

Reported bruxism and stress experience

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Abstract – The aim of the study was to analyze whether perceived bruxism was associated with stress experience, age, gender, work role, and occupational health care use among a nonpatient multiprofessional population. Altogether, 1784 (age 30–55 years) employees of the Finnish Broadcasting Company were mailed a self-administered questionnaire covering demographics, perceived bruxism, total stress experience and the use of health care services provided by the company. The response rate was 75% ($n = 1339$, 51% men) and mean age was 46 years ($SD = 6$) in both genders. There were no significant differences in demographic status by age and gender. Bruxism and stress experiences did not significantly vary with regard to category of work, but both were significantly more frequent among women ($P < 0.05$). In all work categories frequent bruxers reported more stress, and the perceptions were significantly differently polarized between the groups ($P < 0.001$). According to logistic regression, frequent bruxism was significantly positively associated with severe stress experience (Odds ratio = 5.00; 95% CI = 2.84–8.82) and female gender (Odds ratio = 2.26; 95% CI = 1.43–3.55). Frequent bruxism was also significantly positively associated with the numbers of occupational health care and dental visits ($P < 0.01$), and slightly negatively associated with increasing age and work in administration ($P < 0.05$). It was concluded that bruxism may reveal ongoing stress in normal work life.

Key words: bruxism; stress; gender; health care use

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In healthy people, masticatory muscle activities can be divided into two categories: functional (e.g. chewing, swallowing, and speaking) and parafunctional (e.g. tooth clenching and grinding, and various oral habits) (1). Tooth grinding and clenching have generally been characterized as bruxism in the literature. Bruxism has commonly been associated with temporomandibular disorder (TMD), which affects millions of people (2).

In clinical studies, the reported prevalence of bruxism varies greatly, between 6.5 and 88%, while the figures in epidemiologic studies are usually lower, about 6–8% (2–8). It is most frequent between 20 and 50 years and tends to decrease with increasing age. It is also more common among those who are better educated, and among women, especially in their reproductive years.

On the other hand, stress has been increasingly considered as an initiating, predisposing and perpetuating factor for bruxism, although their impact

relationship has remained unclear (9–12). Stress experiences reportedly arise from multifactorial work and life issues (13, 14). In a recent survey, examining stress in the workplace in the UK, USA, Germany, Finland and Poland, the UN's International Labour Organisation (ILO) found that levels of anxiety, burnout and depression are 'spiraling out of control' (15).

A survey was conducted prior to a comprehensive prospective study on stress in the work environment, with TMD and related biopsychosocial factors as one aspect of it. The aim of the present study was to analyze whether perceived bruxism was associated with stress experience, age, gender, work role, and occupational health care use among multiprofessional media personnel with relatively low physical strenuousness of work but an assumed high psychosocial loading (e.g. deadlines, teamwork, changing technology, demands on productivity, ongoing competition, resource management).

Materials and methods

A standardized questionnaire was mailed to all 30–55-year-old employees of the Finnish Broadcasting Company Ltd, whose current employment had lasted at least 5 years in the Helsinki area ($n = 1784$; 809 women, 975 men). The work duties of this media personnel include journalism, broadcasting, program production, technical support, administration, and service and maintenance.

The questionnaire covered demographic items, employment details, general health experience, physical status, psychosomatic symptoms, psychosocial status, stress, work satisfaction and performance, and health care use. For the present study, the data were categorized as follows:

- *Demographic data*: gender, age and level of education in years; weekly working hours; work position (directors and managers = management; journalism = journalist; program production and technical support = production; program planning, research and development = planning; service, logistics and maintenance = service; administration = administration).
- *Bruxism*: self-assessed frequency of tooth grinding (1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = continually).
- *Stress (Occupational Stress Questionnaire) (16)*: level of perceived stress measured as follows: 'Stress means the situation on when a person feels tense, restless, nervous or anxious, or is unable to sleep because his/her mind is troubled all the time. Do you feel that kind of stress these days?' (1 = not at all, 2 = only a little, 3 = to some extent, 4 = rather much, and 5 = very much).
- *Health care use*: number of visits to the physician and dentist during the preceding year.

