

# A Patient's Perception about Experience of a Root Canal Treatment: A Cross-Sectional Study

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## ABSTRACT

**Background and Aim:** Root canal treatment (RCT) is considered as a painful procedure but is rendered as the most popular modality for any dental setting. The major concern for dental patients is the anxiety and pain encountered during RCT. The present study aimed to assess the patient's perception regarding root canal treatment experience.

**Materials and Methods:** This questionnaire based analytical cross-sectional study was carried out on 156 patients who experienced root canal treatment in the Department of Dentistry of a Tertiary Care Hospital of Lahore, Pakistan from January 2022 to December 2022. Respondents were given the opportunity to evaluate their feelings about the endodontic treatment both prior to and following the procedure. Demographic details, pain, anxiety associated with questions, and concern about RCT were recorded on a pre-validated questionnaire. Pre and post-test scores were compared using paired t-tests.

**Results:** Out of the total 156 patients, there were 92 (59%) male and 64 (41%) female study participants. The overall mean age of male and female subjects was  $22.48 \pm 12.68$  and  $27.52 \pm 8.32$  years respectively. The current study analyzed the patient's anxiety level, which was shown to be considerably lowering from pre-treatment values of  $30.54 \pm 14.86$  to post-treatment values of  $22.32 \pm 12.84$  respectively. Similarly, the mean predicted and experienced pain score decreased dramatically from that of pre-treatment value of  $40.12 \pm 22.42$  to  $20.88 \pm 14.46$  post-treatment value.

**Conclusion:** The present study found a substantial decrease in the mean anxiety score for RCT post-treatment. Furthermore, with the treatment, there was a considerable difference between predicted and realized pain. Prior to treatment, a considerable proportion of patients were unconcerned about RCT, rather the majority of patients were anxious about the pain associated with it (RCT).

**Keywords:** Root canal treatment, Patient's perception, Anxiety, Pain, Endodontics.

## INTRODUCTION

Root canal treatment (RCT) causes anxiety among patients<sup>1</sup>. Endodontic therapy is crucial in the sense as it has got a significant link with the preoperative, surgical and postoperative pain. Pain management is critical in the field of endodontics. To reduce postoperative pain, several experts have advised to get completed the root canal treatment in a single visit, especially in situations where preoperative pain is prevalent and high<sup>2</sup>. Effective pain management during RCT minimizes the stigma on the part of the patients who might believe that the doctor is the cause behind their agony. Despite breakthroughs in contemporary endodontic treatments and local analgesics, patients may still endure intra-operative pain<sup>3</sup>. Post endodontic pain usually appears within the first two days after the treatment and goes away within a few hours. However, in certain circumstances, it might linger on for several days. According to a recent systematic analysis, 40% of the patients suffered discomfort during the first 24 hours post root canal therapy, and this dropped to 11% after 7 days. A good clinician must address pain management both before and after the root canal procedure<sup>4</sup>.

The post endodontic soreness can be caused by a variety of factors. The most serious appears to be related to the instrumentation method, which might result in an immediate peri-apical inflammatory response due to the microbiological injury to the peri-radicular tissues<sup>5</sup>. During chemo-mechanical preparation, extrusion of dentinal debris, pulp tissue, bacteria, and irrigant into the peri-apical tissues may also induce inflammation. The degree of tissue injury appears to be related to the level of pain<sup>6</sup>. Several studies have indicated that having a high level of dental anxiety affects the amount of the overall dental pain felt<sup>7</sup>. Furthermore, it has been hypothesized that the existence of pre-operative discomfort raises the patient anxiety, which has then got its associated consequences for perceived pain<sup>8</sup>. Prosthetic equipments like implants are an expensive endeavor used for the functional and aesthetic rehabilitation of tooth replacement and is not afforded by majority of the patients. As a result, the preservation of natural teeth is pivotal and has got clinical outcomes which promote the RCT to be considered as the best possible alternative<sup>9</sup>. Despite the fact that RCT is widely used,

many patients regard it as a fearsome operation. In general, anxiety and fear are significant disincentives as reported in various studies which were found to be associated with this particular procedure<sup>10, 11</sup>. Patient's limited or no knowledge regarding RCT is associated with anxiety as well. A study of the literature reveals a scarcity of data on RCT awareness among patients in the Pakistani community<sup>12</sup>. As a result; this survey was carried out to assess the patient's perception regarding root canal treatment's experience.

