# **Scientific Research Report**

# Relationship Between Job Satisfaction and Health of Hygienists in Lithuania



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## ABSTRACT

*Objectives*: This study aimed to determine the perceived musculoskeletal and psychological symptoms and job satisfaction of Lithuanian dental hygienists. Second, the study aimed to examine the relationships between job satisfaction and musculoskeletal and psychological symptoms amongst dental hygienists in Lithuania.

Methods: A 41-item survey was sent by email to all members of the Lithuanian Dental Hygienists Association (N = 328) up to 3 times. The questionnaire comprised 5-point Likert scale structured questions, which were developed according to 3 existing questionnaires.

Results: The final response rate was 52.4% (N = 172). The level of overall work-related physical health was 3.76  $\pm$  0.65, and the most common physical health symptom was upper back pain; the level of overall work-related psychological health was 3.84  $\pm$  0.64, and the most common symptom was stress. The level of overall job satisfaction was 3.87  $\pm$  0.62, and the most satisfying areas were their relationships with colleagues, relationships with dentists, and working conditions (equipment, work environment); the least satisfying practice areas were income, work-related physical and psychological health, and social security.

Conclusions: According to the results of this study, Lithuanian dental hygienists were quite satisfied with their job but sometimes experienced work-related musculoskeletal and psychological disorders. Their physical health score and the total psychological health score were significantly correlated with all job satisfaction criteria. The better the self-evaluation of physical and psychological health, the higher the job satisfaction reported.

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# Introduction

For many years the only practicing oral health professionals in Lithuania were dentists. The first dental hygienists in Lithuania were introduced in 1996, coinciding with substantial changes in dental care in the country, including preventive care.<sup>1,2</sup> Dental hygienists are licensed dental professionals in the country and have a duty to take continuing education for at least 60 hours over five years.<sup>3</sup> The duties of dental hygienists in Lithuania include assessment of patient oral condition, local topical and infiltration anaesthesia, scaling, root planning, polishing teeth, oral health training,

E-mail address: grederiene@gmail.com (G. Rederiene). https://doi.org/10.1016/j.identj.2021.07.005 and applying prevention measures of oral diseases. Dental hygienists work independently within their competencies or in collaboration with dentists, and most are employed in private dental practices with few independent dental hygiene practices in the country.<sup>1</sup> As in some other countries, such as Sweden, Holland, and Denmark or parts of the USA, there is direct access to Lithuanian dental hygienist services, mainly provided in private practices.<sup>3-5</sup> Approximately 92% of dental hygienists in Lithuania are female. Work-related perceived musculoskeletal and psychological symptoms and job satisfaction of dental hygienists have never been investigated in Lithuania before, although the number of educated professionals has risen to nearly 1500.<sup>1</sup> Relationships between musculoskeletal/psychological symptoms and job satisfaction are an important part of

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risk assessments of stress in the workplace and can help to identify those aspects of work that are causing the most dissatisfaction amongst employees.<sup>3</sup> Job satisfaction affects future career goals, social relationships, and personal health.<sup>4</sup>

Work-related musculoskeletal disorders and other occupation-related stressors are common in the dental team. Studies have found that dental hygienists, like dentists, more often experience neck, shoulder, and wrist pain because of repetitive movements, static postures, pinch-grasp, forceful exertions, vibration, poor ergonomics, and insufficient breaks.<sup>6-9</sup> Work-related musculoskeletal disorders have a significant impact on work time and weakened work performance and may lead to early retirement or even a professional change.<sup>7,9,10</sup>

Practice-based perceived job satisfaction of dental hygienists is closely related to communication with patients, colleagues, dentists, and other health services providers.<sup>12</sup> General, physical, and mental health are also important factors influencing overall job satisfaction, which for some target groups and/or in some contexts may be associated with the risk of burnout.<sup>11-13</sup> However, recent study findings showed that Dutch dental hygienists are not at risk for burnout,<sup>12</sup> in contrast with dentists.<sup>14,15</sup> This may be reasonable because in 2014, Dutch dental hygienists' level of work engagement was very high.<sup>16</sup>

