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Patient perception who had undergone root canal treatment

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Abstract--Introduction: Root canal treatment (RCT) is generally known as a painful procedure. One of the most significant disadvantages of root canal therapy is that most patients are unaware of it. To effectively address the problem, it is important to understand and recognise the factors that prevent or deter patients from undergoing RCT. According to a review of the literature, there is a scarcity of data on RCT knowledge and acceptance among patients in the Indian population. Aim: The aim of this present study is to assess the patients perception who had undergone root canal treatment. Materials and Methods: 100 participants were involved in the study. A well structured questionnaire containing 15 questions was administered to the participants through an online survey link. The responses were analysed through descriptive statistics using SPSS software. The results are represented through pie charts and association graphs. Results and Discussion: The patients association is not significant. This shows that if patients are not properly educated regarding RCT, they get motivated to undertake the treatment. Patients' confidence can be increased by informing them about potential post endodontic pain and administering drugs to handle it. This can also raise their pain tolerance and boost their

attitude toward possible dental care. Patients may be more likely to seek and approve RCT as a result of increased awareness and information about the procedure. Conclusion: It is concluded that, patient expectations of RCT and assisted in recognizing concerns and misconceptions about the treatment protocol. Patients' knowledge and understanding of the RCT are lacking, according to our findings.

Keywords---Root canal treatment, Perception, Pain, Tooth.

Introduction

During recent decades, there has been a growing interest in quantifying the consequences of disease by measuring its impact on patients' daily living and quality of life. Oral disorders may significantly impact patients' general health. Health - related outcomes are also important, such as the impact of the treatment on daily life and patient satisfaction. The literature regarding such patient-centered outcomes after root canal treatment is quite sparse. Endodontic procedure, also known as endodontic therapy or root canal treatment (RCT), entails the removal of diseased pulpal tissue in order to avoid and intercept pulpal/periradicular pathosis (1) and to protect the disinfected tooth from further microorganism entrenchment. RCT not only prevents the severance of periodontal fibers that aid in proprioception for occlusal feedback (2), and efficient chewing but also aids in the retention of infected teeth that otherwise might have been extracted. Although, RCT is highly prevalent but still is perceived by many patients as a procedure to be feared. Patients' lack of knowledge about root canal procedures can be blamed for these concerns. The essence of endodontic care and what it means are frequently misunderstood by patients. Prosthetic appliances, including implants, are used to replace teeth when they are required for esthetic and functional recovery, making it an expensive procedure. As a consequence, if RCT is recommended, it should be considered because it not only favors the protection of natural teeth but also has excellent clinical outcomes.

Root canal treatment (RCT), secondly to oral surgery, is one of the dental procedures that causes the most fear and discomfort in patients. Efficient pain control during RCT removes the stigma that patients feel the clinician is causing or exacerbating their pain. Despite advancements in modern endodontic practice and local analgesia, patients can sometimes experience discomfort during the procedure (3). Additionally, the presence of pre-operative pain has been suggested to increase patient anxiety with subsequent effects on experienced pain. Anticipated pain has also been shown to be consistently greater than the pain endured during the procedure (4). If RCT is recommended, a simple filling or antibiotics would not be enough to treat the tooth infection. Furthermore, if treatment is postponed, the tooth can experience significant decay and become too weakened to be saved; in this situation, extraction is possibly the only option, which can result in a cascade of events including tooth moving, collapsed occlusion affecting mastication, and damage esthetics. According to studies, apprehension and anxiety are significant deterrents to pursuing RCT in general. Patients' lack of knowledge about root canal procedures is to blame for these concerns (5). Patients frequently have misconceptions about endodontic care and

what it entails. Previous research has highlighted the need for more information on the subject (6). The controversy between single-visit and multiple-visit root canal care has raged in the endodontic community for years (7). In reality, attempts to complete root canal care in a single visit have been recorded since the early twentieth century.

Possible discrepancies in health outcomes, microbiological problems, and discomfort are among the unresolved issues. With the help of an evidence-based approach, this debate can be explored more thoroughly. The adoption of new treatments, techniques or concepts depends not only on their effectiveness or biological rationale but also on operator preference for and satisfaction in performing such procedures. From a public health care point of view, the issue of treatment efficiency and cost is also important because resources in the society are limited. Treatment success and complications are only two of the significant factors in the treatment decision-making process; social, psychological, and even economic factors are also likely to play a part. To effectively resolve the problem, it is important to identify the factors that cause patients anxiety, preventing them from participating in RCT. A crucial move is to complete these population-based surveys. Our team has extensive knowledge and research experience that has translate into high quality publications (8–17), (18–21), (22–26), (27). Hence, the aim of this present study is to assess the patients perception who had undergone root canal treatment.

Materials and Methods

A total of 100 people who have undergone root canal treatment were selected for the study. Both male and female participants were included. Participants under all age groups were involved. The selection of the participants was biased. The participants were from a homogeneous population. To reduce the sampling bias, internal and external validity was checked. Consent for participation was obtained from the participants. Data to assess the patient's perception was collected by means of 20 self structured close-ended questionnaires. The questionnaire was approved by the scientific review board of saveetha dental college and hospitals, chennai. A questionnaire was distributed randomly online. Questionnaire included details such as demographic datas such as name, age, qualification, etc... The questionnaire was formulated on basic knowledge on root canal treatment. Questions about their perception were also asked from the participants. The sampling method used was random sampling. The independent variables include age, time and lifestyle modification. The dependent variables include awareness, knowledge, perception and attitude. The inclusion criteria involves the willingness of the participants and the exclusion criteria involves the uncooperative patients. The collected data were analyzed using SPSS software version 23. The frequencies and the significance were assessed using descriptive statistics and Chi square test. The results obtained are represented through pie charts and association bar graphs.