Statistical methods

Student's *t*-test and Kruskal–Wallis *h*-test were used for comparison of the group means. The trend test and chi-square test were used to study the significance of the associations between categorical variables. The logistic regression model was fitted to analyze the effects of the background variables on the probability of frequent (often or continual) bruxism. Age in years, the number of physician and dentist visits during the preceding year were included in the multivariate model as continuous variables. Stress experience (very much), gender (female) and each work category (category $x = 1$, else = 0) were included as dichotomous indicator variables. The forced entry method was used, i.e. the

independent variables were entered in the model in a single step.

Results

Altogether 1339 employees completed the questionnaire. The response rate was 75%. Of the respondents, 49% were women and 51% men. The mean age was 46 years ($SD = 6$) in both genders. Work positions varied according to gender ($P < 0.001$); men were more often in technical production (65%), service (63%) and management (60%), while women were more often journalists (59%) and in administration (87%). Women worked weekly for 39 h ($SD = 8$) and men 40 h ($SD = 10$) on average (NS). The levels of education were similar in both genders (NS). During the preceding 12 months, women had had 4.4 ($SD = 2.6$) and men 3.5 ($SD = 3.5$) visits to a physician ($P < 0.01$), and 2.4 ($SD = 2.6$) and 1.6 ($SD = 1.7$) visits to a dentist ($P < 0.01$), respectively.

Overall bruxing and stress experiences did not significantly vary according to work position (NS), but frequent bruxers reported more frequent stress in all work groups, and these perceptions were significantly differently polarized between the groups ($P < 0.001$) (Fig. 1).

Women reported more often both bruxism ($P < 0.001$) and stress ($P < 0.05$) than men (Table 1). This tendency was seen regardless of age (Fig. 2). In addition, the female to male ratios for mean scores of

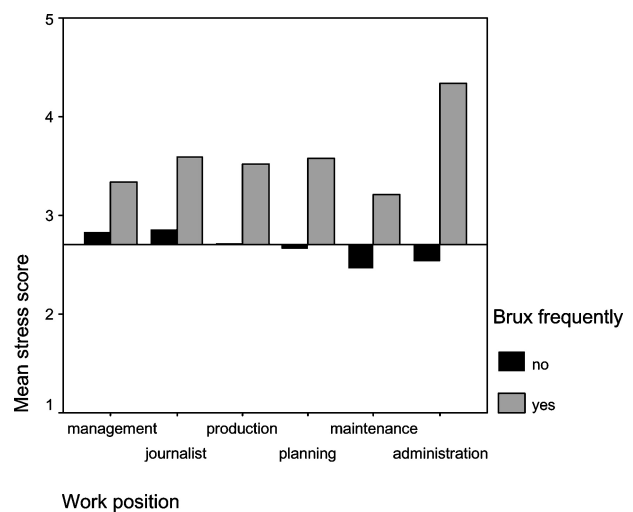


Fig. 1. Mean stress scores according to work position in frequent (continually or often) and nonfrequent (else) bruxers. Reference line the overall mean stress score 2.7 (Kruskal–Wallis *h*-test: $P < 0.001$).

Table 1. Frequency distributions of perceived bruxism and stress according to gender (*n* = 1339)

Bruxism**	Stress*		Stress*	
	Male	Female	%	Male Female
Never	63.0	56.2	Not at all	11.4 9.6
Seldom	20.0	17.5	Only a little	33.4 28.2
Sometimes	11.7	14.2	To some extent	33.4 36.6
Often	4.1	8.2	Rather much	17.6 17.6
Continually	1.2	3.8	Very much	4.3 8.0

Trend test: **P* < 0.05, ***P* < 0.001.

bruxism and stress fluctuated similarly according to age (Fig. 2).

Logistic regression revealed that frequent bruxism was significantly positively associated with continual stress (Odds ratio = 5.00; 95% CI = 2.84–8.82) and female gender (Odds ratio = 2.26; 95% CI = 1.43–3.55) (Table 2). Frequent bruxism was also significantly positively associated with the numbers of occupational health care and dental visits (*P* < 0.01), and slightly negatively associated with increasing age and work in administration (*P* < 0.05) (Table 2).

Discussion

The main result was that the experience of severe stress was the most significant factor associated with frequent bruxism among the multiprofessional media personnel. Frequent bruxers were also more likely to use health care services, which has been the case among those having temporomandibular disorders (17).

