



COST AND PATIENT SATISFACTION RELATED TO ROOT CANAL TREATMENT, A SURVEY AT SECONDARY CARE HOSPITAL, RAWALPINDI, PAKISTAN

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Abstract

Objective: To determine the direct and indirect cost of the root canal treatment and its relationship with the patient satisfaction.

Material and Methodology: The research is analytical cross sectional and was done by using two separate questionnaire surveys. Sampling technique used was convenience sampling and the sample size used is of 384 patients. Chi square test was applied to determine the goodness of fit between patient satisfaction undergoing RCT and the cost of RCT.

Results: The minimum cost of the procedure according to the survey was about 5k. While 348 out of 384 patients were satisfied to spend less than the minimum cost. The calculated p-value was 0.03 which shows that the results were highly significant.

Conclusion: The study included a low income population and according to the results of the survey, they wanted to spend less amount on the treatment. The repeated visits created a major problem in terms of the cost the patient had to bear. Patients were satisfied with the staff availability, technique, equipment and procedure of the treatment. But they were not satisfied by the scheduling and post-operative care and follow up procedure.

Keywords: Root canal treatment, direct and indirect cost, patient satisfaction, cost and patient satisfaction relationship.

INTRODUCTION

In the underdeveloped and developing countries, there is an ongoing increase in urbanization, leading to a significant change of lifestyle, which consequently leads towards increased oral diseases. Other things, such as tobacco and beverages also contribute towards increased pathologies in oral health. According to a study by Global Burden of Diseases, the most common health condition is untreated dental caries as the number of children suffering from primary teeth caries is more than 530 million.(1). About 70% of the people of Pakistan has untreated dental caries (2).

Endodontics is the branch of dentistry that is related to the pulp tissue. It mainly deals with the physiological, pathological and morphological characters of pulp tissue. The branch of endodontics is largely focused on the diagnosis, etiology, treatment and prevention of diseases related to periapical tissue including pulp.(3).

• Importance of Root canal treatment

In the current times, the impact of oral health on mental and physical health, as well as on the quality of life has significantly increased. There are a few barriers to get dental care which include anxiety, time, fear and lack of access. (4).

• Patient Satisfaction

In order to provide quality healthcare, it is important to have awareness about patient satisfaction. Patient satisfaction can be defined as

“Patient’s perception of the care received compared with the care expected”

Finances play a very important role in gauging the patient satisfaction level in underdeveloped countries, such as Pakistan, where the health system drains a larger chunk out of the pockets, especially in the public sector where the patient is mostly from the underprivileged section of the society.

• Patient satisfaction in root canal treatment

In the city of Rawalpindi, there is a variation in the direct cost of the process in the public sector. This is due to the variation in the doctor fee, radiographs, medication, travelling, transportation and recreational activity during the visit. Together with indirect cost, in case of paid leaves/ short leaves of patients, house attendants. Remarkably, only a few studies have discussed the cost of root canal treatment overall (5).

• Patient perception of RCT

There is a large number of patients in the developing countries who have a fear of root canal treatment. According to a study on Indian patient’s perception of RCT, including other factors, 64.67% of patients believed that RCT is a costly procedure. It was further found that making people aware of the benefits of the procedure changed their thinking, and as a result, 84% of the patients preferred RCT over tooth extraction. Such changes in perception is important while studying patient satisfaction in root canal treatment(6).

• Cost of root canal treatment

The direct cost includes the non-medical and medical expenses of the treatment. The fee of the dentist/hospital, fee of investigations, are the medical cost, while transportation and entertainment are all nonmedical direct costs.

Any loss of wage, house attendants and paid leaves for the patient when they have to visit the facility for treatment are included in the indirect cost.

OBJECTIVES

- a. To determine the cost of root canal treatment.
- b. To assess patient satisfaction.

c. To determine the relationship between cost and patient satisfaction.

LITERATURE REVIEW

There are a few factors on which cost of the RCT and satisfaction of patient depends upon, such as, the doctor's professional skills, interaction with patient, behavior, interaction with professional community and level of interest in the public and private sector(7).