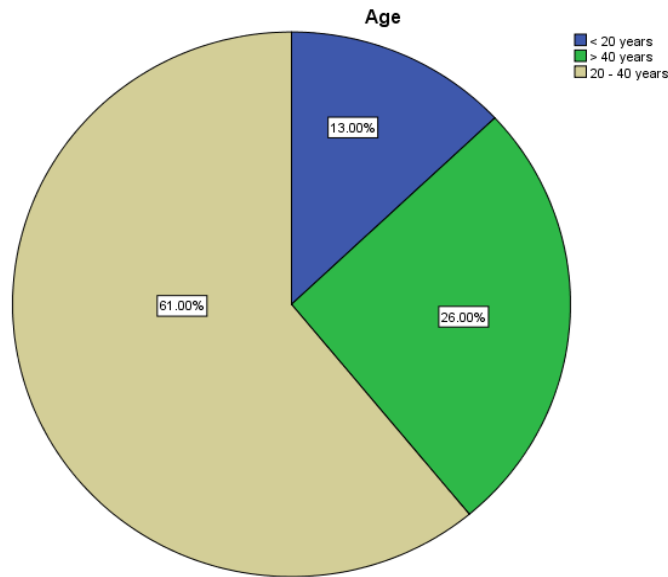
Results

Figure 1: The pie chart represents the age of the participants. 13% of the participant's age were below 20 years (blue), 26% of the participant's age were above 40 years (green) and 61% of the participant's age were between 20 - 40 years (beige).

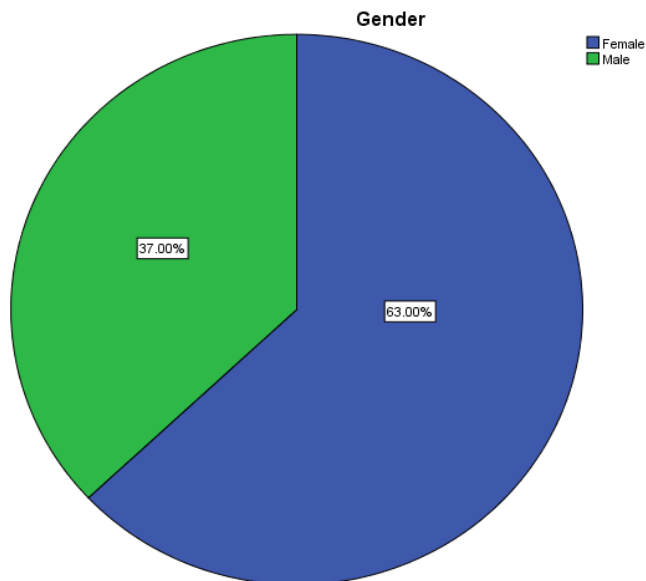


Figure 2: The pie chart represents the gender of the participants. 63% of the participants were females (blue) and 37% of the participants were males (green).

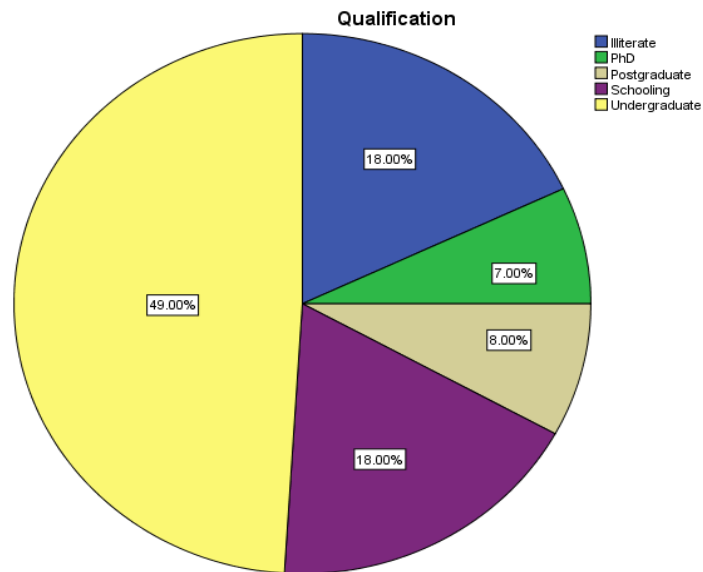


Figure 3: The pie chart represents the qualification of the participants. 49% of the participants were undergraduates (yellow), 18% of the participants were illiterate (blue) and 18% of the participants were under schooling (purple), 8% of the participants were postgraduates (beige) and 7% of the participants were PhD students (green).

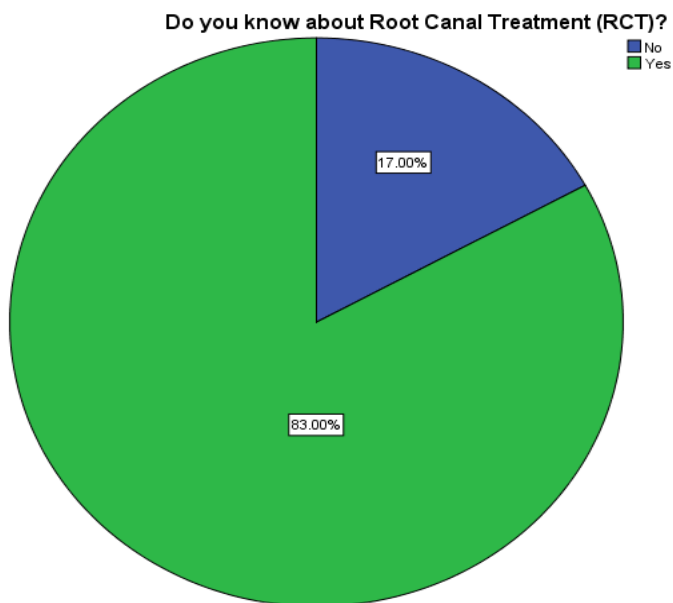


Figure 4: The pie chart represents the participant's knowledge on RCT. 83% of the participants know about RCT (green) and 17% of the participants do not know about RCT (blue).

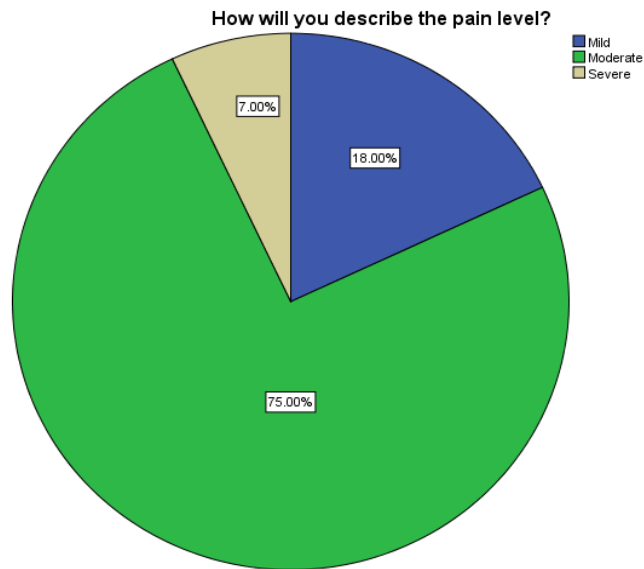


Figure 5: The pie chart describes the pain level of RCT felt by the patients. 75% of the participants described the pain level of RCT as moderate (green), 18% participants described as mild (blue) and 7% participants described as severe (beige).