## METHODOLOGY

This questionnaire based study was conducted on 156 patients who experienced root canal treatment in the Dental Department of a Tertiary Care Hospital of Lahore, Pakistan from January 2022 to December 2022. Respondents were given the opportunity to evaluate their feelings about endodontic treatment both prior and following the procedure. Demographic details, pain, anxiety associated with questions, and concern about RCT were recorded on a pre-validated questionnaire. Pre and post-test scores were compared using paired t-tests. Individuals > 18 years of age and those who provided consent to participate were enrolled in the study. Participants with edema, any ongoing systemic disease, TMJ problems, any mental disorder and severe pulpitis were excluded. Participants were asked to complete two surveys without assistance, pre and post RCT operation. Visual Analog Scales (VAS) grades as 0-100% were used for measuring the pain during RCT. All the patients were asked about their experience of worse or better pain they felt during RCT treatment and to compare with what each patient expected. In cases where pain was associated with treatment of tooth retention, similar questions regarding the post-treatment survey were asked. The data was added and analyzed using the IBM SPSS Statistics 27.0 version. Independent and paired t-tests were used for the comparison of pre and post-test scores.

## RESULTS

Out of the total 156 patients, there were 92 (59%) male and 64 (41%) females. The overall mean age of male and female study participants was  $22.48 \pm 12.68$  and  $27.52 \pm 8.32$  years

respectively. The patient's anxiety level was shown to be considerably lowering from the pre-treatment  $30.54 \pm 14.86$  to post-treatment  $22.32 \pm 12.84$ . Similarly, the mean predicted and experienced pain score decreased dramatically from  $40.12 \pm 22.42$  to  $20.88 \pm 14.46$  post-treatment. Patient's demographic data is shown in Table-I. All the patients underwent pre and post RCT test questionnaire based surveys in order to learn about the patients' attitudes regarding RCT. It was revealed that the patients who had a RCT prior history and were now in pain projected discomfort before the treatment, and it was proven to be mildly uncomfortable. Patients with prior RCT experience, on the other hand, placed a significantly higher value on tooth maintenance in the mouth by treating rather than extracting. Following the RCT, any variation in the patient's attitude toward RCT was assessed through a number of questions. Most patients revealed that their RCT experience

was better than their previous experience. Additionally, the majority of patients preferred tooth preservation rather than extraction. Table-II represents the pre- and post-treatment score of the participants. Gender comparison of mean anxiety, predicted pain, and experienced pain is shown in Table-III.

Table 1: Demographic details of the study participants

Parameters	Male (n=92)	Female (n=64)
Age (mean $\pm$ SD) (years)	22.48 $\pm$ 12.68	27.52 $\pm$ 8.32
Education (n) (%)		
Primary	15 (16.3)	11 (17.2)
Secondary	18 (19.6)	14 (21.9)
Graduate	39 (42.4)	23 (35.9)
Post-graduate	20 (21.7)	16 (25)

Table 2: Pre and Post - treatment scores of the study participants (n=156)

Parameters	Pre-test score	Post-test score	p-value
Concern related to RCT			0.001
No concern	21 (13.5)	80 (51.3)	
Pain during treatment	59 (37.8)	28 (17.9)	
Duration of treatment	42 (26.9)	40 (25.6)	
Cost	22 (14.1)	8 (5.1)	
Follow-up	10 (6.4)	0 (0)	
Unexpected outcomes	2 (1.3)	0 (0)	
Mean anxiety score	30.54 $\pm$ 14.86	22.32 $\pm$ 12.84	0.022
Mean anticipation and pain experience	40.12 $\pm$ 22.42	20.88 $\pm$ 14.46	0.001
Prior history of RCT			
Yes	68 (43.6)	-	-
No	74 (47.4)	-	-
I don't know	14 (9)	-	-
Status of current pain (Mean)	23.64 $\pm$ 16.54	-	-
Tooth importance (Mean)	74.28 $\pm$ 26.14	-	-
Treatment duration (Mean)	54.82 $\pm$ 31.42	-	-
Expectation about treatment (Mean)	-	74.88 $\pm$ 22.64	-
Happiness about RCT	-	82.12 $\pm$ 26.64	-
Future preference about RCT (n) (%)			
Yes	-	134 (85.9)	-
No	-	22 (14.1)	-
RCT satisfaction (n) (%)			
Yes	-	146 (93.6)	-
No	-	10 (6.4)	-

Table 3: Gender comparison of mean anxiety, predicted pain and experienced pain

Parameters	Gender (n)	Value (mean $\pm$ SD)	p-value (t-value)
Pre-treatment			
Mean anxiety	Male (92)	30.18 $\pm$ 18.22	0.932 (-0.089)
	Female (64)	30.94 $\pm$ 16.58	
Mean anticipated pain	Male (92)	36.38 $\pm$ 18.68	0.427 (-0.902)
	Female (64)	42.62 $\pm$ 20.86	
Post-treatment			
Mean anxiety	Male (92)	19.12 $\pm$ 10.43	0.129 (-1.48)
	Female (64)	25.94 $\pm$ 26.64	
Mean anticipated pain	Male (92)	22.42 $\pm$ 12.62	0.992 (0.015)
	Female (64)	22.52 $\pm$ 14.52	

