



Examining Stress-Induced Bruxism Among Bus Drivers: A Cross-Sectional Study Analysis Through the Lens of Resilience

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Abstract

This study aimed to assess the prevalence of bruxism among bus drivers and its association with stress. A cross-sectional study was conducted among bus drivers in Chennai city using simple random sampling. The 120 participants were interviewed using a stress questionnaire, including items related to stress, work experience, working hours and bruxism. Responses were recorded on a ten-unit scale, and statistical analysis was performed using SPSS software, employing Chi-square and regression analysis. A significance level of $p < 0.05$ was applied. The majority of participants reported experiencing diurnal bruxism. There was a statistically significant association found with bruxism and cognitive failure. The study indicates that work pressure, prolonged work duration and stress-related factors contribute to the occurrence of bruxism among bus drivers. Therefore, stress appears to have a significant impact on the development of bruxism in the oral cavity among bus drivers in Chennai city.

Keywords: Stress, Bruxism, Bus drivers, Health.

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1. Introduction

Bruxism is characterized by excessive tooth grinding or jaw clenching, can be attributed to various factors including stress, anxiety, and dental issues such as misaligned or missing teeth [1,2]. There are two main types: Nocturnal bruxism, occurring during sleep, and Awake bruxism, happening during wakefulness [3]. Stress is recognized as a significant factor in initiating and perpetuating bruxism, though the exact relationship is not fully understood. Instances of teeth clenching often coincide with intense periods of workload [4]. The role of a bus driver is inherently tied to the public service industry, where the driver's physical and psychological well-being significantly impacts their driving performance.[5] Bus drivers often experience tension, mental overload, fatigue and sleeping problems which can affect their performance and well-being. They may also have higher rates of absences from work and longer durations compared to workers in other occupations. Additionally, bus drivers self-report health issues such as hypertension, dyslipidemia, diabetes

and overweight along with engaging in health-related risky behaviors like smoking and sedentary behavior. These factors highlight the importance of addressing the physical and mental health needs of bus drivers to ensure their safety and effectiveness on the job [6].

The job of bus drivers is inherently challenging and often entails long hours, leading to significant stress. This study investigates the correlation between workplace stress and its impact on oral health. Bus drivers commonly report elevated levels of occupational stress, burnout and are at increased risk of occupational traffic accidents. These findings underscore the importance of addressing stress management and promoting oral health among bus drivers to mitigate potential negative outcomes [6]. Some studies suggest that nocturnal bruxism can contribute to various short-term acute and long-term chronic disorders involving the masticatory apparatus [7]. Additionally, research on reported bruxism and stress indicates a correlation between stress and bruxism [8].

The study aimed to assess the prevalence of bruxism and identify associated factors among bus drivers in Chennai city, recognizing the significant impact of occupation-related stress on overall health. With workplace stress being labeled a "worldwide epidemic" by the World Health Organization, its effects on the body, including the oral cavity, are of particular concern. Understanding the prevalence and factors contributing to bruxism among bus drivers sheds light on the broader issue of occupational stress and its implications for oral health.

2. Materials and Methods

In a cross-sectional study conducted among bus drivers, ethical clearance was obtained from the institutional review board of Sree Balaji Dental College and Hospital. Permission was secured from the bus depot management and 120 bus drivers were randomly selected using simple random sampling method. The estimated sample size was 120 with a confidence interval of 95%. Ultimately, 120 eligible participants were included. Inclusion criteria comprised a minimum of 5 years of job experience, natural dentition, absence of cervical or facial injury history and no ongoing orthodontic therapy. Data collection involved personal details and utilized a stress-based questionnaire which consists of 12 items validated by three experts in public health dentistry. Reliability was assessed via Cronbach's alpha. The questionnaire encompassed personal data, work inventory, stress symptom inventory and bruxism examination with responses recorded on a ten-unit scale. The questionnaire comprises working hours, tension, environmental factors, pressure, etc. Intraoral examinations were conducted to assess the presence or absence of bruxism, including habits like teeth grinding or clenching. Personal data collected included age and years of experience in the field. Statistical analysis was performed using IBM SPSS 17.0, utilizing chi-square tests to explore bivariate associations between age, gender, work experience, work-related factors, stress and bruxism. Logistic regression analyses were employed to determine associations between age, gender, work experience, work-related factors, stress and diurnal bruxism.

2.1. Data analysis

Statistical analysis was conducted to analyze the data, including the use of chi-square tests to examine the relationship between age, work experience, and stress with bruxism. This analysis aimed to identify any significant associations between these variables and the occurrence of bruxism among the bus drivers.

