

Reasons for Permanent Tooth Extraction in the West of Kabul

Shirin Safari^{1*}, Mohammad Mansour Mohebi², Naseer Ahmad Nazhand², Naveed Mazaher³

¹Department of Anatomy-Physiology, Faculty of Dentistry, Khatam Al-Nabieen University, Kabul, Afghanistan

²Department of Prosthodontics, Faculty of Dentistry, Khatam Al-Nabieen University, Kabul, Afghanistan

³Faculty of Dentistry, Khatam Al-Nabieen University, Kabul, Afghanistan

Email: *Safari.knurtc@knu.edu.af

How to cite this paper: Safari, S., Mohebi, M.M., Nazhand, N.A. and Mazaher, N. (2020) Reasons for Permanent Tooth Extraction in the West of Kabul. *Journal of Biosciences and Medicines*, 8, 54-63.

<https://doi.org/10.4236/jbm.2020.85006>

Received: March 25, 2020

Accepted: May 3, 2020

Published: May 6, 2020

Copyright © 2020 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Background: There has been no study in Kabul on reasons for permanent tooth extraction. This study aimed to determine the prevalence and reasons for tooth loss in a sample from two dental clinics in the west of Kabul. **Methods:** During a 6-month period (April-September 2019), the reasons for every extraction of a permanent tooth were recorded. Different reasons for tooth extraction were assigned, such as, dental caries, periodontal disease, eruption problems, trauma, orthodontics and others. The data requested for each extraction were: patient age, gender, previous treatment, educational level, type of tooth removed and the reason for its extraction. **Results:** young people aged between 20 - 29 years old had the highest percentage of extraction. Periodontal disease (39%) followed by caries (20%) was the most common reason for tooth extraction. Maxillary and mandibular first molars were removed most frequently (31%). 29% of patients have treated their teeth before extraction and RCT (Root Canal Treatment) (19%) is the most common previous treatment. Tooth loss has an opposite relationship with education level. People with high education level, loose their tooth less (14%). **Conclusion:** periodontal disease was the most common reason for tooth loss in Kabul, Afghanistan and a high percentage of tooth loss is seen among young people. Educating and preventive programs need to be implemented in order to reduce tooth loss.

Keywords

Tooth Extraction, Reasons, Permanent, Periodontal Disease, Kabul, Afghanistan

1. Introduction

Our teeth are important for chewing, smiling and speaking and our quality of life: biologically, psychologically and socially will decrease by the loss of these

teeth so we need to keep our permanent teeth as long as possible and extraction of permanent teeth should be considered the last option for dental treatment [1]. The number of extracted teeth can be used as an indicator of socioeconomic and oral hygiene level [2]. There are some reasons that have been given for permanent tooth extraction, including the presence of caries, periodontal disease, orthodontic treatment, trauma, prosthetic procedures, impacted teeth, failed dental treatment, prosthetic indications and other reasons [3]-[12]. Thus, understanding the patterns and the causes for tooth loss is essential for oral health outcomes and disease prevention. Numerous cross-sectional studies have investigated for the reasons of tooth loss in different countries and areas. Generally speaking, in many studies, Dental caries followed by periodontal disease caused the majority of tooth extraction. With age consideration, dental caries and its sequels are the most frequent cause of tooth loss in young people, whereas periodontal disease is the main reason of tooth loss in middle-aged and elderly people [5] [13] [14] [15] [16] [17].

Orthodontic reason is the principal reason in people younger than 20 years old [4] [5] [13]-[27]. Amongst these studies the only study that has investigated for the reasons of permanent tooth extraction in Afghanistan is the one that performed in Mazar-e-Sharif, located in the north of Afghanistan [1]. Populations with low socioeconomic level have demonstrated higher prevalence and extent of tooth mortality, which increases with aging [28] [29] [30].

Tooth loss decreased in developed countries in the last years [30] [31] [32]. This reduction of tooth extraction may be resulting from preventive programs and higher accessibility of the oral health care [33] [34]. Some studies revealed the prevalence of dental caries in females more than males and more periodontal disease in males than in females [25] [26] [35]. Amongst various tooth types, third molars or molars generally were the most frequently extracted ones [5] [16] [18] [19] [20] [25] [26] and the main reason were dental caries whereas extracting of anterior teeth mostly resulting from periodontal diseases [5] [16] [18] [20] [25]. Unfortunately, not enough data are available on this topic in Afghanistan and related information is strongly needed. By identifying the main causes and predictors for tooth loss, it may be possible to limit future extractions and highlight the crucial role of prevention. Therefore, the purpose of this paper was to investigate the reasons for extraction of permanent teeth, its correlations to several aspects such as age and gender and the best predictors for dental caries in Kabul.

