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Prevalence of Patients Seeking Treatment for Tooth Wear Related Problems

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ABSTRACT

Introduction: Tooth wear is defined as the loss of tooth structure that occurs in the absence of carious mechanism which can cause deleterious effects in the dental health. The aim of this study was to assess the prevalence of awareness among patients and if they seek the treatment for tooth wear.

Methods: This study was done in the Department of Conservative Dentistry and Endodontics KIST Medical College and Teaching Hospital Imadol during October 2019 to March 2020. A cross-sectional study was done including data collection from a questionnaire and clinical examination. Total 370 participants, both male and females of age group 18-70 years were included in the study.

Results: A total of 370 patients were examined out of which 148 male and 222 females were examined. 351 (95%) of them showed the sign of tooth wear. Prevalence of tooth wear was 95% for both males and females. More than half of the patients with tooth wear reported of having GI symptoms (54%). Patients who brushed twice daily (54.9%) and using soft (46.2%) and medium (43.5%) showed the sign of tooth wear. Patients lacking awareness of tooth wear was 64.9%. however, those seeking treatment was 68.9%. Chi Square test was applied for statistical analysis

Conclusion: Tooth wear is a common finding having higher prevalence in this population. Severity increased with progressing age group. Even though there was lack of awareness of the condition, most of them sought treatment for tooth wear.

Keywords: Awareness; Questionnaire, Seeking Treatment, Tooth wear

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INTRODUCTION

Tooth wear is a non-carious, non-traumatic, irreversible, multi-factorial destructive process of dental hard tissues. It results in the functional loss of tooth surface. The main etiology behind such lesion is dietary acids, teeth grinding habit, acid regurgitation from stomach and various lifestyle factors.[1]Tooth wear is broadly classified as attrition, erosion, abrasion and abfraction.[2]

Tooth wear usually leads to discomfort as well as sensitivity during eating, drinking or tooth brushing.[3] Untreated cases of tooth wear might result in pain, pulpal pathology, occlusal impairment, functional imbalance, esthetic problems which eventually renders tooth being non vital.[3] In the initial stage, tooth wear patients might not notice its effect, but later on, due to sensitivity or esthetic reasons, they get concerned. [3] The knowledge of multi-factorial character of tooth wear and its etiology is important for diagnosis and its management. [3]

The interest in tooth wear related studies seem to be increasing according to literature in dental science. [4] The incidence of such lesions varies in different places. Tooth wear indices are the only authentic measure to determine effects and changes in tooth structure due to non-carious lesions in large populations.[4] The literature review discloses various methods of tooth wear indices.

Qualitative methods of indices depend on clinical descriptions that can be more subjective and can be evaluated as mild, moderate, severe or extreme. Another approach is quantitative that depends on objective physical measurements like crown height, facets, depths of grooves. [5] In this study, Smith and Knight Tooth Wear Index (1984) was used.[5]

There is not much epidemiological study regarding tooth wear for Nepal. A study in Kathmandu Medical College conducted by Shrestha D and Rajbhandari P in 2018 shows that out of 364 individuals examined, the prevalence of tooth wear was 218 (60.1%) with no significant gender difference.[6] The tooth wear increased with increasing age group and was statistically significant.[6]

Nowadays, there has been a marked increase in the number of patients seeking treatment for tooth wear. Timely diagnosis and management of tooth wear lesions are important for overall wellbeing of the dentition. In order to manage tooth wear and its consequences, a thorough history, proper diagnosis, etiology and risk factors should be assessed.[6]

The objective of this study was to find out the prevalence of tooth wear in patients coming to the Department of Conservative Dentistry and Endodontics, KIST Medical College and to know whether the participants seek for treatment. The findings would be beneficial to plan the preventive and treatment modalities required for tooth wear.

METHODS

This is a cross-sectional study conducted in the OPD of Department of Conservative Dentistry and Endodontics KIST Medical College and Teaching Hospital Imadol during October 2019 to March 2020. The sample size of this study was determined using convenience sampling method.

A pre-tested questionnaire on demographics, dietary factors, oral habits and lifestyle was used.

A questionnaire was delivered to the participants to collect the data regarding demographic factors, awareness about tooth wear and their attitude towards treatment of tooth wear related problems and also about the etiology of tooth wear. Smith and Knight Tooth wear index (1984) was used to assess the tooth wear. The data was analyzed using Chi- square test with SPSS version 22.

Clinical examination of the oral cavity was done using a sterile mouth mirror, dental probe, tweezers and gauzes (to remove food debris if any) under operating light of the dental chair.

