



Prevalence and pattern of endodontic treatment among pediatric age group of a known population

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Abstract

Background:Dental caries continues to be a significant community-level public health issue as well as an individual source of pain, suffering, and poor quality of life. As a result, the current study was carried out to evaluate the frequency and pattern of endodontic treatment among children of a recognised community.

Materials & methods:100 kids between the ages of 5 and 15 made up the entire enrollment. Only patients who need dental care were included in the study. All patients examined throughout the study period had their dental records collected, and those who had endodontic treatment were chosen. Age, gender, the type of tooth that underwent endodontic therapy, the

justifications for the procedure, and the kind of endodontic treatment administered were all taken from the cases that were chosen. SPSS software was used to record and interpret each outcome.

Results: A total of 100 children were evaluated in the present study. Among these 100 children who underwent dental treatment, endodontic treatment was done in 70 subjects (70 percent). Deciduous tooth A, B, C, D and E involvement occurred in 4.28 percent, 5.71 percent, 2.85 percent, 35.71 percent and 15.71 percent of the patients respectively. Permanent tooth 1, 2, 6 and 7 involvement occurred 5.71 percent, 1.42 percent, 2.85 percent and 25.71 percent of the patients respectively.

Conclusion: The most frequent causes of endodontic treatment in primary and permanent teeth, respectively, are dental caries and trauma. The most affected teeth were the mandibular molars.

Key words: Endodontic treatment, pediatric

INTRODUCTION

Dental caries, otherwise known as tooth decay, is one of the most prevalent chronic diseases of people worldwide; individuals are susceptible to this disease throughout their lifetime. Dental caries forms through a complex interaction over time between acid-producing bacteria and fermentable carbohydrate, and many host factors including teeth and saliva. The disease develops in both the crowns and roots of teeth, and it can arise in early childhood as an aggressive tooth decay that affects the primary teeth of infants and toddlers. Risk for caries includes physical, biological, environmental, behavioural, and lifestyle-related factors such as high numbers of cariogenic bacteria, inadequate salivary flow, insufficient fluoride exposure, poor oral hygiene, inappropriate methods of feeding infants, and poverty. The approach to primary prevention should be based on common risk factors. Secondary prevention and treatment should focus on management of the caries process over time for individual patients, with a minimally invasive, tissue-preserving approach.¹

Abstract Dental caries is a transmissible bacterial disease process caused by acids from bacterial metabolism diffusing into enamel and dentine and dissolving the mineral. The bacteria responsible produce organic acids as a by-product of their metabolism of fermentable carbohydrates. The caries process is a continuum resulting from many cycles of demineralization and remineralization. Demineralization begins at the atomic level at the crystal surface inside the enamel or dentine and can continue unless halted with the end-point being cavitation. There are many possibilities to intervene in this continuing process to arrest

or reverse the progress of the lesion. Remineralization is the natural repair process for non-cavitated lesions, and relies on calcium and phosphate ions assisted by fluoride to rebuild a new surface on existing crystal remnants in subsurface lesions remaining after demineralization. These remineralized crystals are acid resistant, being much less soluble than the original mineral.²

Hence; the present study was conducted for assessing the prevalence and pattern of endodontic treatment among pediatric age group of a known population.

MATERIALS & METHODS

The goal of the current study was to determine the frequency and pattern of endodontic therapy among children of a recognised community. 100 kids between the ages of 5 and 15 made up the entire enrollment. Only patients who need dental care were included in the study. All patients examined throughout the study period had their dental records collected, and those who had endodontic treatment were chosen. Age, gender, the type of tooth that underwent endodontic therapy, the justifications for the procedure, and the kind of endodontic treatment administered were all taken from the cases that were chosen. SPSS software was used to record and interpret each outcome.

RESULTS

A total of 100 children were evaluated in the present study. Among these 100 children who underwent dental treatment, endodontic treatment was done in 70 subjects (70 percent). Deciduous tooth A, B, C, D and E involvement occurred in 4.28 percent, 5.71 percent, 2.85 percent, 35.71 percent and 15.71 percent of the patients respectively. Permanent tooth 1, 2, 6 and 7 involvement occurred 5.71 percent, 1.42 percent, 2.85 percent and 25.71 percent of the patients respectively.

