AFGHAN MEDICAL JOURNAL

KABUL UNIVERISITY OF MEDICAL SCIENCES ABU ALI IBN SINA

Vol 1, Issue 1 | Mar 2024 AMJ e-ISSN: 3007-0805

Prevalence of endodontic treatment among Stomatology Teaching Hospital adult patients, Kabul University of Medical Sciences (KUMS), Kabul, Afghanistan

Senior Teaching Assistant Dr. Ali Maisam Eshraqi[1], Teaching Assistant Neghat Ghafoory[2]

[1]Department of Endodontics and Operative Dentistry, Kabul University of Medical Sciences Abu Ali Ibn Sina
[2]Department of Oral and Maxillofacial Surgery, Kabul University of Medical Sciences Abu Ali Ibn Sina

Corresponding Author: Dr. Ali Maisam Eshraqi
Email: alimaisame@gmail.com
Cell Phone: +93774197713

Abstract

Background: Endodontic treatment is the entire removal of coronal and radicular pulp tissue and then obturation of the space by specific materials. Normally dental pulp and its surrounding dentin are protected by enamel and cementum. Factors like caries, dental trauma, and restorative procedures may destroy these hard tissues and infect the complex of dentin-pulp, and result in dental pathology and extension of inflammation into peri-radicular tissue. In this condition, endodontic treatment is necessary to be done.

Objective: To find the prevalence of endodontic treatment among Stomatology Teaching Hospital adult patients

Method and Material: It is a descriptive cross-sectional study that was done during the last four months of 1399. The target information for this research was collected actively from patients in data collection form and the register book and the prevalence of endodontic treatment was found. So that all the patients of the Endodontics and Operative Dentistry department of Stomatology Teaching Hospital were carefully noted and evaluated and the number of teeth that were treated endodontically and their characteristics were noted in the data collection form for research and then the collected data was analyzed.

Results: The prevalence of endodontic treatment was found 25 %. The participants were 18-70 years old. According to age, most of the cases were found in the third decade of life (44.96%), 21.6 % in the second decade, and 14 % in the fifth decade. According to gender, 46.4 % of the cases were male and 53.6 % of the cases were female. The most affected teeth were the first permanent molar tooth 39,9 % the and second permanent molar tooth 16,2 %, but the least cases were found in the permanent canine tooth 3,6 % and the third permanent molar tooth 4,3 %. Most cases were found in the lower jaw 52.1 % which is more than in upper jaw teeth.

Conclusion: The prevalence of endodontic treatment was 25%, higher than observed in epidemiological studies conducted in other countries. Most of the cases were female. Endodontic treatment was most frequent in the lower jaw and specifically in the first molar and mostly occurred in the third, second, and fifth decades of life.

Keywords: Endodontic Treatment, Adult Patients, Molar Tooth, Oral Health

Introduction

Endodontic treatment is the entire removal of coronal and radicular pulp tissue and then obturation of the space by specific materials (7). Normally dental pulp and its surrounding dentin are protected by enamel and cementum. Factors like caries, dental trauma, and restorative procedures may destroy these hard tissues and infect the complex of dentin-pulp, and result in dental pathology and extension of inflammation into peri-radicular tissue. In this condition, endodontic treatment is indicated to be done (3).

Endodontic treatment is very common throughout the world. Worldwide prevalence of endodontics treatment is 8.2%. The global prevalence of people with at least one Endodontically treated tooth is 55.7%. In the 20th century, the prevalence of endodontic treatment was 10.2% whereas in the 21st century, the overall calculated prevalence of endodontic treatment is 7.5%. (10)

Endodontic treatment has some benefits; the excruciating pain that patients constantly experience will completely go away. Since endodontic treatment involves scraping the entire bacteria causing the infection, the spread of infection is prevented. It also prevents the formation of abscesses in infected teeth. By doing endodontic treatment, it would leave the patients with natural biting force and sensation. Since the tooth is saved, there would be no problems with replacing the missing tooth or dealing with loss of confidence due to gaps and missing teeth. Despite all the advantages, it has some disadvantages. Discoloration and even darkening of the treated tooth are common. The endodontically treated tooth will not be as strong as its original strength before the bacterial infection. Reinfection will occur if the crown is not restored as soon as possible. (13, 1)