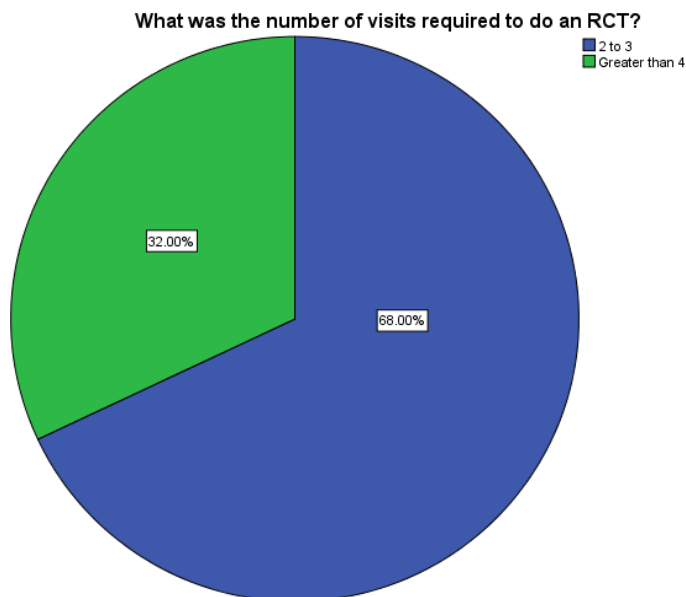


Figure 6: The pie chart represents the number of visits required to do an RCT. 68% of participants have done their RCT within 2 to 3 visits (blue) and 32% of the participants took greater than 4 visits (green).

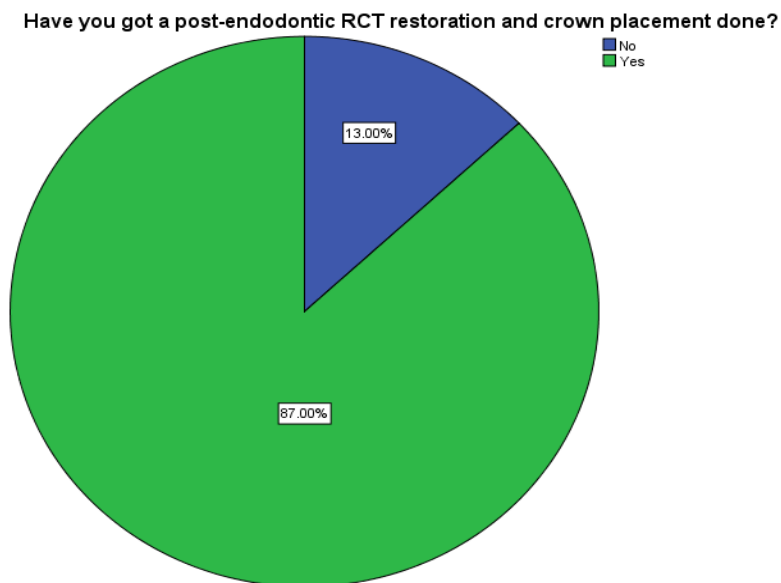


Figure 7: The pie chart represents the RCT restoration and crown replacement. 87% of the participants got their post endodontic RCT restoration and crown replacement done (green) and 13% of the participants have not got their post endodontic RCT restoration and crown replacement done (blue).

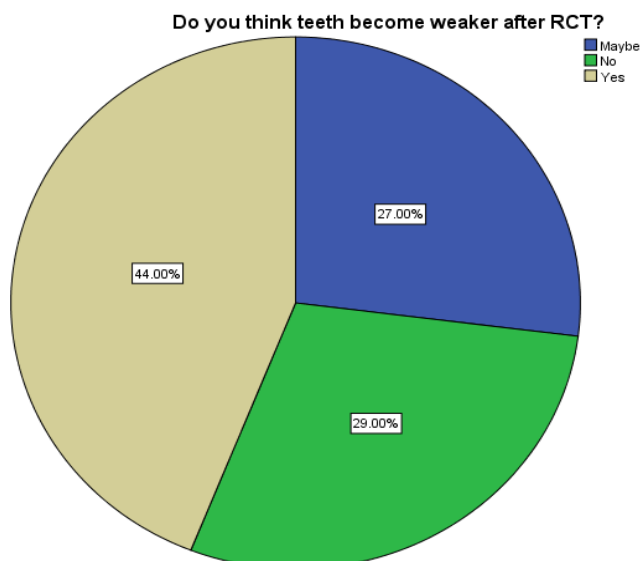


Figure 8: The pie chart represents the participants feeling about the weakness of the tooth. 44% of the participants think that teeth become weak after RCT (beige),

29% of the participants say that teeth will not get weaker (green) and 27% of the participants are in confused state (blue).

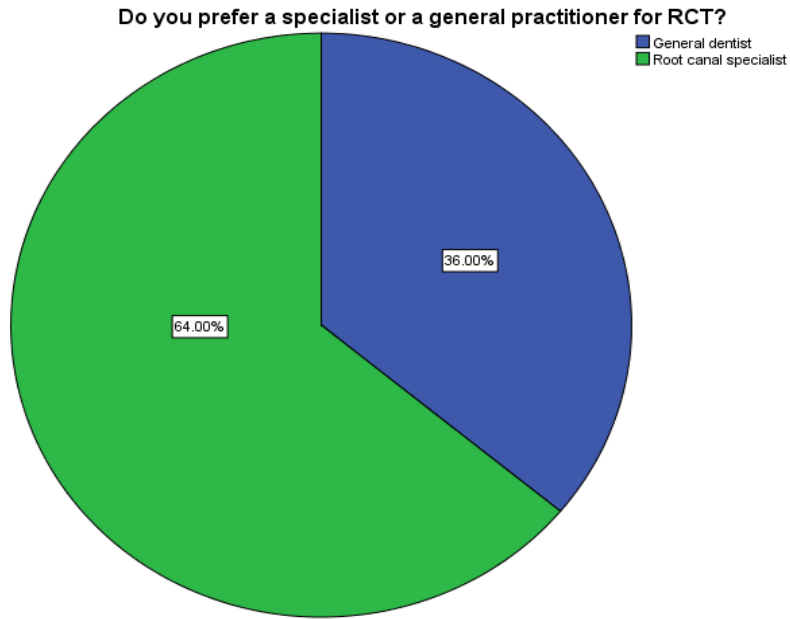


Figure 9: The pie chart represents the preference of the patients on choosing a doctor. 64% of the participants prefer a root canal specialist for their RCT (green) and 36% of the participants prefer a general practitioner (blue).