Table 1: Distribution of patients according to tooth involved

Tooth involved	Number of patients	Percentage
A	03	04.28%
B	04	05.71%
C	02	02.85%
D	25	35.71%
E	11	15.71%
1	04	05.71%
2	01	01.42%

6	02	02.85%
7	18	25.71%

DISCUSSION

Functional dentition is an important factor in the process of growth and development of the child patient, therefore preservation of both primary and permanent teeth in a functional state is a major task in achieving good oral health in children.³

Many risk factors have been found to affect the health of dental pulp and consequently cause pulpal infection. Of these factors, dental caries, periodontal disease and dental trauma have been generally reported to be the major and the commonest causes of pulp necrosis and periapical periodontitis.⁴⁻⁶ In Nigeria, studies have shown that the commonest cause of tooth loss among children is delayed presentation of dental caries and traumatic dental injury.⁷⁻⁹ This late presentation and symptomatic visits attitude has made endodontic treatment inevitable among them.

Endodontic treatment is a procedure that is designed to maintain the health of all or part of the pulp when the pulp is diseased or injured, thereby preserving the tooth that would have been otherwise extracted due to pulpal pathology.¹⁰ In a study carried out among Danish population, Kirkevang et al.¹¹ reported that endodontic treatment has invariably led to a decline in the tendency amongst dentists to extract diseased teeth. These treatments aim at prevention of progression of infection, preservation of normal periradicular tissues and restoration of the treated tooth to its proper form and function in the dental arch.¹²

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BOPopoola et al¹³ aimed at determining the prevalence and pattern of endodontic treatment carried out at the Paediatric dental unit of the University College Hospital, Ibadan over a five-year period. This was a retrospective study of all patients below 16 years of age treated for various dental problems in our unit between August, 2010 and July, 2015. The records were

reviewed and cases with endodontic treatments selected. Data such as age, gender, endodontically treated teeth, reasons for endodontic treatment and type of endodontic treatment given were retrieved from the patients' dental records. A total of 3,237 children were seen during the period under review, out of which 312 (9.6%) received endodontic treatment. There were 159 males and 153 females with a mean age of 10.2 ± 3.5 . Children aged 10-13 years had the highest frequency of endodontic treatment (36.8%) and this was majorly due to dental trauma, followed by those aged 6-9 years (28.6%) who were treated mainly for dental caries. Root canal therapy was the most prevalent endodontic treatment in permanent teeth (central incisor; 32.7% and first permanent molars; 14.6%) while pulpectomy was the most prevalent endodontic treatment in primary teeth ($p = < 0.001$). Dental caries and trauma were the commonest reasons for endodontic treatment in primary and permanent teeth respectively. The prevalence of endodontic treatment in the studied children was 9.6% with highly invasive and multiple visits endodontic treatment type (pulpectomy and root canal therapy) being the most common.

In a similar study conducted by Demirbuga S et al¹⁴, authors investigated a total of 7,895 panoramic radiographs taken for routine dental examination. Two independent specialists evaluated early tooth loss and endodontic treatment needs of permanent first molars using panoramic radiography and patient anamnesis forms. The teeth were classified according to the following data: (a) Missing teeth, (b) teeth requiring extraction, (c) endodontically treated teeth (ETT), (d) teeth requiring endodontic therapy. A total of 19,488 and 12,092 teeth were evaluated in the child group and adolescent group respectively. All data were higher in adolescents than children ($P < 0.001$). For gender factor, only ETT was higher in girls than it was in boys ($P < 0.001$). For the jaw factor, all data were higher ($P < 0.001$) in mandible than in the maxilla. For the side factor, no statistical difference existed between right and left. Early tooth loss and endodontic treatment needs of permanent first molars showed variability according to age groups and jaws.

CONCLUSION

The most frequent causes of endodontic treatment in primary and permanent teeth, respectively, are dental caries and trauma. The most affected teeth were the mandibular molars.

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