Dolci M et al. found the endodontic treatment prevalence 6.59%. In this research, the prevalence of endodontic treatment in females was 61.21%. According to tooth type, the prevalence in molar teeth was 15.02% which is more than any other teeth (4). De Cleen MJ et al. showed that the prevalence was 2.3% (2). Eriksen HM et al. found it 3.4%. According to age, it has been said that with increasing age, the prevalence of endodontic treatment has also increased so in people over 60 years of age, the prevalence of endodontic treatment has been 20.2% (5). Tsuneishi M et al. showed that 87% of the teeth of the people under

study have been treated endodontically (12). Khan SQ et al. found the prevalence 93.4%. Among all the teeth, the most endodontic treated was the first molar (28.43-36.36%), the second premolars (20.1- 27.27%) of both jaws and the first premolars of the upper jaw (11.67%), and the lowest prevalence was found in lower incisors (9). Hollanda AC et al. showed that the prevalence of this treatment was 21.4%, among all the teeth of the jaws, the most endodontic treated teeth were premolars and molars of the upper jaw and the lowest prevalence was in the lower incisors. According to age, the highest prevalence (47.6%) was between 46-60 years old, and the prevalence of endodontic treatment increased with age. According to this research, the prevalence of this condition in females was 61.9% which is more than in men (7). Kamberi B et al. showed that the prevalence of endodontic treatment was 2.3%. According to age, it has been said that with increasing age, the prevalence of endodontic treatment has also increased so in people over 60 years of age, the prevalence of endodontic treatment is 20.2% (8). Kirkevang LL found the prevalence of endodontic treatment at 4.8%. According to gender, it has been said that the prevalence of endodontic treatment was higher in females than in men. According to the type of teeth, its incidence was 8.1% in molar teeth, 5.4% in premolars, and 2.5% in anterior teeth. The prevalence of endodontic treatment has increased with age (10). Hebling E et al. showed that the prevalence of endodontic treatment was 13.37% (6).

Considering the information, we presented, oral diseases do not only affect the teeth but also the tissues surrounding them, and in the next stages, it endangers the function of phonetics, esthetics and nutrition, and even the general health of the person. (2) This situation requires investing in prevention programs to improve the oral health status of society. The information that is collected in this research about the prevalence of endodontic treatment and the conclusions drawn after analysis and evaluation can help us in the development of preventive programs.

The main purpose of the research: to find out the prevalence of endodontic treatment among adult patients (18-70 years old) of the Stomatology Teaching Hospital, Kabul University of Medical Sciences "Abu Ali ibn Sina".

Importance of the subject: endodontic treatment is performed on all teeth, but it's not the same on all teeth. Endodontic treatment if carried out in a standardized manner, will preserve the desired tooth for many years. If this treatment is not performed or is performed incompletely, finally the tooth must be extracted. Finding another alternative (such as partial prosthesis, bridge, and implant) for the desired tooth is destructive for the adjacent tooth or is very expensive. Therefore, endodontic treatment is cheaper and more accessible than other treatments. There has been no research on the prevalence of endodontic treatment among adults in Afghanistan and no statistics are available. Therefore, in this research, an effort is made to find out its prevalence so that it can be considered in preventive policies.

type of each tooth **Table (1).**

Table (1): Demographic characteristics of participants

Research Questions

1. What is the prevalence of endodontic treatment in adults?
2. In there any differences in endodontic treatment prevalence between lower and upper jaws?
3. Is the prevalence of endodontic treatment the same in all types of teeth?
4. How is the prevalence of endodontic treatment in males and females?
5. What age ranges are endodontic treatment more prevalent?

Method and Material

It is a descriptive cross-sectional study that was done during the last four months of 1399. The target information for this research was collected actively from patients in data collection form and the register book and prevalence of endodontic treatment was found. So that all the patients of the Endodontics and Operative Dentistry department of Stomatology Teaching Hospital were carefully noted and evaluated and the number of teeth that were treated endodontically and their characteristics were noted in the data collection table for research and then the collected data was analyzed.

Research location: Stomatology Teaching Hospital, Kabul University of Medical Sciences "Abu Ali ibn Sina".

The number of samples: All patients who visited the Endodontics and Operative Dentistry department of the Stomatology Teaching Hospital during these four months.

Sampling method: Census. All those who agreed to participate in the research were included, except the patients whose information was incomplete.

Inclusion criteria: All patients who visited Endodontics and Operative Dentistry department.

Exclusion criteria: Patients whose information in the data collection form and the register book was incomplete.

The main research variables: endodontic treatment, age, gender, type of tooth, and jaws.