The overall occurrence of bruxism was in line with previous findings (4), bearing in mind the problems involved in reliable comparison of the figures from different studies. Using questionnaires

Table 2. The probability of frequent (present often or continually) bruxism, logistic regression (*n* = 1339)

	β	SE	<i>P</i>	OR	95% CI for OR
Age	-0.032	0.016	0.047	0.97	0.94–0.99
Visits to physician	0.079	0.025	0.001	1.08	1.03–1.14
Visits to dentist	0.125	0.037	0.001	1.13	1.05–1.22
Gender (female)	0.813	0.232	0.000	2.26	1.43–3.55
Stress (very much)	1.610	0.289	0.000	5.00	2.84–8.82
Work category					
Management	-0.362	0.601	0.547	0.70	0.21–2.26
Journalist	-0.751	0.554	0.175	0.47	0.16–1.40
Production	-0.025	0.548	0.964	0.98	0.33–2.86
Planning	-0.401	0.603	0.506	0.67	0.21–2.18
Administration	-1.377	0.697	0.048	0.25	0.06–0.99
Service	-0.487	0.567	0.407	0.61	0.19–1.94
Constant	-1.778				

may cause difficulties in defining the actual prevalence of bruxism: it may be even more common among populations than surveys indicate, but because of its potential subconscious nature, not registered as a behavior by the individuals. People may also term their bruxism (tooth grinding, tooth clenching, masticatory muscle activities or parafunctions) ‘incorrectly’. Reporting of bruxism may also be influenced by negative affectivity and individuals with subjective distress may be more likely to perceive, over-react to and complain about their sensations (18).

The literature confirms that women use health care resources more than men, even after accounting for the differences in reproductive biology (19). One explanation given earlier for such gender-related behavior, is hormonal differences, or that women are more prone to express their pain experiences and to seek care (20). The differently polarized bruxism according to work duty may be due to their different gender distributions, especially in administration.

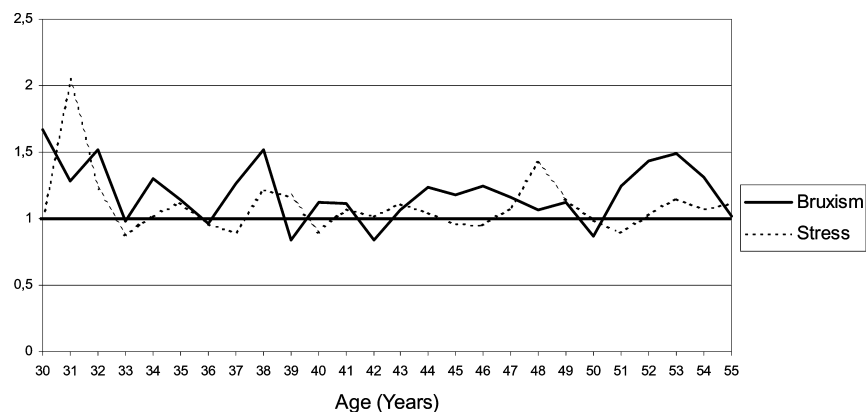


Fig. 2. Female to male ratios for the mean bruxing and stress scores according to age. A value of 1.0 represents equivalence between the sexes.

For decades, it has been claimed that occlusal disturbances mainly provoke bruxism (21–23). Yet, based on extensive experimental and epidemiological data, there is little evidence of the capability of premature contacts or other minor occlusal disturbances to produce bruxism, or that eliminating such very common interference could reduce the parafunction (24). A recent literature review shows a clear transition from a mechanistic attitude to psychological and biopsychosocial concepts in the development of ideas of the etiology, pathogenesis and therapy of temporomandibular disorder (25). This comprehension, namely from bite to mind, could be extended to bruxism as well.

The ILO study focused on the problems of stress and mental illness at work (15). It found that despair at work is a growing problem in all studied countries. For example, about 30% of employees, in UK, experience mental health problems and 5% are continually fighting off major depression. In USA, 10% of workers suffer from clinical depression and the problem is getting worse; some 40% of workers complain that their job is very or extremely stressful. In Finland, work-related stress seems to have reached almost epidemic proportions; more than half of the workforce is claimed to be blighted with some kind of stress-related symptom, and 7% severely burnt out. This tendency further underscores the value of early revelation of a developing stress disorder.

Management strategies in the quasi-static equilibrium of well-being need to be practicable for use in care wherever patients who seek treatment present. Frequent bruxism may link to ongoing multifactorial stress in normal life and work and, when observed in a patient interview, could assist occupational health care professionals to notice more complex stress disorders.

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