The procedure of root canal is done under anesthesia, while all the precautions are taken related to the side effects and fear of the anesthesia. As a result, better biting, chewing and natural appearance of the tooth is restored. It also prevents excessive strain and wear of the other teeth(8).

Dental Caries (Prevalence and Etiology)

According to the study conducted by J.L Williams, it was proposed that caries are an outcome of plaque formation. Moreover, in another study by Keyes and Fitzgerald, a model was established to demonstrate a possible link between occurrence of caries and some microbes (Streptococci) (9). The dental caries are perceived to be the most ancient and common oral cavity disease (10). The caries are closely linked with the use of fluoride pastes, frequency and technique of brushing (11). The caries victims are about 60-90% of the school children (12).

Patient Satisfaction

In the field of dentistry, patient satisfaction assesses the clinic environment, weaknesses and strengths of the procedure and the treatment quality(13).

There are few factors that affect the patient's satisfaction with root canal treatment. Pain perception, number of appointments, quality and cost of the service are among a few of factors. Along with that, phobia/fear of the procedure, and anxiety are also vital role player in patient satisfaction(14). It is easier to satisfy younger patients as compared to the older ones(15).

Indirect factors affecting patient satisfaction

The hypothesis related to patient satisfaction are:

Hypothesis 1: the satisfaction of the patient keeps on changing with the personal characters like age, literacy, gender and economic status of the patient.

Hypothesis 2: organization characteristics (job satisfaction) influences the patient's personal characteristics which has an effect on patient satisfaction.(16).

Previous studies on patient satisfaction reveal that factors like, patient-doctor interaction, sociodemographic factors and age, gender and literacy level, quality of service have a major role to play in patient satisfaction assessment(17).

Factors impacting patient satisfaction

The outcome of interaction between experiences, expectations and requirements of the patients is patient satisfaction. It depends on different factors, hence making it multidimensional and complex (18).

The key indicator of a particular service provided to the patient is their satisfaction, it reflects competence, success, diagnostic abilities, communication skills, and procedure performance, ethical and professional practice of the service provider. According to the present literature on the topic of patient satisfaction, it is mentioned that any dissatisfied patient does not consult the same doctor, the patient either self-medicates or delays the consultation (19). It is reported that mostly high service quality results in increased satisfaction(20). The satisfaction of patients depends on the administrative and medical qualities of the service provider, along with the adaptation of advanced technologies and diagnosis also play an important role. (21).

According to research, the factors of attitude, cost, waiting time, and explanation of service are the most influencing factors on patient satisfaction.(22). Oral health policies are also improved with the help of patient satisfaction(23).

Effect of Cost in Root Canal Treatment

Different obstacles come across the treatment of the root canal, one of it being the transport to the place of treatment(24). It is important to consider the cost effectiveness of any procedure in public health services. In the economic evaluation, the preferences of patients must also be included (25). The complication of a procedure effects the cost of any procedure of treatment along with other factors (26).

MATERIAL AND METHODS

Study Design

This is an analytical cross-sectional study. It is a type of non-experimental, quantitative research design. Such studies seek to “gather data from a group of subjects at only one point in time” (27). In this study, data was gathered through a questionnaire related to direct and indirect cost. The level of satisfaction from the treatment and the cost where then compared to get the relationship by using Chi-Square test. The research is conducted at the Cantonment General Hospital Rawalpindi. The population that surrounds the hospital belongs to a low socio economic, which was kept in consideration while drafting the price for treatments at the hospital. The dental OPD in the hospital is about 100 patients on average. Patients visiting the hospital for root canal treatment were the population for the study. Time duration was Dec 2020 to August 2021.