Research tools and information collection source: All the information required for this research has been written down in data collection form from patients and some from the register book.

Facilities: All facilities are available in the Stomatology Teaching Hospital.

Limitations and ways to solve them (if possible): Since the information was taken directly from the participants and the register book, there are no limitations, unless the information in the data collection form and register book is incomplete.

Ethical issues: The required information is obtained from the register book and there is no intervention by the researcher.

Results

A total of 1110 participants were evaluated. Their age was between 18-70 years. 55% were female. 278 cases (25%) were treated endodontically. The prevalence of endodontic treatment was studied according to age, gender, jaw, and

Variables		Number of participants	Percentage
	18-20	259	23.3%
	21-30	466	42%
	31-40	139	12.5%
Age	41-50	172	15.5%
	51-60	61	5.5%
	61-70	13	1.2%
	Total	**1110**	**100%**
	Male	611	55%
Gender	Female	499	45%
	Total	**1110**	
	Central	65	5.9%
	Lateral	69	6.2%
	Canine	38	3.4%
Type of tooth	First premolar	133	12%
	Second premolar	134	12.1%
	First molar	445	40.1%
	second molar	178	16%
	Third molar	48	4.3%
	Total	**1110**	**100%**
	Lower	572	51.5%
Jaw	Upper	538	48.9%
	Total	**1110**	**100%**

Chart (1): Prevalence of endodontic treatment

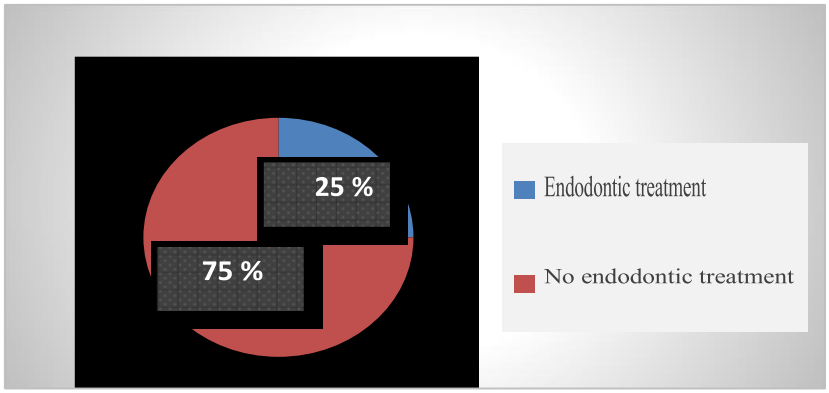

Chart (1) shows the prevalence of endodontic treatment that was found 25%.

Table (2): prevalence of endodontic treatment according to age.

Age	Number	Percentage
16-20	60	21.6%
21-30	125	44.96%
31-40	38	13.66%
41-50	39	14%
51-60	13	4.67%
61-70	3	1.7%
Total	**278**	**100**

Table (2) shows that most cases of endodontic treatment were in the third decade of life (125 cases, 44.96%), the second decade (60 cases, 21.6%), the fifth decade (39 cases, 13.66%), 13 cases (4.67%) in the sixth decade and 3 cases (1.7%) in the seventh decade of life.

Chart (2): Percentage of the patients by gender

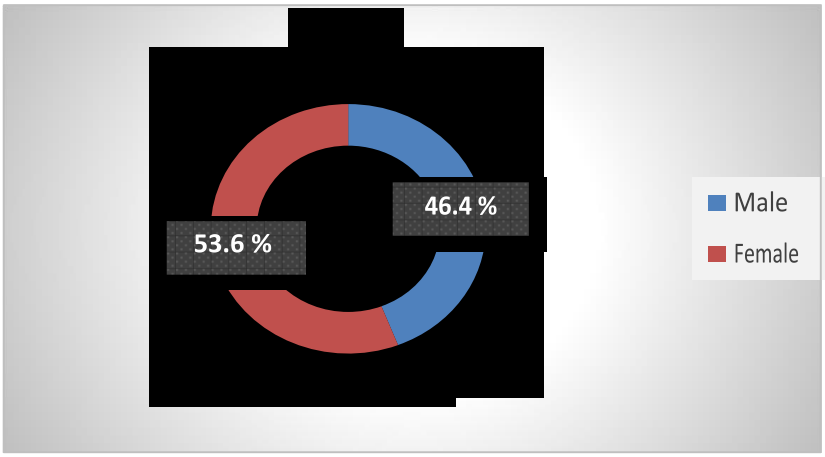

Chart (2) shows that 46.4% of the patients who were treated endodontically, were male and 53.6% were female.

