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ROOT CANAL TREATMENT FROM PATIENTS’ PERSPECTIVE:
KNOWLEDGE, AWARENESS AND EXPECTATIONS

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Abstract

**Background/Aim:** Root canal treatment (RCT) is one of the most common endodontic procedures for which patients visit the dentist. Patient's knowledge, awareness, and attitude regarding root canal treatment are an interesting problem in everyday dentistry. Therefore, the study aimed to evaluate the knowledge, awareness, and attitude of patients coming for endodontic treatment.

**Methods:** Questionnaire surveys were carried out in a group of 209 patients, including queries characterizing their knowledge, awareness, and attitude towards the RCT - their experiences, expectations, potential problems, and management expenses.

**Results:** Exploring the knowledge of individuals’ concerning RCT, it was noticed that 51% of the surveyed patients in the past had experienced endodontics treatment. 52% of participants reported that they know the charges of the RCT, 50% of them said that the price was sufficient to the difficulty of the process. The study confirmed that a large number of people still prefer specialists to perform the RCT (47%).

**Conclusion:** An enhancement of knowledge and awareness of people about the RCT has been observed, as well as a need of providing more information to patients about endodontics and benefits of saving teeth.

**Keywords:** Root canal treatment; Health awareness; Pain in dentistry.

**Introduction**

Tooth disease may often lead the patient to seek dental care. Dental pain is the commonest reason observed among patients for seeking necessary management, which mainly comprises RCT or extraction of the diseased tooth\(^1\). Extraction of the tooth may lead to a chain of events such as causing the adjacent or opposing teeth to shift, affect the masticating ability, and harm the natural smile and esthetics of the patient. The chief outcome of securing oral health is conservation of the inherent dentition. In modern dentistry, RCT is an achievable and effective method to preserve the teeth\(^1,2\).

RCT is a process in which the damaged and contaminated dental pulp is eliminated and replaced with sterile and antibacterial material. It eliminates a focus of infection, allowing a person to keep tooth performance and aesthetics\(^2\). Tooth replacement if indicated for esthetic and functional rehabilitation is accomplished with prosthetic appliances, including
implants making it a costly enterprise. Therefore, RCT should always be considered whenever indicated as it not only favors the preservation of natural teeth but also has excellent clinical outcomes\textsuperscript{3,4}.

Current endodontics is constantly evolving. This development offers not only new gadgets but also new management modalities. The most basic rule of contemporary endodontics is a painless and effective treatment\textsuperscript{2}. However, fear of dental treatment is somehow frequent in the population.

Although, RCT is highly prevalent, it is still considered by several patients as a process to be feared. Studies have shown that fear and anxiety are the main deterrents in looking for RCT\textsuperscript{5, 6}. These fears can be attributed to the ignorance of patients about root canal procedures. Patients often do not understand the nature of endodontic treatment and what it involves\textsuperscript{7, 8}. Studies in the past had highlighted the need to provide more information about it\textsuperscript{4, 9}.

Awareness is defined as information that somewhat exists or understanding of a condition or matter at the current time based on knowledge or practice\textsuperscript{2}. Awareness of endodontic management is significant in educating persons on saving their natural teeth. Many studies on the awareness of RCT are still limited. Some studies recommend that the level of knowledge is highest in people of developed countries. A research carried out by the American Association of Endodontics (AAE) observed that 76\% of participants have a preference for RCT over tooth extraction\textsuperscript{3}. Just to compare, only 20\% of Indian people are interested in endodontic treatment, while 38.5\% choose extraction\textsuperscript{1}. In contrast, the level of knowledge on root canal may impact by the different factors such as attitude about the dental health and socio-demographic\textsuperscript{2}.

Janczarek et al\textsuperscript{6} reported that there is an enhancement of awareness and knowledge of individuals about the root canal treatment.

This study aimed to evaluate patients’ knowledge, awareness, and attitude of endodontics treatment among Lahore population. The criterion that directed the persons in deciding on root canal treatment has been investigated.
Methods

Questionnaire surveys were carried out in a group of 209 patients of the department of operative dentistry, Lahore medical & dental college, Lahore, Pakistan. There was designed a multiple-choice questionnaire comprising socio-demographic questions of participants, as well as their awareness about RCT - their experiences, expectations, treatment costs, and possible complications. The obtained data are presented in tabular form. Participants were selected by certain characteristic called inclusion criteria that consist of male or female patients ranging from 14-75 years old that attended to the outpatient department of Lahore medical and dental college, Lahore, Pakistan. While exclusion criteria of participants were mentally handicapped, pediatric patients and more than 75 years old.

