

# Evaluation of the Oral Status of Persons Living with Epilepsia in a Rural Community in Togo

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**Abstract:** *Purpose:* Epilepsy, one of the most common brain disorders in the world, is a universal disease with multiple causes, often curable. Frequent seizures are the cause of trauma of all kinds, wounds, fractures, burns. Lesions often concern the face and the oral sphere. This study took place in a rural environment, in Nadoba in the Tamberma country, in the north of Togo, and concerned people who had been enclosed in a valley for several hundred years. *Objective:* We therefore set out to assess the state of oral health among persons living with epilepsy in the Tamberma environment. *Method:* This was a cross-sectional survey conducted from 30 November 2001 to 29 January 2002 and covering 10 of the 13 villages in Nadoba. The choice of population was random and used door-to-door. The methodology was inspired by the protocol drawn up in 1980 by the WHO concerning surveys in developing countries. Oral pathologies have been studied in two different populations of epileptics and non-epileptics. *Results:* Oral pathology was studied in 98 people with epilepsy (PE) screened and 200 people without epilepsy (PNE) among the 6249 inhabitants of Nadoba. The proportion of gingival hypertrophy was significantly ( $p=0.0001$ ) higher in EPs than in NEPs ( $p=5.77$  1012). The proportion of traumatized anterior teeth was higher in EPs than in NEPs ( $p=1.15$  108). Lingual scars were only noted in EPs: 13 cases (13.26%). *Conclusion:* This work has made it possible to account for the importance of oral lesions in this rural community and in epileptics in particular in order to set up a prevention policy within the framework of primary health care.

**Keywords:** Epilepsy, Oral Status, Rural, Nadoba, Tamberma, Togo

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## 1. Introduction

Epilepsy, one of the most common neurological diseases in the world [1], has been considered since ancient times as a supernatural, frightening and incurable disease. Despite important advances in the understanding and treatment of this condition [2], the attitude of some populations has remained fundamentally unchanged, due to irrational beliefs in a supernatural and sacred evil [3, 4]. In poor countries, at least,

this conception would hinder access to modern care. Three to four million Africans have epilepsy and 80% are deprived of care [5]. Epileptic seizures are most often traumatic and could be the cause of all kinds of injuries: wounds, fractures, burns. In the vast majority of cases, these lesions concern the face and the oral sphere [6]. As part of a plan for the multidisciplinary management of epileptic patients in Togo, an epidemiological survey was carried out in the prefecture of Kéran, in northern Togo.

## 2. Method

This was a cross-sectional survey conducted from 30 November 2019 to 29 January 2020 and covering 10 of the 13 villages of Nadoba, a canton of the Kéran prefecture in northern Togo. The remaining three villages served as a pre-test area for the questionnaire and were not included in the actual study. The method used was based on the protocol developed in 1980 by the WHO [7, 8] for neuro-epidemiological surveys in developing countries. This technique was based on a three-point strategy:

1. census of concessions and households using the door-to-door technique
2. screening of subjects likely to present an epileptic seizure by the WHO questionnaire
3. confirmation of the diagnosis by clinical examination and electroencephalographic (EEG) recording. The investigators were chosen among the interns of the neurology department of the CHU of Lomé campus. Subjects who had experienced at least two stereotyped seizures, in a non-febrile context, and not provoked by a rapidly identifiable cause, with EEG patterns suggestive of epilepsy and meeting the 1987 WHO diagnostic criteria for periodontal pathologies [7] were included in our study. To further identify dental lesions in people with epilepsy (PE), we investigated dental lesions in local people without epilepsy (NEP). A total of 200 NEPs were examined. The information collected was processed using Epi Info software version 6.4

## 3. Results

The study identified 227 out of 6249 subjects. After confirmatory testing, 98 subjects were identified as EPs. Of the 98 EPs, 57 were male (58.16%) and 41 were female (41.84%). The mean age of the EPs was  $26 \pm 17.86$  years with extremes of 2 and 71 years. About 68% of the EPs could not read or write; 30% were in school, 17% of whom were men and 13% women. Of the 98 EPs, 14 were school-age children: six were in primary school, four in secondary school and four were not in school. Seizures were generalised in 75 EPs (76.53%), partial in 22 subjects (22.45%) with secondary generalisation in 8 cases and unclassifiable in one subject. Sixty-nine EPs (70.41%) had frequent seizures; 10 (10.20%) had very frequent seizures and 16 had infrequent seizures. Fifty-six EPs (57.14%) had no treatment, 10 (10.20%) were on medication. Traditional treatment was ongoing in 20 EPs (20.40%) and 12 EPs (12.25%) had mixed treatment. The traditional treatment in all 32 EPs was plant or animal based. In 8 EPs, this treatment was combined with scarification and in 7 other EPs with amulets. Phenobarbital and diazepam

were the only chemical treatments used in the 10 EPs who had drug treatment. Seizures were controlled in only 13 of the 98 EPs.

The odontostomatological lesions were divided into two categories: traumatic and non-traumatic lesions. Traumatic lesions are reported in table 1. The absence of teeth was noted in 31 EPs. This absence of teeth concerned the anterior teeth (incisors and canines) in 18 EPs. Trauma to the anterior teeth was represented by 13 cases of traumatic avulsions (3 females, 10 males), 2 cases of dental fracture in males, 3 cases of loose teeth (2 females, 1 male). The frequency of traumatic injuries was proportional to the frequency of attacks (Table 2). Non-traumatic lesions were dominated by gingivitis, which was found in 84.69% of EPs. It was almost always associated with tartar. Thirty-three EPs had at least one carious tooth. Caries was found in the molars in 25 EPs. Gingival hypertrophy was generalized except in 2 cases in men.

