

The Need of Endodontic Therapy among Patients Attending Tertiary Care Center in Central Nepal

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Citation

Acharya N, Humagain R, Dahal S, Kafle D. The Need of Endodontic Therapy among Patients Attending Tertiary Care Center in Central Nepal. *Kathmandu Univ Med J.* 2022;79(3):264-7.

ABSTRACT

Background

Dental caries is considered as the most prevalent oral disease in Nepalese population that frequently needs endodontic therapy or root canal treatment (RCT). Pulp infection is one of the most common sequels of dental caries which when left untreated leads to pulpal necrosis and peri-radicular diseases. Patients usually reports to the dental hospital after there is pain, sensitivity, swelling or fracture of the tooth structure which usually impedes their normal routine of daily life. RCT is one of the efficacious therapeutic procedures that can save the teeth retaining its aesthetics and function.

Objective

To determine the need of RCT among patients attending Tertiary Care Hospital.

Method

A cross-sectional epidemiological study was conducted in the Department of Conservative Dentistry and Endodontics over the period of one year from April 2019 to April 2020. Ethical approval was taken from the Institutional Review Committee Kathmandu University School of Medical Sciences. In total, 7566 records of the patients that needed endodontic therapy and other treatments were collected and the need of endodontic therapy versus other treatments were assessed. The data obtained were analyzed using the SPSS version 20. The association between various patient-related variables were calculated by chi square test and mean, standard deviation, frequency and percentage were calculated using descriptive statistics. P value was set at < 0.05 for statistical significance.

Result

Among the total study population, (n=7566), the mean age was 34.97±14.34 years among which 4387 (58%) were females and 3179 (42%) were males. The type of treatment required by the study participants were significantly associated with age and sex (p < 0.001) and p < 0.001, respectively).

Conclusion

The findings of this study concluded that there was an increased need for endodontic therapy among patients visiting the department compared to other treatments. There was a significant association between gender and age showing females and elderly patients in greater need for endodontic therapy.

KEY WORDS

Endodontic therapy, Epidemiology, Periapical periodontitis, Pulpal pain, Treatment need

INTRODUCTION

The primary goal of the Endodontic Therapy or root canal treatment (RCT) is prevention and interception of pulpal or periapical pathosis along with preservation of natural dentition.¹ Among several other aetiologies, dental caries is the most common cause of tooth structure loss leading to need of endodontic therapy.² Literature shows several epidemiological studies on frequency and distribution of root filled teeth in different populations with high frequency of need of RCT.³⁻⁵ It has also been documented that more people are keen to preserve their teeth in older ages. Moreover, due to increase in life expectancy and success of preventive dentistry, the demand for RCT has increased significantly.^{2,6}

According to American Dental Association (ADA), RCT is one of the most commonly performed non-surgical treatment with approximately 15.1 million RCTs per year.⁷ In context of Nepal, the first and only National Pathfinder Survey on oral health shows 58% of 5-6 years old schoolchildren suffered from dental caries resulting in pain and discomfort in 18% of 5-6 years old and 64% of older patients, when left untreated.⁸ Another study conducted in Chepang school children in Nepal, reported 52%, 41% and 31% prevalence of caries in 5-6, 12-13 and 8-16 years old children respectively with the need of treatment of decayed teeth to be 100%.⁹

The sequel of untreated dental caries is irreversible pulpitis leading to pulpal necrosis and various periapical pathosis.¹⁰ However, literature shows lack of epidemiological studies in the prevalence of dental caries and its sequel in other age group in Nepal. Hence, this study aimed to determine the need of endodontic therapy among patients attending Dhulikhel Hospital, Kathmandu University Hospital as epidemiological health records can be an important tool to assess the frequency of the teeth that needs endodontic therapy and to design strategic plan for future.