2. Methods

The study protocol is in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans.

The present study involved two major centers for dental treatment in Kabul, the capital city of Afghanistan, including the clinics of Dr. Naseer Ahmad Nazhand and Watan hospital. The selection of these two centers was based on their location, and the numbers of patients who could be recruited into the study. Dentists cooperated this study were the instructors from the faculty of dentistry of Khatam al-Nabieen University. Patients aged between 10 - 60 years who came

with toothache and after physical examination and X-ray photos the final decision for their treatment was tooth extraction, were included in this study.

The reasons for tooth extraction in questionnaire were assigned as: dental caries, periodontal disease, eruption problems, trauma, orthodontics, maxillary or mandibular fracture, patient request and other reason. Other data requested for each extraction included patient age, gender, type of tooth removed, and the reason for extraction, treatment before extraction, satisfaction with the extraction process and any problem during extraction. The design of the questionnaire and its validity and reliability were tested and modified during a one-month pilot study before the main study. Data were collected over a 6-month period (April-September 2019) and analyzed descriptively using Statistical Package for Social Sciences version 17 software.

3. Results

The survey questionnaire, collecting data of reasons and patterns of tooth extractions in 100 patients (64 males and 36 females) was analyzed over a 6-month period at two dental clinics in Kabul city. The numbers and percentages of teeth extracted during this period are shown according to sex and age group in **Table 1** and **Figure 1**. **Table 1** shows that the number of teeth extracted was different for the different age groups in both sex and young people aged between 20 - 29 years old had the highest percentage of extraction. Periodontal disease (39%) followed by caries (20%) was the most common reason for tooth extraction. Trauma was found the third most common reason for the tooth extraction (15%). Other reasons for teeth extraction can be verified as follows: eruption problems (8%), orthodontics (5%), patient request (3%), fracture (1%) and other reasons (9%) (**Table 2** and **Figure 2**).

Table 1. Numbers of extracted teeth according to sex and age.

Age (year)	Male	Female	Total	%
10 - 19	6	3	9	9%
20 - 29	28	18	46	46%
30 - 39	17	9	26	26%
40 - 49	7	3	10	10%
50 - 60	6	3	9	9%
Total	64	36	100	100%

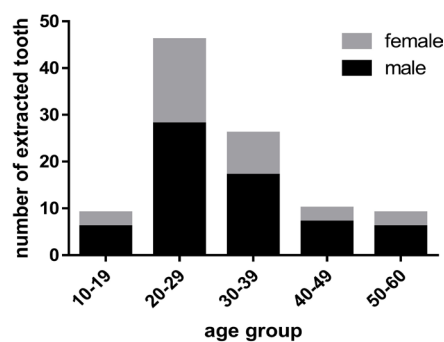
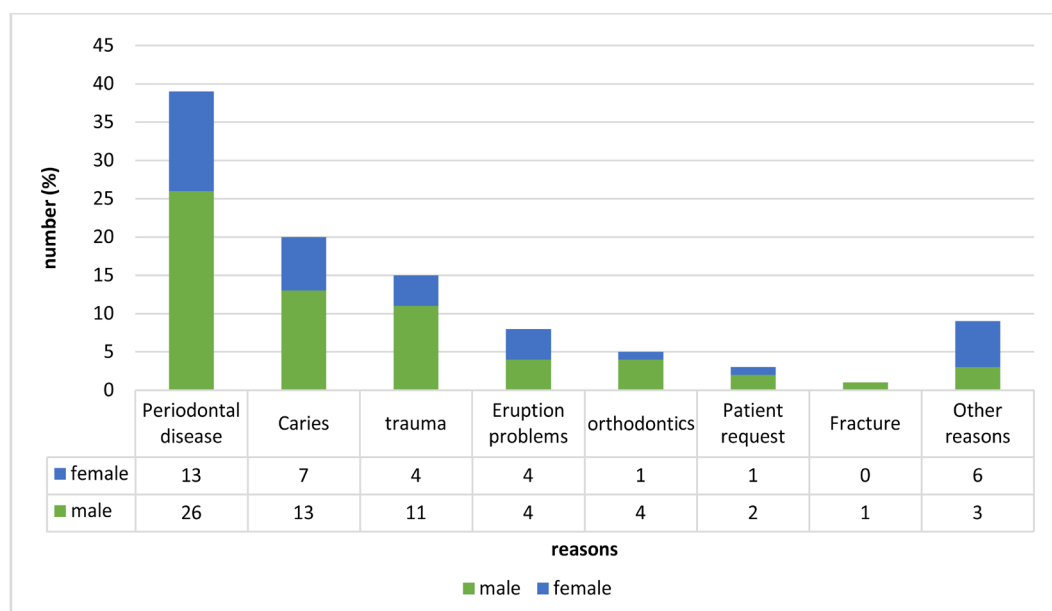