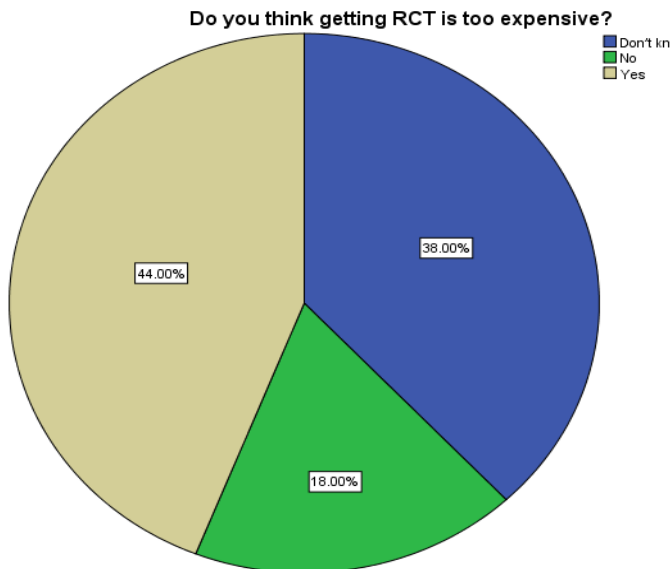


Figure 10: The pie chart represents the participants thought on cost of RCT. 44% of the participants think that getting RCT is too expensive (beige), 38% of the

participants don't know about the cost of RCT (blue) and 18% of the participants think that RCT is not too expensive (green).

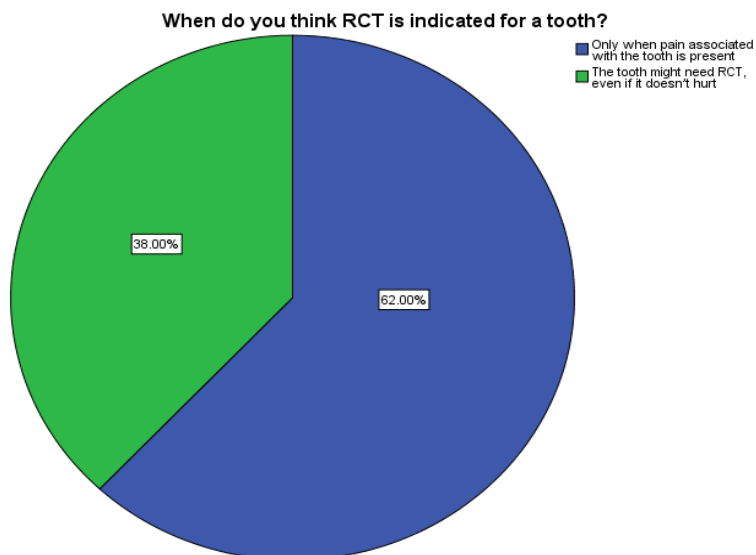


Figure 11: The pie chart represents the participants opinion on indication of RCT. 62% of the participants think that RCT is indicated only when pain is associated with the tooth (blue) and 38% of the participants think that RCT is indicated for a tooth even if it doesn't hurt (green).

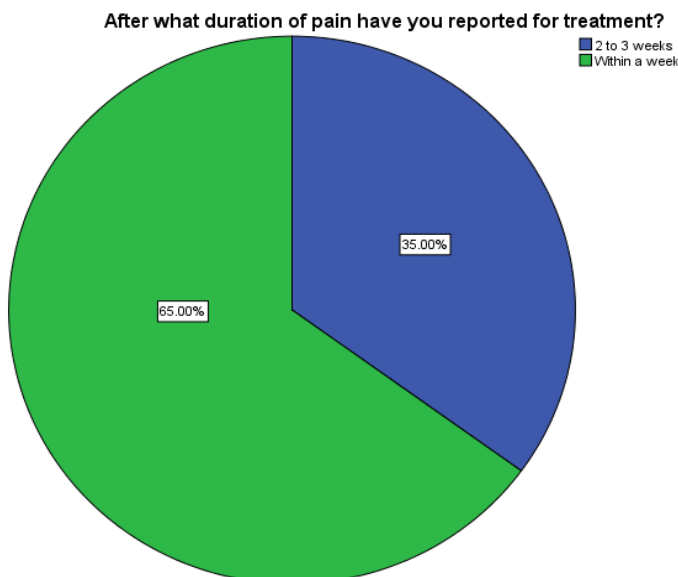


Figure 12: The pie chart represents the participants opinion on reporting to doctor at particular duration of pain. 35% of the participants reported for

treatment within 2 to 3 weeks of pain (blue) and 65% of the participants reported within a week for the treatment (green).

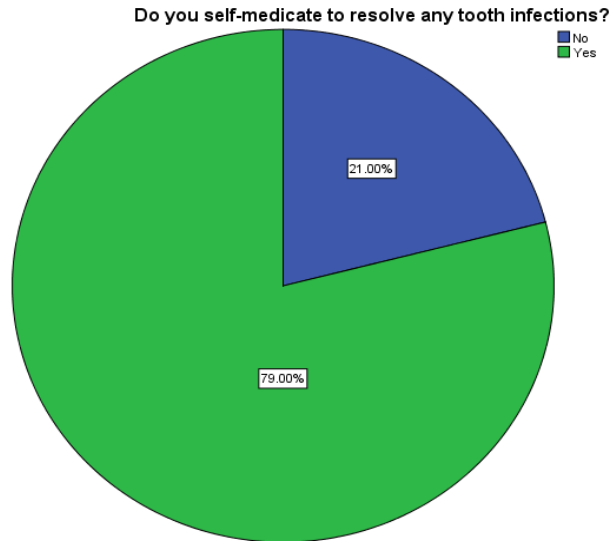


Figure 13: The pie chart represents the self medication. 79% of the participants self medicate to resolve any tooth infections (green) and 21% of the participants do not self medicate to resolve any tooth infections (blue).