3. Results and discussion

This study provides valuable insights into the prevalence of bruxism and its association with stress and work-related factors among bus drivers in Chennai City. With a total of 120 participants, the study considered working patterns and hours in its analysis. Data collection relied on self-reported information from participants due to the absence of standardized diagnostic criteria. This study underscores the importance of addressing bruxism and its potential relationship with occupational stress among bus

drivers. The study findings reveal that work satisfaction and years of experience are significant contributors to stress-induced bruxism among bus drivers. A notable correlation exists between stress and diurnal bruxism, indicating that stress is a prevalent factor among bus drivers. Studies consistently highlight the high demands and inadequate support experienced by bus drivers, leading to elevated stress levels. This combination of demanding work conditions and chronic stress poses a risk for mental occupational illness among bus drivers [9]. A study among Brazilian police officers found that emotional stress was linked to their work, regardless of their specific job roles [10]. Alhberg and colleagues observed that stress levels among multimedia professionals were five times higher compared to those working without stress [11]. One study indicates that 90% of bus drivers with over 18 years of experience exhibit poor health conditions [12]. Another group of studies focused on the psycho-physiological effects on bus drivers, revealing an increase in cortisol levels due to time pressure conditions [13]. A study examining the emotional connection with stress and its impact on bodily systems such as the stomach, thymus and spleen as well as hormone levels including cortisol and adrenaline, found that stress does indeed have an excitatory effect on hormones. In some cases, this heightened stress response may even lead to the formation of gastric ulcers [14]. An objective study revealed an association between sleep bruxism and stress sensitivity, concluding that salivary chromogranin A (cgA) levels were increased in individuals with sleep bruxism, whereas they remained normal in those without bruxism following a stress task [15]. Bus drivers particularly in urban areas, experience psychophysiological stress attributed to traffic congestion and excessive control measures [16].

The aforementioned studies serve as comparisons and corroborate the findings of the current study, indicating that stress plays a significant role in causing bruxism. Stress arises from various factors in individuals' daily lives. The International Labour Organization (ILO) has recognized mental illness and stress as escalating concerns in workplaces worldwide [17]. The data from the study on the relationship between stress and bruxism among undergraduate students at BUITEMS indicates that 69% of female students and 42% of male students attribute the etiology of bruxism to both stress and other factors [18]. The study identifies working hours and experience as significant risk factors related to mental illness among workers, particularly bus drivers. Prolonged working hours correlate with increased stress levels and a higher incidence of bruxism, including teeth clenching habits. Unlike other professions where age is a primary factor in stress levels, this study highlights the combined influence of experience, workload and age-related factors on bruxism. Implementing measures to address these factors could lead to positive outcomes, including reduced sickness absenteeism and improved overall well-being for bus drivers and their companies [19]. Indeed, while stress and work are significant factors contributing to bruxism, there are numerous other related factors at play. The study conducted among bus drivers in Chennai City relied on self-analysis and self-recording of data, which may have led to over-reporting or under-reporting of bruxism due to a lack of knowledge about the condition.

