
Patient Satisfaction with Non-Surgical Root Canal Therapy Among Patients Attending Muhimbili University Dental Clinic

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ABSTRACT: *To evaluate patient satisfaction with Non-surgical root canal therapy (NS-RCT) among patients attending Muhimbili University Dental Clinic. A total of 184 patients were selected randomly in this cross-sectional study. Data collection was carried out using patient recruitment and validated questionnaire. NS-RCT is more common in the upper than lower jaw and premolars were the most frequently NS-RCT treated teeth. Most of patient were satisfied with treatment they got despite questionable quality of coronal and radicular fillings. Most of patients with at least one or more RCT done to their teeth were those educated ones with at least college education. Majority were convinced by their dentist for having their tooth/teeth NS-RCT treated. Satisfaction of patients towards endodontic treatment did not depend on the quality of NS RCT done to them.*

KEYWORDS: Endodontics, Non-surgical Root Canal Therapy, Pulpotomy, Patient Satisfaction

INTRODUCTION

Endodontics is increasingly recognized as a dental field that paid attention on the prevention, diagnosis, and treatment of the dental pulp and peri-radicular tissues (Sadr et al., 2021). It has emerged as proper treatment of dental caries hence replaced tooth loss through extraction, which was the dental caries treatment accessible in Tanzania for the previous two decades (Idon et al., 2020; George, 2019; Krivanek et al., 2020; leading to serious effects of losing teeth involving lowering quality of life (Thanaya Dental Center & Arabia, 2022).

Endodontics term is provided in different forms, the two most common being *pulpotomy* and *pulpectomy* (Root Canal Treatment).

PULPOTOMY

This is complete removal of coronal portion of the dental pulp, followed by placement of suitable dressing or medicament that will promote healing & preserve vitality of the tooth (Madan et al., 2020). Usually done in children's milk/primary teeth or in young permanent teeth (which are not close to natural exfoliation) when decay/trauma has reached the crown part of the pulp without radicular pathology.

PULPECTOMY

Root Canal Therapy (RCT) is performed on a tooth with severely injured pulp; which may be caused by deepened caries with damage to the pulp or traumatized teeth with severe pulp destruction (Bjørndal, Simon, Tomson, & Duncan, 2019). The main goal of endodontic therapy is the elimination of pathosis of endodontic origin in the root canal and periapical areas (Berman & Hargreaves, 2020).

Radiographs, usually peri-apical type, are mandatory in RCT and are taken at different stages of the treatment process.

Two forms of RCT, *non- surgical (conventional)* and *surgical methods*, are described.

NON- SURGICAL (CONVENTIONAL RCT)

Non-surgical RCT entails first preparation of an access cavity coronally; that is cleaning the pulp chamber and gaining access to root canals. Removal of the pulp tissue through specialized endodontic instruments follows. Then shaping and disinfecting the canals by using special endodontic medicaments and irrigants such as NaOCl₃ is the next step. Finally, the canals are sealed (obtured) with special radiopaque materials such as the Gutta Percha or Methyl Trioxide Aggregates (MTA) (Yee, 2017). If it becomes successful, RCT is followed with an enclosed restoration/filling in the access cavity (Yavorek, 2019). Correct diagnosis, proper cleaning and shaping (instrumentation) and proper obturation of the root cavities brings to a successful RCT. When performed adequately, RCT provides the success rate of up to 95%.

In Tanzania, Root Canal Treatment is performed in in both private and the government dental units or clinics, and currently is the best alternative to tooth extraction; the only dental caries treatment which dominated in Tanzania for previous two decades (Rugarabamu, 2017).

This study therefore aimed at evaluating and documenting the patients' satisfaction after RCT among the patients attending MUHAS dental clinic.