## DISCUSSION

The current survey mainly focused on the patient's perception regarding the root canal treatment's experience and found that a significant decrease in the mean anxiety level for RCT post-treatment. Furthermore, with the therapy, there was a considerable difference between predicted and realized pain. Prior to treatment, a considerable proportion of patients were unconcerned about RCT itself rather the majority of patients were anxious about the discomfort associated with RCT. This survey was conducted on 156 patients who underwent RCT and were fulfilling the inclusion criteria.

RCT is the most common yet a difficult operation performed in a dental setting. It not only protects the tooth, but it also significantly improves the quality of life of the patient. The decision for treating a patient for RCT relies on multiple factors such as socioeconomic position, community values and its associated practices<sup>13</sup>. Furthermore, pain and discomfort caused by RCT are nowadays less tolerated by dental patients. Therefore, for a

successful RCT treatment, these factors must be reduced<sup>14</sup>. The experience felt and decision for going through RCT is mainly influenced by anxiety of unknown factors, dental anxiety being in particular. Various studies<sup>15, 16</sup> reported that pain recalling and same experience expectations were the main factors limiting the health services' utilization in this particular domain.

Another study revealed that anxiety is caused by negative expectations for actual pain exacerbation as directed on pain stimuli<sup>17</sup>. Chugh et al<sup>18</sup> advised reduction of pre-treatment anxiety as a best alternative. MatDaud et al<sup>19</sup> reported that in males, their social expectations are such that prompts them to have a tendency of concealing anxiety as compared to females. According to Bansal et al., no association between pain perception, mean anxiety, and gender were reported. The findings suggested that women had greater levels of expected pain than men; although both had similar levels RCT associated anxiety or realistic pain<sup>20</sup>.

Doumani et al.<sup>21</sup> concurred that genuine discomfort was substantially lower during the treatment than predicted in utmost

circumstances. Additionally, another study reported that the majority of patients prefer RCT in future over tooth extraction due to the quick post-operative pain relief<sup>23</sup>. According to numerous previous researches, the majority of participants recommended RCT to others around such as friends and relatives<sup>24, 25</sup>.

The incidence of dental anxiety varies depending on a variety of prospective patient variables, including gender, age, education, and socioeconomic level<sup>25</sup>. In order to maximise clinical experience, dental practitioners should be well-qualified to recognise these apprehensive patients and soothe their biggest anxieties regarding RCT<sup>26</sup>. The patient's past experience regarding the RCT must be specifically tailored to incorporate his' or hers' attitude towards RCT<sup>27</sup>. Moreover, previous research has emphasized on the need of preserving natural teeth<sup>28</sup>.

## CONCLUSION

A significant decrease in the mean anxiety levels for RCT post-treatment was recorded. Furthermore, with the therapy, there was a considerable difference between predicted and realized pain. Prior to treatment, a considerable proportion of patients were unconcerned about RCT itself rather the majority of the patients were anxious just about the discomfort associated with it.

