

An Investigation to Assess Occlusal and Psychological Parameters in Bruxism

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ABSTRACT

Aim: To assess the anxiety and occlusal features in bruxism by means of T-Scan III and Hospital Anxiety and Depression Scale correspondingly.

Study design: Case control study

Place and duration of study: Department of Oral Medicine, Khyber Medical University-Institute of Dental Sciences, Kohat from 1st December 2020 to 30th November 2021.

Methodology: This study comprised of a cluster of fifty patients with bruxism (Cluster Bxm) and fifty healthy persons as control cluster (Cluster NBxm). Patients were nominated from outdoor patients coming to Private Dental Teaching Hospital in Peshawar with the principal grievance of sensitivity of the teeth due to routine crushing. For the selection of cases, American Academy of Sleep Medicine (AASM) was followed. Supplementary grounded on assessment of era and sex, controls were nominated. Hospital Anxiety and Depression Scale (HADS) survey was asked equally from the clusters to assess the depression and anxiety. Record of occlusal strictures in both the clusters was completed numerically by using T-Scan III.

Results: Cluster Bxm had expressively superior mean tooth wear index (20.35 ± 9.7) than cluster NBxm (10.20 ± 7.29). Cluster Bxm had ominously advanced anxiety ($13.33 \pm 3.97/9.17 \pm 1.92$) and depression scores ($9 \pm 1.83/7.17 \pm 2.34$) as equated to NBxm. The disclusion period of cluster Bxm was 0.953 ± 0.860 and that of cluster NBxm was 0.358 ± 0.390 ($p=0.009$).

Conclusions: Patients with advanced stage of depression, anxiety and amplified disclusion period may have more fondness to misery from bruxism ($p<0.05$).

Keywords: Bruxism, Depression, American Academy of Sleep Medicine (AASM), Tooth wear, Anxiety, Digital occlusal analysis

INTRODUCTION

Researchers have testified frequency of bruxism varies broadly from 3-97%.¹⁻³ Frequency of bruxism have intended to be existing in 13% of the people during snoozing times and the frequency of bruxism through day hours has been designed to be 31%.^{2,4} Frequency of bruxism can be impacted by variables such as phase, masculinity as well as site demographics of the suffering person.^{5,6}

Cause of bruxism assumed to be for the reason that of mass of issues like pathophysiological/central factors i.e. brain neurotransmitters, psychosocial impacts instigating expressive anxiety or stress or basal ganglia, and exterior reasons i.e. tooth intrusion in oral constriction.^{5,7-9} In place of assessing the psychosomatic position of the enduring, numerous examinations are used such as HAMA, HADS and Beck Depression Inventory (BDI).¹⁰ Usually articulating paper are used to discriminate the areas of interaction amongst the upper and lower dentition in eccentric and centric activities of dental prosthesis and normal tooth. However consuming these articulating papers have few disadvantages e.g. the magnitude of the spot may not signify volume of the load¹¹ and the paper marks becomes grubby in drool.¹² Hi-tech occlusal analyzers are used to overwhelm such inadequacies through assessment of occlusion.

Unfortunately no flawless statistics are accessible on the source and outcome of bruxism.⁹ Accessible International and national readings have revealed that conceivable association amongst bruxism and numerous psychosocial as well as occlusal issues are still in the evolution however still not any convincing statement has hitherto been stated.⁹⁻¹²

he current research was carried out to find a relationship amongst occlusal strictures and depression/anxiety in bruxism such that, no strong track in the present texts in this details.

MATERIALS AND METHODS

This case control study was carried out in the 'Department of Oral Medicine of the institution' from 1st December 2020 to 30th November 2021. The study covering of a cluster of patients with bruxism as cases (Cluster Bxm: Teeth grinders) and a cluster of oldness and gender harmonized control cluster (Cluster NBxm: Non Teeth grinders). The essential sample mass per cluster was 50 patients each. Proper consent from the institutional ethics committee (50/Ethical/T-Scan;20/21) was acquired and the knowledgeable consensus was taken from individually involved in the current study.

