

## Periodontal Status, DMFT and Tooth Wear Assessment among Epileptic Patients

Ahmed Tawfig<sup>1\*</sup>, Al-Bandari Bin-Rubayan<sup>2</sup>, Ghadeer Shihabi<sup>2</sup>, Haya Al-Mashal<sup>2</sup>, Touqa Al-Ali<sup>2</sup>, Haya Al-Mahmoud<sup>2</sup> and Bushra Abdulla<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Preventive Dentistry, Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia

<sup>2</sup>Dental Interns at Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia

<sup>3</sup>General Physician at Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia

**\*Corresponding Author:** Ahmed Tawfig, Assistant Professor, Preventive Department at Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia.

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### Abstract

In Saudi Arabia, the prevalence rate of epilepsy is 6.54/1000 which is within the range reported in most other communities. It was mentioned in the literature that epileptic patients have shown a higher percentage of caries, extracted teeth and less filled teeth as well as a higher gingival and plaque indices compared to a healthy age-matched group, with a significantly worse degree of abrasion and in a recent analysis of their prosthodontics status.

**Aim:** Lack of enough data about oral and periodontal status among epileptic patients in Saudi Arabia, focus the need to conduct studies hope to fill this gap. To investigate the possible relationship between epilepsy and severity of periodontal diseases also to find out if there is correlation between DMFT and teeth wear among epileptic patients.

**Material and methods:** The study took place in Riyadh colleges dental; the sample size was determined by the number of the patients whom attended the Riyadh colleges dental clinics within the period of the study and for fill the inclusion criteria. The patients received routine dental examination, radiographs (OPG and Bite-wings) to measure their DMFT. Oral examination was carried using the gingival index, plaque index and the clinical attachment level/loss. Their teeth were also examined for signs of tooth wear using the Tooth Wear index by (Smith and Knight).

**Results:** Our results indicated a positive relation where almost half our epileptic patients had moderate periodontitis.

**Keywords:** Periodontitis; Epilepsy; DMFT; Tooth Wear

### Introduction

The International League Against Epilepsy defined the epilepsy a disease of the brain with At least two unprovoked (or reflex) seizures or one unprovoked (or reflex) seizure occurring more than one day apart, or one unprovoked (or reflex) seizure with a chance of more seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years, or a diagnosis of an epilepsy syndrome [1].

In Saudi Arabia, the prevalence rate of epilepsy is 6.54/1000 which is within the range reported in most other communities [2].

It was mentioned in the literature that epileptic patients have shown a higher percentage of caries, extracted teeth and less filled teeth as well as a higher gingival and plaque indices compared to a healthy age-matched group, with a significantly worse degree of abrasion

and in a recent analysis of their prosthodontic status, it was also found that compared with age-matched controls, patients with epilepsy have a tendency to become edentulous earlier [3].

Other researchers have reported oral side effects of anti-epileptic drugs such as gingival hyperplasia, xerostomia, stomatitis and rash that may involve the oral cavity also Valporic acid has been reported to cause direct bone marrow suppression which can impair wound healing and increase postoperative bleeding and infections and other hematologic side effects including a decrease in the platelet counts [3].

Another relatively new drug, Retigabine, has the potential side effect of inducing a blue/purple pigmentation of the oral mucosa in addition to the skin, lips, nails and retina of the eyes and as with all medications, Retigabine carries special warnings and precautions associated with its use and of particular interest to the dental practitioner peripheral edema and dry mouth [4].

A number of drugs prescribed by dentists can interfere with anti-epileptic drugs as well [5]. For example, NSAID's can increase the plasma concentrations of Valporate and Phenytoin, and antifungal agents (such as Fluconazole) and antibiotics (such as Erythromycin and Metronidazole) may interfere with the metabolism of certain antiepileptic drugs [5].

It was well established in the literature the association between epilepsy and anti-epileptic drugs with early edentulism and the most frequent encounters would be trauma due to seizures Periodontal problems, prosthodontic problems, dermatological problems and drug interactions [6].

### Material and Methods

An Inter-Rater Reliability test was done for the 5 examiners to ensure the reliability. Also, a Convenient sampling technique - patient were obtained from the RCsDP clinical data base.

