JoCASS
Çukurova Anestezi ve Cerrahi Bilimler Dergisi
2018 Adana

ORAL HEALTH STATUS OF PATIENTS WITH EPILEPSY

Damla Soydan Çabuk [1], Berkhas Tumani Üstdal [1]

1 Çukurova University, Faculty of Dentistry, Department of Oral and Maxillofacial Radiology, Adana, Türkiye

Abstract

Aim: Epilepsy is a medical and social disorder characterized by recurrent seizures. It is a general view that patients with epilepsy have worse oral health than the general population. The DMFT index has been widely used worldwide to determine oral and dental health. The aim of this study is to determine the oral health status of epilepsy patients using the DMFT index and to compare it with the control group.

Methods: The DMFT score of the groups was determined by clinical and radiological examination. Decayed, missing and filled teeth were recorded immediately after the examination.

Results: The number of decayed teeth was 7.27 ± 3.994 in the epilepsy group and 4.04 ± 2.202 in the control group (p<0.05). The number of missing teeth was 5.71 ± 5.891 in the epilepsy group and 3.01 ± 3.763 in the control group (p<0.05). The number of filled teeth was 2.07 ± 2.382 in the epilepsy group and 3.50 ± 2.196 in the control group (p<0.05). DMFT scores were 15.05 ± 7.128 in the epilepsy group and 10.55 ± 5.589 in the control group (p<0.05).

Conclusions: It has been shown in this study that patients with epilepsy have worse oral health compared to the general population, but they do not receive adequate treatment. Functionally and aesthetically adequate dental treatment should be provided to these patients and their quality of life should be increased.

Keywords: *Oral health, antiepileptics, epilepsy*

Corresponding Author: Berkhas Tumani Üstdal, e-mail: berkhastumani@hotmail.com

Received: 02.01.2023, Accepted: 16.01.2023, Available Online Date: 27.02.2023

Cite this article as: Soydan Çabuk D, Üstdal BT. Oral Health Status of Patients with Epilepsy. J Cukurova Anesth Surg. 2023;6(1):28-32.

doi: 10.36516/jocass.1228371

Introduction

Epilepsy is a medical and social disorder characterized by recurrent seizures. It is a disease that is common worldwide and affects all ages and genders[1]. Antiepileptic drugs (AED) are used to control seizures, which have some effects on oral health. Drug-related gingival enlargement, ulceration, glossitis and stomatitis are some of these effects[2]. Patients with epilepsy are thought to have worse oral health than the general population[3]. Although this group has more dental caries, they receive less dental treatment[4]. The major reason for the high incidence of dental caries is insufficient plaque removal[3]. Oral complications of antiepileptic drugs can also complicate oral hygiene.

Caries indices are used to determine dental caries in individuals or populations[5]. An ideal index should be simple, objective, valid, reliable, measurable, repeatable, and acceptable[6]. The DMFT index has been widely used worldwide for over 80 years to determine oral and dental health. With this index, the number of decayed teeth, missing teeth and filled (treated) teeth can be determined[7]. In addition, this index is the most important index used in epidemiological research on oral health status[8].

The purpose of this study is to determine the oral health status of epilepsy patients using the DMFT index and to compare it with the control group.

Materials and Methods

This study was conducted in accordance with the principles of the 1964 Declaration of Helsinki and was approved by the Çukurova University Faculty of Medicine Ethics Committee. (meeting no: 127 decision no: 59).

Eighty-two epilepsy patients (44 female-38 male, age range 18-66, mean age 32.65) who were examined in the Department of Oral and Maxillofacial Radiology of the Faculty of Dentistry between 2021-2022 were included in this study. Exclusion criteria were defined as having a systemic disease other than epilepsy, using drugs other than antiepileptics, having any syndrome, having a history of trauma, and any pathology in the maxillofacial region. The control group consisted of 82 patients who did not have any systemic disease, did not use any medication, did not have any pathology in the maxillofacial region and were compatible with the study group in terms of age and gender.

The DMFT score of the groups was determined by clinical and radiological examination. Decayed (D), missing (M), and filled (F) teeth were recorded immediately after the examination. All examinations were made by two oral and maxillofacial radiologists (DSC:6 years of experience; BTU:3 years of experience). Informed consent was obtained from all patients included in the study.

Missing teeth were recorded as M only if they were extracted due to pathology. If a tooth has both caries and fillings, it was recorded as D. Fixed dental prosthesis, crowns and implants were not included in the study[9]. Fully erupted third molars were included in the study.