Figure 1. Number of tooth extraction according to age. The highest number of tooth extraction is seen in 20 - 29 years old (46%), including 18% females and 28% males.

Table 2. Numbers and percentages of tooth extractions according to reason.

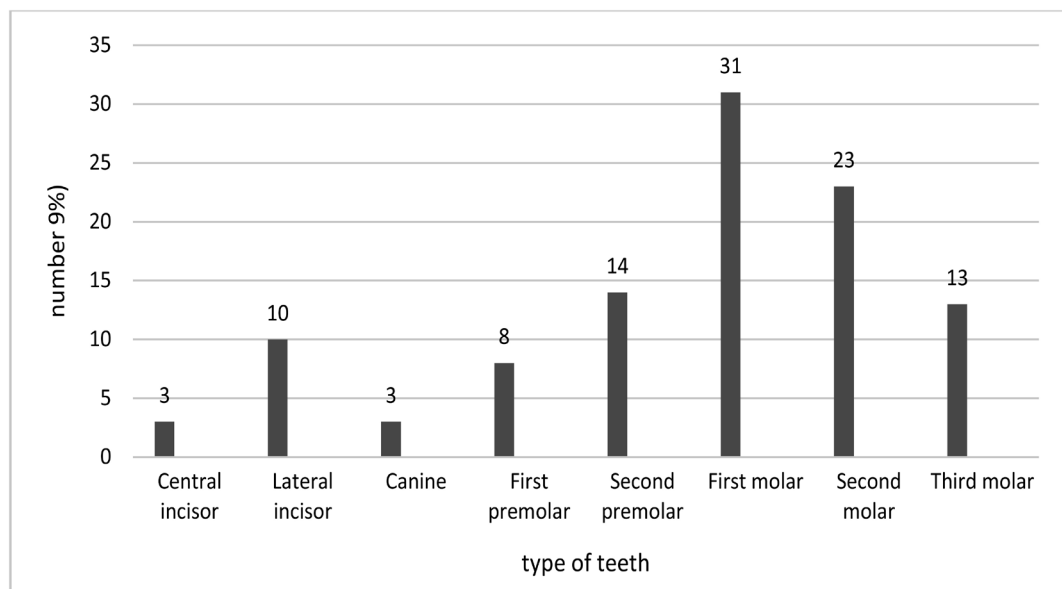
Reason	Male	Female	Total
Periodontal disease	26	13	39
Caries	13	7	20
trauma	11	4	15
Eruption problems	4	4	8
orthodontics	4	1	5
Patient request	2	1	3
Fracture	1	0	1
Other reasons	3	6	9
Total	64	36	100

**Figure 2.** Number of tooth extraction according to reason. Periodontal disease is the most common reason for tooth extraction (39%), including 13% females and 26% males and fracture is the least one (1%).

Regarding the tooth types, maxillary and mandibular first molars were removed most frequently (31%), followed by second molar (23%) and second premolar (14%), and canine and central incisor removal was the least frequent (3%) (Table 3 and Figure 3). Data in Table 4 reveals that 29% of patients have treated their teeth before extraction and RCT (Root Canal Treatment) (19%) is the most common previous treatment. Findings of current study showed that people who have higher educational level (doctors, engineers, teachers and government employees) lose their teeth less (14%) than people having no or incomplete education (Table 5).