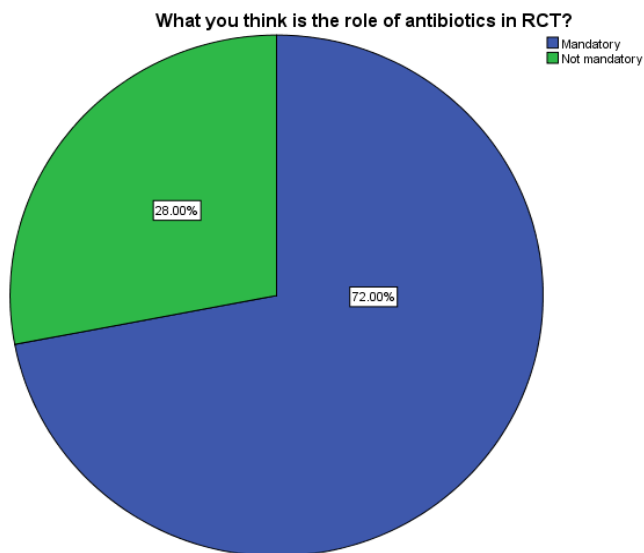


Figure 14: The pie chart represents the participants' opinion on the role of antibiotics. 72% of the participants think that role of antibiotics is mandatory in RCT (blue) and 28% of the participants think that role of antibiotics is not mandatory (green).

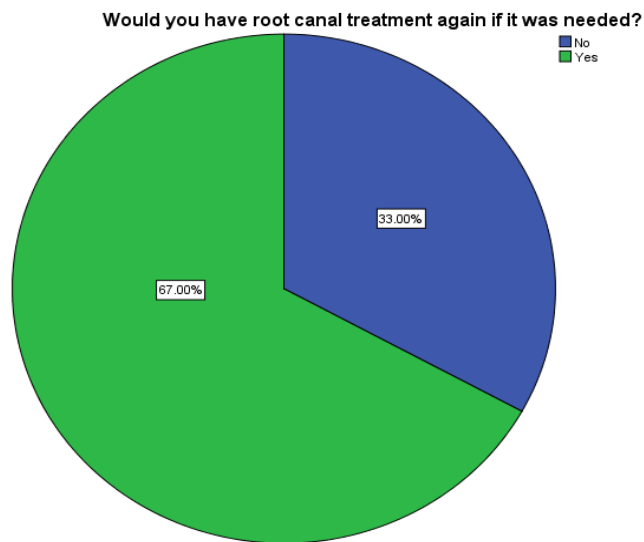


Figure 15: The pie chart represents the preference of the participants to have a root canal treatment again. 67% of the participants prefer to have an RCT again if needed (green) and 33% of the participants do not prefer to have an RCT again (blue).

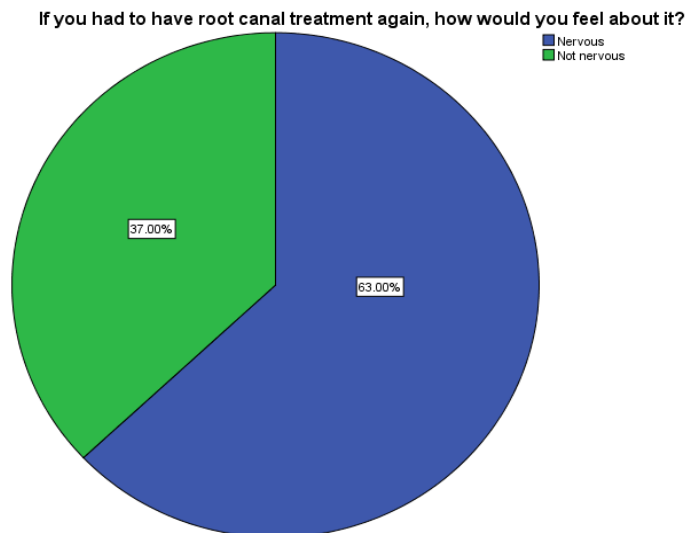


Figure 16: The pie chart represents the nervousness felt by the participants to have an RCT. 63% of the participants feel nervous to have an RCT again (blue) and 37% of the participants do not feel nervous to have an RCT again if needed (green).

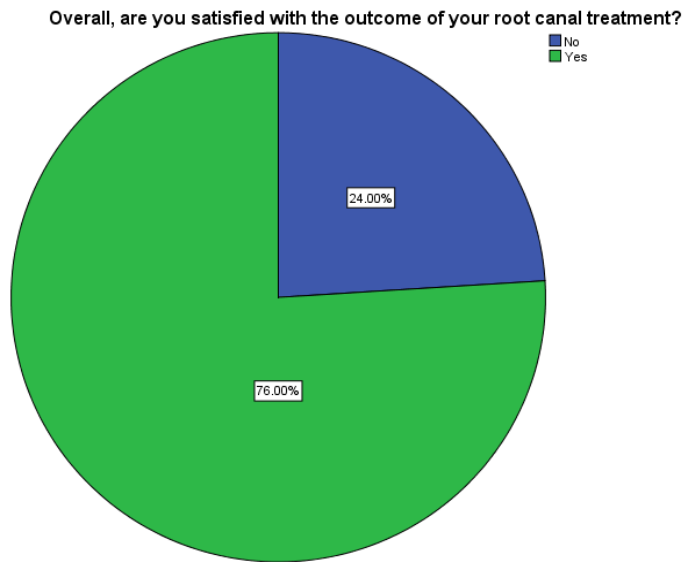


Figure 17: The pie chart represents the overall satisfaction of the participants on the outcome of their RCT. 76% of the participants are satisfied with the outcome of their RCT (green) and 24% of the participants are not satisfied with the outcome of their RCT (blue).