Whereas burnout is considered to be the negative, opposite pole of work engagement, it can be concluded that dental hygienists in the Netherlands have no negative working attitude and experience a high level of well-being at work.<sup>12,16</sup> Several studies have been conducted on job satisfaction and psychological and general health problems amongst dental hygienists in different parts of the world, and outcomes vary over time and by country.<sup>17-21</sup> A recent study in the United States found that dental hygiene has a significant emotional component and impacts job satisfaction and the risk of burnout. Physical demands were related to dental hygienists leaving clinical dental hygiene.<sup>22</sup>

In 2007 there was a study of job satisfaction conducted amongst dentists, and it was seen that Lithuanian dentists experienced great job satisfaction.<sup>23</sup> Understanding the relationship of the current work-related physical and psychological disorders to job satisfaction of dental hygienists is an essential tool to establish effective professional dental hygiene services in Lithuania.<sup>1</sup> Moreover, this study aims to contribute scientific knowledge on the social psychology of work-related disorders of Lithuanian dental hygienists' job satisfaction, as a scientific approach to develop effective tailored future interventions.

# Methods

This cross-sectional survey study with human participants was conducted according to universal ethical principles of the Declaration of Helsinki, and the study design was consistent with the guidelines of the ethical board of the Central Committee on Research Involving Human Subjects.<sup>24,25</sup> The members of the Lithuanian Dental Hygienists Association (LDHA) participated voluntarily, and participants were informed of what participation entailed.

The data were collected using a one-time online survey distributed in 2018. In September and October, the survey was sent up to 3 times by email to all 328 members of the LDHA.

#### Questionnaire

Based on 3 existing instruments—the Nordic Musculoskeletal Questionnaire, the Psychological Wellbeing Survey, and the Dentists Satisfaction Survey—the present questionnaire was developed.<sup>23,26,27</sup> The final questionnaire included 41items divided into several parts, and the Geisinger procedure was performed for the translation of the measures used in the questionnaire.<sup>28</sup> First, the items were translated into the Lithuanian language by a native speaker of Lithuanian descent. Next, this translation version was carefully reviewed and translated back by a native speaker of English descent and compared, and the final Lithuanian version was prepared.

In a small pilot amongst 5 dental hygienists who were not members of LDHA, and thus not included in the study sample, the survey was verified. Wording of several questions were not clear to the participants, and appropriate adjustments were made until the language was clear and understandable for Lithuanian dental hygienists and the measurements had the intended construct. At the end of the translation process, a translator checked the final questionnaire.

The final questionnaire consisted of four parts: "general" (12 items) concerning respondents' sociodemographic characteristics on matters such as gender, age, work experience, and education; "assessment of physical health status" (11 items)<sup>26</sup>; "assessment of psychological health status" (8 items)<sup>27</sup>; and "job satisfaction" (10 items).<sup>23</sup>

Physical health symptoms (Cronbach's  $\alpha = 0.80$ ) were assessed by the frequency of respondents' complaints (eg, pain, discomfort, numbness) in the neck, head, shoulders, upper back, elbows, wrists, hands/fingers, lower back, hips/ thighs, knees, and ankles/feet.

Responses varied from 1 = constant to 5 = never, and a sum score (ranging from 11 to 55) was computed by summing scores on all 11 items that measured the concept of physical health. *Psychological health symptoms* (Cronbach's  $\alpha$  = 0.79) were measured by the incidence of bad moods, nervousness, insomnia, anxiety, feelings of loneliness, feelings of inferiority, mental fatigue, and nervous tension in the last 12 months. Responses were analysed using a 5point Likert scale: 1 = constant, 2 = often, 3 = sometimes, 4 = rarely, and 5 = never. A sum score for respondents' psychological health was constructed by adding the 8 items (ranging from 8 to 40). Higher scores indicate better psychological well-being.

Job satisfaction (Cronbach's  $\alpha = 0.86$ ) was assessed by the following criteria: satisfaction with work-related musculoskeletal and psychological health; self-realisation; relationships with colleagues, dentists, patients, and management; control at work; work-family issues; equipment; social security; and income. Job satisfaction was analysed using a 5point Likert scale: 1 = completely dissatisfied, 2 = dissatisfied, 3 = partially satisfied, 4 = satisfied, and 5 = completely satisfied. The sum score for respondents' job satisfaction was constructed by adding the 10 items (ranging from 10 to 50). The higher the total score, the higher the respondents' job satisfaction.