Table 3. Prevalence (%) of extractions by type of teeth.

Tooth	Prevalence
Central incisor	3
Lateral incisor	10
Canine	3
First premolar	8
Second premolar	14
First molar	31
Second molar	23
Third molar	13

**Figure 3.** Prevalence of extraction by type of teeth. First molar is the most prevalent extracted tooth (31%), following by second molar (23%). Central incisor and canine are the least prevalent one.**Table 4.** Prevalence and type of treatment before extraction.

Treatment	Male	Female	Total
Superficial filling	2	1	3
Partial filling	2	2	4
amalgam filling	1	0	1
RCT	15	4	19
Crown fitted	2	0	2
Total	22	7	29

Table 5. Numbers and percentages of tooth extractions according to occupation.

Occupation	Male	Female	Total
University student	10	10	20
student	9	4	13
doctor	7	0	7
Engineer	1	0	1
Housewife	0	20	20
businessman	33	0	33
teacher	0	2	2
Government employee	4	0	4
Total	64	36	100

4. Discussion

To our knowledge, the present study reveals the first available detailed information on the reasons for tooth extraction in Kabul.

The results of this survey indicated that in Kabul, Afghanistan, periodontal disease followed by dental caries were the leading reason for extraction. The finding that periodontal disease was the Main cause of tooth extraction is in agreement with the Studies in Canada [17] [36] and Jordan [22]. Some studies in Japan [26], Italy [16] and Singapore [20] showed that both caries and periodontal disease have the same level of importance for tooth loss. The findings of this study revealed that tooth loss has an opposite relationship with education level. Other studies support this relationship in which tooth loss was associated with an incomplete or low level of education [3] [24] [37] [38] [39] [40] and unfortunately a high percentage of tooth loss is seen among university students in the current study. Data like this about tooth loss in developing countries is important due to evaluate the dental health status in young people and may be used as baseline data for future dental health planning.

This study, like many other surveys clarified that the molars are the most prevalent missing teeth [25] [41]. In the present study, extraction of molar teeth, especially first molars, accounted for 67% of all extractions, followed by extractions of premolars and anterior teeth. Our finding is in line with other study in Saudi Arabia [42] and also with previous surveys that have demonstrated that the first molars were the most commonly extracted teeth in Brazilian youth [29] [43] [44].

Finding of current study showed higher prevalence of tooth mortality in men (64%) than in women (36%) which is in contrast with findings of Barbato *et al.* in Brazil [30]. Youth aged 20 - 29 years has the highest rate of tooth loss in west of Kabul (46%) and it is an alarm for those who is responsible for public health to have a logical plan for developing oral hygiene, for example systemic fluoridation like water or salt fluoridation or licensed dental hygienists to educate students or people in the community. Educating students at school play a key role in promot-

ing oral health in some Asian countries like Malaysia [45]. Some other countries like Thailand have portable dental clinics to serve school children [46]. Nutritional status among school children can be affected by poor oral health [47].

Not all people have regular dental checkups, which are very important to diagnose caries at an early stage in order to prevent extensive dental treatment and decrease tooth extraction. Besides, it is an urgent need to have some programs of screening for periodontal disease which is the most common reason of tooth loss in this study. Further studies are needed to carry out in other provinces and also other parts of Kabul in order to use their results in planning for promoting dental health in Afghanistan. However, this study had some limitations such as people who didn't know their exact ages and the small number of centers selected for this study in comparison with several dental clinics available in the west of Kabul which were not reliable or cooperative.

