# COMPARISON OF MEAN TOOTH ATTRITION SCORE IN PSYCHIATRIC PATIENTS WITH HEALTHY INDIVIDUALS

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# ABSTRACT

The objective of the study was to compare the Mean Tooth Attrition Score in psychiatric patients with depression, with healthy individuals of same age groups. A Case control study was carried out in the Department of Prosthodontics, Armed Forces Institute of Dentistry and Psychiatric Department,Armed Forces Institute of Mental Health, Rawalpindi, from August 2010 to March 2011. Seventy patients were divided into two equal groups, A and B. Group A comprised of 35 psychiatric patients with depression under treatment since one year having minimum ten natural teeth in oral cavity including first molars and incisors selected from Armed Forces Institute of Mental Health while group B comprised of 35 otherwise healthy individuals of same age range reported to AFID for routine dental treatment. They were included by Non probability consecutive sampling method. The patients with history of facial trauma, hormonal disease or neoplasm, having carious or restored molar teeth and malocclusion were excluded from the study. Smith and Knight<sup>1</sup> index with scores ranging from 0 (No loss of enamel) to 4 (Complete loss of enamel) used to measure tooth attrition score of central, lateral incisors and first molars. The data were analyzed with SPSS version 16. In this study, a significant difference between groups for mean tooth attrition score was found. Psychiatric patients with depression and anxiety revealed the highest degree of tooth wear, many of them requiring complex treatment.

Key Words: Attrition, psychiatric patients, oral rehabilitation.

# INTRODUCTION

Tooth wear may progress throughout an individual's life as a normal phenomenon. The wear rate may vary between individuals depending on different factors, and its etiology is multi factorial. Tooth wear is a common term used to describe surface morphologic changes that include erosion, attrition, and abrasion.<sup>1</sup>

Patient health has been reported to correlate with tooth wear. Psychiatric disorders affect the general behavior of a person, impair level of functioning, and alter perception. This group of people is often ne-

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glected because of ignorance, fear, stigma, misconception, and negative attitudes.  $^{\rm 2}$ 

Mirza and Jenkins<sup>3</sup> found that prevalence of anxiety and depressive disorders in Pakistan was 33% associated with female sex, middle age, low level of education, difficulties with finances and relationship problems. It has been demonstrated that some antipsychotic medications produce functional hyperactivity. It includes damages of the occlusal surfaces of enamel and dentine.<sup>4</sup> So these patients showed significantly more signs of dental attrition. <sup>5</sup>

Consequently, an association between tooth wear and anxiety or depression could be related to the grinding and clenching of the teeth. It has been reported that accelerating tooth wear may be an objective clinical sign of long-lasting anxiety.<sup>6</sup>

In previous studies, Al-Hiyasat et al<sup>1</sup>, Tooth wear was evaluated using the tooth wear index with scores ranging from 0 to 4 among psychiatric patients. The prevalence of a tooth wear score of 3 or more in at least one tooth was 90% (90.4% for females and 91.8% for males). In the age group 26-35 years, the prevalence

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was 88.9%. The occlusal surfaces of first molars were greatly affected by wear, followed by incisal edges of central incisors (more than 90% of these surfaces had a score of 2 or more).<sup>1</sup>

Since some psychiatric conditions predominately anxiety or depression may accelerate the rate of tooth wear. This irreversible tooth loss is a challenge for dental surgeon. Early dental intervention in the form of restoration or prostheses may be a good sign for management. So as a part of the treatment planning process, monitoring the progression of tooth wear may be helpful in determining the right moment to start oral rehabilitation.

#### METHODOLOGY

This case control study was carried out in Department of Prosthodontics, Armed Forces Institute of Dentistry and Psychiatric Department, Armed Forces Institute of Mental Health, Rawalpindi, from August 2010 to March 2011. Seventy Patients (Using WHO Sample Size Calculator) of either gender having age range 20-35 years were divided into two equal groups, A and B. Group A were comprised of 35 psychiatric patients with depression under treatment since one year having minimum ten natural teeth in oral cavity including first molars & incisors from Armed Forces Institute of Mental Health while Group B comprised of 35 otherwise healthy individuals of same age range reported to AFID for dental treatment. They were included by Non probability consecutive sampling method.

The patients with history of facial trauma, hormonal disease or neoplasm, having carious or restored molar teeth and malocclusion were excluded from the sample. A written informed consent of the patient was taken after detailed explanation of research procedure. Demographic data of the patients was recorded on Proforma. Smith and Knight<sup>1</sup> Index with scores ranging from 0 (No loss of enamel) to 4 (Complete loss of enamel) used to measure tooth attrition score of central, lateral incisors and first molars (Incisal/Occlusal surfaces). Maxillary and Mandibular impressions were recorded in Alginate impression materials which were poured in dental plaster to make dental cast.

The data were analyzed with SPSS version 16. Mean  $\pm$  S.D was calculated for age and tooth attrition score in both groups. Frequency and percentages were presented for gender and age groups. Independent samples t-test was applied to compare mean tooth attrition scores among different age groups. Keeping 95% Confidence Interval and p value <0.05 considered significant.

