

RESTORATIVE TREATMENT STATUS AMONG SELF REPORTED BRUXISM PATIENTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: To determine the proportion and association of the restorative treatment status among self-reported bruxism patients.

Materials and Method: It was a retrospective cross-sectional study performed at the private dental practices through convenience sampling. The recorded 37 cases were identified satisfactorily to be included in the study. Patients with known developmental disability neurological or gross mal-occlusion such as open bite, cross bite or skeletal class 2 and class 3 malocclusion and patients with a missing required list of clinical records were not included in the study. Patient's record was assessed to find the restorative work performed in term of filling, crown and bridge work and the presence or absence of removable prosthodontics appliances for the missing teeth. Statistical analysis was performed using SPSS 18. Chi-squared test was used to find significance ($p= 0.05$).

Results: Out of 37 patients, 13 were having no restorative work done while 12 patients were having minor restorative treatment, i.e. filling in 1 or 2 teeth or crowning on 1 or 2 teeth. The remaining 12 patients were having major restorative work is done which included more than two dental fillings or the presence of FPD or RPD.

Conclusion: Restorative work has a significant effect on a patient occlusion status and TMJ function.

Keywords: Restorative status, self-reported, bruxism

INTRODUCTION:

The repeated activity of masticatory muscle presented with clenching and grinding of teeth is called bruxism. Bruxism aetiology is complex and multifactorial involving systemic, psychological, occupational, and genetic factors. The primary pathogenesis of bruxism is related to central nervous system activities^{1,2}.

The most common bruxism definitions in current use are those formulated in the eight edition of the Glossary of Prosthodontic Terms (GPT-8)⁴, in the

second edition of the International Classification of Sleep Disorders (ICSD-2)⁵, and in the 4th edition of the Orofacial Pain Guidelines (OFPG-4)⁶, published by the American Academy of Orofacial Pain. These three definitions are scrutinised critically later, after which a new definition of bruxism is proposed. In the GPT-8, bruxism is defined as 'the parafunctional grinding of teeth', and as 'an oral habit consisting of involuntary rhythmic or spasmodic nonfunctional gnashing, grinding or clenching of the teeth, in other than chewing movements of the mandible, which may lead to occlusal trauma⁴.

Bruxism is an oral condition of great interest to both researchers and clinicians in the dental, neurological and sleeps medicine domains. Although associated with some clinical problems, including orofacial pain, tooth wear and failing dental restorative

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treatments^{1,2}, bruxism remains difficult to manage in ineffective and safe ways³. If not treated, it leads to damage to the teeth, periodontium and oral mucosa, pathology of the muscles constituting the masticatory system, headache and cervical pain, temporomandibular and hearing disorders⁵. Stress-related disturbances, including depression and anxiety, are a real problem in a highly developed society. Clinical studies suggest that stress is the main reason for patients to seek medical advice (50–75%)^{6,7,8}. This is also confirmed by the large number of medicines used to treat stress-related problems in western countries such as antidepressants, anxiolytics, and hypnotics, which decrease arterial blood pressure and the level of cholesterol⁹. Moreover, the number of patients seeking treatment because of temporomandibular disorders and oral parafunctions is increasing, which may confirm a correlation between these conditions and a growing number of chronic stressors in highly developed societies. This type of disorder can also be observed in younger people, and it is more common in females^{10,11,12}. It is accepted that chronic stressful situations and mental diseases conduct to the development of occlusal parafunction and temporomandibular disorders without being the only cause. Additional reasons include interceptive occlusal contacts, malocclusions, traumas/microtraumas, hormone disorders, rheumatism, orthopaedic problems, and masticatory system inflammations^{14,15,16}.

The prevalence of bruxism ranges widely, from 4% to 96%,^{8,9,10} because of differences in the bruxism types (unspecified, sleep, and awake), applied diagnostic methodology (questionnaires, oral history, and clinical examination), the presence or absence of comorbidities (e.g. anxiety or temporomandibular disorder), and the characteristics of the study population.² The prevalence of bruxism is higher in young adults than in the elderly.^{6,11,12} The aetiology of bruxism remains controversial. Recent reviews suggest that bruxism is mainly regulated by pathophysiological and psychological factors, rather than morphological ones.^{13,14} Although some dentists suggest that malocclusion may cause bruxism, a recent review concluded that there is no evidence whatsoever for a causal relationship between bruxism and occlusion.² Thus, the research focus is mainly on psychosocial,^{15,16} physiological/biological,^{17–20} and exogenous factors.²¹ However, the etiological factors for bruxism are still unclear, and the aetiology is

probably multifactorial.^{15–22}

Dental fillings, crowns, Fixed and removable dental prosthesis are a common type of restorations carried out for loss of patient teeth and its parts. Systematic reviews have demonstrated survival rates of various restorative dental treatment is 94% after five years and 89% after ten years^{29,30}. The most common technical failures reported included loss of retention and fracture of material. It is often suggested that the occurrence of such failures is greatest in patients with bruxing habits. For example, when prosthetic restoration is being provided for a worn dentition (usually with teeth having short clinical crowns), it will be difficult to achieve adequate mechanical retention and resistance forms for conventionally cemented restorations³⁰. Furthermore, the potentially greater load on restorations if there is bruxism, heavy chewing forces, or unfavourable loading directions between teeth, means that great caution is needed in the design of the restoration if the risk of mechanical failure is to be reduced. We found no study in this regard, although several reports have noted the possible association between bruxism and survival of restorations.

OBJECTIVES:

The purpose of this study was to examine the restorative status of self-reported bruxism patient for possible correlation.