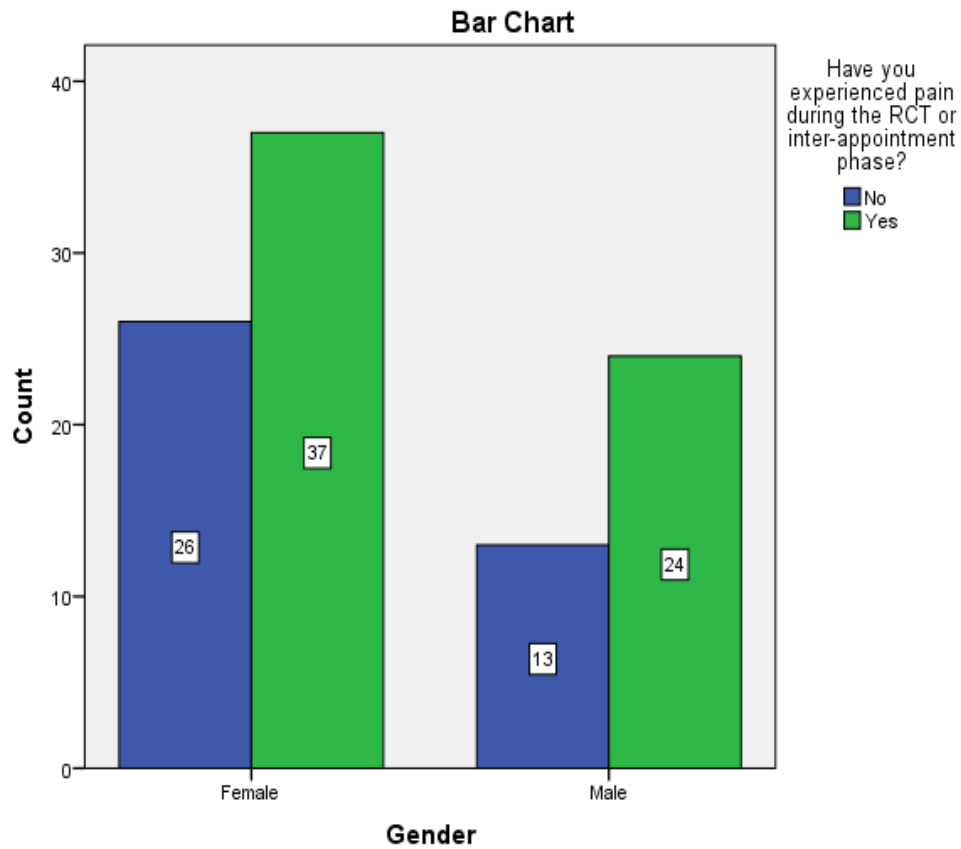


Figure 18: Bar graph shows association between gender and the pain experienced by the participants during RCT. X axis represents gender and Y axis represents number of participants. Green represents yes and blue represents no. The association is statistically not significant. Chi square analysis shows $p = 0.544$ ($p > 0.05$ which is statistically not significant).

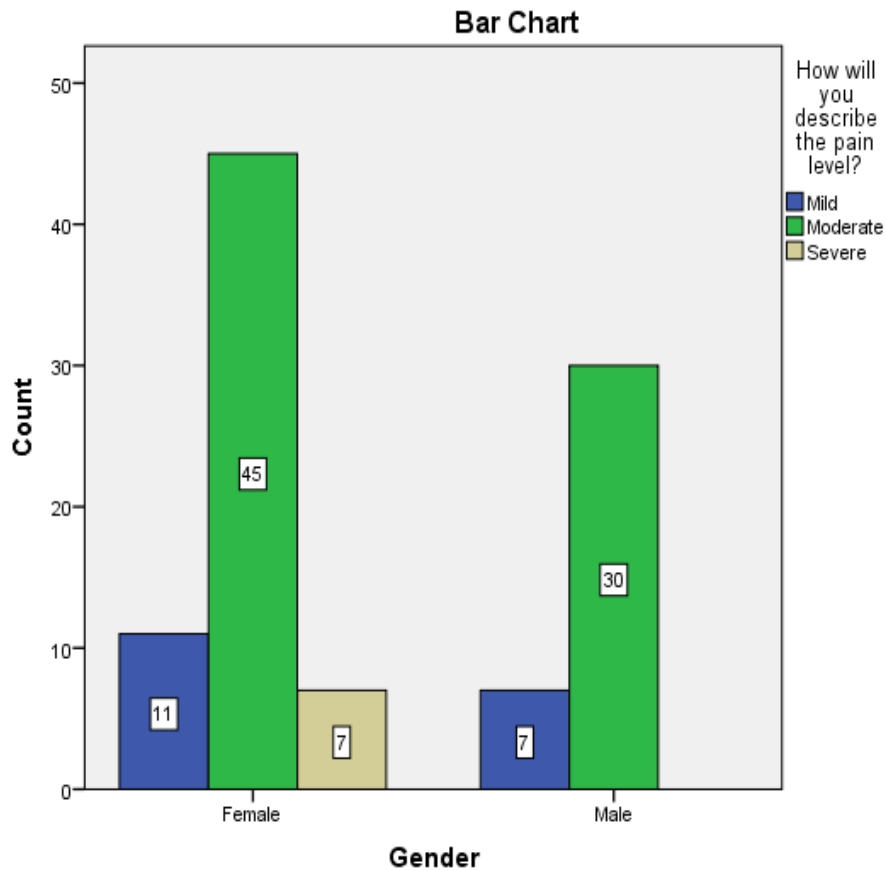


Figure 19: Bar graph shows association between gender and participants description on the pain level. X axis represents gender and Y axis represents number of participants. Blue represents mild, green represents moderate and beige represents severe. The association is statistically not significant. Chi square analysis shows $p = 0.109$ ($p > 0.05$ which is statistically not significant).

