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ARE BUS DRIVERS EFFECTED BY STRESS RELATED BRUXISM: A "See It Through" ANALYSIS USING CROSS SECTIONAL STUDY DESIGN

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ABSTRACT

BACKGROUND: Bruxism, also known as Bruxomania, is the grinding of teeth at night and during the day. The aetiology for bruxism may be local, systemic, psychological or occupational. The psychological reasons are anxiety, emotional stress etc., The current generation worldwide is commonly affected by a factor called 'stress'. Stress also has its effect on the human body by various means.

AIM: The study has been done to evaluate the commonness of bruxism among the bus drivers in Chennai City in relation to stress.

MATERIALS AND METHOD: A cross-sectional study was made among the bus drivers of Chennai city using simple random sampling. The participants (N=101) were interviewed. A modified version American academy of stress questionnaire was used, which consisted of questions related to stress, work experience, working hours, bruxism etc., The categories were recorded on a ten-unit scale, and further statistical analysis was done with SPSS software using Chi-square and regression analysis. P value < 0.05 is considered significant.

RESULTS: Most of the mass reported the presence of diurnal bruxism. Diurnal bruxism was co-related with factors like work experience, no satisfaction in the job and relatively stress (P value less than 0.05 gets significant). Years of work increase with stress accentuation, indicating the prevalence of diurnal bruxism. Hence, this analysis shows that work and stress have a significant role in bruxism among bus drivers.

CONCLUSION: The study reveals that the work pressure, along with the increase in the duration of work, stress-related factors etc., may cause bruxism. Hence the conclusion was made that stress affected the oral cavity, causing bruxism among the bus drivers of Chennai city.

KEYWORDS: Stress, Bruxism, Bus drivers, Work pressure

INTRODUCTION

The state of excessive tooth grinding or jaw clenching is known as bruxism.[1] Various factors related to stress and anxiety, abnormal positioning of teeth, and missing or crooked teeth are responsible for bruxism.[2] The two main types of bruxism are: during sleep- Nocturnal bruxism and during wakefulness- Awake bruxism.[3] Stress is considered the increasing factor that initiates and predisposes the main factor that causes bruxism. Among them, stress is increasingly viewed as the initiating, predisposing, and perpetuating factor for bruxism, although their explicit relationship remains unclear. The habit of teeth clenching has been reported during intense periods of workload.[4] Effects of bruxism in the oral cavity include occlusal attrition, interproximal wearing away of teeth, and sometimes, a gingival recession may be seen along with loosening of teeth. Apart from oral illness, it may also cause temporomandibular joint pain, headache, effects on masticatory muscles, and results on periodontal ligaments etc.

The bus driver job is always a part of the public service industry. The physical and psychological health of the bus driver is a critical factor in driving performance.[5]Bus drivers frequently report tension, mental overload, fatigue and sleeping problems. Bus drivers also do not have more frequent absences from work and are of longer duration than workers in other occupations.[6] Professional drivers self-reported health problems (hypertension, dyslipidaemia, diabetes and overweight) and health-related risky behaviours (smoking and sedentary behaviour).

The jobs of bus drivers are always challenging and overloaded. They often work for extended hours, and hence stress is a major consequence. This study explores the stress experienced at work and its implications on oral health. They tend to report high levels of occupational stress, burnout and occupational traffic accidents. [6] Certain studies discuss that nocturnal bruxism affects various disorders that are short-term acute and long-term chronic caused by the masticatory apparatus [7]. Reported bruxism and stress studies reveal that stress and bruxism are co-related [8].

Health is always co-related with occupation. Stress among employees is raising eventually overtime period. It's now referred to as a 'worldwide epidemic' by World Health Organisation. This discomfort impacts various parts of the human body, including the oral cavity bringing about health problems. This study aimed to assess the relationship between stress due to the workplace and the prevalence of bruxism and factors associated with bruxism due to tension among the bus driver population in Chennai city.

MATERIALS AND METHOD

A cross-sectional study was conducted among bus drivers in Chennai City. Ethical clearance was obtained from the institutional review board of Public health dentistry department SRM Dental College Ramapuram.