METHODS

This cross-sectional epidemiological study was conducted over a period of 1 year, from April 2019 to April 2020 in Department of Conservative Dentistry and Endodontics in Dhulikhel Hospital, Kathmandu University Hospital. Ethical approval was taken from the Institutional Review Committee of Kathmandu University School of Medical Sciences (IRC no. 69/19). Total 7566 records of the patients that needed endodontic therapy and other treatments like restorations, deep caries management, veneers, bleaching and others were collected to see the frequency of the need of endodontic therapy versus other treatment. Informed consent was received from the study participants prior to the study.

The inclusion criteria for the study were patient of either gender with age 15 years or above reporting to department of conservative dentistry and endodontics with adequate

and clearly written patient record book for treatment, having received endodontic treatment or retreatment and with the need of endodontic therapy or other treatments. However, patients with incomplete records, retained deciduous teeth, third molars and grossly decayed teeth with root stumps were excluded from the study. The diagnosis and endodontic treatment protocol was followed according to standardized protocol for endodontic treatment.¹¹

The clinical examination of the patients was done by the two skilled endodontists and treatment need was verified. Besides, demographic information such as age and gender of the patients were also recorded. The data was entered into Microsoft Excel Sheet which was further analyzed using the SPSS (Statistical Package for Social Sciences) software (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). The association between various patient-related variables were calculated by chi square test whereas mean, standard deviation, frequency and percentage were calculated using descriptive statistics. P value was set at < 0.05 for statistical significance.

RESULTS

Among the total study population (n=7566), the mean age was 34.97±14.34 years among which 4387 (58%) were females and rest were males (Figure 1), indicating the greater need of overall treatment in females compared to males. While assessing the treatments needs among the patients visiting the Department of Conservative and Endodontics, majority (5417, 71.6%) required endodontic therapy (RCT) and rest of them needed other treatments such as restorations, deep caries management, veneers or bleaching (Table 1).

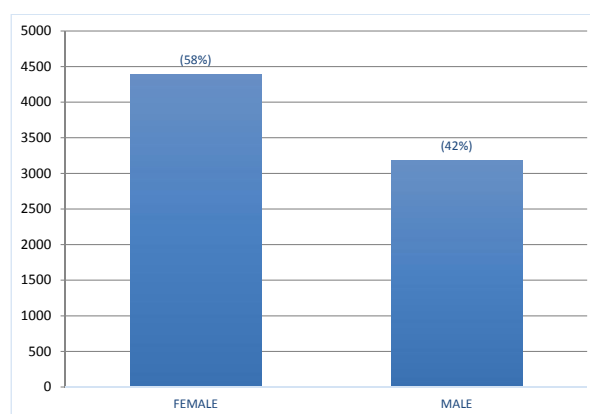


Figure 1. Sex distribution of study participants

Table 1. Frequency distribution of type of treatment need conducted in Department of Conservative Dentistry and Endodontics

Type of treatment	n (%)
Endodontic Treatment (RCT)	5417 (71.6)
Other Treatments	2149 (28.4)

Table 2. Proportional difference in types of treatment according to different variables

Variables	Categories	No of patients and Percentage n (%)	Type of treatment n (%)		P value*
			RCT	Other Treatments	
Age	< 20 years	1384 (18.29)	960 (69.4)	424 (30.6)	< 0.001
	21-40 years	3516 (46.5)	2471 (70.3)	1045 (29.7)	
	41-60 years	2412 (31.8)	1788 (74.1)	624 (25.9)	
	> 60 years	254 (3.3)	198 (78)	56 (22.0)	
Sex	Female	4387 (58)	3220 (73.4)	1167 (26.6)	< 0.001
	Male	3179 (42)	2197 (69.1)	982 (30.9)	

*Chi square test

All the patient were divided into four age groups, < 20 years, 21-40 years, 41-60 years and > 60 years. The majority of the patients fall under 21-40 years age group (3516, 46.5%) followed by 41-60 years (2412, 31.8%), < 20 years (1384, 18.29%) and > 60 (254, 3.3 %) years respectively. However, the more need of endodontic treatment was observed in > 60 years old age group (78.0%) followed by 41-60 years (74.1%), then 21-40 years (70.3%) and least need was observed in < 20 years old (69.4%) patients. Thus, an increased need of endodontic therapy was noted with the increasing age of the patients. Gender wise the endodontic treatment need was more in females (73.4%) compared to their male counterparts (69.1%) (table 2). Moreover, we observed the types of treatment required by the study participants were significantly associated with age and sex ($p < 0.001$ and $p < 0.001$, respectively, table 2).