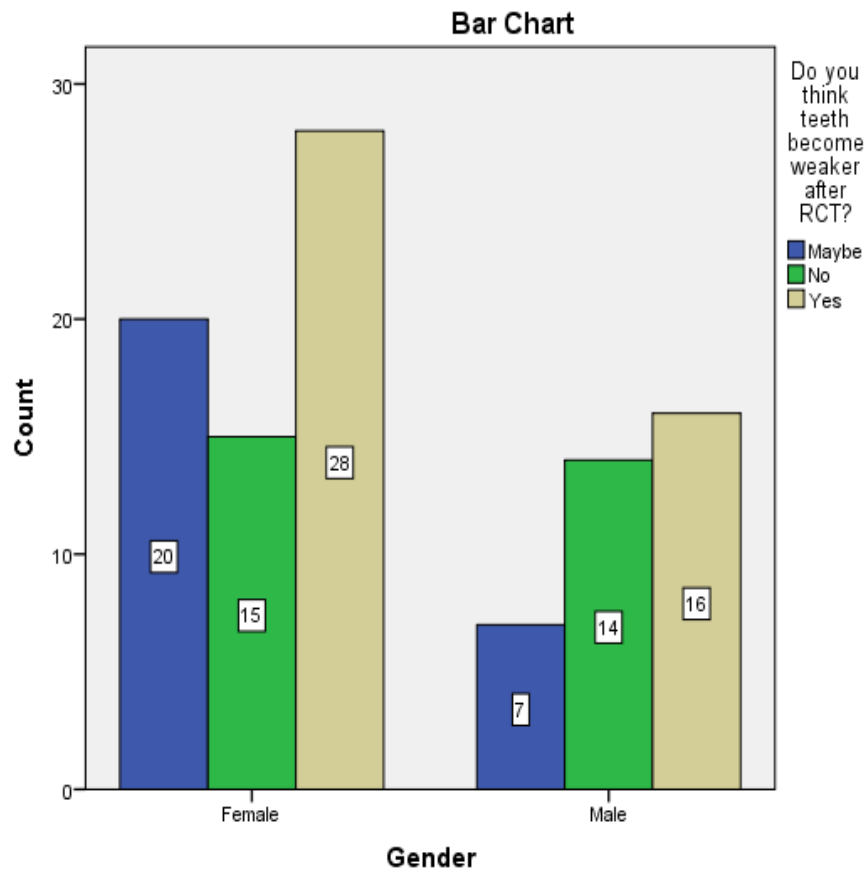


Figure 20: Bar graph shows association between gender and participants' opinion on weakness of their teeth after the RCT procedure. X axis represents gender and Y axis represents number of participants. Blue represents maybe, green represents no and beige represents yes. The association is statistically not significant. Chi square analysis shows $p = 0.222$ ($p > 0.05$ which is statistically not significant).

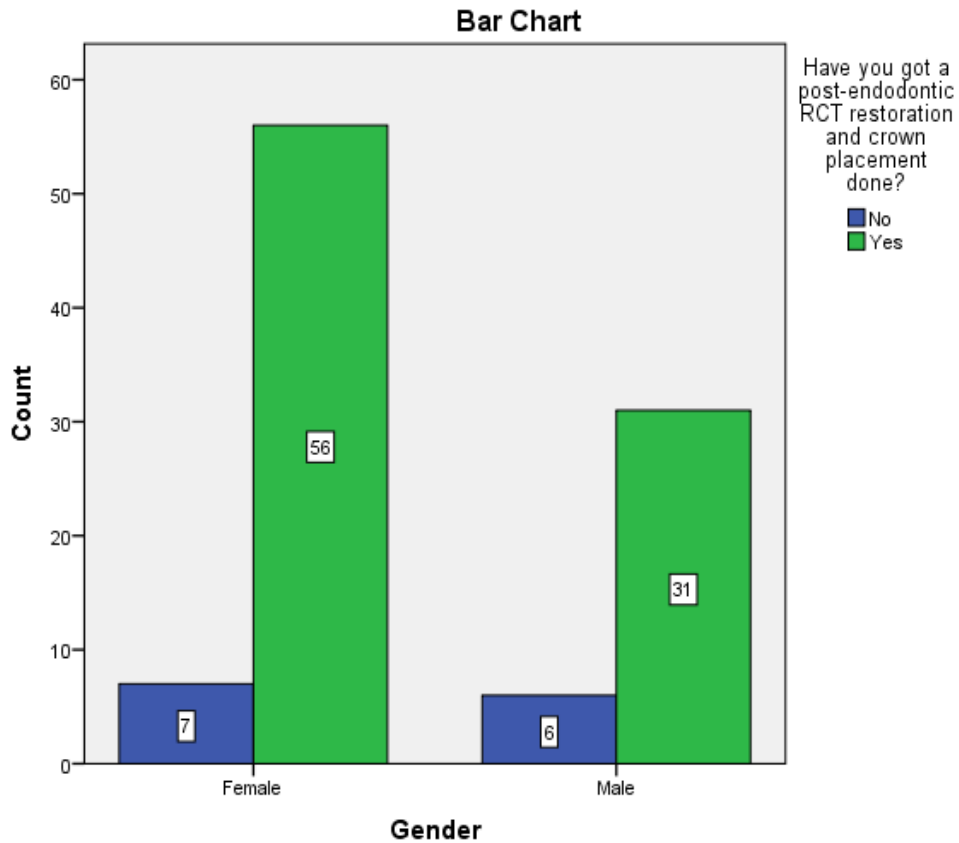


Figure 21: Bar graph shows association between gender and post endodontic RCT restoration and crown replacement. X axis represents gender and Y axis represents number of participants. Green represents yes and Blue represents no. The association is statistically not significant. Chi square analysis shows $p = 0.464$ ($p > 0.05$ which is statistically not significant).