Statistical analysis

The analysis of data was carried out by descriptive statistics as percentage. The answers of the participants were analyzed by Chi-square test with a 5% level of significance using IBM Statistical Program for Social Sciences Version 23.0 (SPSS Inc, Chicago Illinois, USA).

Results

Of the 209 participants in the study, (43.5%) were males and (56.5%) were females. Table 1 shows the socio-demographic characteristics of the participants. The mean age of participants was 34.72±13.61 years, between 14 and 75 years of age.

| Characteristics | Frequency (%) |
|-----------------|--------------|
| Gender          |              |
| Male            | 91(43.5)     |
| Female          | 118(56.5)    |
| Age             |              |
| 14-29 years     | 94(45.0)     |
| 30-39 years     | 49(23.4)     |
| 40-49 years     | 33(15.8)     |
| 50-59 years     | 19(9.1)      |
| 60-69 years     | 11(5.3)      |
| ≥ 70 years      | 3(1.4)       |
Table 2 shows the patient’s experience regarding endodontic treatment, in which (51%) of subjects had experienced root canal treatment in the past while (49%) had no experience of the RCT. Out of the total, 76% subjects who undergone endodontic treatment recalled it as was very well, but 24% participants had bad experience with it. Interestingly, almost half of the participants did not remember who performed the treatment.

| Study group | Response | % |
|-------------|----------|---|
| Do you have any endodontic treatment done before? | Yes | 51% |
|  | No | 49% |
| How do you recall your endodontic treatment? | Well | 76% |
|  | Bad | 24% |
|  | Yes | 49% |
| Was it a painful treatment? | No | 32% |
|  | Don't remember | 19% |
| Who performed the treatment? | Student | 6% |
|  | Intern | 18% |
|  | Experienced dentist | 33% |
|  | Don't Know | 43% |

Concerning the reasons behind the endodontic treatment of the respondents(Table 3), the majority of them reported tooth ache while eating or biting, or strong spontaneous pain (altogether 67%), but many of them reported some other symptoms.

| The reason behind the endodontic treatment | % |
|-------------------------------------------|---|
| Toothache while eating | 15% |
| Toothache while biting | 23% |
| Strong spontaneous toothache | 29% |
| Color discoloration | 1% |
| Others | 32% |
Table 4. Have you done any home remedy to relieve a toothache?

| Symptoms | %  |
|----------|----|
| Yes      | 60%|
| No.      | 40%|

In case of toothache, the majority of participants (60%) used some home remedies to relieve toothache (Table 4). Among participants, 22% of them had average knowledge concerning endodontic treatment and they were willing to learn more information about it, but 42% reported that they do not know anything (Table 5).

Table 5. Self-evaluation of patient's knowledge on the endodontic treatment

| Symptoms                                                      | %  |
|---------------------------------------------------------------|----|
| I know a lot                                                  | 12%|
| Average knowledge, I will ask from the dentist                | 22%|
| Average Knowledge, I am not interested in the course          | 6% |
| I don't know anything                                         | 42%|
| Will know from media/internet                                 | 18%|

Table 6 presents the patient's concern on endodontic treatment. Majority of the 47% participants worried about possible pain associated with endodontic treatment, and 23% indicated a high cost of endodontic treatment.

Table 6. Patient's concern on endodontic treatment

| Concern                                      | %  |
|----------------------------------------------|----|
| Pain                                         | 47%|
| Long treatment time                          | 19%|
| High cost                                    | 23%|
| Breaking of the instrument in canal          | 1% |
| Multiple x-rays/OPG's                        | 2% |
The high price of endodontic treatment plays a vital role in the decision between choosing endodontic treatment or tooth extraction. Of the total number of participants, 86% answered that high price changes their decision of endodontic treatment, while only 14% answered that high prices did not affect the decision of choosing endodontic treatment (Table 7). Only 37% of participants were willing to pay a high cost for proper endodontic treatment and 63% were reluctant to pay a high cost for dental treatment. However, 70% of respondents would not go for extraction in any case.

Table 7. Selection criteria between endodontic treatment and tooth extraction

| Relationship                                                      | Yes (%) | No (%) |
|-------------------------------------------------------------------|---------|--------|
| Will the price make any changes to the decision of your endodontic treatment? | 86%     | 14%    |
| Would you willing to pay the high cost for the proper endodontic treatment? | 37%     | 63%    |
| Would you go for the extraction rather than paying heavily for the endodontic treatment? | 30%     | 70%    |

Table 8 shows criteria for selecting the person who would perform endodontic treatment. Most of participants reported that they would choose a specialist to perform endodontic treatment, and 33% answered that they would choose a dentist recommended by a friend or relative. However, 13% participants reported that it is not important who is performing the endodontic treatment.