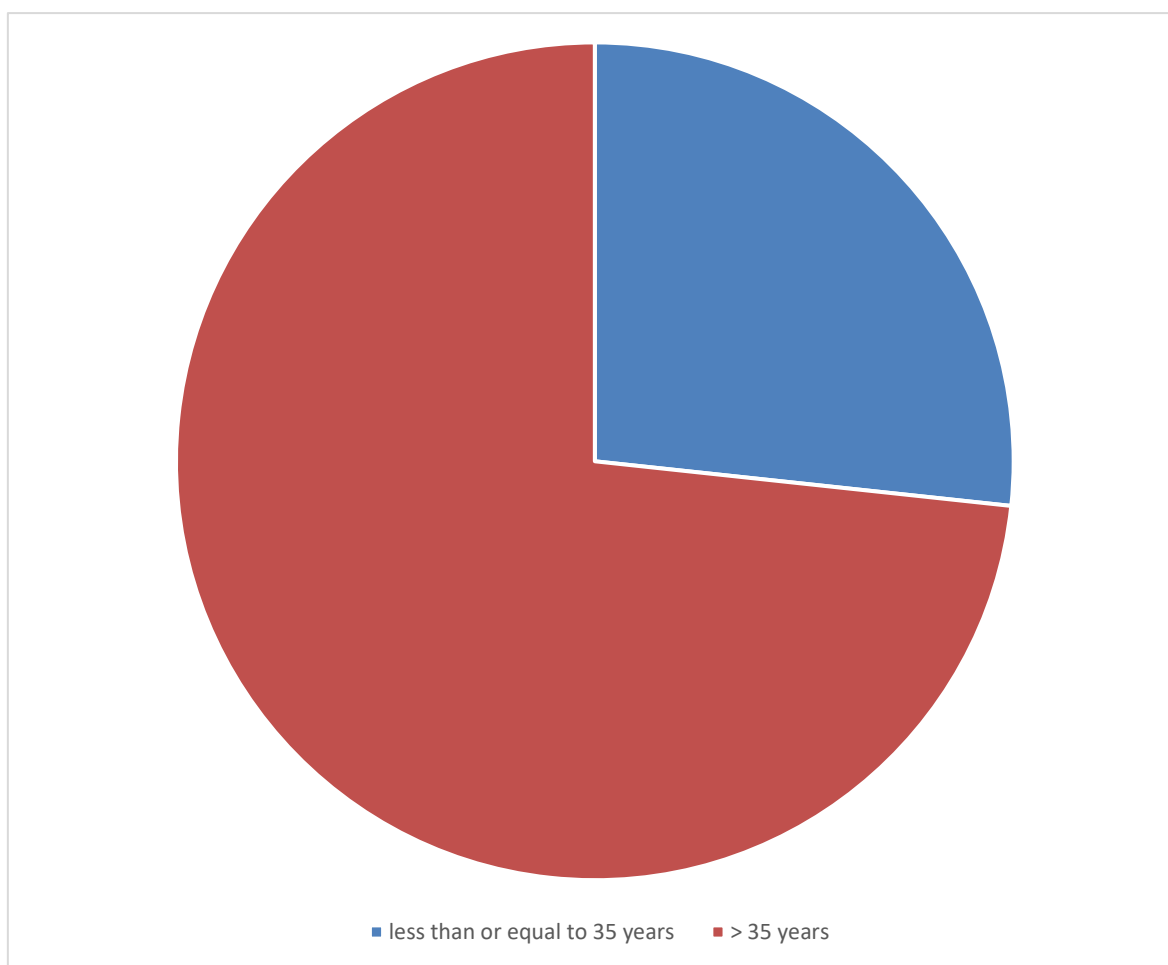


Figure 1: Percentage-wise distribution of age

Table 1: Descriptive statistics of demographic variables

Demographic factors	Variables	Percentage (%)
Working experience	less than 12 years	43.3
	more than 12 years	56.7
Working hours	less than 12 hours	54.2
	more than 12 hours	45.8
Educational Status	no formal education	74.2
	formal education	25.8

Table 1 depicts the frequency and percentage of descriptive variables

Table 2: Association between stress and bruxism among bus drivers

Questionnaire	Variables (%)		Bruxism(%)		P value
	No	Yes	No	Yes	
Abrupt acceleration/deceleration	45.8	54.2	32.7%	67.3%	0.5
Cognitive failure	55.0	45.0	42.6%	57.4%	0.04*
Aggressive driving	65.8	34.2	39.0%	61.0%	0.2
Traffic jam	65.8	34.2	39.0%	61.0%	0.2
Accident	65.8	34.2	39.0%	61.0%	0.2
Negative impact on performance	65.8	65.8	39.0%	61.0%	0.2
Time pressure	52.5	47.5	33.3%	66.7%	0.5
Pollution	55.8	44.2	41.5%	58.5%	0.06
Fear of accidents	65.8	34.2	39.0%	61.0%	0.2
Unsafe behaviour of other drivers	63.3	36.7	40.9%	59.1%	0.12
Poor condition of road	60	40	39.6%	60.4%	0.1
Lights of other vehicles	61.7	38.3	41.3%	58.7%	0.1

Table 2 depicts that there was a statistically significant association was found with bruxism and cognitive failure

Additionally, the data from only 101 participants may not be representative of the entire bus driver population in the city, limiting the external validity of the study. As a cross-sectional study, it serves as an initial step for further cohort studies to explore the cause-and-effect relationships between various factors and bruxism more comprehensively.

4. Conclusion

The aim of the study was to establish the relationship between stress and bruxism among bus drivers. The findings indicate a positive association between stress and bruxism, particularly among drivers with longer working hours, years of experience and constant work pressure. To prioritize the health of workers, it is recommended to reduce work pressure, maintain ergonomic driver spaces, implement frequent shifts changes and establish schedules with timetables. Additionally, preventive measures should be implemented, recognizing the crucial role bus drivers play as public service workers.

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