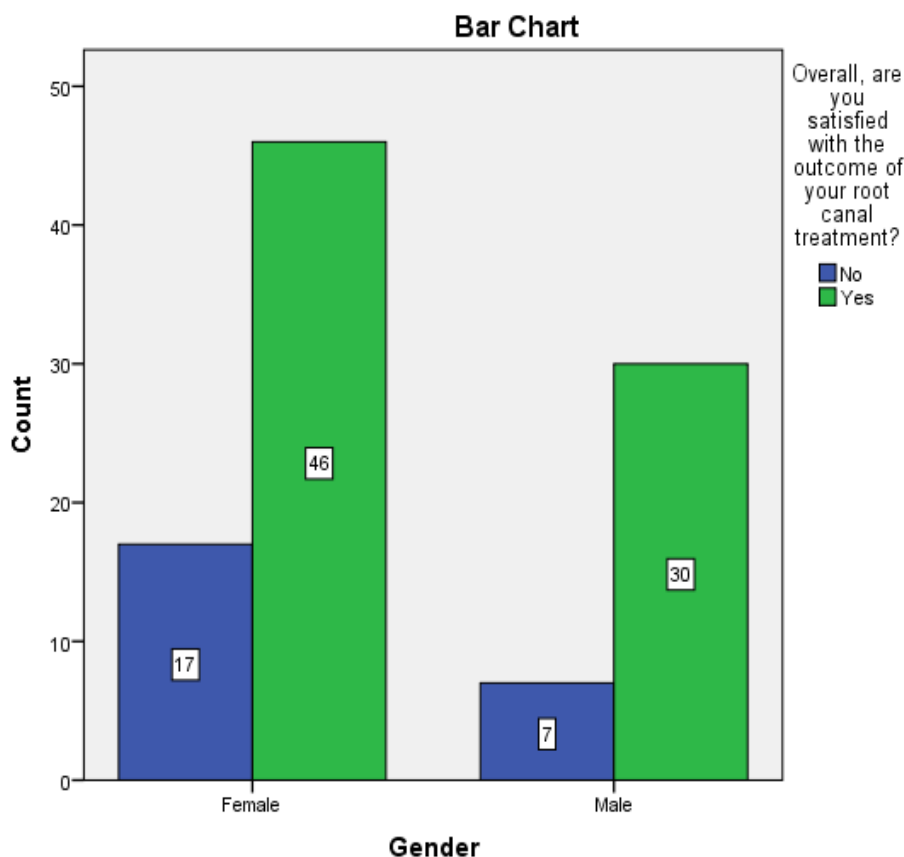


Figure 22: Bar graph shows association between gender and overall satisfaction with the outcome of RCT. X axis represents gender and Y axis represents number of participants. Green represents yes and blue represents no. The association is statistically not significant. Chi square analysis shows $p = 0.362$ ($p > 0.05$ which is statistically not significant).

Discussion

The obtained results were statistically analyzed using SPSS software. It is known that, 13% of the participant's age were below 20 years, 26% of the participant's age were above 40 years and 61% of the participant's age were between 20 - 40 years. 63% of the participants were females and 37% of the participants were males. Qualification of the participants were asked, 49% of the participants were undergraduates, 18% of the participants were illiterate and 18% of the participants were under schooling, 8% of the participants were postgraduates and 7% of the participants were PhD students. 83% of the participants knew about RCT and 17% of the participants did not know about RCT. 75% of the participants described the pain level of RCT as moderate, 18% participants described as mild and 7% participants described as severe. 68% of participants had done their RCT within 2 to 3 visits and 32% of the participants took greater than 4 visits. 87% of the participants got their post endodontic RCT restoration

and crown replacement done and 13% of the participants have not got their post endodontic RCT restoration and crown replacement done. 44% of the participants think that teeth become weak after RCT, 29% of the participants say that teeth will not get weaker and 27% of the participants are in a confused state. 64% of the participants prefer a root canal specialist for their RCT and 36% of the participants prefer a general practitioner. 44% of the participants think that getting RCT is too expensive, 38% of the participants don't know about the cost of RCT and 18% of the participants think that RCT is not too expensive. 62% of the participants think that RCT is indicated only when pain is associated with the tooth and 38% of the participants think that RCT is indicated for a tooth even if it doesn't hurt. 35% of the participants reported for treatment within 2 to 3 weeks of pain and 65% of the participants reported within a week for the treatment. 79% of the participants self medicate to resolve any tooth infections and 21% of the participants do not self medicate to resolve any tooth infections. 72% of the participants think that the role of antibiotics is mandatory in RCT and 28% of the participants think that the role of antibiotics is not mandatory. 67% of the participants prefer to have an RCT again if needed and 33% of the participants do not prefer to have an RCT again. 63% of the participants feel nervous to have an RCT again and 37% of the participants do not feel nervous to have an RCT again if needed. 76% of the participants are satisfied with the outcome of their RCT and 24% of the participants are not satisfied with the outcome of their RCT.

Oral health is not yet a high priority in India, as shown by people who neglect their oral health to the point that, when they finally seek dental care, the involved teeth are invariably recommended for extraction. This may be due to the patients' lack of knowledge about the various dental treatment options available, especially RCT, which can save their decayed teeth. Postoperative pain, identified as any degree of pain that starts after the initiation of endodontic therapy (28) is an unpleasant situation for both patient and clinician. RCT induces more frequent and severe postoperative pain than any other dental procedures. The reported frequency of postoperative pain ranges from 1.5 to 53% and more than 50% of patients experience severe postoperative pain (29). Persistent tooth pain is defined as pain present ≥ 6 months after endodontic treatment, its frequency is 5.4% to 10.0% (30). The etiology of persistent pain can be odontogenic or non-odontogenic. Literature shows that most practitioners (52.4%) complete RCTs in three visits and 26.8% do it in single sitting whereas very few dentists complete RCT in more than three visits (31) Teeth that need endodontic care are typically compromised due to dental caries, trauma, or prior restorations (32). Furthermore, chemicals used in RCT, such as sodium hypochlorite (NaOCl) and ethylenediaminetetraacetic acid (EDTA), deplete collagen, affecting dentine elasticity and predisposing the tooth to fracture throughout shearing powers (33). The patients avoid dental treatment in spite of their oral problems because of anxiety and fear for dental procedures. Endodontically treated tooth which is properly restored yields long-term success rates of 97% (34) and even if the root canal-treated tooth becomes infected again years down the line, the tooth can be saved through endodontic retreatment or an apicoectomy. The majority of RCT is performed by general dentists in India, and many of them do not follow the defined guidelines for RCT quality (35). According to a report in India on the introduction of modern endodontic technologies (instruments, principles, and techniques), the majority of general dentists still use traditional diagnostic,

planning, and obturation techniques, and very occasionally use magnifying instruments.

This shows that if patients are not properly educated regarding RCT, they get motivated to undertake the treatment. Patients' confidence can be increased by informing them about potential post endodontic pain and administering drugs to handle it. This can also raise their pain tolerance and boost their attitude toward possible dental care. [58] Patients are unable to approach RCT rationally due to misconceptions and theories. According to the research, having a strong understanding of dental health is linked to a higher probability of pursuing dental treatment. As a result, patients must be educated about the benefits of RCT in order to save their natural teeth. Patients may be more likely to seek and approve RCT as a result of increased awareness and information about the procedure.

Conclusion

The research revealed patient expectations of RCT and assisted in recognizing concerns and misconceptions about the treatment protocol. Patients' knowledge and understanding of the RCT are lacking, according to our findings. Patients must be educated about the benefits of endodontic surgery in order to save their natural teeth. In order to help the patient maintain a positive attitude about RCT, it is important to properly inform the patient about current treatment modalities, advise against RCT misconceptions, and direct the patient on what to expect from RCT.

Acknowledgement

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Conflict of Interest

The author declares that there was no conflict of interest in the present study.

Source of Funding

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