The bus depot management was first contacted to obtain permission. In total, 125 bus drivers were invited to participate in the study by simple random sampling through a table of random numbers. The estimated sample size was 97 and calculated based on an odds ratio and confidence interval of 95%. Finally, 101 participants were eligible to participate in the study. First, personal details were collected. Participants with working experience in the job for at least five years, having natural dentition, no history of cervical or facial injury, and not undergoing orthodontic therapy were included in the study. A trained person interviewed the bus drivers. The modified version of the work stress questionnaire by the American Academy of Stress was used, and content validity was checked priorly by three experts in the field of public health dentistry. Cronbach's alpha calculated the reliability of different sets of questions in the questionnaire.

The questionnaire consisted of four parts; personal data, work inventory, stress symptom inventory [8] and bruxism examination. Work and stress-related categories were recorded on a ten-unit scale.

Work inventory questions include working hours, tension, environmental issues, pressure, etc. Stress symptom inventory had hypertension, depression, inability to concentrate, insomnia and headache. Intraoral examination was done to check the presence or absence of bruxism that included habits like grinding or clenching of teeth. Personal data that were collected included age and years of experience in this field. Statistical analysis was done usingIBM SPSS 17.0. Chi-square tests were made to find bivariate associations between age, gender, work experience, work, and stress with bruxism. Logistic regression analyses were performed to see if associations existed between age, gender, work experience, work, and stress with diurnal bruxism.

DATA ANALYSIS

Statistical analysis was made to analyse the data. A Chi-square test was made to find the relation between age, work experience, and stress with bruxism.

RESULTS

A total of 101 participants participated in the study. Out of 125 who volunteered to participate in the study, 24 were excluded. The characteristic analysis was made and is shown in table 1. The age of the participants was in between 30 to 60 years.

TABLE 1:DISTRIBUTION OF PARTICIPANTS ACCORDING TO AGE, WORKING EXPERIENCE, HOURS, STRESS AND BRUXISM

		N	Marginal Percentage
Bruxism			
	Absent	29	28.7%
	Present	72	71.3%
Age			
	30-45	48	47.5%
	45-60	47	46.5%
	above 60	6	6.0%
Years of experience			
	8 to 10	24	23.8%
	less than 8	42	41.6%
	more than 10	35	34.7%
Working hours			
	10 to 15	18	17.8%
	5 to 10	73	72.3%
	less than 5	10	9.9%
Job satisfaction			
	No	46	45.6%
	Yes	55	54.5%
Stress			
	No	26	25.7%
	Yes	74	73.3%
Valid		101	100.0%

Missing	0	
Total	101	

Table 1 shows that the age of the participants ranged between 30 and 60 years, with a mean age of 37.90 ± 7.24 years. The prevalence of bruxism is 71%, i.e. reported in 72 bus drivers. Based on their stress score, 73.3% of bus drivers are in stress which is 74 bus drivers out of 101.

TABLE 2:DATA ANALYSIS SHOWS THE ASSOCIATION OF AGE, YEARS OF EXPERIENCE, WORKING HOURS, STRESS, AND JOB SATISFACTION WITH DIURNAL BRUXISM.

Chi-Square Tests

VARIABLES	**P-VALUE**
AGE	0.067
YEARS OF EXPERIENCE	0.009
WORKING HOURS	0.078
STRESS	0.000
JOB SATISFACTION	0.000

Statistically significant $p<0.05$

As per table 2, the presence of diurnal bruxism was reported by a majority of the participants. It was associated with factors like work experience (P value- 0.009), job satisfaction (P value-0.00), and stress (p-value-0.00). But the age factor and working hours did not show a statistically significant association with diurnal bruxism.

TABLE 3: REGRESSION ANALYSIS TO FIND OUT ACCURACY AMONG DIURNAL BRUXISM AND INDEPENDENT FACTORS OF THE BUS DRIVERS (N=101).

VARIABLES	P VALUE	95% CI…
30-45 years of age	0.596	0.249-2.221
Work experience of 8-10 years	**0.007***	0.004-0.427
Work experience of fewer than eight years	0.526	0.360-7.368
Less job satisfaction	0.151	0.243-1.427
More stress	**0.00***	**2.614-13.325**

Multivariate analyses revealed that individuals with increased work experience were less likely to exhibit diurnal bruxism 95% confidence interval (p-value 0.007) (CI =0.00–0.43). Occupational load and its effects on the outcome of bruxism were found to be statistically insignificant when age and job satisfaction were entered into the logistic regression model. Stress encountered by the professionals showed a statistically significant association with diurnal bruxism (P <0.00). The stress was found to be a major risk indicator for diurnal bruxism (CI= 2.61–13.32).