#### RESULTS

Seventy patients (35 cases and 35 controls) formed the study groups. Group A showed mean age  $27.51\pm$ 3.70 compared to Group B which had  $27.38\pm3.53$ (p>0.05). About 29 (41.4%) were male and 41 (58.6%) were female. Although there was difference between

Score	Surface	Criterion	
0	B/L/O/I	No loss of enamel surface characteristics	
1	C B/L/O/I	No change of contour Loss of enamel surface characteristics	
2	C B/L/O	Minimal loss of contour Loss of enamel exposing dentin for less than one third of the surface	
	Ι	Loss of enamel just exposing dentin	
3	C B/L/O	Defect less than 1 mm deep Loss of enamel exposing dentin for more than one third of the surface	
	Ι	Loss of enamel and substantial loss of dentin, but not exposing pulp or secondary dentin	
4	C B/L/O	Defect 1–2 mm deep Complete loss of enamel, pulp exposure, or exposure of secondary dentin	
	Ι	Pulp exposure or exposure of secondary Dentin	
	С	Defect more than 2 mm deep, pulp exposure, or exposure of secondary dentin	

B = Buccal or labial; L = Lingual or palatal; O = Occlusal; I = Incisal;

 $C = Cervical. \qquad (*In \ case \ of \ doubt \ a \ lower \ score \ is \ given).$ 

	Group A		Group B	
Age groups	Physiological Attrition (Score 0-1)	Abnormal I Attrition (Score 2-4)	Physiological Attrition (Score 0-1)	Abnormal Attrition (Score 2-4)
20-25 years	17(47.2%)	19(52.7%)	29(80.05%)	7(19.44%)
26-30 years	13(27.08%)	35(72.91%)	41(80.39%)	10(19.60%)
31-35 years	4(21.05%)	15(78.94%)	12(66.66%)	6(33.33%)
p-value	<0.05	< 0.05		

#### TABLE 2: COMPARISON OF ABNORMAL ATTRITION AMONG BOTH GROUPS

male to female ratio but instead of this we found mean tooth attrition score in males was  $1.75\pm0.83$  compared to  $1.47\pm0.86$  in females (p>0.05).

All patients were further grouped according to age range into three groups. Because of presence of some degree of physiological tooth attrition, score 0 and 1 were combined as "Physiological Attrition" and score 2, 3 and 4 were combined and labeled as "Abnormal Attrition". The present study found abnormal attrition in 66.9% in Group A, but only in 21.9% for Group B (p<0.05) as given in Table 2.

The results showed significant difference between groups for mean tooth attrition score. The mean dental attrition score was  $2.14\pm0.74$  for psychiatric patients (Group A) and  $1.03\pm0.54$  for the control group (Group B) (p<0.05).

# DISCUSSION

Tooth wear is an irreversible, multifactorial, non carious, physiologic, pathologic, or functional loss of dental hard tissues.<sup>7</sup> Age is one of the most important factors that influences tooth wear. In the present study, a significant increase in tooth attrition score with increasing age was observed. <sup>1,5,7,8</sup> Secondly gender may also be a related factor because of aesthetics and regular dental check up by female so there is tendency for male to have more tooth attrition score than female. Similar results were found in the current study but the difference was not statistically significant.

Winocur et al<sup>5</sup> found that the psychiatric patients experienced severe dental damage, as evident by an extensive attrition of teeth. Approximately 50% of these patients presented abnormal attrition of their general dentition. The mean dental attrition level was  $1.29\pm0.75$  for psychiatric patients and  $0.82\pm0.59$  for control group (p<0.05). Abnormal attrition was evident in 46.8% of the psychiatric patients, but only in 20% of control group  $(p{<}0.05).^{\scriptscriptstyle 5}$ 

In the present study, abnormal attrition score was the highest degree of tooth wear evident in psychiatric patients than the control group. An association between tooth wear and psychiatric condition has been reported and was related to antidepressant medication taken by the patient that caused a reduction in salivary flow rate and movement disorder like clenching or bruxing, which may in turn influence tooth wear rate.<sup>1,5,6,9</sup> The use of psychoactive drugs is quite common in Pakistan regardless of having any psychiatric disease.<sup>10</sup>

In this study, occlusal surfaces of first molars were found to be the most affected by wear, followed by the incisal edges of the central incisors. The explanation for the severity of tooth wear on occlusal surfaces in psychiatric patients when compared to healthy controls could be related to the fact that the main cause of tooth surface loss is attrition, which may be related to contact parafunction (grinding and clenching of the teeth). Moreover, such findings have also been documented in psychiatric and non psychiatric patients. <sup>1,8</sup>

Chuajedong et al<sup>8</sup> found that occlusal surfaces of the teeth were the most affected by wear, and the greatest degree of wear was found in the first molar. The authors related this to the fact that the first molar is the first permanent tooth that erupts in the mouth and dynamic movements of mandible during functional and parafunctional activity in depressive patients. Similar results were found in the present study.

There is no specific treatment available at this time to stop bruxism, so that the focus has been to reduce the adverse effects of the habit. The use of interocclusal appliances is the most common and accepted way to prevent wear of teeth and Prosthodontic restorations in spite of lack of strong evidence for its efficacy.<sup>11</sup> A survey among general dental practitioners in Sweden showed that they considered hard interocclusal appliances was for protecting the dentition from wear as first indicator, followed by for managing TMD problems.<sup>12</sup>

In order to prevent worse consequences of attrition, routine dental checkups and treatment should be utilized by psychiatric inpatients, especially those in chronic wards. <sup>13</sup> Some studies have suggested that the effects of education, a reminder system and motivational interviewing on improving the oral health status and behavior of patients with severe mental illnesses in the short term were encouraging.<sup>13.14</sup>

Further studies should be done to investigate the effects of depression and anxiety in changing the oral health behavior of psychiatric patients, eventually and to emphasize the dental clinician's role in looking for possible dental sequelae in such individuals.

## CONCLUSION

The present study showed that psychiatric patients with depression and anxiety revealed the highest degree of tooth wear, many of them requiring complex treatment. However, prevention should be the main objective because patients with advanced mental illness are often anxious and unco-operative in the dental clinic, thereby precluding complex treatment. No dental treatment was provided in these hospitals except referral to the dental surgeon for emergency treatment. Hence more coordinative efforts between medical, dental, and social care sectors must be established to serve the needs of this underprivileged population.

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