Statistical analysis

Statistical analysis was performed using IBM SPSS software version 25.0. Kolmogorov-Smirnov analysis was applied to determine whether the investigated parameters were normally distributed. Since the data were not normally distributed, Mann-Whitney U test was used to compare the data of the study and control groups. A value of $p<0.05$ was considered statistically significant.

Table 1. Descriptive values of DMFT scores and sub-groups in the study and control groups.

	Group	n	Mean	Std. Deviation	*p*
DT	Study	82	7.27	3.994	*p*<0.001*
	Control	82	4.04	2.202	
MT	Study	82	5.71	5.891	*p*<0.001*
	Control	82	3.01	3.763	
FT	Study	82	2.07	2.382	*p*<0.001*
	Control	82	3.50	2.196	
DMFT	Study	82	15.05	7.128	*p*<0.001*
	Control	82	10.55	5.589	

(DT: Decayed teeth, FT: Filled teeth, MT: Missed teeth.)

Results

82 epilepsy patients and 82 healthy controls were evaluated. The subgroups that make up the DMFT index were determined as follows: The number of decayed teeth was 7.27 ±3.994 in the epilepsy group and 4.04 ±2.202 in the control group (p<0.001). The number of missing teeth was 5.71 ±5.891 in the epilepsy group and 3.01 ±3.763 in the control group (p<0.001). The number of filled teeth was 2.07 ±2.382 in the epilepsy group and 3.50 ±2.196 in the control group (p<0.001). According to these results, the number of decayed and missing teeth was significantly higher in the epilepsy group than in the control group, but the number of filled (treated) teeth was significantly lower. DMFT scores were 15.05 ±7.128 in the epilepsy group and 10.55 ±5.589 in the control group (p<0.001). The DMFT score was significantly higher in the epilepsy group than in the control group. **(Table-1)** There was no statistically significant difference between the genders in any score (p>0.05).

Discussion

Dental caries is a biofilm-associated, multifactorial disease caused by demineralization and remineralization processes of dental hard tissues[10]. Caries negatively affect people's quality of life regardless of age[11]. It causes pain and loss of aesthetics/function, causing an inability to attend work/school and loss of self-confidence[12].

The World Health Organization (WHO) has reported that epidemiological studies are required every 5 years to follow the changes in oral diseases and to establish a global database of oral health[9]. Data from these studies are useful for the control and prevention of diverse health problems and are used as an important tool for planning public health promotion[12]. One of the most important indexes used for this purpose is the DMFT index. The DMFT index, which is used to determine the number of decayed teeth, missing teeth and filled teeth, was introduced by Klein and Palmer in 1938[13]. It has continued to be widely used in the assessment of caries status in population groups worldwide for over 80 years. It is considered as simple, reliable and easy to use[14]. However, this index has limitations such as evaluating only cavitated caries reaching dentine, and inability to evaluate caries progression rate and treatment needs. However, incipient caries lesions should not be ignored because when these lesions are detected in the early stages, they can be reversed with some preventive treatments such as fluorides. Therefore, an index should describe these lesions for prophylactic applications in a population[14].

It has been shown in various studies that patients with epilepsy have worse oral health than the normal population[4,15]. In the study of Karolyhazy et al[4], individuals with epilepsy had more carious teeth and missing teeth due to caries compared to the normal population; however, fewer treated teeth have been reported. Similarly, in another study, it was reported that while the tooth loss of epilepsy patients was higher than the healthy population, the number of restored teeth was lower[16]. In addition, some studies have examined gingival hyperplasia related to the use of AEDs[15]. It is known that drug-induced gingival enlargement is multifactorial but it has been suggested that poor oral health has a significant effect on this condition[17,18].

In the present study, similar to the literature; in terms of oral health and dental condition, patients with epilepsy are in a significantly worse condition compared to a general (non-epilepsy) population of the same age and sex. There were more caries and missing teeth due to caries in the epileptic group. However, it was determined that there were fewer treated teeth. Being aware of this situation may enable dentists to be more careful in their approach to patients with epilepsy.

One of the reasons why caries-related tooth extractions are higher but treated teeth are lower in patients with epilepsy compared to the normal population may be that dentists tend to choose a quick and simple treatment such as tooth extraction, before complex treatment alternatives. However, this approach causes epilepsy patients to become

edentulous at an early age, decreasing their quality of life. The reason for this tendency of dentists is the lack of sufficient information about the disease and the possibility of the patient having seizures during treatment[4].

The recording of the M component in the DMFT scoring according to the patient's response can be considered as a limitation of this study. Another limitation is that the study was conducted in a single center. Multicenter studies with more patients should be planned.