Table 8. Criteria for selecting the person for performing endodontic treatment

| The person performing endodontic treatment                  | %  |
|-------------------------------------------------------------|----|
| Dentistry student                                           | 1% |
| Dentist recommended by friend/ relative                     | 33%|
| Specialist                                                  | 47%|
| Dentist without specialization                              | 6% |
Table 9. The criteria for selecting a dental office

| Selection criteria          | %    |
|-----------------------------|------|
| Free of charge treatment    | 7%   |
| Reasonable price            | 7%   |
| Friendly service            | 14%  |
| Professional staff          | 44%  |
| Painless treatment          | 21%  |
| Easy access for you         | 7%   |

In the final part of the survey, the participants were inquired regarding the criteria for choosing the dental office. The majority of them answered that highly professional staff was the most significant criterion for selecting the dental clinic. Of the total, 21% reported painless treatment is the criteria for selecting dental office, 14% reported friendly service (Table 9).

**Discussion**

Nowadays, the RCT has been one of the fastest-growing fields of dental sciences. The use of the latest gadgets, such as new restoration materials, microscope in daily practice, and rubber dam, considerably influences the durability and quality of the treatment. Conversely, the level of awareness concerning the RCT in individuals in the world varies from one area to another due to various technologies accessible, human population and resources, and many more reasons\(^2,9,10\).

Pain experience causes patients to hesitate the treatment and become more frightened of it\(^8\). The main reason for patients to avoid going to the dentist was the fear of pain\(^10,11\). This may be the reason why patients delay treatments until they experience a spontaneous toothache\(^12\). Nevertheless, further studies revealed that dental fear may create oral health problems, as well as psychosocial problems for the individual\(^13,14,15\). Participants stated that painless treatment is much more important than the expense of the treatment. Physicians should always try to reduce the stress level of the patient and the dentist should always make decisions in favor of the patients\(^7,16\). Few studies\(^11,12,17\) showed that people
avoid check-ups to the dentist due to fear. Participations most often and take pain killers, anti-inflammatory drugs, or even antibiotics. Patients also said that they prefer willingly custom-made preparations or locally used with cotton swabs soaked in alcohol, placing of ash from a burnt newspaper in the tooth lesion, keeping the cigarette smoke in the mouth, rinsing the mouth with water, baking soda and vinegar. One of the patients applied acupuncture technique in reducing pain. Acupuncture was also applied in the practice of decreasing the stress of dental visits and brought shockingly good outcomes. It has been recommended that the most suitable puncture points are the hand’s feet and ears. Nevertheless, due to the decreased number of studies, such information needs further study.

Prices related to the RCT are still debatable. Patients often complaining that they are too high and the treatment should be financed by insurance companies. However, half of the respondents were ready to pay even higher amounts to prevent tooth loss.

According to the survey conducted by Daudet al, 52% of the patients gained knowledge about the treatment through their relatives and friends. Subjects who were unaware of the specialized treatment, reported the use of home remedies for relieving pain, which comprised the use of clove oil, balm application, self medications, and heat pack, but they were mainly among the geriatric group (12.73%).

Nearly half of the patients said they would prefer an endodontist to perform the treatment. This rate was much higher in other studies (68%). The proportion of patients who had not yet acquainted with the concept of endodontist was much more than we expected. We believe that this was due to the fact that patients were unaware of endodontics. In previous studies, the most important criterion for patients was the skill and experience of the staff, which we noticed, too. More than half of the participants reported their endodontics treatment done before. Previous studies revealed that the patient-dentist relationship strongly affects a patients’ feeling to be safe and secure. Therefore, practitioners should explain the course of the treatment to patients, including alternative treatment plans.

Participants stated that almost half of them would prefer specialist for their treatments (47%). However, 33% stated that the RCT should be performed by experienced dentist. That reveals patients' lack of knowledge about the endodontic concept.
The awareness of people regarding the RCT has improved considerably over the past years. This is not only due to school education, but also mostly due to mass media - television, newspapers and the Internet. People are aware of the chances accessible by the latest dental practices- not just to achieve instant relief of pain, but also to perform the management at the utmost level - ensuring long-term radiological surveillance, enabling observation of outcomes achieved, allowing immediate intervention in case of exacerbation of symptoms, and monitoring the effects of treatment.

**Conclusions**

Awareness levels of patients’ concerning the RCT are different among races and populations. Knowledge of patients about endodontic treatment has been increased, and specialist dentist is the first choice of the majority of patients.

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