Table (3): Distribution of endodontic treatment according to the type of tooth.

Endodontic treatment	Number	Percentage
Central	14	5%
Lateral	19	6.9%
Canine	10	3.6%
First premolar	33	11.9%
Second premolar	34	12.2%
First molar	111	39.9%
second molar	45	16.2%
Third molar	12	4.3%
Total	**278**	**100%**

Table (3) shows the most tooth in which endodontic treatment has been performed is the permanent first molar (111 cases, 39.9%), followed by the second molar (45 cases, 16.2%), second premolar (34 cases,12.2%), first premolar (33 cases, 11.9%), lateral (19 cases, 6.9%), central (14 cases, 5%), third molar (12 cases, 4.3%) and canine (10 cases, 3.6%).

Chart (3): Percentage of endodontic treatment according to the jaw.

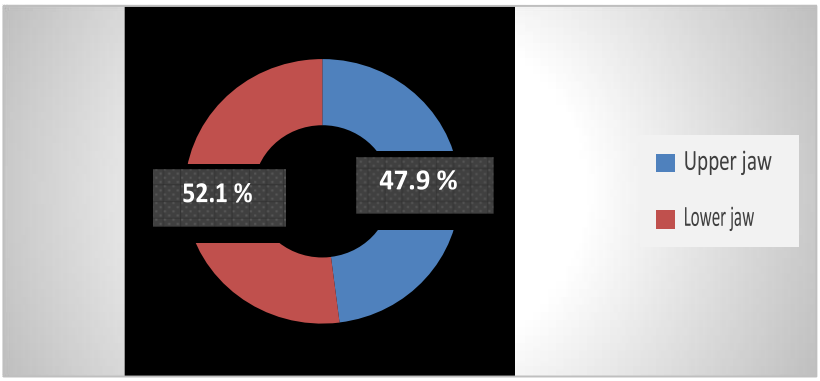

Chart (3) shows that 52.1% of endodontic treatment cases have been done in the lower jaw, which is more than that of the upper jaw.

Discussion

The prevalence of endodontic treatment was found to be 25%. This result mostly follows the findings of two studies in the region and all over the world (7 & 6). However, in some studies, it doesn't follow our result (4,2 & 8) and this is approximately 3 times the worldwide prevalence (8.2%) (11). The possible reasons are the difference in the number of samples, lack of access to oral and dental hygiene equipment and materials, not paying attention to oral and dental hygiene, and the low level of awareness and literacy of people in Afghanistan.

The prevalence of endodontic treatment was 53.6% in females a little higher than in males. This result is by those of Dolci M et al. (4) and Hollanda AC (7)

The analysis of the prevalence of endodontic treatment according to age revealed a higher prevalence in the third decade of life (44.96%), the second decade (21.6%), the fifth decade (14%), the fourth decade (13.66%), the sixth decade (4.67%) and the seventh decade (1.7%). Hollanda AC showed that the highest prevalence (47.6%) was among the 46-60 years old and with increasing age, its prevalence increased (7) Kamberi B also found that the prevalence of endodontic treatment has also increased with age. (8)

In the present study, the prevalence of endodontic treatment in the lower jaw was (52.1%), but Hollanda AC et al. showed that the prevalence of this condition was higher in the upper jaw and the lowest prevalence was found in lower incisors (7).

The most prevalent teeth were the first molar tooth (39.9%) followed by the second molar (16.2%), second premolar (12.2%), first premolar (11.9%), lateral (6.9%), central (5%), third molar (4.3%) and canine (3.6%). This result is mostly by M. Dolci et al. that found it (15.02%) in molars, more than any other teeth in the jaw (7). Hollanda AC et al. found that most of the endodontic treatments were done in premolars and molars of the upper jaw and the lowest prevalence was found in incisors of the lower jaw (7).

Conclusion

The prevalence of endodontic treatment was 25%, higher than observed in epidemiological studies conducted in other countries. Most of the cases were in female patients. Endodontic treatment was most frequent in the lower jaw and specifically in the first molar and mostly occurred in the third, second, and fifth decades of life.

Suggestions

1. Serious attention should be paid to the importance of permanent teeth, especially the permanent first molar, and timely visits to the dentist should be advised through the media.
2. People should be encouraged to brush their teeth at least once a day and visit the dentist regularly every 6 months.
3. The subject of prevention of oral and dental diseases should be included in the curriculum of private and public schools.

