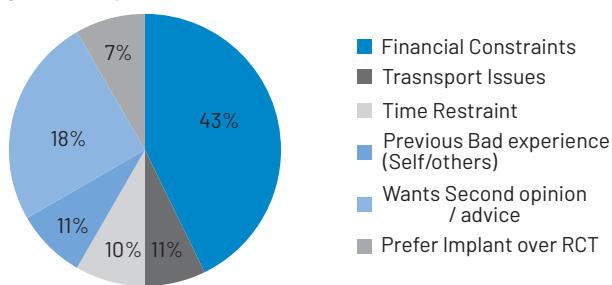


Figure 1: Non-Clinical Factors as reported by patients for avoiding Root Canal Treatment

Majority of the male participants (47, 58%) as compared to female participants (59, 34.91%) refused for RCT due to

financial constraints with statistically significant association ($p<0.001$). Reasonable number of female patients (44, 26.03%), however, also identified the reason "want second opinion/advice" before RCT. As compare to other age groups, almost half of the patients belonging to age groups 29-39 and 40-50 years {(32, 47.76%) and (21, 45.65) respectively} identified "financial constraint" as a reason for refusing RCT with statistically significant association. A statistically significant association was also seen between pain intensity and reason for avoiding RCT. Majority of the patient with moderate pain (51.8%) identified "financial constraints" as a reason for avoiding RCT. Majority of the patients (18, 48.64%) experiencing no pain preferred to get a second opinion/advice before RCT procedure ($p<0.001$). No statistically significant association was found between tooth number, quadrant, periapical diagnosis and reasons for refusing RCT. A detailed description of statistically significant association of variables and reasons for refusing RCT is provided in table 2.

Patients' Reasons For Avoiding Root Canal Treatment (RCT)							
Variable Category (Total Number)	Financial Constraints	Transport Issues	Time Restraints	Previous Experience	Want Second Opinion/Advice	Prefer Implant Over RCT	P-Value*
Gender							
Male (81)	47(58.0)	7(8.64)	8(9.87)	17(20.98)	2(2.46)	0(0)	<0.001
Female (169)	59(34.91)	21(12.42)	16(9.46)	11(6.50)	44(26.03)	18(10.65)	
Age group (years)							
18-28 (116)	45(38.79)	8(6.89)	07(6.03)	12(10.34)	31(26.72)	13(11.20)	<0.001
29-39 (67)	32(47.76)	12(17.91)	12(1.49)	10(14.92)	01(1.49)	0(0)	
40-50 (46)	21(45.65)	07(15.21)	02(4.34)	03(4.47)	08(17.39)	05(10.86)	
50 and above (21)	8(38.09)	01(4.76)	03(14.28)	07(33.33)	06(28.57)	0(0)	
Education							
Illiterate (44)	22(50)	09(20.45)	07(15.90)	10(22.72)	0(0)	0(0)	<0.001
Matric or intermediate (164)	76(46.34)	10(6.09)	16(9.75)	17(10.36)	34(20.73)	11(6.70)	
Graduate (41)	07(17.07)	09(21.95)	01(2.4)	05(12.19)	12(29.2)	07(17.07)	
Education							
No pain (37)	7(18.91)	8(21.62)	2(5.40)	2(5.40)	18(48.64)	0(0)	<0.001
Mild (46)	17(36.95)	10(21.73)	5(10.86)	7(15.21)	7(15.21)	0(0)	
Moderate (83)	43(51.80)	5(6.02)	10(12.04)	6(7.22)	8(9.63)	11(13.25)	
Severe/worst (84)	39(46.42)	5(5.95)	7(8.33)	13(15.47)	13(15.47)	7(8.33)	

Table 2: Association between demographic variable and pain intensity with patients' reasons for avoiding Root canal treatment(RCT)

* Chi square(Fisher exact) test

Statistical significance at $P \leq 0.05$

DISCUSSION

The present study was an attempt to get an insight of the patients' reasons for avoiding RCT. Although there is literature regarding patients' perception of RCT, but to our limited knowledge there is scarcity of the literature on the patients' reasons for avoiding RCT [5, 6, 10]. Most common reason as identified by the present study is "financial constraints". Financial status of the patient is an important

non-clinical factor that can effect decision to retain or extract the tooth regardless of the clinical condition of the tooth. Studies conducted around the globe also concluded that an important barrier to obtain dental care is cost of the treatment [11-13]. A survey conducted in United States from 2013-2016 reported that 15 % of the population in need of dental care didn't get or obtain it [13,14]. Top three

barriers identified in this survey were all related to financial reasons like "could not afford the cost," "insurance did not cover procedures," and "did not want to spend the money". Non-financial barriers like "afraid of dental treatment" and "busy routine" were less cited reasons. However, our result is in contrast to Sadasiva et al., study conducted in India where "cost" was the fourth most common reason for avoidance of the RCT and perception that RCT is a failure treatment was the most common reason for avoidance of RCT [6]. In our study previous bad experience of self or others was third most common reason for avoiding RCT. Extracting the tooth and replacing it with prosthesis whether fixed or removable was an expensive option with patients sometimes not aware of the cost of the replacement prosthesis. Proper counselling and explaining the importance of natural tooth. Sayed et al., studied that cost of the future treatment may help in scenarios where patient is preferring a replacement prosthesis instead of RCT of clinically salvageable teeth [15]. The second most common reason identified in this study was "wants second opinion/advice". Twenty six (26 %) percent female identified this factor as a reason for avoiding RCT whereas only 2% of male patients identified this reason. In developing countries socio-cultural structure and financial dependency limits women's decision making power regarding their own health and lives [16]. This may be a possible reason for female identifying "wants second opinion/advice" before agreeing for RCT. In National Health and Nutritional Examination Survey (NHANES) conducted in 2013-2014 and 2015-2016 a similar reason identified for not seeking dental care was "another dentist recommend not doing the procedure" [17]. This survey however recorded the information regarding not seeking dental care in general and not specific to RCT. Secondly no discrimination of the respondents reasons according to gender was made. Least cited yet thought-provoking reason identified in our study was "preference of implant over RCT". Although only 7% of the patients identified this reason but extraction and placement of implant instead of RCT in a tooth with adequate restorative and periodontal status is a great concern. Parirokh et al., many patients and dentists think that implant may offer better results and this trend is increasing among both dentists and patients [17, 18]. Till date, not a single non-biased evidence based study has shown that extraction and placement of implant is preferential over RCT [19, 20]. Although the present study probes the reasons of patients not seeking RCT in endodontically treatable teeth. Still data collection from a single center was a limitation of this study.

CONCLUSIONS

The frequency of patients' avoiding RCT in endodontically

treatable teeth was 21.09%. Financial constraints followed by seeking second opinion or advice were the most common reasons identified in this study by the patients avoiding RCT in endodontically treatable teeth.

Conflicts of Interest

The authors declare no conflict of interest

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