MATERIALS AND METHODS

Study Design

It was a cross-sectional study based on clinical and radiographic determination of the quality of and satisfaction with Non-surgical root canal therapy among patients attending MUHAS dental clinic

Sample Size and Sampling Design

A total of 184 patients were selected randomly. All dental patients aged 18 years and above with at least one primary NS-RCT treated permanent tooth (permanently obturated and with at least a semi-permanent restoration) at least three months before, attending the dental clinic at the time of data collection were included in the sample.) Those who had condition that would interfere with interviews and clinical/radiological examination were excluded in the study.

ETHICAL CLEARANCE

Ethical clearance was requested from the Ethical Clearance Committee of the Muhimbili University of Health and Allied Sciences. Permission to conduct this study in Muhimbili University dental clinic was obtained from MUHAS authorities. Each participating patient received detailed oral explanation on the nature and purpose of the study, following which they were requested to fill consent form (Appendix I). The participants were assured of confidentiality, right to participate and right to withdraw without any condition and strict usage of the data for intended purpose only.

Data Collection Procedures

Data collection was carried out in 2015 October. *During this period the world is in demand of Non-surgical Root Canal Therapy in which patients are greatly in need to deals with tooth challenge.* Data collection was conducted in the application of relevant method and tools; patient recruitment and validated questionnaire. The respondents who are patients attending Muhimbili University dental clinic were asked to fill the questionnaire for ten minutes to complete the questionnaire.

Questionnaire was developed to meet specific quality demand of the study towards the objective accomplishment. The first consideration was exploratory factor analysis in the previous attempt to validate the questionnaire. The Participants were interviewed in Kiswahili by the principle investigator (GEL) using a structured questionnaire (Appendix 2b). Information on participants' socio-demographic characteristics and satisfaction with provided NS-RCT were collected. The questionnaire closed questions designed to cover key aspects of satisfaction with the treatment (Emerson, 2017). The Likert scale was used to rank the responses from highest score (5) to lowest score (1), i.e. very satisfied=1, satisfied=2, fairly satisfied=3, dis-satisfied=4, and very dis-

satisfied=5. The information was then dichotomized to be satisfied or not satisfied by addition of scores 1-2 as satisfied (1), and 3-5 as dissatisfied (0).

STATISTICAL ANALYSIS

The collected data was analyzed using SPSS software for Windows version 21. Continuous data such as the age, sex, number of NS-RC treated teeth and education level were presented through mean, mode and range. Frequency distribution together with cross tabulation were used to report while Chi-square test was used to check for possible association for proportions. A p-value = 0.05 was used as a cut-off level for significance.

The social demographic details and NS-RCT treated teeth:

Continuous data such as the age, sex, number of NS-RC treated teeth, types of teeth and education level were reported by calculating the mean by running the frequency distribution.

Patient satisfaction

Frequency of those who were satisfied was calculated, to show the percentage of people who were satisfied. Cross tabulations were performed on patient satisfaction and socio-demographic features to notice any association between them.

RESULTS

A total of 185 adult patients attending MUHAS dental clinic were included in this study. Their age varied from 16 to 82 years, (mean age: 40.7, SD=14.6) . The results in Table 1 female dominance of 66.5% is seen. Almost two thirds (70.2%) of the participants were aged 15-49 years (younger age group). Half of the participants were married and more than half (63.8) had a college/university education. As regards to employment 30.1% of sample population was unemployed. Majority had college or university education (63.8%)

Socio-demographic features	n	%
Age (years)		
16-49 (younger age group)	130	70.2
50++ (older age group)	55	29.8
Sex		
Male	62	33.5
Female	123	66.5
Marital status		
Married	93	50.3
Single	75	40.5
Widower/widow/separated	17	9.2
Educational status		
Did not go to school/primary education	17	9.2
Secondary Education	50	27.0
College/University	118	63.8
Employment status		
Formal employment	72	38.9
Informal employment	54	29.2
Not employed	59	31.9

NS

RCT

TEETH

Toothache was the main reason for visiting a dentist by 75.1% (n=139) of the participants with only 4.3% of the participants visiting a dentist for normal dental checkup. A large number of participants (88.1%, n=163) had their NS-RCT treatment done at the MUHAS dental clinic. Figure 1 below shows the percentage of people having different number of NS-RCT treated teeth. A total of 141 (76.2%) participants had one NS-RCT treated tooth, 0.5% had 5 or 6 NS-RCT treated teeth, 173 (94.1%) were knowledgeable on NS-RCT, and 171 (98.3%) got the knowledge/information on NS-RCT from dentists.