Fifty patients existed designated in 'Cluster Bxm' as cases, by means of the investigative screening standards of bruxism as specified via AASM.¹³ Inclusion criteria for cluster Bxm were cognizance regarding bruxism whichever by the patient him or herself or by a spouse (Bruxism during snoozing), fit folk shaving no systemic complaints, entirely dentate patients (third molars were not assessed) with deficiency of any prosthesis and restorations and with no past of tumors, neuralgia, migraine, chronic diseases, or trauma, temporomandibular joint disorders or any operations in the head and neck region and no past of orthodontic handling. Fifty fit folks were designated as 'Cluster NBxm' based on resemblances of age and sex with the 'Cluster Bxm'.

Clinically, the tooth wear was documented by means of the Guide specified by Ekfeldt et al.¹⁴ for the clusters equally. The contestants of both the clusters were managed HADS to get the depression and anxiety score. HADS is a 14 item scale that spawns ordinal information.¹⁵ Seven points of which relate to depression and seven relay to anxiety. Each item on the form is recorded from Zero to Three i.e. a person's depression/anxiety score may fluctuate among 0 and 21. A cut-off scale on eight was used to classify depression or anxiety scale distinctly. Occlusal interaction information was assessed electronically using T-Scan III for Windows (Renishaw, Inc, Gloucestershire, UK). Similar survey accomplished all monotonous medical investigations and T-Scan capacities to moderate biasness. The patients were educated to bite down T-scan sensor soundly and the actual-

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period strength move of occlusion produced was documented on a processor display. Erstwhile to dimension, T-scan sensor was re-calibrated amongst contestants to recompense specific disparities in bite strength. The similar sensitivity assessment was sustained through all copies for separately contestant.

The statistics were abridged as mean $\pm$ SD and statistical analysis was completed by means of the SPSS-26. For parametric analysis, unpaired *t*-test and for non-parametric analysis, Mann Whitney *U* test was used.

RESULTS

Not any noteworthy variance in sex proportions amongst the clusters Bxm (59.8% males, 40.2% females) and NBxm (63.8% males and 37.2% females) [$p=0.995$] was initiated. Age cluster below 30 years (46.8%) had upper frequency for bruxism than other age clusters Bruxism was extra-mutual in subjects related to metropolis zones (65%) [Table 1]. Cluster Bxm had glumly better mean tooth wear index (mean=26.14) as associated to the cluster NBxm (Table 2).

A greater anxiety slashes was establish in cluster Bxm (mean=11.09) as associated to cluster NBxm (mean=8.18) [Table 3]. Likewise cluster Bxm (mean=11) shows expressively greater depression percentage than cluster NBxm (mean=9) as shown in Table 4. When occlusal parameters were associated, disclusion period of cluster Bxm (0.953 $\pm$ 0.860) was extra as compared to cluster NBxm (0.358 $\pm$ 0.390) [Table 5].

Table 1: Distribution of patients

Variable	Bxm cluster	NBxm cluster
Gender		
Male	59.8%	63.8%
Female	40.2%	37.2%
Age (years)		
23-30	46.8%	53.2%
31-36	31%	29%
37-43	22.3%	17.7%
Location		
Metropolitan	69%	66.3%
Countryside	31%	33.7%

Table 2: Assessment of mean tooth wear

Cluster	Mean tooth wear	P value
Bxm	26.14 $\pm$ 13.49	0.05
NBxm	8.13 $\pm$ 5.17	

Table 3: Assessment of mean anxiety score

Cluster	Mean anxiety score	P value
Bxm	11.09 $\pm$ 1.87	0.05
NBxm	8.18 $\pm$ 1.76	

Table 4: Assessment of mean depression score

Cluster	Mean depression score	P value
Bxm	11.00 $\pm$ 2.02	0.05
NBxm	9.00 $\pm$ 1.80	

Table 5: Mean Occlusion time, disclusion time, left right stress distribution and anteroposterior of clusters Bxm and NBxm using the T scan occlusal analyzer