## REFERENCES

1. Aleid AA. Patients' perceptions and experiences about the root canal treatment: An exploratory study among Saudi population. *Asian J Oral Health Allied Sci* 2021;11:5.
2. Chandraweera L, Goh K, Lai-Tong J, Newby J, Abbott P. A survey of patients' perceptions about, and their experiences of, root canal treatment. *Aust Endod J* 2018;45:225-32.
3. Wali A, Siddiqui TM, Gul A, Khan A. Analysis of level of anxiety and fear before and after endodontic treatment. *J Dent Oral Health* 2016;2:36.
4. Al-Khalifa KS. Prevalence of dental anxiety in two major cities in the kingdom of Saudi Arabia. *Saudi J Med Med Sci* 2015;3:135-40.
5. Alshammari Y, Almuthhin M, Alarajah A, Barri GM, Alshammari H, Alshahrani S. Patients satisfaction after endodontic treatment in Saudi Arabia. *Egypt J Hosp Med* 2018;70:791-5.
6. Alhashimi R. A comparison of fear levels of endodontic treatment in Iraqi population. *Int J Med Res Health Sci* 2018;7:127-30.
7. Hamedy R, Shakiba B, Fayazi S, Pak JG, White SN. Patient-centered endodontic outcomes: A narrative review. *Iran Endod J* 2013;8:197-204.
8. Jothish R, Alam MK, Alam F. Impact of educational background on knowledge, attitude, and practice of root canal treatment among male university and high school students of Sakaka province. *Saudi Endod J* 2019;9:101-8.
9. Machale PS, U Shenoy V, Phodse K. Assessment of dental anxiety levels in patients undergoing endodontic treatment. *J Contemp Dent* 2017;7:91-6.
10. Phodse K, Shenoy VU, Machale PS. Assessment of dental anxiety levels in patients undergoing endodontic treatment. *J Contemp Dent* 2017;7(2):91-96. DOI: 10.5005/jp-journals-10031-1192.
11. Bansal R, Jain A. An insight into patient's perceptions regarding root canal treatment: A questionnaire-based survey. *J Family Med Prim Care* 2020;9:1020-7.
12. Nair R, Gupta P, Tavane PN, Pawar P. Dental patient's knowledge, awareness and attitude towards root canal treatment: A survey based research. *Int J Recent Sci Res* 2018;9:23214-8.
13. Sivakumar APN, David Raj J. Awareness of factors affecting endodontic treatment failures among dental students. *Drug Invent Today* 2019;11:453-7.
14. Aldawsari M, Alamri HM. Public knowledge and perception regarding endodontic treatment in a Saudi population. *J Int Oral Health* 2017;9:255-7.
15. Ahamed ZH, Alwakeel A, Alrshedan A, Altimsah F. Knowledge and awareness of root canal therapy for population in Saudi Arabia: A questionnaire-based study. *Int J Med Sci Clin Invent* 2018;5:3560-4.
16. Melgaço-Costa JL, Martins RC, Ferreira EF, Sobrinho AP. Patients' perceptions of endodontic treatment as part of public health services: A qualitative study. *Int J Environ Res Public Health* 2016;13:450.
17. Peters OA, Seeberger GK. White Paper on Endodontic Care. Available from: [https://www.fdiworlddental.org/sites/default/files/media/resources/eigp-2019-white\\_paper-enpdf](https://www.fdiworlddental.org/sites/default/files/media/resources/eigp-2019-white_paper-enpdf).
18. Chugh A, Rastogi R, Choudhary A, Singh S, Chugh VK, Patnana AK. Knowledge, awareness and attitude of oral health and root canal treatment among medical professionals. *J Global Oral Health* 2019;2:41-7.
19. MatDaud MS, Ruslan S, Isa SS, Abllah Z. Awareness on root canal treatment among patients attending dental clinic in Kuantan, Pahang. *Mater Today* 2019;16:2268-72.
20. Bansal M, Gupta N, Saini GK, Sharma N. Satisfaction level among patients visiting a rural dental institution toward rendered dental treatment in Haryana, North India. *J Educ Health Promot* [serial online] 2018. Available from: <http://www.jehp.net/text.asp?2018/7/1/81/233695>.
21. Doumani M, Habib A, Mohammed N, Abdulrab S, Bashnakli A, Arrojee R. Patients' awareness and knowledge of the root canal treatment in Saudi population: Survey-based research. *Int J Dent Res* 2017;5:89-92.
22. Sadasiva K, Rayar S, Senthilkumar K, Unnikrishnan M, Jayasimharaj U. Analyzing the reasons for patients opting-out from root canal treatment and preferring extraction in South Indian population-Prospective study. *Int J Prosthodont Restor Dent* 2018;8:108-13.
23. Janakiram C, Antony B, Joseph J, Ramanarayanan V. Prevalence of dental caries in India among the WHO index age groups: A meta-analysis. *J Clin Diagn Res* 2018;12:ZE08-13.
24. Eswaran R, Anbanandan V. Dental patient's knowledge, awareness and attitude towards root canal treatment: A survey based research. *Int J Recent Sci Res* 2018;9:23214-8.
25. Elnahas K.A, Nabil N, Yacoub S. Post-operative pain after single visit root canal treatment in necrotic teeth using two different rotary systems Pro-Taper Next and Neolix: A randomized clinical trial. *Acta Sci Dent Sci* 2019;3:110-15.
26. Al-Manei KK. Radiographic quality of single vs. multiple-visit root canal treatment performed by dental students: A case control study. *Iran Endod J* 2018;13:149-54.
27. Allen C, Meyer CA, Yoo E, Vargas JA, Liu Y, Jalali P. Stress distribution in a tooth treated through minimally invasive access compared to one treated through traditional access: A finite element analysis study. *J Conserv Dent* 2018;21:505-9.
28. Sakamoto E, Yokoyama T. Pain and anxiety in dentistry and oral and maxillofacial surgery focusing on the relation between pain and anxiety. *Ann Pain Med* 2018;1:1002.