Participants in the age group of 18-70 years who gave written consent and those having more than or at least 20 teeth in the oral cavity were included in the study. Participants with full coverage crown, edentulous arch, those having less than 20 teeth in the oral cavity, pregnant and those not willing to participate in the survey were excluded from the study. Ethical approval was received from institutional Review Committee KIST (Ref. no :2076/77/19)

Table 1. Smith and Knight Tooth Wear Index (1984)

Score	Surface	Criteria
0	B/L/O/I C	No loss of enamel surface characteristics No loss of contour
1	B/L/O/I C	Loss of enamel surface characteristics Minimal loss of contour
2	B/L/O I C	Loss of enamel exposing dentine for less than 1/3rd of surface Loss of enamel just exposing dentine Defect less than 1 mm deep
3	B/L/O I C	Loss of enamel exposing dentine for more than 1/3rd of surface Loss of enamel and substantial loss of dentine Defect less than 1-2 mm deep
4	B/L/O I C	Complete enamel loss - pulp exposure – secondary dentine exposure Pulp exposure or exposure of secondary dentine Defect more than 2 mm deep - pulp exposure - secondary dentine exposure

Scores were given from 0-4 depending upon the severity of tooth wear. (Table 1)

B: Buccal, L: Lingual, O: Occlusal, I: Incisal, C: Cervical

RESULTS

Out of 370 patients (male:148 and female:222) examined, 95% patients showed sign of tooth wear. Mean age of the study subjects was 38 (SD ± 13) years. 148 patients were male and 222 were females. Tooth wear and gender: Prevalence of tooth wear was 95% for males and 95% for females. (Table 2)

Table 2. Prevalence of tooth wear in males and females

Sex	Total pts examined	Pts with tooth wear (n%)
Male	148	141 (95%)
Female	222	210 (95%)

Table 3. Prevalence of tooth wear in different age group

Age group	Total pts examined	Pts with tooth wear (n%)	p value
18-25	70	58 (83%)	<0.001
26-35	109	103 (94%)	
36-45	83	82 (99%)	
46-55	67	67 (100%)	
56-65	28	28 (100%)	
66-70	13	13 (100%)	

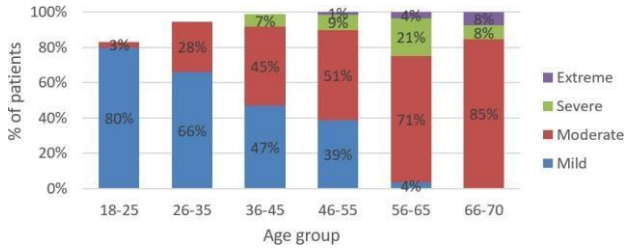

Figure 1. Prevalence of tooth wear in different age groups

Table 4. Tooth wear and brush frequency

Brush frequency	No. of patients (n%)	p-value
Once 1	167 (45.1%)	<0.001
Twice 2	203 (54.9%)	

Table 5. Tooth wear and brush type

Brush type	No. of patients (n%)	P-value
Ultra - soft	2 (0.5%)	0.006
Soft	171 (46.2%)	
Medium	161 (43.5%)	
Hard	36 (9.7%)	

Table 6. Gastrointestinal symptoms and tooth wear

GI symptoms	Severity (n%)						P-value
	None	Mild	Moderate	Severe	Extreme	Total	
Yes	9 (47.4%)	88 (45.4%)	85 (63.0%)	14 (73.7%)	3 (100.0%)	199 (53.8%)	<0.001
No	10 (52.6%)	106 (54.6%)	50 (37.0%)	5 (26.3%)	0 (0.0%)	171 (46.2%)	
Total	19	194	135	19	3	370	

Table 7. Tooth wear and patient's awareness

Aware	None	Mild	Moderate	Severe	Extreme	Total
Yes	5 (26.3%)	74 (38.1%)	41 (30.4%)	9 (47.4%)	1 (33.3%)	130 (35.1%)
No	14 (73.7%)	120 (61.9%)	94 (69.6%)	10 (52.6%)	2 (66.7%)	240 (64.9%)
Total	19 (100%)	194	135	19	3	370

Table 8. Patients seeking treatment and tooth wear

Seeking treatment	Mild	Moderate	Severe	Extreme	Total	P- value
Yes	153 (78.9%)	72 (53.3%)	14 (73.7%)	3 (100%)	242 (68.9%)	<0.001
No	41 (21.1%)	63 (46.7%)	5 (26.3%)	0 (0.0%)	109 (31.1%)	