The study was done in Riyadh colleges dental clinics. 33 epileptic patients who had already been receiving dental treatment in the college's clinics were chosen and examined.

A consent form was signed by the participants or their guardians' before initiating the examination. The patient's received routine dental examination starting with the necessary radiographs (OPG and Bite-wings) to measure their DMFT, Plaque index, gingival index [7] and the clinical attachment level/loss. Their teeth were also examined for signs of tooth wear using the Tooth Wear index by [8].

The dental examination was done with basic dental examination instruments – mouth mirror, explorer and a UNC periodontal probe. Medical history obtained from the patient and/or their guardian including their current and previous anti-epileptic medications. The sample method was random sampling technique, targeting epileptic patients from Riyadh College's clinical database. Only patients who were currently under anti-epileptic medications and who had permanent dentitions were examined.

### The exclusion criteria:

- Edentulous patients.
- Primary or mixed dentitions.
- Uncontrolled systemic diseases.

### Results

The data was interpreted and a descriptive Statistical analysis was done using SPSS version 20.

Gender Distribution

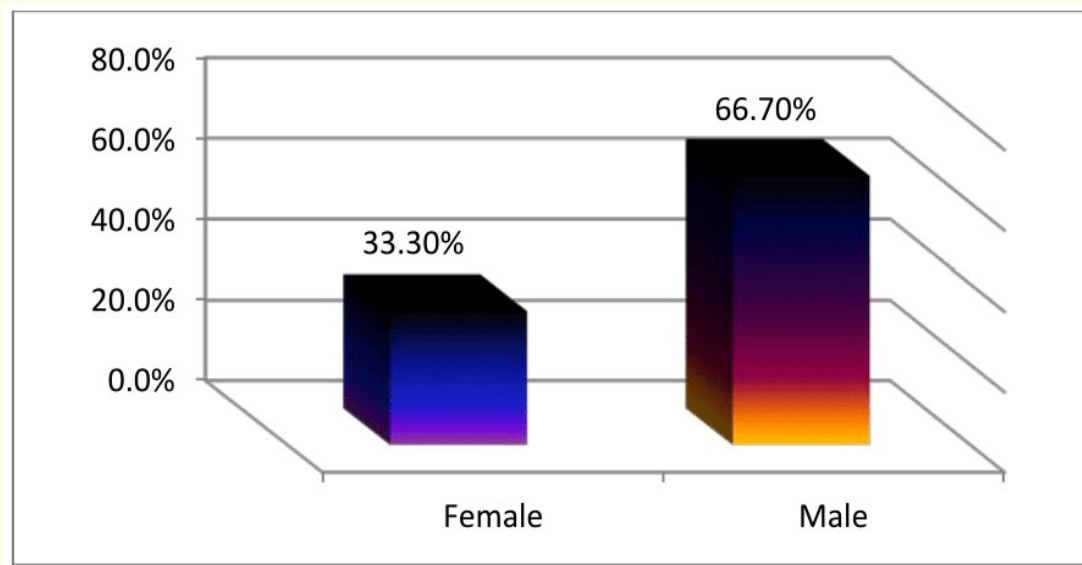


Figure 1: Shows gender distribution among epileptic patients of the study.

*C.A.L	Frequency	Percentage
Mild Chronic Periodontitis	8	24.2%
Moderate Chronic Periodontitis	17	51.5%
Severe Chronic Periodontitis	8	24.2%
Total	33	100.0

Table 1: Shows clinical attachment loss among epileptic patients.