#### Statistical analyses

The data obtained during the survey were processed with the SPSS version 17 package and Microsoft Office Excel 2007. The nonparametric Mann-Whitney U test (for 2 independent samples) and the Kruskal-Wallis H test (for 3 or more independent samples) were used to determine the significance of the differences in means. The significance level used was 95% (ie, P = .05). Spearman's correlation coefficient was used to determine relationships between 2 variables measured on at least an ordinal scale. Correlation coefficients were subsequently classified as weak (r = 0.1-0.3), moderate (r = 0.4-0.6), or strong (r = 0.7-0.9).<sup>29</sup>

#### Results

#### Sociodemographic characteristics

Responses were received from 172 unique dental hygienists (response rate = 52.4%). Respondents consisted of 169 women (98.3%) and 3 men. The age of the hygienists ranged from 21 to 54 years (average age =  $31.5 \pm 6.9$  years), and work experience ranged from 1 to 26 years (average =  $8.11 \pm 5.8$  years). One respondent (0.6%) did not practice any clinical work and only reported working in an academic setting; therefore, that response was removed from the statistical analysis in this study. More sociodemographic data are presented in Table 1.

Correlational analyses (Spearman correlation coefficients) were carried out to establish the direction and magnitude of the associations between the variables, which suggested that respondents' physical and psychological health and job satisfaction were quite good. Physical health was reported to be associated with better psychological health. Job satisfaction was found to correlate positively and significantly with physical and psychological health. The results are presented in Table 2. The relationships were in the expected directions.

Table 1 -	<ul> <li>Sociodemographi</li> </ul>	c characteristics	of respondents
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Type of practice	Dental hygienists	40.5%
	Dental hygienists and assistant	59.5%
Education level	Professional bachelor	69.5%
	BSc	24.4%
	MSc	6.1%
Working place	Private practice	79.4%
	Public practice	7.6%
	Private and public practices	13.0%
Workload	<19 h/wk	12.2%
	>19 h/wk but <38 h/wk	33.6%
	~38 h/wk	17.6%
	>38 h/wk	36.6%

Table 2 – Spearman correlation coefficients (upper values) and P values (lower values) amongst total scores of physiological, psychological health, and job satisfaction.

	Physical health	Psychological health	Job satisfaction
Physical health	-	0.495	0.407
		0.000	0.000
Psychological health	0.495	-	0.417
	0.000		0.000
Job satisfaction	0.407	0.417	-
	0.000	0.000	

#### Physical health symptoms

The average respondents' physical health score was  $3.76 \pm 0.65$ , and Cronbach's  $\alpha$  was 0.80. From the total score (M = 41.40; SD = 7.17), the participants' physical health was quite sporadic. The most prevalent musculoskeletal complaints amongst dental hygienists during the previous 12 months were reported in the upper back ( $\bar{x} = 3.17$ ), shoulders ( $\bar{x} = 3.31$ ), lower back ( $\bar{x} = 3.34$ ), and neck ( $\bar{x} = 3.36$ ), whereas the least prevalent complaints were associated with ankles/ feet ( $\bar{x} = 4.34$ ), elbows ( $\bar{x} = 4.27$ ), knees ( $\bar{x} = 4.22$ ), and hips/ thighs ( $\bar{x} = 4.15$ ). Valid differences in musculoskeletal symptoms between work types were found; hygienists who also work as dental assistants experienced significantly more elbow, hip/thigh, and ankle/foot pain (P < .05) (Table 3).

There were no statistically significant differences between physical health and respondents' age, academic degree, working sector, work experience in years, or work-load (P > .05).