Sample Size

Z=1.96 with 95% confidence

P=0.50

n =384 with 5% error

q= 100 -32= 68%

e= tolerance error 5%

(z^2pq/e^2) WHO formula(28)

Convenience sample technique is used. Patients underwent root canal treatment and willing to participate in the survey were included. PSQ III questionnaire was used with modifications. In this questionnaire Likert scale was used, that consists of strongly disagree, disagree, neutral, agree and strongly agree with the range from 0-4. 11 questions are used in this questionnaire with the maximum score of (44) and minimum score of (0). The second questionnaire is developed by extensive research to determine the direct cost and indirect cost, along with the age, gender, socio economic status, educational level and occupation. This questionnaire has 10 questions. Chi-Square Test for assessing goodness of fit. The relationship of patient satisfaction and cost of root canal treatment was checked by using chi-square test on SPSS version 26. For p-values < or = 0.05, statistical significance was assumed.

RESULTS:

This cross sectional study was conducted on 384 patients. Out of which 176 (45.2%) were male and 209 (53.7%) were female. Gender distribution can be scene in table 1

Table 1: Gender distribution of respondents

Serial No	Variable	Percentage
1	Male	176 (45.2%)
2	Female	209 (53.7%)
3	Total	100%

Age distribution can be scene in figure 1.

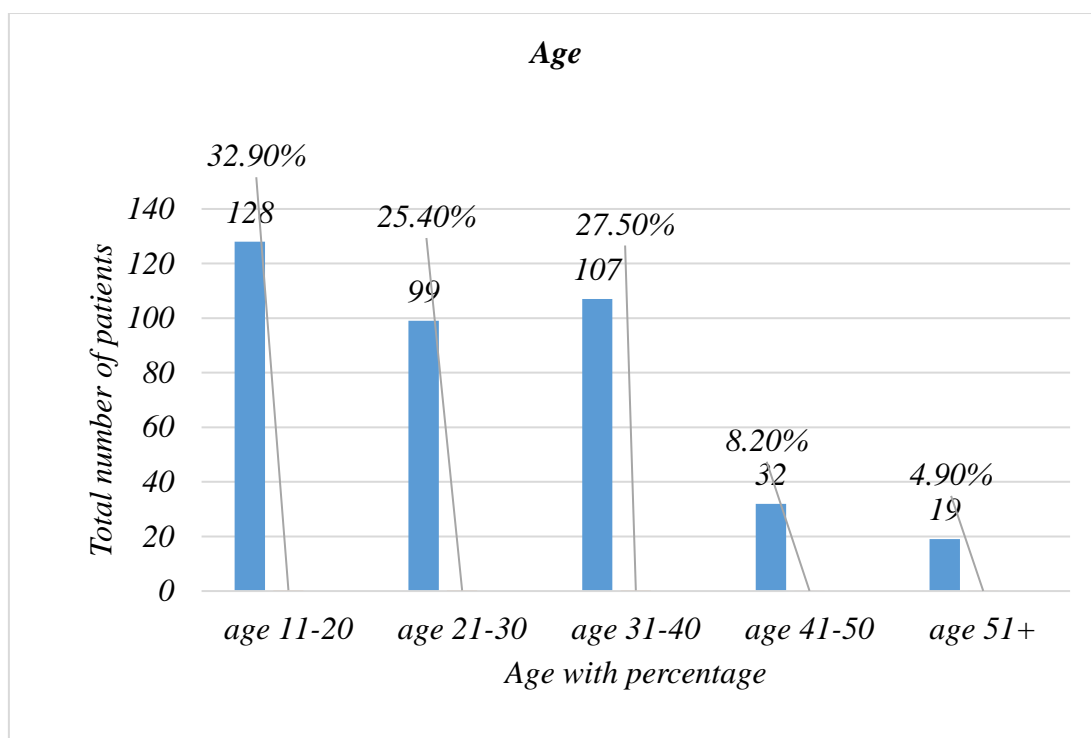


Figure 1: Age of participants who underwent the root canal treatment

Total patients were asked for the reason of visit to dental clinic, 306 (78.7%) people visit dentist due to pain and discomfort, 38 (9.8%) were referred for treatment, and 41(10.5%) came for self check up. Demonstrated in figure 2.