\*C.A.L = clinical attachment loss

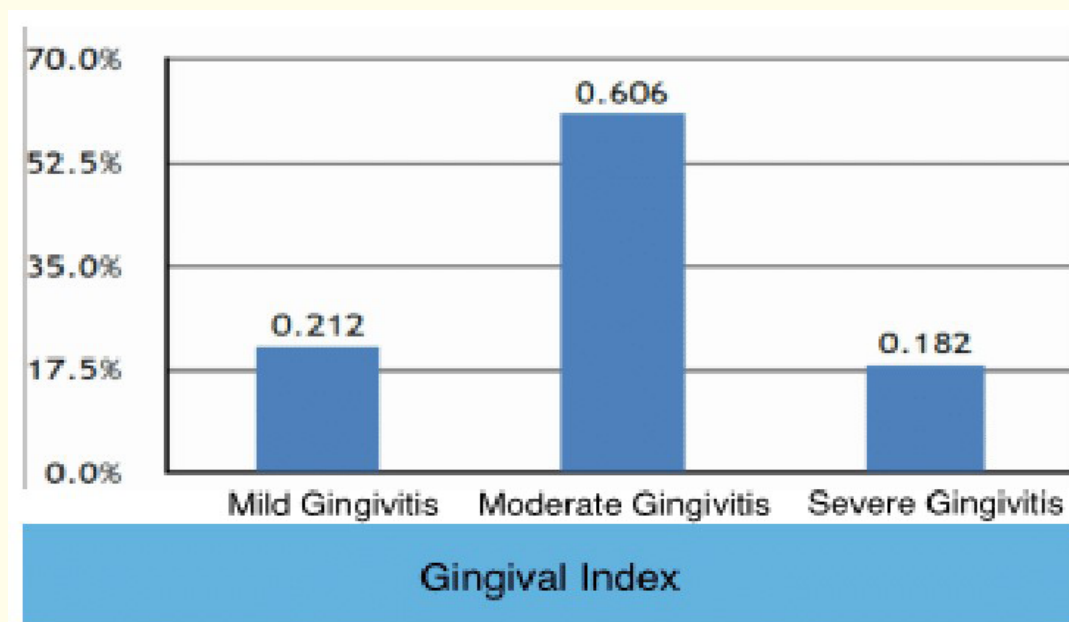


Figure 2: Shows gingival index among epileptic patients.

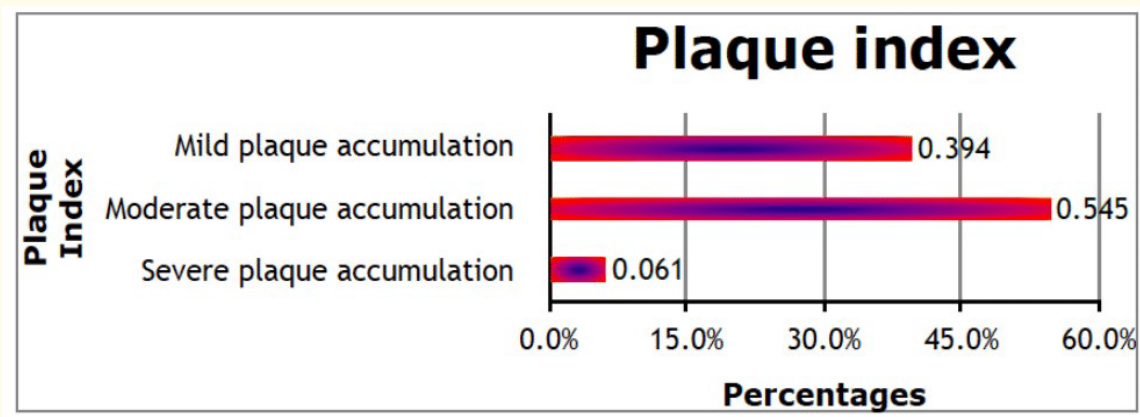


Figure 3: Shows the plaque index among epileptic patients.