#### Psychological symptoms

The average respondent's psychological health score was 3.84  $\pm$  0.65, whilst the total score (M = 30.75, SD = 5.13) showed a certain level of psychological symptoms experienced by dental hygienists (Cronbach's  $\alpha$  =0.79). The most prevalent psychological complaints amongst dental hygienists during the previous 12 months were stress ( $\bar{x} = 3.52$ ), nervousness ( $\bar{x} = 3.63$ ), anxiety ( $\bar{x} = 3.69$ ), and mental exhaustion ( $\bar{x} = 3.79$ ), whereas the least prevalent complaints were associated with loneliness ( $\bar{x} = 4.21$ ), feelings of inadequacy ( $\bar{x} = 4.06$ ), depression ( $\bar{x} = 3.97$ ), and insomnia ( $\bar{x} = 3.89$ ). Dental hygienists working in both positions had significantly higher stress and insomnia rates (P < .05) than participants who worked only as dental hygienists (Table 3).

There were no statistically significant differences between psychological health complaints and respondents' age, academic degree, working sector, work experience in years, and workload (P > .05).

#### Job satisfaction

The average respondent's job satisfaction score was  $3.87 \pm 0.62$  with a total score (M = 36.21, SD = 6.25; Cronbach's  $\alpha$  = 0.86). The most satisfying areas were their relationships with colleagues ( $\bar{x}$  = 4.22), dentists ( $\bar{x}$  = 4.02), and patients ( $\bar{x}$  = 3.89) as well as work environment ( $\bar{x}$  = 3.89). The least

		Mean values		
		Only dental hygienists	Dental hygienists who also work as dental assistants	P value
Parts of the body	Head	3.34	3.37	0.909
,	Neck	3.47	3.49	0.983
	Shoulders	3.34	3.29	0.806
	Upper back	3.00	3.28	0.213
	Elbows	4.57	4.08	0.014
	Wrists	3.98	3.60	0.065
	Hands/fingers	4.23	3.85	0.083
	Lower back	3.26	3.40	0.549
	Hips/thighs	4.36	4.01	0.048
	Knees	4.36	4.13	0.356
	Ankles/feet	4.53	4.21	0.049
Psychological health disorders	Nervous tension	3.77	3.35	0.392
, ,	Mental fatigue	3.89	3.72	0.160
	Feelings of inferiority	4.00	4.10	0.029
	Feelings of loneliness	4.28	4.17	0.141
	Anxiety	3.87	3.56	0.664
	Insomnia	4.13	3.72	0.753
	Nervousness	3.79	3.51	0.320
	Bad mood	4.09	3.88	0.019
Job satisfaction	Income	3.13	3.00	0.256
	Work-related physical and psycho- logical health	3.42	3.05	0.457
	Work-family issues	3.60	3.24	0.882
	Management and control at work	3.85	3.51	0.802
	Relations with patients	4.00	3.77	0.324
	Relations with dentists	3.89	4.12	0.028
	Relations with colleagues	4.23	4.22	0.037
	Social security	3.30	3.35	0.033
	Equipment	3.94	3.85	0.058

# Table 3 – The mean values of 5-point Likert scale of musculoskeletal symptoms, psychological health complaints, and job satisfaction experienced by dental hygienists in the past 12 months.

satisfying practice areas were income ( $\bar{x} = 3.05$ ), work-related physical and psychological health ( $\bar{x} = 3.2$ ), social protection ( $\bar{x} = 3.33$ ), and work-family balance ( $\bar{x} = 3.39$ ). Moreover, valid differences in job satisfaction between practice types were found; hygienists who also work as dental assistants were significantly less satisfied with communication with patients, work-family balance, management, and control at work (P < .05) (Table 2). There were no statistically significant differences between job satisfaction and respondents' age, academic degree, working sector, work experience in years, or workload (P > .05).

Self-realisation

## Relationship between perceived musculoskeletal/psychological symptoms and job satisfaction

There was a correlation found between the total physical health score and psychological health total score for this dental hygienist group. The correlation was statistically significant (P < .05), indicating that there was a statistically significant linear relationship between musculoskeletal and psychological symptoms; that is, better physical health was associated with better psychological health. Additionally, it should be noted that the correlation coefficient itself fell in the range of 0.2 to 0.5, indicating that the relationship, although statistically significant, was weak. The musculoskeletal symptoms that affected psychological health disorders the most were physical complaints (eg, pain, discomfort, numbness) in the head, hands/fingers, and lower back (P < .05) (Table 4). In contrast, the psychological symptoms that affected musculoskeletal disorders the most were depression, insomnia, nervousness, and mental exhaustion (P < .05) (Table 4). Additionally, it was found that the total physical health score and the total psychological health score were significantly correlated with all job satisfaction criteria (P < .05), except that there was no correlation between psychological health and satisfaction amongst relationships with patients (P > .05) (Table 5).