Functional movement	Bxm cluster	NBxm cluster	P value
Occlusion time	0.41 $\pm$ 0.43	0.34 $\pm$ 0.59	0.823
Disclusion time	0.65 $\pm$ 0.27	0.45 $\pm$ 0.27	0.008*
Left right stress distribution	1.81 $\pm$ 0.86	1.75 $\pm$ 0.80	0.322
Antero-posterior stress distribution	0.26 $\pm$ 0.21	0.19 $\pm$ 0.17	0.451

DISCUSSION

The bruxism either objective or subjective have been established to be an interesting assignment.^{8,9,12} No generally acknowledged standards for analysis of alert bruxism have been testified in the studies yet. A unique finest picture for the analytical of sleep

bruxism was projected by AASM for both clinical and research goals¹⁶.

In the current study, 59.8% of the teeth grinders were males and 40.2% teeth grinders were females (Table 1) and it was establish to be statistically not weighty. Variance in level of anxiety, amount of avowal of the problem in surveys in both genders,⁹ disparities in chewing strength and the period of revealing of bruxism might description for the disparity in frequency of bruxism in females and males.³ Results of the current research validate with the studies piloted by Lavigne⁷ and Manfredini¹⁷ who established that there was no masculinity cantered preference for bruxism. Though, results contrasting researched prepared by Hegde et al⁶ and Al Zarea et al⁴ who establish sophisticated preference for bruxism in males.

Metropolitan populations (69%) were comparatively more pretentious with bruxism than in countryside populace (31%) [Table 1]. This alteration in frequency ratio could be for the reason that of difference in food and regime in the metropolitan and countryside residences in addition to illiteracy forwarding to non-reportage of illness situation realized in countryside populace.^{6,7}

A greater frequency for bruxism in subjects below the age of 31 (46.8%) than the subjects in the age cluster of 31–36 (31%), subjects above the age of 37 (22.3%) [Table 1]. The frequency of bruxism has frequently been originate to be sophisticated in the younger cluster due to sophisticated volume of stress resultant from inactive routine, occupation restrictions as well as incapability to handle through antagonistic situations.¹⁰

In the existing research, tooth wear in cluster Bxm was greater as related to the cluster NBxm (Table 2) Knight¹⁸ and Seligman¹⁹ establish in their studies that tooth wear was augmented in subjects with problem of bruxism. Nevertheless, Beba et al²⁰ and Pergamalian¹⁵ haven't publicized an optimistic association amongst tooth wear and bruxism in their respective research.

The current study exhibited a pointedly sophisticated stages of anxiety (11.43 $\pm$ 5.97/11.17 $\pm$ 2.92) and depression (11 $\pm$ 2.83/8.17 $\pm$ 3.34) in the cluster of teeth grinders (Tables 3-4). The results of the current study were supported by Major et al²¹, Rao et al⁸ and Gungormus & Erciyas²² who establish that the sample with greater level of depression and anxiety have greater affinities for bruxism while Pierce²³ found no association amongst strain and bruxism.

In the present study T-Scan occlusal analyzer was used as a replacement of an orthodox enunciating paper. Although bearing in mind the occlusal features in the samples it was establish that there was a noteworthy upsurge in disclusion period (0.653 $\pm$ 0.748) in cluster Bxm (Table 5). Though no statistically significant alteration was seen in dis-collusion period or occlusion time amongst the bruxism patients in earlier research done by Gümüş²⁴.

This could help to articulate an active management strategy to avoid the injurious sequel of bruxism i.e. tooth wear and subsequent TMJ complaints. This would assist the doctor to verbalize a stronger trail to manage a patient with bruxism by considering not only the significances but besides the causing features.

CONCLUSION

Inside the restrictions of the study, it was determined that bruxism is associated to multi-factorial causative factors along with the existence of sophisticated grade of tooth wear. Patients of greater type of depression, anxiety and amplified disclusion have superior preference to anguish from bruxism.

Conflict of interest: Nil

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