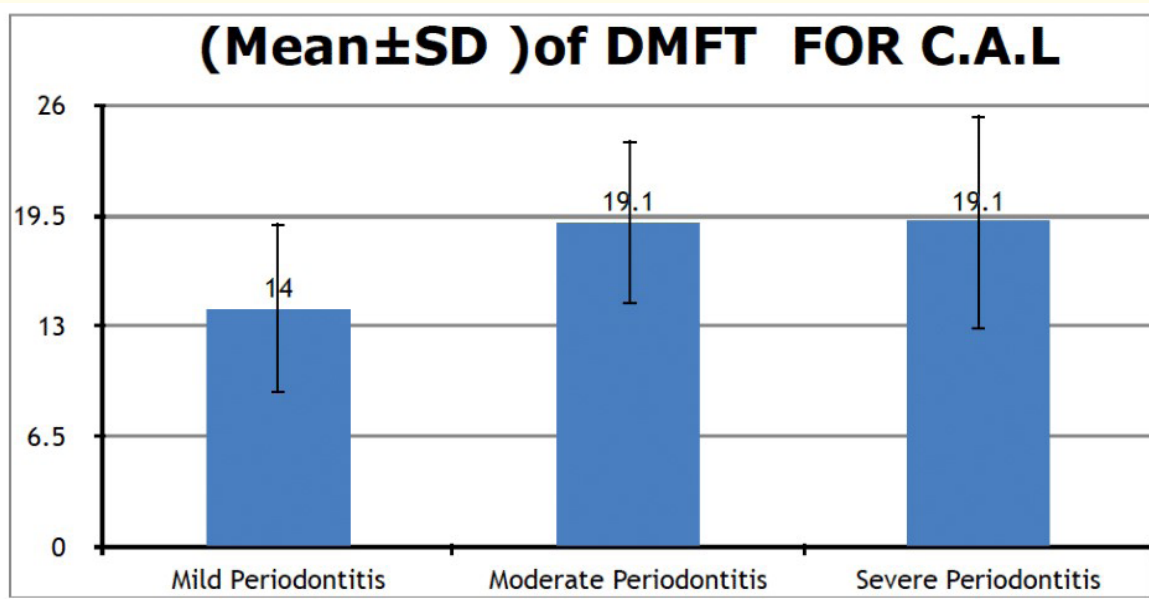
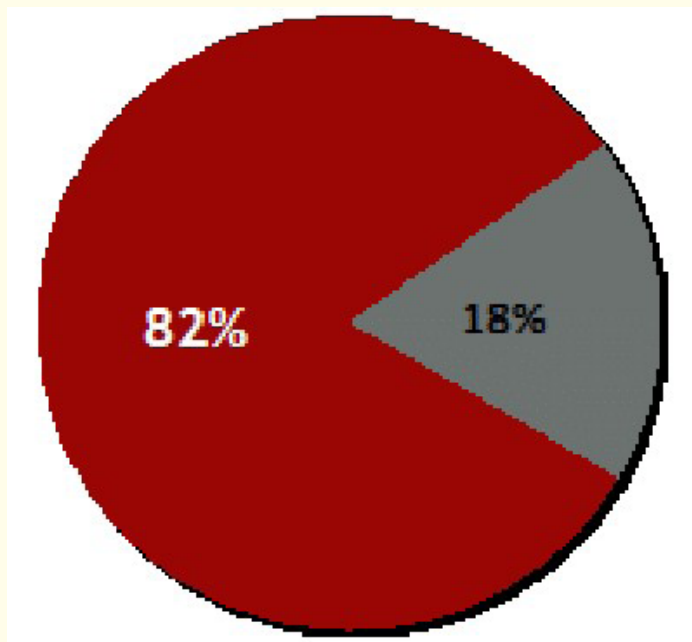


Figure 4: Shows the DMFT in relation to CAL among epileptic patients.



**Chart 1:** Shows Tooth Wear.  
82% with TW  
18% without TW

Surface	Scores			Repeated cases
	1	2	3	
Buccal	0(0%)	2(100%)	0(0%)	2
Lingual	23(69.7%)	10(30.3%)	0%	33*
Occlusal	110(62.1%)	65(36.7%)	2(1.1%)	177*
Cervical	5(27.8%)	13(72.2%)	0(%)	18

**Table 2:** Shows the surface/scores of TWI for each surface and repeated cases of the score on each surface.

\*These values are greater than the no of patients (33) because many patients have more than one score of TWI appears in more than one tooth. And the same patient has TWI in different Surfaces.

Above table shows that the most affected surface was the Occlusal.