References

1- Anees FF, Premavathy D. Advantages and Disadvantages of Endodontic Management. J. Pharm. Res. Int. [Internet]. 2021 Dec. 27 [cited 2023 Jul. 23];33(60B):2977-84. Available from: https://journaljpri.com/index.php/JPRI/article/view/7032

2- De Cleen MJ, Schuurs AH, Wesselink PR, Wu MK. Periapical status and prevalence of endodontic treatment in an adult Dutch population. Int Endod J. 1993 Mar;26(2):112-9. doi: 10.1111/j.1365-2591.1993.tb00552.x. PMID: 8330933.

3- de Oliveira BP, Câmara AC, Aguiar CM. Prevalence of endodontic diseases: an epidemiological evaluation in a Brazilian subpopulation. Brazilian Journal of Oral Sciences. 2016;15(2):119-23.

4- Dolci M, Migliau G, Besharat Z, Besharat L, Gallottini L. Prevalence and distribution of endodontic treatments and apical periodontitis in an Italian population sample. European Journal of Inflammation. 2016;14(1):48-53. doi:10.1177/1721727X16638213

5- Eriksen HM, Bjertness E, Orstavik D. Prevalence and quality of endodontic treatment in an urban adult population in Norway. Endod Dent Traumatol. 1988 Jun;4(3):122-6. doi: 10.1111/j.1600-9657.1988.tb00309.x. PMID: 3248574.

6- Hebling E, Coutinho LA, Ferraz CC, Cunha FL, Queluz Dde P. Periapical status and prevalence of endodontic treatment in institutionalized elderly. Braz Dent J. 2014;25(2):123-8. doi: 10.1590/0103-6440201302348. PMID: 25140716.

7- Hollanda AC, de Alencar AH, Estrela CR, Bueno MR, Estrela C. Prevalence of endodontically treated teeth in a Brazilian adult population. Braz Dent J. 2008;19(4):313-7. doi: 10.1590/s0103-64402008000400005. PMID: 19180320.

8- Kamberi B, Hoxha V, Stavileci M, Dragusha E, Kuçi A, Kqiku L. Prevalence of apical periodontitis and endodontic treatment in a Kosovar adult population. BMC Oral Health. 2011 Nov 29;11:32. doi: 10.1186/1472-6831-11-32. PMID: 22126237; PMCID: PMC3251521.

9- Khan SQ, Khabeer A, Al Harbi F, Arrejaie AS, Moheet IA, Farooqi FA, Majeed A. Frequency of Root Canal Treatment among Patients Attending a Teaching Dental Hospital in Dammam, Saudi Arabia. Saudi J Med Med Sci. 2017 May-Aug;5(2):145-148. doi: 10.4103/1658-631X.204860. Epub 2017 Apr 20. Erratum in: Saudi J Med Med Sci. 2018 Jan-Apr;6(1):53. PMID: 30787773; PMCID: PMC6298371.

10- Kirkevang LL, Hörsted-Bindslev P, Ørstavik D, Wenzel A. Frequency and distribution of endodontically treated teeth and apical periodontitis in an urban Danish population. Int Endod J. 2001 Apr;34(3):198-205. doi: 10.1046/j.1365-2591.2001.00370.x. PMID: 12193265.

11- León-López M, Cabanillas-Balsera D, Martín-González J, Montero-Miralles P, Saúco-Márquez JJ, Segura-Egea JJ. Prevalence of root canal treatment worldwide: A systematic review and meta-analysis. Int Endod J. 2022 Nov;55(11):1105-1127. doi: 10.1111/iej.13822. Epub 2022 Sep 8. PMID: 36016509; PMCID: PMC9826350.

12- Tsuneishi M, Yamamoto T, Yamanaka R, Tamaki N, Sakamoto T, Tsuji K, Watanabe T. Radiographic evaluation of periapical status and prevalence of endodontic treatment in an adult Japanese population. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2005 Nov;100(5):631-5. doi: 10.1016/j.tripleo.2005.07.029. PMID: 16243252.

13- Zoccola GC, Ostengo O, Fogliano F. Vantaggi e svantaggi delle tecniche di misurazione canalare. Il contributo dell'elettronica [The advantages and disadvantages of root canal measurement technics. The contribution of electronics]. Minerva Stomatol. 1991 Jun;40(6):449-54. Italian. PMID: 1944062