The difference in gender was not statistically significant (p=0.132) Prevalence of tooth wear increased with aging (Table 3, figure 1). For 66-70years, 56-65 years and 46-55 years age, the prevalence was 100%, whereas for 26-35 years, it was 94% and 18-25 years 83%. The chi-square test between tooth wear and age showed significant association. (p=<0.001). Out of 370 patients, 167 (45.1%) brushed once daily and 203 (54.9%) brushed twice. The chi-square test between tooth wear and brush frequency showed significant association (p=<0.001). (Table 4) Out of 370 patients, ≈90% used soft to medium toothbrush. The chi-square test between tooth wear and brush type showed significant association. (p=0.006) **(**Table 5) Patients with more GI symptoms((heartburn / gastritis/ vomiting/ chest pain/ acid regurgitation reflux) had higher prevalence of tooth wear. The chi-square test between tooth wear and GI symptoms showed significant association. (p= <0.001).(Table 6) A total of 130 (35.1%) were aware of tooth wear whereas, 240 (64.9%) were unaware of the problem. The difference was statistically not significant (p=0.404).(Table 7) The patients seeking treatment for tooth wear was high (68.9%). It was highest in the extreme severity group (100%) and lowest in the moderate group (53.3%). Those not seeking treatment was found to be 31.1%. The chi-square test between tooth wear and patients seeking treatment showed significant association (<0.001).(Table 8)

DISCUSSION

Tooth wear is a multi-factorial process commonly involving various physical and chemical agent and considered a global epidemic [7,8]. This study was centered on the results of questionnaire followed by clinical examination. The overall prevalence of patients aware of the tooth wear was 95%.This study sought for the prevalence of patients for tooth wear and whether they want any treatment for the problem. If left untreated, tooth wear could be the risk factor for function, esthetics and longevity of dentition after acute trauma, dental caries and periodontal disease. [9,10,11]The prevalence of tooth wear increases with age. [12] When there is excessive tooth wear, it leads to the exposure of dentin, shortening of the tooth height, dentinal hypersensitivity, eventually leading to pulpal exposure, pulpitis and necrosis of the pulp, even leading to unattractive appearance. [13,14]Tooth wear was significantly high in the elderly that is in agreement with other studies. [15,16,17]

There was no difference between genders in the prevalence of tooth wear that was also found in other studies. [18,19,20]There was no relation between various brushing aids (toothbrush, neem stick, finger) and tooth wear that is similar to that of a Nigerian study. [21]Our study showed, patients who brushed twice daily (54.9%) had increased tooth wear than those who brushed once daily (45.1%). This is in accordance with a study done by Nayantara Sud. [22] This may be due to abrasives present in the toothpaste, due to faulty tooth brushing habit or extended time period of brushing.Similarly, type of tooth brush bristle had a significant relation with tooth wear. In our study, patients using soft (46.2%) and medium (43.5%) bristled toothbrushes had higher prevalence of tooth wear. This is in accordance with other study as well. [23]

Tooth surface loss was also found to be significant with those with gastrointestinal symptoms (heart burn, gastritis, vomiting, chest pain, acid regurgitation, acid reflux). Similar observation was found in other studies done in a dental clinic in Trinidad, West Indies. [24,25]General symptoms of GERD are heart burn, belching, but some patients might not experience any symptoms. Dentists need to ask specific questions regarding those symptoms. [26]There was no association with or without parafunctional habits like clenching, grinding, bruxism and tooth wear. This is in agreement to other studies. [27]

There was no association with tobacco use (pan, tobacco, betel nut, khaini, gutkha) and tooth wear which is in similarity with the study done by Sadaf *et.al.* [27]Though frequency of hard food and acidic food increases the risk of tooth wear, it was not significant in our study. This is in accordance with the study done in Nigeria and China. [28,29]

Oral habits play an important role in tooth wear. These may be in the form of repetitive behaviors in the oral cavity resulting in the loss of tooth structure. They might include brushing technique, parafunctional habits, dietary habits, gastrointestinal disorders.[30]Since creating awareness among patients about tooth wear and its risk factors is an important aspect for us despite being a challenge. In this study, there was no significance of tooth wear and awareness among the participants. Patients seeking

treatment for tooth wear related problem was 68.9%. Those seeking treatment for tooth wear was significant in this study. All of the patients with extreme severity of tooth wear wanted the treatment.

CONCLUSION

Since the etiology of tooth wear may be various physical or chemical factors, the findings of our study also indicate aging, brushing habits, type of toothbrush, GI symptoms, oral parafunctions like nail biting as a possible contributor to the occurrence of tooth wear. Though, the patients seem to be lacking awareness about tooth wear and its risk factors, we need to emphasize the importance of early diagnosis and treatment of tooth wear. When the severity increases, patient become more concerned about tooth wear and seek treatment.

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