DISCUSSION

In this study, the frequency of the need of endodontic therapy (RCT) was evaluated in context with other treatments, age and gender of the patients. Similar to other studies, this study also observed the more need of endodontic therapy among female patients compared to males.¹²⁻¹⁴ One of the reasons for this difference can be men having greater access to health care system compared to females in our part of world.¹⁵

Contradictory to our findings, Osama et al. and Tareen et al. observed higher demand of endodontic therapy in males.^{16,17} This can be attributed to the fact that ethnic variance occurs as both of the study represents Pakistani population.

Most of the patients presented to the department of conservative dentistry and endodontics were found to be in 21-40 years age group (46.5%) followed by 41-

60 years age group (31.8%). This finding is similar to the study by Umanah et al.¹⁸ This can be attributed to the high prevalence of dental caries among adult patients along with greater ease and access to approach the healthcare system compared to young (> 20) or old (> 60/) patients.¹⁹ Due to the same reasons only 3.3% of old patients (> 60 years) visited to dental hospital with significantly greater need of endodontic therapy (78%) compared to other age groups. Similar to other studies, it has been observed in this study that the endodontic treatment is required more with patients of advancing age (> 60) compared with other age groups.^{2,4,20} This is due to the fact that older patients and their dentition have been exposed to the various noxious stimuli for much longer period of time compared to younger individuals. Hence, with advancing age etiological factors increases, the pulpal regenerative power decreases and oral hygiene maintenance also decreases leading to greater need of endodontic therapy.

Moreover, among the total patients visited (N=7566), the demand of the treatment was significantly more for RCTs (71.6%). The treatment needs for other treatments like restorations, deep caries management, veneers, bleaching or others were only 28.4%. The most common complication of untreated dental caries is the irreversible pulpitis, pulpal necrosis and periapical periodontitis demanding the need for endodontic treatment.^{10,18} The other most important factor is the awareness towards the oral health in our populations, which seems to be much less than desired owing to the fact that patient usually seek dental care when they already have pain, swelling, discomfort, loss of function and disturbed daily activities in advanced stages of dental diseases.²¹ With the advancement of preventive dentistry these oral diseases are largely preventable.^{14,22} However, also due to the dental fear, which is more common in females and younger, patients report late to the hospital advancing the preventive treatment and needing the endodontic therapy.¹⁴ Moreover, mostly molars and premolars are the type tooth that demands endodontic therapy compared to anterior teeth.^{2,5,20} However in our study this parameter was not included.

It is necessary to identify the need of endodontic treatment in any population to access the necessity of treatment service, healthcare manpower as well as to plan future strategies.²³⁻²⁵ This study has provided data on need of endodontic treatment as well other treatments. However more importantly it will also guide us to adjust the need for preventive and interceptive treatment for our population. Moreover, it has provided information to understand the disease process, its need among gender and age groups and emphasizes towards the need for implementation of effective preventive dental health, patient education, and early treatment of dental diseases and recognition of importance of geriatric dentistry.

This study has some limitations. The study was conducted in Kathmandu University Teaching Hospital, Dhulikhel

Hospital, Kavre which being a referral centre, represents a large number of populations from central Nepal. However more generalization of the sample is still needed. Additionally, this study did not compare the need of endodontic therapy among tooth types and jaw wise.

CONCLUSION

The need of an endodontic therapy is high in Nepalese population compared to other procedures done in endodontic and restorative department. Endodontic therapy has higher need in females. As the age advances, the need of endodontic therapy also increases. Elderly population with age more than 60 years have highest need of endodontic therapy.

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