5. Conclusion

The results of this survey indicated that periodontal disease and caries were the principal reasons for tooth extraction in the west of Kabul. First molar is the most frequent extracted tooth and tooth loss has an opposite relationship with education level. A high percentage of tooth loss is seen among young people, in conclusion, educating and preventive programs need to be implemented in order to reduce tooth loss for the common reasons discussed here.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Da'ameh, D.A. (2006) Reasons for Permanent Tooth Extraction in the North of Afghanistan. *Journal of Dentistry*, **34**, 48-51.
<https://doi.org/10.1016/j.jdent.2005.02.009>
- [2] Chrysanthakopoulos, N.A. (2011) Reasons for Extraction of Permanent Teeth in Greece: A Five-Year Follow-up Study. *International Dental Journal*, **61**, 19-24.
<https://doi.org/10.1111/j.1875-595X.2011.00004.x>
- [3] Caldas Jr., A., Marcenes, W. and Sheiham, A. (2000) Reasons for Tooth Extraction in a Brazilian Population. *International Dental Journal*, **50**, 267-273.
<https://doi.org/10.1111/j.1875-595X.2000.tb00564.x>
- [4] Richards, W., Ameen, J., Coll, A. and Higgs, G. (2005) Reasons for Tooth Extraction in Four General Dental Practices in South Wales. *British Dental Journal*, **198**, 275.
<https://doi.org/10.1038/sj.bdj.4812119>
- [5] Reich, E. and Hiller, K.A. (1993) Reasons for Tooth Extraction in the Western States of Germany. *Community Dentistry and Oral Epidemiology*, **21**, 379-383.
<https://doi.org/10.1111/j.1600-0528.1993.tb01103.x>
- [6] Haugejorden, O. and Klock, K. (1992) The Relative Importance of Reasons for Tooth Extraction in Terms of Potential Tooth Years of Life Lost (PYLL). *Community Dental Health*, **9**, 369-379.

- [7] Corbet, E. and Davies, W. (1991) Reasons Given for Tooth Extraction in Hong Kong. *Community Dental Health*, **8**, 121-130.
- [8] Szabo, J., Szabo, I. and Kiralyfalvi, L. (1991) Survey of Reasons for Tooth Extraction in the Framework of Government-Sponsored Dentistry. *Fogorvosi szemle*, **84**, 161-166.
- [9] Stephens, R., Kogon, S. and Jarvis A. (1991) A Study of the Reasons for Tooth Extraction in a Canadian Population Sample. *Journal of Canadian Dental Association*, **57**, 501-504.
- [10] Mosha, H. and Lema, P. (1991) Reasons for Tooth Extraction among Tanzanians. *East African Medical Journal*, **68**, 10-14.
- [11] Kay, E. and Blinkhorn, A. (1987) The Reasons for the Extraction of Various Tooth Types in Scotland. *Journal of Dentistry*, **15**, 30-33.
[https://doi.org/10.1016/0300-5712\(87\)90094-7](https://doi.org/10.1016/0300-5712(87)90094-7)
- [12] Mieler, I. and Vahnauer, D. (1970) Statistical Analysis of Reasons for Tooth Extraction with Special Reference to Periodontal Diseases. *Deutsche Stomatologie*, **20**, 42.
- [13] Trovik, T.A., Klock, K.S. and Haugejorden, O. (2000) Trends in Reasons for Tooth Extractions in Norway from 1968 to 1998. *Acta Odontologica Scandinavica*, **58**, 89-96.
<https://doi.org/10.1080/000163500429343>
- [14] Chestnutt, I., Binnie, V. and Taylor, M. (2000) Reasons for Tooth Extraction in Scotland. *Journal of Dentistry*, **28**, 295-297.
[https://doi.org/10.1016/S0300-5712\(99\)00069-X](https://doi.org/10.1016/S0300-5712(99)00069-X)
- [15] Agerholm, D. (2001) Reasons for Extraction by Dental Practitioners in England and Wales: A Comparison with 1986 and Variations between Regions. *Journal of Dentistry*, **29**, 237-241. [https://doi.org/10.1016/S0300-5712\(01\)00013-6](https://doi.org/10.1016/S0300-5712(01)00013-6)
- [16] Angelillo, I.F., Nobile, C.G. and Pavia, M. (1996) Survey of Reasons for Extraction of Permanent Teeth in Italy. *Community Dentistry and Oral Epidemiology*, **24**, 336-340. <https://doi.org/10.1111/j.1600-0528.1996.tb00872.x>
- [17] Murray, H., Locker, D. and Kay, E. (1996) Patterns of and Reasons for Tooth Extractions in General Dental Practice in Ontario, Canada. *Community Dentistry and Oral Epidemiology*, **24**, 196-200. <https://doi.org/10.1111/j.1600-0528.1996.tb00841.x>
- [18] Cahen, P., Frank, R. and Turlet, J. (1985) A Survey of the Reasons for Dental Extractions in France. *Journal of Dental Research*, **64**, 1087-1093.
<https://doi.org/10.1177/00220345850640081401>
- [19] Kay, E. and Blinkhorn, A. (1986) The Reasons Underlying the Extraction of Teeth in Scotland. *British Dental Journal*, **160**, 287. <https://doi.org/10.1038/sj.bdj.4805837>
- [20] Ong, G., Yeo, J.F. and Bhole, S. (1996) A Survey of Reasons for Extraction of Permanent Teeth in Singapore. *Community Dentistry and Oral Epidemiology*, **24**, 124-127.
<https://doi.org/10.1111/j.1600-0528.1996.tb00828.x>
- [21] Hull, P., Worthington, H., Clerehugh, V., Tsrirba, R., Davies, R. and Clarkson, J. (1997) The Reasons for Tooth Extractions in Adults and Their Validation. *Journal of Dentistry*, **25**, 233-237. [https://doi.org/10.1016/S0300-5712\(96\)00029-2](https://doi.org/10.1016/S0300-5712(96)00029-2)
- [22] Haddad, I., Haddadin, K., Jebrin, S., Ma'ani, M. and Yassin, O. (1999) Reasons for Extraction of Permanent Teeth in Jordan. *International Dental Journal*, **49**, 343-346.
<https://doi.org/10.1111/j.1875-595X.1999.tb00535.x>
- [23] McCaul, L., Jenkins, W. and Kay, E. (2001) The Reasons for the Extraction of Various Tooth Types in Scotland: A 15-Year Follow up. *Journal of Dentistry*, **29**, 401-407.
[https://doi.org/10.1016/S0300-5712\(01\)00036-7](https://doi.org/10.1016/S0300-5712(01)00036-7)
- [24] Jovino-Silveira, R.C., de França Caldas Júnior, A., de Souza, E.H.A. and Gusmao, E.S. (2005) Primary Reason for Tooth Extraction in a Brazilian Adult Population. *Oral Health & Preventive Dentistry*, **3**, 151-157.