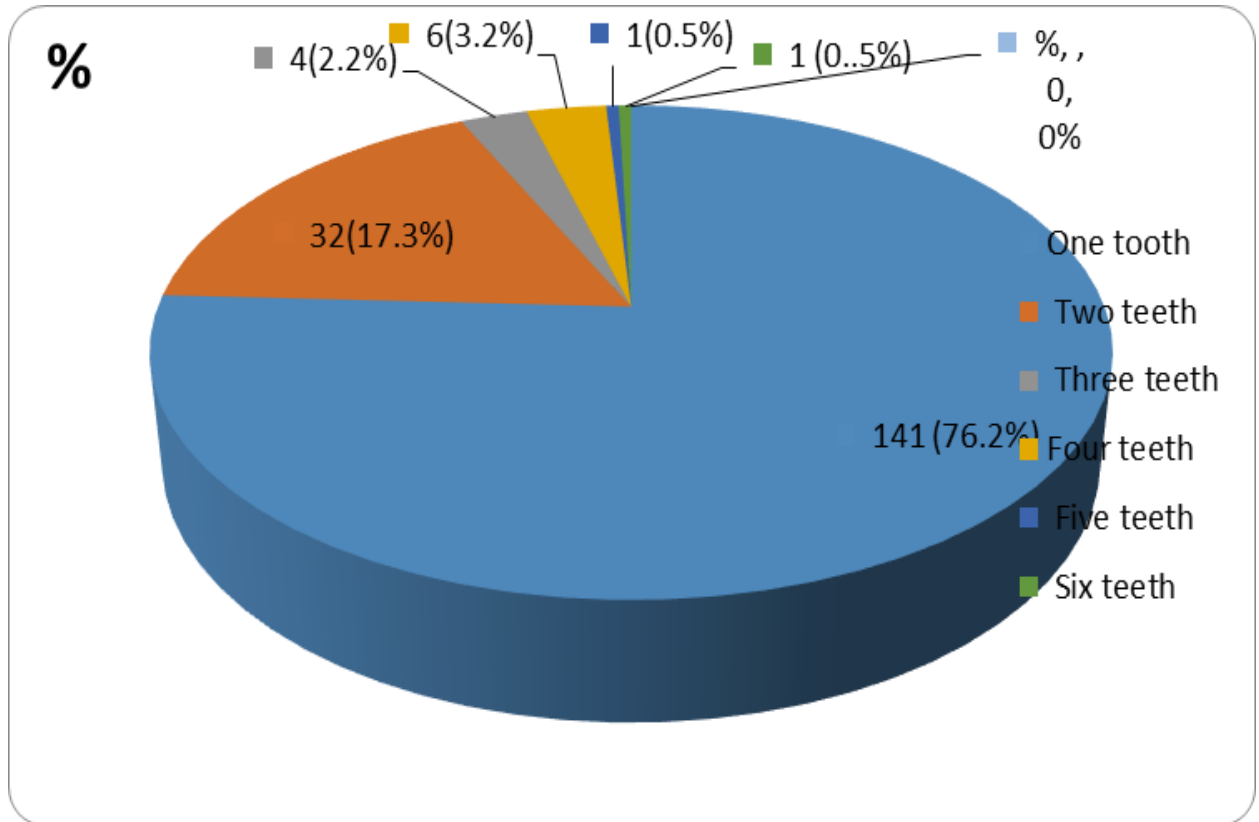