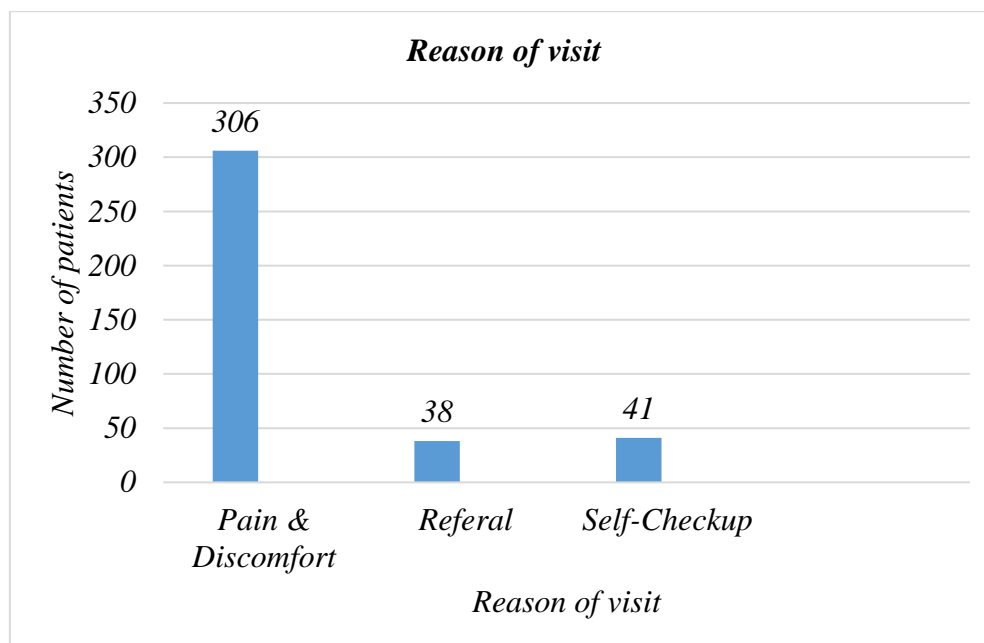


Figure 2: Reason of visit of patient to the health facility for treatment

The two modified questionnaires were filled by 384 patients. When asked about the direct cost, among the 384 patients, 182 (46.8%) spent upto 2500 Rs. 191 (49.1%) spent upto 5000 Rs. and 12 (3.1%) spent upto 7500 Rs. Explained in figure 3

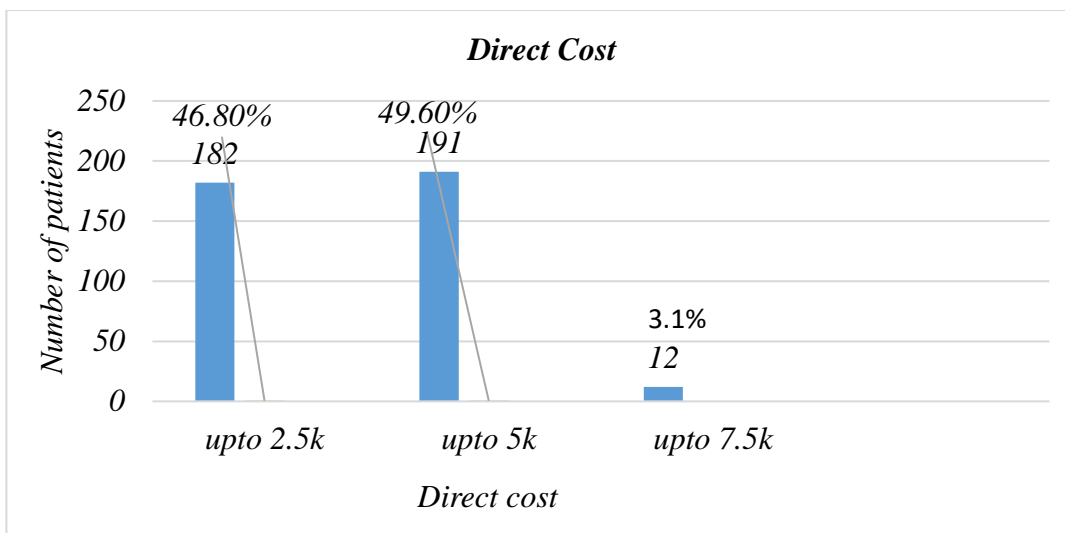


Figure 3: Direct cost of the root canal treatment paid by the patients.