- [25] Al-Shammari, K.F., Al-Ansari, J.M., Al-Melh, M.A. and Al-Khabbaz, A.K. (2006) Reasons for Tooth Extraction in Kuwait. *Medical Principles and Practice*, **15**, 417-422. <https://doi.org/10.1159/000095486>
- [26] Aida, J. ando, Y., Akhter, R., Aoyama, H., Masui, M. and Morita, M. (2006) Reasons for Permanent Tooth Extractions in Japan. *Journal of Epidemiology*, **16**, 214-219. <https://doi.org/10.2188/jea.16.214>
- [27] Preethanath, R.S. (2010) Reasons for Tooth Extraction in Urban and Rural Populations of Saudi Arabia. *Pakistan Oral & Dental Journal*, **30**, No. 1.
- [28] Susin, C., Oppermann, R.V., Haugejorden, O. and Albandar, J.M. (2005) Tooth Loss and Associated Risk Indicators in an Adult Urban Population from South Brazil. *Acta Odontologica Scandinavica*, **63**, 85-93. <https://doi.org/10.1080/00016350510019694>
- [29] Susin, C., Haas, A.N., Opermann, R.V. and Albandar, J.M. (2006) Tooth Loss in a Young Population from South Brazil. *Journal of Public Health Dentistry*, **66**, 110-115. <https://doi.org/10.1111/j.1752-7325.2006.tb02565.x>
- [30] Barbato, P.R., Nagano, H.C.M., Zanchet, F.N., Boing, A.F. and Peres, M.A. (2007) Tooth Loss and Associated Socioeconomic, Demographic and Dental-Care Factors in Brazilian Adults: An Analysis of the Brazilian Oral Health Survey, 2002-2003. *Cadernos de saude publica*, **23**, 1803-1814. <https://doi.org/10.1590/S0102-311X2007000800007>
- [31] Marcus, S., Drury, T., Brown, L. and Zion, G. (1996) Tooth Retention and Tooth Loss in the Permanent Dentition of Adults: United States, 1988-1991. *Journal of Dental Research*, **75**, 684-695. <https://doi.org/10.1177/002203459607502S08>
- [32] Hiidenkari, T., Parvinen, T. and Helenius, H. (1997) Edentulousness and Its Rehabilitation over a 10-Year Period in a Finnish Urban Area. *Community Dentistry and Oral Epidemiology*, **25**, 367-370. <https://doi.org/10.1111/j.1600-0528.1997.tb00957.x>
- [33] Löe, H. (2000) Oral Hygiene in the Prevention of Caries and Periodontal Disease. *International Dental Journal*, **50**, 129-139. <https://doi.org/10.1111/j.1875-595X.2000.tb00553.x>
- [34] Haugejorden, O. and Klock, K.S. (2002) Expectation of Retaining Natural Teeth for a Lifetime and Its Predictors among Norwegian Adults. *Community Dental Health*, **19**, 73-78.
- [35] McCaul, L., Jenkins, W. and Kay, E. (2001) Public Dental Health: The Reasons for Extraction of Permanent Teeth in Scotland: A 15-Year Follow-up Study. *British Dental Journal*, **190**, 658. <https://doi.org/10.1038/sj.bdj.4801068>
- [36] Matthews, D.C., Smith, C.G. and Hanscom, S.L. (2001) Tooth Loss in Periodontal Patients. *Journal of Canadian Dental Association*, **67**, 207-210.
- [37] Hamasha, A., Al Qudah, M.A., Bataineh, A.B. and Safadi, R.A. (2006) Reasons for Third Molar Teeth Extraction in Jordanian Adults. *The Journal of Contemporary Dental Practice*, **7**, 88-95. <https://doi.org/10.5005/jcdp-7-5-88>
- [38] Hessari, H., Vehkalahti, M.M., Eghbal, M.J. and Murttomaa, H.T. (2007) Oral Health among 35- to 44-Year-Old Iranians. *Medical Principles and Practice*, **16**, 280-285. <https://doi.org/10.1159/000102150>
- [39] Hessari, H., Vehkalahti, M.M., Eghbal, M.J., Samadzadeh, H. and Murttomaa, H.T. (2008) Oral Health and Treatment Needs among 18-Year-Old Iranians. *Medical Principles and Practice*, **17**, 302-307. <https://doi.org/10.1159/000129610>
- [40] Klock, K.S. (1995) Patients' Perceptions of the Decision-Making Process Leading to Extraction of Permanent Teeth in Norway. *Community Dentistry and Oral Epidemiology*, **23**, 165-169. <https://doi.org/10.1111/j.1600-0528.1995.tb00222.x>