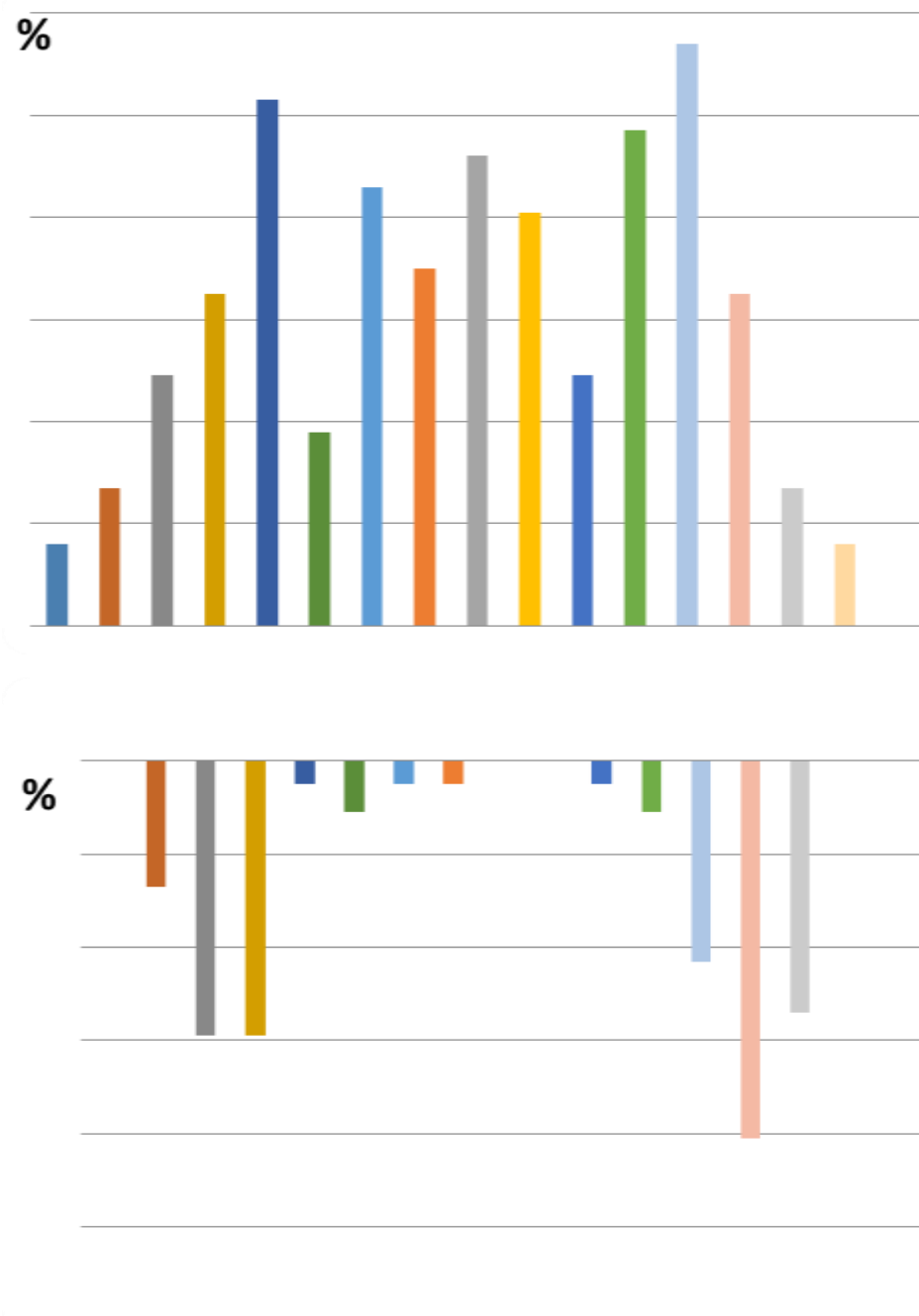