On the other hand, survey results show that the indirect cost paid by the 180 patients which is 46.3% is upto 2500 Rs. 188 patients (48.3%) spent upto 5000 Rs. and 17 (4.4%) patients spent upto 7500 Rs. Explained in table 4.

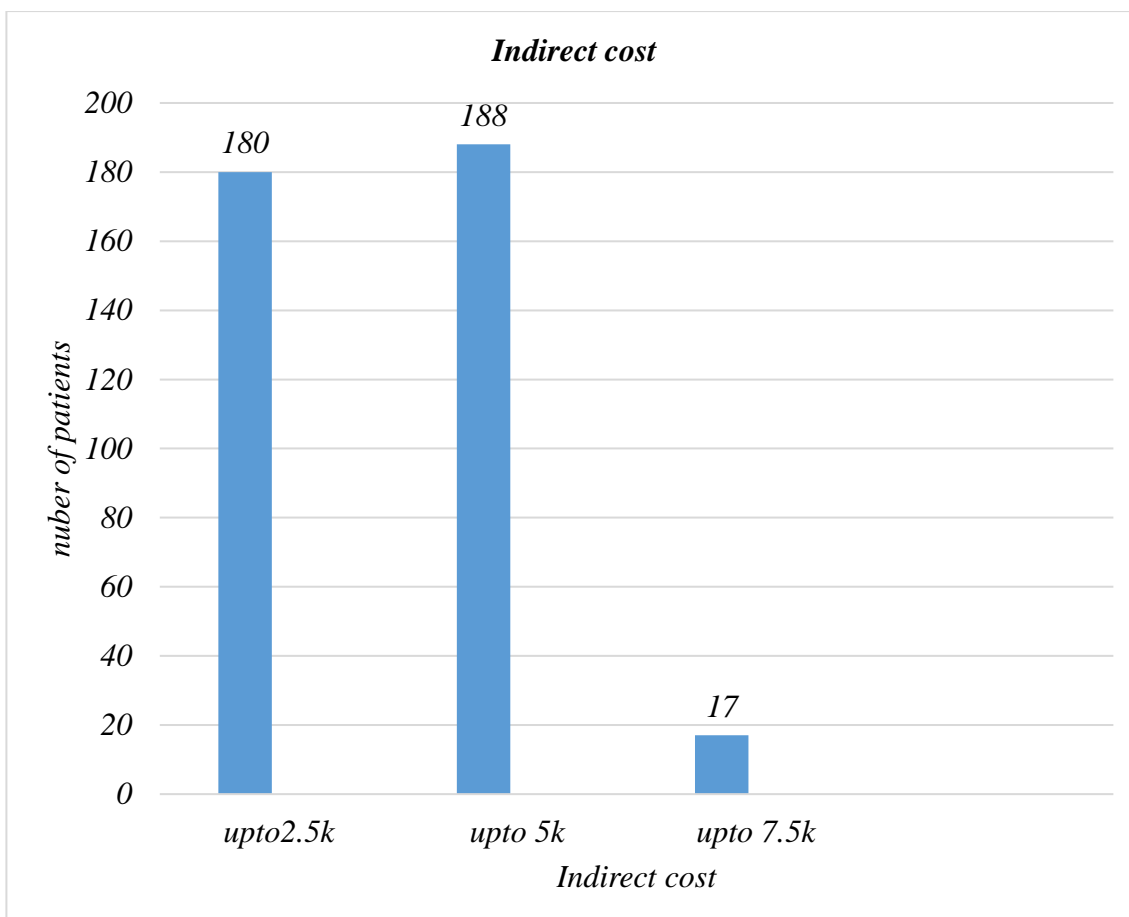


Figure 4: Indirect cost paid by the patients who underwent the root canal

The total cost of the RCT paid by 220 patients (57.3%) is upto 5000 Rs. 128 patients (33.3%) spent upto 7500 Rs. and 36 patients (9.4%) spent about 10,000 Rs. Demonstrated in figure 5