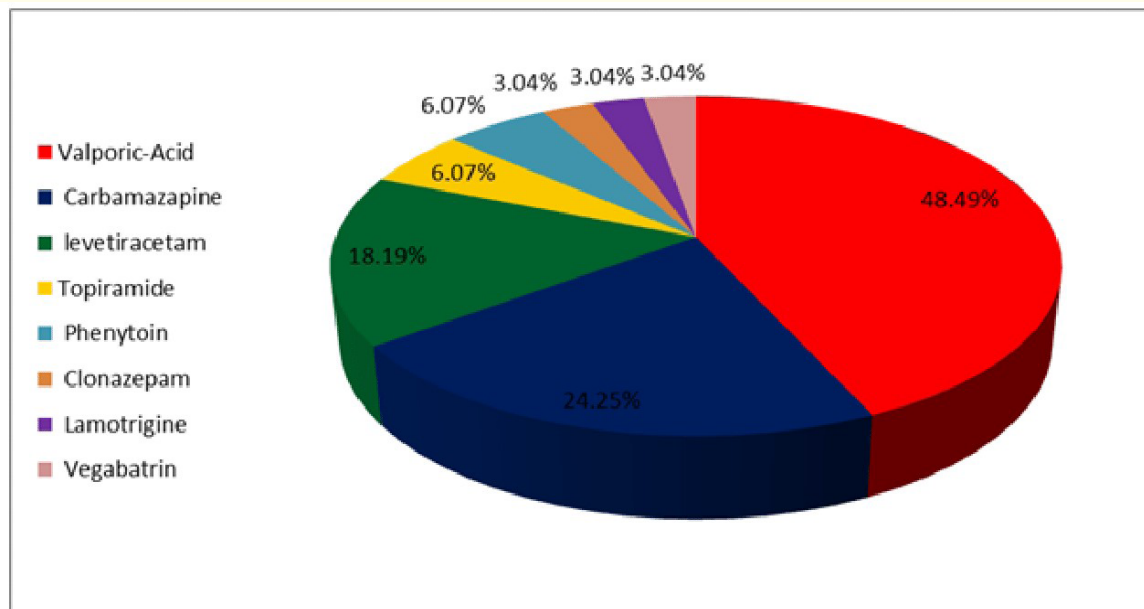


Chart 2: Shows medications used among epileptic patients.

**Discussion**

Epilepsy has multiple manifestations in the oral cavity that had been observed in other studies; in this research, the results indicate a positive relation. The clinical attachment levels in 51.5% of the patients had moderate chronic periodontitis whereas mild and severe chronic periodontitis was shown in 24.2% for each. Gingival index measurements indicated that 60.6% had moderate gingivitis and 18.2% had severe gingivitis. As for the third index, PI, 54.5% had moderate plaque accumulation and 6.1% had severe plaque accumulation. Amongst the three categories, we found that moderate is common for all.

A study conducted in Serbia showed that gingival and plaque scored high indices and this is similar to what has been found in our study [9].

Two testes has been made to find the association between the severity of the clinical attachment loss with the DMFT scores of the patients and the result was found to be statistically insignificant with a P-value of 0.093. No association means that CAL severity could most likely be due to the epilepsy or the anti-epileptic drugs.

The study also measured the tooth wear for the same 33 epileptic patients using the TWI by Smith and knight. The most affected teeth found were no. 11, 21, 22, 31, 41 and 42. Tooth no. 21 had the highest percentage of 8.9% whereas the lowest was no. 41 and 42 with percentage of 6.4% each. The surface scores were measured and found that occlusal surface recorded as one in 77 of all the patients’ teeth. Score #1 of TWI represents the highest percentage of 60%.

As we didn’t observe an edge-to-edge relation in our sample size this result could indicate that the patients could be clenching on their anterior teeth during the seizure attack.

The medication history obtained from the patients found that they use eight different types of medications. The one used by most patients was Valproic-Acid with a percentage of 48.5%. This type of medication causes gingival bleeding which was observed while examining the patients. In one article published on this subject, it has been found that Valopric-Acid leads to gingival enlargement [10] and that was observed in our sample size as well.

### Conclusions and Recommendations

The effects of epilepsy and anti-epileptic drugs are not fully understood in the dental society. the association between the severity of the clinical attachment loss with the DMFT scores of the epileptic patients found to be statistically insignificant In this particular research, our sample size can't be represented as a sample of the Saudi population, also the number of epileptic patients is far more than we got in our study, because most of the patients deny having such a neurological problem because they are afraid to be rejected from dental treatment. More effort from Saudi epileptic society of epileptic is also crucial to provide data for all of these patients in order to give them proper dental care. More investigation needs to be done in the future with a larger sample size; also we positively need to raise the awareness in the Saudi dental society.

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