Conclusion

In the present study, it has been shown that patients with epilepsy have worse oral health compared to the general population, but they do not receive adequate treatment. Dentists need to make extra efforts to improve the oral health of this group, which generally has difficulties in life due to their condition. Functionally and aesthetically adequate dental treatment should be provided to these patients and their quality of life should be increased.

Author Contributions:
Study Idea / Hypothesis: D.S.C. Study Design: D.S.C., B.T.U. Data Collection: B.T.U., D.S.C. Literature Review: D.S.C., B.T.U. Analysis and/or Interpretation of Results: B.T.U. Article Writing: D.S.C., B.T.U.

Conflict of interest
The authors declare that they have no conflict of interest.

Funding
Authors declared no financial support.

Ethical approval
This study was approved by the Cukurova University Institution Ethics Committee (127-59).

References

1. World Health Organization. Atlas: Epilepsy Care in the World, Switzerland, 2005.
2. Fiske J, Boyle C. Epilepsy and Oral Care. Spec Care Dentist. 2002;29:180-7. https://doi.org/10.12968/denu.2002.29.4.180
3. Foyaca-Sibat H. Novel Aspects on Epilepsy, Croatia, Intech, 2011. https://doi.org/10.5772/1137
4. Karolyhazy K, Kovacs E, Kivovics P, et al. Dental Status and Oral Health of Patients with Epilepsy: An Epidemiologic Study. Epilepsia. 2003;44:1103-8. https://doi.org/10.1046/j.1528-1157.2003.04003.x
5. Baginska J, Rodakowska E. Current dental caries indices - review of literature. Journal of Stomatology. 2012;65:899- 912. https://doi.org/10.5604/00114553.1016756
6. Daly B, Batchelor P, Treasure E, et al. Essential Dental Public Health, 2nd ed, UK, Oxford Univesity Press, 2013. https://doi.org/10.1093/oso/9780199679379.001.0001
7. Moradi G, Mohamadi Bolbanabad A, Moinafshar A, et al. Evaluation of Oral Health Status Based on the Decayed, Missing and Filled Teeth (DMFT) Index. Iran J Public Health. 2019;48:2050-7. https://doi.org/10.18502/ijph.v48i11.3524
8. Broadbent JM, Thomson WM. For debate: Problems with the dmf index pertinent to dental caries data analysis. Community Dent Oral Epidemiol. 2005;33:400-9. https://doi.org/10.1111/j.1600-0528.2005.00259.x
9. World Health Organization. Oral Health Surveys-Basic Methods, 5th ed, France, 2013.
10. Pitts N, Zero D, Marsh P, et al. Dental caries. Nat Rev Dis Primers 3. 17030 (2017). https://doi.org/10.1038/nrdp.2017.30
11. Janakiram C, Antony B, Joseph J, et al. Prevalence of Dental Caries in India among the WHO Index Age Groups: A Meta-Analysis. J Clin Diagnostic Res. 2018;12:8-13. https://doi.org/10.7860/JCDR/2018/32669.11956
12. Paiva SM, Abreu-Placeres N, Camacho MEI, et al. Dental caries experience and its impact on quality of life in Latin American and Caribbean countries. Braz Oral Res. 2021;35. https://doi.org/10.1590/1807-3107bor-2021.vol35.0052
13. Klein H, Palmer CE, Knutson JW. Studies on Dental Caries: I. Dental Status and Dental Needs of Elementary School Children. Public Health Rep (1896-1970). 1938;53:751-65. https://doi.org/10.2307/4582532
14. Mehta A. Comprehensive review of caries assessment systems developed over the last decade. Revista Sul-Brasileira de Odontologia. 2012;9:312-21.
15. Wang M, Ding D, Zhang Q, et al. Oral health and dental status in people with epilepsy in rural China. Seizure. 2019;65:42-7. https://doi.org/10.1016/j.seizure.2018.12.022

16. Karolyhazy K, Kivovics P, Fejerdy P, et al. Prosthodontic status and recommended care of patients with epilepsy. J Prosthet Dent. 2005;93:177-82. https://doi.org/10.1016/j.prosdent.2004.11.008
17. Moffitt ML, Bencivenni D, Cohen RE. Drug-induced gingival enlargement: an overview. Compend Contin Educ Dent. 2013;34:330-36.
18. Seymour RA, Ellis JS, Thomason JM. Drug-induced gingival overgrowth and its management. J R Coll Surg Edinb. 1993;38:328-32.