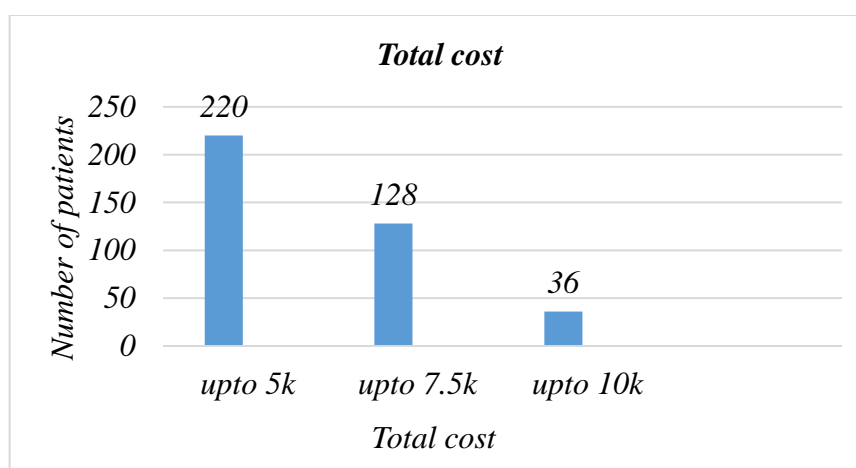


Figure 5: Total cost of the root canal treatment paid by the patients

In the survey conducted for patient satisfaction, the satisfaction level of patients about the RCT experience was overall high. In the analysis between the satisfaction and cost paid by the patient, 348/384 patients felt satisfied by spending around 2500 Rs. as both direct and indirect cost for RCT. Although the study shows that minimum cost required to receive RCT was around 5000 Rs. but the patients wanted to spend less than that for the treatment. SPSS version 26 was used and Chi square test was applied to get the goodness of fit between the expected and observed value. The p-value obtained was 0.03, which shows that the results were highly significant.

DISCUSSION

RCT is a complicated procedure, it requires skills and proper tools to perform and diagnose. The cost is almost 10-20 times high in the private sector as compares to the public sector. Long waiting time plays a negative role in the patient satisfaction status as in previous study (29). Methods of diagnosis, skills or operators were satisfactory while follow up visits, schedule of appointments, cleanliness of room were not satisfactory, because of the load of patients and working timings of the dental OPD. Spending less amount was more satisfying as same in the previous study(30). 348 out of 384 patients felt satisfied if they spend upto 2.5k for RCT. Out of pocket spending was around 85%. And patient were mostly between the ages of 11-40 years having mostly monthly income of house is 20-40k. The patients were belong to the same socio economical back ground and majority were in private jobs.

Limitations:

The study was conducted at a secondary care hospital, age, underlying medical condition, type of tooth, detailed cost analysis of the treatment can be explored further. Availability of latest equipment and technologies also play a vital role in the success of treatment and impact the positive satisfaction level.

Recommendations:

Frame work of appointments can be implemented along with monitoring and evaluation in public hospitals creating positive effects. Supply of adequate materials and equipment also plays a positive role in health service delivery.

CONCLUSION:

The study included a low income population and according to the results of the survey, they wanted to spend less amount on the treatment. The repeated visits created a major problem in terms of the cost the patient had to bear. Patients were satisfied with the staff availability, technique, equipment and procedure of the treatment. But they were not satisfied by the scheduling and post-operative care and follow up procedure. \

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