DISCUSSION

This study is the best to know about the prevalence of bruxism and its association with stress and work-related factors among the bus drivers in Chennai City. The number of participants in total was 101. The working pattern and the working hours were taken into consideration, and the sample was collected from the participants; therefore, the analysis and the conclusion were made. The current study observed that 71.3% of the participants have bruxism. The records of the participants were taken based on the self-given data since there are no standardised diagnostic criteria.

The finding of this study is that work satisfaction and years of work or experience are the contributing patterns to stress-induced bruxism. Most bus drivers are reported to be stressed, which has a positive correlation with diurnal bruxism. Stress is a common factor, and studies tend to yield that bus drivers have high demands and yet have low support hence undergoing stress. This combination of work and stress risks the bus drivers' mental occupational illness [9]. A study conducted in Brazil among police officers concluded that emotional stress was associated with their work regardless of the type of work [10]. Albert and colleagues noticed that the stress level among multimedia professionals was five times higher than those working without stress [11]. One study tells that 90% of the bus drivers who have an experience of more than 18 years have poor health conditions [12]. Another group of studies has been done based on

the psychophysiological effect on bus drivers showing an increase in the level of cortisol due to time pressure conditions [13]. There was a study in which the emotional connection with stress was considered, and its effect on the stomach, thymus, spleen, cortisol and adrenaline was tested; the results reveal that stress does have an excitable impact on hormones. Gastric ulcers were also spotted in a few cases.[14]. An objective study showed an association between sleep bruxism and stress sensitivity. It concluded that the salivary IgA were increased in the positive bruxism cases and was normal in the bruxism negative cases after the stress task [15]. Due to the traffic congestion and over-controlling, there is psychophysiological stress among bus drivers, especially in the urban area [16].

The above studies are used as a comparison and confirm the result of the current study and suggest that stress has an important role in causing bruxism. Pressure is due to various reasons in an individual day to day life. The International Labour Organization has concluded that mental illness and stress appear to raise problems in each workplace [17]. The data from the study of stress and bruxism among the undergraduate students of Balochistan University of Information Technology Engineering and Management Sciences tells that aetiology as bruxism has an effect along with stress in 69% of female students and 42% of male students [18].

The other related and identified risk factor has been found in the working hours and the working experience, which are related to the workers' mental illness. The drivers working for a longer period of time compared to others are known to have more mental illness and increase their stress levels. There is a habit of clenching teeth and bruxism in such workers having a longer duration of work. However, among the other profession where age has a role related to the stress level, this study has a view that experience and workload, along with age-related factors, has a role in the cause of bruxism. Proper implementation and benefits to both the bus drivers and the company may produce a positive outcome in preventive action and sickness absenteeism [19].

However, stress and work are not only the only factor causing bruxism; there are various other related factors that are linked together. The study was made among the population of bus drivers in Chennai City, and the data was recorded based on a self-analysing and self-recorded basis. The available data might be over-recorded or mainly under-recorded due to a lack of knowledge about bruxism. Secondly, it cannot be used for all the driver population in the city since only the data of 101 participants were recorded. So, the external reflection of this article is very minimal. This cross-sectional study will be an initial step for further cohort studies to evaluate the cause-and-effect relationship.

CONCLUSION

The intent of the research is to demonstrate the relationship between stress and bruxism in a particular group of people 'bus drivers'. Henceforth the study reveals that there is a positive relationship between stress and bruxism since it is clearly seen that drivers who work for many years and drivers with constant work pressure are under stress and tend to clench or grind their teeth causing bruxism. They also have other symptoms like headache and temporomandibular joint pain commonly. Hence keeping in mind, the health of the workers, the work pressure has to be reduced, ergonomics of the driver's space should be maintained, working shifts must be

frequently changed, and a schedule with a timetable can be used. Certain preventive measures can be made as they are important public service workers.

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