MATERIALS AND METHOD:

It was a retrospective cross-sectional study performed at private dental practices through convenience sampling. The Dental health records of known bruxism patients were analysed to extract the required data. For this purpose patient with class I occlusion and available dental records including health charts, occlusal and panoramic radiographs, pictures and dental casts were included in the study. Patients with known developmental disability (neurological or gross malocclusion, i.e. open bite, cross bite or skeletal class 3 and class 2 malocclusion.) and patients with missing the required list of records were not included in the study.

Patients' record was assessed to find the restorative work performed in term of filling, crown and bridge work and presence or absence of prosthodontics appliances for the missing teeth.

Data were analysed using SPSS software 18. Frequencies of dental fillings, crowns, FPD and RPD were calculated using descriptive statistics. chi-squared Tests were used to determine whether there were any significant differences ($P < 0.05$) between men and women groups.

RESULTS

Out of 37 patients, 13 were having no restorative work done while 12 patients were having the minor restorative treatment done, i.e. filling in 1 or 2 teeth or crown on 1 or 2 teeth. Out of 37, 12 patients were having major restorative work is done which included more than two dental fillings or presence of FPD or RPD.

Out of 37 patients, 10 78 percent were having a dental filling done in one or multiple teeth while ten percents had single crown present. The fixed partial

denture was present in 19 percent of the patient while 10 percent of patients had removable partial denture in use. This indicates the possible correlation between bruxism and dental restorative work.

Statistical analysis shows a significant correlation between of restorative work and bruxism presence. The unpaired chi-squared test measured this correlation, and the p-value was taken at 0.05. The correlation was also measured for various prosthodontics treatments individually, and this was also found significant.

DISCUSSION:

This study showed the presence of significant amount of restorative work in self-reported bruxism patient. Restorative work can have a significant effect on the occlusal status of a patient and can bring changes in normal occlusion which in turn can have adverse

Table-1: Restoration treatment status

	Frequency	Percent	Valid Percent	Cumulative Percent
No Restorative work done	13	35.1	35.1	35.1
Minor Restoration	12	32.4	32.4	67.6
Major Restoration	12	32.4	32.4	100.0
Total	37	100.0	100.0	

Table-2: Correlations of Restorative Work (Fpd, Rpd, Crown And Fillings) with Bruxism

		Restoration	FPD	RPD	Crowns	Fillings
Restoration	Pearson Correlation	1	.520**	.435**	.554**	.494**
	Sig. (2-tailed)		.001	.007	.000	.002
	N	37	37	37	37	37
FPD	Pearson Correlation	.520**	1	-.168	.161	.093
	Sig. (2-tailed)	.001		.320	.341	.582
	N	37	37	37	37	37
RPD	Pearson Correlation	.435**	-.168	1	.389*	.067
	Sig. (2-tailed)	.007	.320		.017	.692
	N	37	37	37	37	37
Crowns	Pearson Correlation	.554**	.161	.389*	1	-.252
	Sig. (2-tailed)	.000	.341	.017		.133
	N	37	37	37	37	37
Fillings	Pearson Correlation	.494**	.093	.067	-.252	1
	Sig. (2-tailed)	.002	.582	.692	.133	
	N	37	37	37	37	37

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

effects on the temporomandibular joint and can act as a contributing factor in bruxism.

Bruxism, which can be considered an umbrella term for clenching and grinding of the teeth, is the commonest of the many parafunctional activities of the masticatory system. Opinions on the cause of bruxism are numerous and widely varying. Current reviews indicate that the aetiology is not fully known but that it is probably multifactorial¹. Although intermittent clenching and grinding are extremely common, they usually pose no serious consequences for the oral structures. On the other hand, manifest bruxism can result in problems that are as frustrating for the patient as well as for the treating dentist. Sequelae of bruxism that have been proposed include tooth wear, signs and symptoms of temporomandibular disorders (TMD), headaches, toothache, mobile teeth, and various problems with dental restorations as well as with fixed and removable prostheses^{2,5,6}.

The prevalence of bruxism in the population is difficult to estimate because of the wide variations in methods and diagnoses applied, types of bruxism considered and differences between samples examined in published studies. Indeed, epidemiologic studies have reported prevalences of bruxism ranging from 6% to 91% of examined samples⁶. It is evident that clenching and grinding of teeth are extremely common, although the prevalence of manifest bruxism has been estimated to be about 10%¹

Instead, the focus has been on psychosocial, pathophysiologic and genetic factors. Even though the literature is still not conclusive, it is agreed today that bruxism has a multifactorial aetiology^{29,30}.

Historically, occlusal/articulation and skeletal factors were believed to constitute the greatest risk for bruxism, but modern studies have failed to demonstrate a consistently significant relationship between such factors and bruxism. Factors which have been implicated as having an increased risk for bruxism include lower age, female gender, tobacco, alcohol and caffeine usage, psychosocial factors (e.g. stress and anxiety), sleeping disorders (e.g. obstructive sleep apnea), genetics and certain medications or drugs. Some authors have emphasised that bruxism during sleep and wakefulness should be regarded as two separate entities, probably with different etiologies, and with different presumed risk factors. The American Academy of Sleeping Disorders proposed

the terms sleep and awake bruxism³⁰⁻³².

The relationship between bruxism and malocclusion due to restorative treatment has been investigated in dentistry for a long time but has remained poorly understood.² Although some dentists suggest that malocclusion by restorative treatment may cause bruxism, a recent review concluded that there is no evidence whatsoever for a causal relationship between bruxism and occlusion.² Likewise, the literature on the materials recommended for use in dental restoration in patients with severe bruxism is sparse, and the choice needs often to be made on the basis of common sense rather than on scientific data. The choice of material to be used could be critical if, for example, it is opposed by natural teeth³⁴⁻³⁶.

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