Figure 1: Percentage distribution of participants having different number of NS-RCT treated teeth.

NS RCT FOR UPPER AND LOWER JAWS

The upper jaw had many NS-RC treated teeth than the lower jaw. The most frequently treated teeth in the upper jaw were, based on ISO, numbers 25 (11.4%, n=21), 14 (10.3%, n=19), 24 (9.7%, n=18) and 21 (9.2%, n=17). In the lower jaw, teeth numbers 36 and 46 were the most frequent NS-RCT treated teeth (n=15 in each). See column chart below



GENERAL PATIENT SATISFACTION

It was found that more than three quarters of study population (80%, n=148) showed to be satisfied with NS-RCT they got. The table below summarizes general patient satisfaction by socio-

demographic characteristics, tooth type and clinical indicators. None of the socio-demographic details and teeth treated with NSRCT showed association with patient satisfaction

Table 4: Percentage distribution of patients satisfaction with NS-RCT according to socio-demographic details, clinical indicators and the tooth type

Social demographic features n=185	Patient Satisfaction		
	No(n)	Yes (n)	Statistics
Age			
16-49	28	102	
50-89	9	46	$X^2=1.489, P=0.685$
Sex			
Male	11	51	
Female	26	97	$X^2=0.297, P=0.586$
Education			
Up to secondary	17	50	
College/univer	20	98	$X^2=1.895, P=0.196$
Marital			
Married	19	71	
Others	18	77	$X^2=0.137, P=0.713$
Employment			
Employed	11	60	
Not employed	26	88	$X^2=1.46, P=0.226$
NS-RCT treated teeth			
Molars	15	56	$X^2=0.091, P=0.762$
Premolars	14	67	$X^2=0.664, P=0.415$
Anteriors	10	44	$X^2=0.105, P=0.746$

DISCUSSION

In this study, a higher proportion of participants with NS-RCT treated teeth were females (66.5%). This can be explained by the fact that females have been reported to care about their health than males (George, 2019). Furthermore, previous reports reveal that females consume sugar containing foods more often than their males' counterparts (Nyatu et al., 2021).

Most of NS-RC treated patients had College/University Education. This can be explained by the fact that most of educated people are more aware of health issues such as different modalities of treatment or advantages of retaining natural teeth (Nyatu et al., 2021). Educational level had shown to have influence on the oral cavity.

The finding that most participants had their NS-RCT treatment done at Muhimbili National Hospital dental clinic (88.1%) could be due to availability of required equipment and materials. Majority (76.8%) had only one NSRC treated tooth and 0.5% had 5 or 6 NSRC treated teeth.

Similar to the findings in this study, dentists have reported to be the source of oral health information in previous studies (BaniHani, Tahmassebi, & Zawaideh, 2021).

NS-RCT is more common in the upper than lower jaw and premolars were the most frequently NS-RCT treated teeth. This is controversial to the study by (Azarpazhooh et al., 2022) who found that 1st molars are the mostly NS-RCT treated teeth. The number of NS-RCT treated teeth varied from person to person; the person would have at least one RCT treated teeth however some of them had five or six NS-RCT treated teeth.

In this study, more than three quarters of study population (80%) showed to be satisfied with treatment they received (n=148). Comparable findings have been reported before in a study in Tanzania, whereby 92.7% of adults examined were satisfied with urgent oral care (Nyamuryekunge). These finding have thought to be attributable to a good working atmosphere of the dental clinic, a good relationship between care provider and patient.

Age, level of education, marital status and occupation did not show an association with satisfaction with NSRCT done.

CONCLUSION

Most of educated people are having one or more NS-RCT. Majority get knowledge on NS-RCT from the Dentist when they come to hospital and they are convinced by their dentist for having their tooth/teeth NS-RCT treated. Many of those who have encountered post treatment pain have visited the dental clinic to have their teeth retreated with NS-RCT. Patients were reporting to be satisfied with treatment they get. Mostly NSRCT treated patients have got at least college education.

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