- [41] J. M. Farsi (1992) Common Causes of Extraction of Teeth in Saudi Arabia. *Saudi Dental Journal*, **4**, 101-105.
- [42] Alesia, K. and Khalil, H.S. (2013) Reasons for and Patterns Relating to the Extraction of Permanent Teeth in a Subset of the Saudi Population. *Clinical, Cosmetic and Investigational Dentistry*, **5**, 51. <https://doi.org/10.2147/CCIDE.S49403>
- [43] Gjermo, P., Belid, M.I., Bellini, H.T. and Martins, C.R. (1983) Study of Tooth Loss in an Adolescent Brazilian Population. *Community Dentistry and Oral Epidemiology*, **11**, 371-374. <https://doi.org/10.1111/j.1600-0528.1983.tb01394.x>
- [44] Montandon, A.A.B., Zuza, E.P. and de Toledo, B.E.C. (2012) Prevalence and Reasons for Tooth Loss in a Sample from a Dental Clinic in Brazil. *International Journal of Dentistry*, **2012**, Article ID: 719750. <https://doi.org/10.1155/2012/719750>
- [45] Chen, C.J.-A. and Jallaludin, R.L.R. (2000) Knowledge and Perception of Oral Health Promotion in Schools among Dental Nurses in Sarawak, Malaysia. *Asia Pacific Journal of Public Health*, **12**, 12-16. <https://doi.org/10.1177/101053950001200103>
- [46] Tianviwat, S., Chongsuvivatwong, V. and Birch, S. (2009) Estimating Unit Costs for Dental Service Delivery in Institutional and Community-Based Settings in Southern Thailand. *Asia Pacific Journal of Public Health*, **21**, 84-93. <https://doi.org/10.1177/1010539508327246>
- [47] Ngoenwiwatkul, Y. and Leela-Adisorn, N. (2009) Effects of Dental Caries on Nutritional Status among First-Grade Primary School Children. *Asia Pacific Journal of Public Health*, **21**, 177-183. <https://doi.org/10.1177/1010539509331787>