**Table 1.** Dental conditions and endo oral trauma in people with epilepsy.

Injuries n (%)	Men	Women	Total
Missing teeth	19 (19.39)	12 (12.24)	31 (31.63)
Fractured teeth	2 (2.04)	0 (0.00)	2 (2.04)
Loose teeth	6 (6.12)	7 (7.14)	13 (13.27)
Lingual wounds	3 (3.06)	3 (3.06)	6 (6.12)
Lingual scars	8 (8.16)	5 (5.10)	13 (13.27)

**Table 2.** Distribution of traumatic injuries according to the frequency of attacks in the study population.

	Effectif	Traumatic injuries of anterior teeth
Rare attacks	16	1 (6.22%)
Frequent attacks	69	12 (17.39%)
Very frequent attacks	10	5 (50%)
No respondent	3	0 (0%)
Total	98	18 (18.36%)

In 79.59% of the EPs, teeth cleaning was usually done with "toothpicks", i.e. small branches of certain plants or trees recognised as non-toxic. The most commonly used plant was neem. Only 11 people used a toothbrush. The correlation between brushing technique and tartaric gingivitis shows that there was a significant difference between the gingival condition of the toothbrush users and the others. In the toothbrush group, 36.36% had tartaric gingivitis compared to 89.74% in the toothpick group. The non-brush group had the same prevalence of tartaric gingivitis as the toothpick group.

In the 200 PNE group, there was a predominance of males with 67.5%, with a sex ratio of 2.08. The extremes of age were 5 and 17 years. We have reported all the dental lesions found in these PNEs in Table 3.

**Table 3.** Oral lesions present in persons without epilepsy (PWoE) and persons with epilepsy (PWE).

	PWoE n (%)	PWE n (%)	P Value	IC 95
Caries	60 (30.0)	33 (33.7)	0.21	Not significant
Tartar gingivitis	179 (89.5)	82 (83.7)	0.97	Not significant
Gingival hypertrophy	14 (7.0)	24 (24.5)	$5.77 \times 10^{-12}$	0.244898 (0.1809342-1.0000000)
Dental decay	5 (2.5)	4 (4.1)	0.2303	Not significant

	PWoE n (%)	PWE n (%)	P Value	IC 95
Halitosis	24 (12.0)	14 (14.3)	2.43x10 <sup>-1</sup>	Not significant
Traumatized anterior teeth	11 (5.5)	18 (18.4)	1.15x10 <sup>-8</sup>	0.1836735 (0.1281373-1.0000000)
Non-traumatized anterior teeth	189 (94.5)	80 (81.6)	1	Not significant

PWoE: people without epilepsy; PWE: people with epilepsy; CI: confidence interval; P value: probability.

After comparison of the two groups, the proportion of gingival hypertrophy was significantly ( $p=0.0001$ ) higher in PE than in PNE ( $p=5.77 \times 10^{-12}$ ). The proportion of traumatized anterior teeth was higher in EPs than in NEPs ( $p=1.15 \times 10^{-8}$ ). Lingual scars were only noted in EPs: 13 cases (13.26%).

## 4. Discussion

We conducted a comparative study to assess the oral status in a population of EPs. From a general point of view, the oral conditions found were of traumatic or non-traumatic origin. Missing teeth and loose teeth without a traumatic cause were either secondary to periodontal disease or caries, or to the loss of deciduous teeth. Tongue wounds and scars were very common. It was a witness to tongue bites during convulsive seizures, especially generalized ones. During seizures, tongue biting is one of the most typical signs of a coma [2]. Trauma to the anterior teeth was the most common condition. Its prevalence was 18.37% with a male predominance. This male predominance was reported in most studies and among the causes of these injuries, falls were the most frequent [9]. The prevalence was 7.7% in Iraq and 5.1% in Sudan among school-aged children [10] and 6.5% in the rural population in Nigeria [11]. However, few studies have looked at the particularity in the epileptic subject. Ogunbodede in his study of epileptics reported a prevalence of 46.9% [11]. This prevalence was very high compared to that of our study (18.87%) and even higher than that of Sonnen [12] which was 6%. Falls were the most frequent cause of these injuries. These falls accompanying epileptic seizures could explain the high prevalence of traumatic injuries to the anterior teeth. The distribution of trauma showed that the prevalence of lesions was proportional to the frequency of seizures. Gingivitis was the most frequent condition with 83.67% prevalence in EPs. It was almost always of tartaric origin. This high prevalence was reported by Ogunbodede [11] and Hartshorne [13]. However, it did not seem to be particularly common in epileptic patients. In our study, there was no significant difference between the proportions of tartaric gingivitis in the NEP population and in the EP population. This tartaric gingivitis reflected poor oral hygiene in the population, hence the need for continuous education on good oral hygiene practices. Low social status was the most common factor. Hartshorne [13] in South Africa in a study comparing a population of white (affluent) and black (disadvantaged) children, all of whom were epileptic and mentally handicapped, found a four-fold higher prevalence in black children. The same finding was reported by Otuyemi [14]. Dental hygiene was provided by toothpicks by the majority of patients, 79.59%. These were small branches of

certain plants or trees known to be non-toxic. Plant roots were sometimes used. Only 11 people used the toothbrush regularly. This reflected a way of life that was direct contact with nature and the preservation of traditional practices.

Gingival hypertrophy was more prevalent in the EPs in our study probably due to the more frequent oral trauma in the EPs.

## 5. Conclusion

This study, the first of its kind, carried out in our region, to our knowledge, allowed us to note the important frequency of oral injuries in epileptics. These lesions were in the majority of cases related to the recurrence of seizures. The control of epileptic seizures by anti-epileptic drugs, in particular phenobarbital, should make it possible to considerably reduce these avoidable injuries in this vulnerable category of the population.

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