3.53

# Discussion

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This study aimed to investigate musculoskeletal and psychological symptoms and job satisfaction amongst Lithuanian dental hygienists as well as to discover how perceived musculoskeletal and psychological symptoms are related to their job satisfaction. According to the results, the higher the total musculoskeletal symptoms score, the higher the psychological symptoms total score. This means that the fewer self-

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	Bad mood	Nervousness	Insomnia	Anxiety	Feelings of loneliness	Feelings of inferiority	Mental fatigue	Nervous tension
Neck	0.161	.245	0.099	0.106	0.047	.173	0.169	0.115
	0.065	0.005	0.263	0.229	0.595	0.048	0.054	0.192
Head	.296	.306	.255	.221	.204	0.154	.279	.179
	0.001	0.000	0.003	0.011	0.019	0.079	0.001	0.041
Shoulders	.246	.350	.256	0.091	.174	0.165	.279	.179
	0.005	0.000	0.003	0.300	0.047	0.060	0.002	0.002
Upper back	.207	.332	0.099	0.075	0.138	0.135	.282	0.124
	0.018	0.000	0.258	0.395	0.117	0.124	0.001	0.160
Elbows	.246	0.161	.311	0.061	.175	0.065	.329	.182
	0.005	0.066	0.000	0.490	0.045	0.460	0.000	0.038
Wrists	.237	.204	.357	0.086	.195	0.041	.200	0.159
	0.006	0.019	0.000	0.326	0.026	0.642	0.022	0.070
Hands/	.221	0.164	.387	.176	0.112	.226	.284	.201
fingers	0.011	0.061	0.000	.044	0.202	0.009	0.001	0.021
Lower	.299	.246	.354	0.149	.191	.318	.308	0.150
back	0.001	0.005	0.000	0.089	0.029	0.000	0.000	0.087
Hips/	.185	.309	.274	0.125	0.149	0.133	.255	0.164
thighs	0.034	0.000	0.002	0.155	0.089	0.129	0.003	0.062
Knees	0.128	0.142	.237	0.087	0.119	0.075	0.117	0.088
	0.145	0.106	0.007	0.325	0.176	0.395	0.181	0.315
Ankles/	.204	.183	.302	0.147	-0.040	0.117	0.164	.175
feet	0.020	0.037	0.000	0.094	0.648	0.182	0.062	0.045

Table 4 – Pearson correlation coefficients (upper values) and P values (lower values) between individual musculoskeletal and psychological disorders.

perceived musculoskeletal problems reported by dental hygienists, the better they evaluated their psychological wellbeing. Nevertheless, there was a significant association between all job satisfaction criteria and total musculoskeletal/psychological symptom scores with one exception. There was no significant correlation between psychological

Table 5 – Spearman correlation coefficients (upper values) and P values (lower values) between each job satisfaction criteria and total musculoskeletal and psychological disorders scores.

	Musculoskeletal disorders	Psychological disorders
Self-realisation	.219	.296
	0.012	0.001
Work equipment	.289	.221
	0.001	0.011
Social security	.213	.297
	0.015	0.001
Relations with	.185	.285
colleagues	0.035	0.001
Relations with	.223	.335
dentists	0.011	0.000
Relations with	.226	.105
patients	0.010	0.234
Management and	.277	.321
control at work	0.001	0.000
Work-family issues	.320	.369
	0.000	0.000
Health	.477	.483
	0.000	0.000
Income	.327	.257
	0.000	0.003

symptoms and patient relationships. However, no studies thus far have investigated the correlations between job satisfaction and both musculoskeletal and psychological symptoms of dental hygienists or other dental team members. Similar research was conducted recently in Switzerland amongst health care workers in hospital settings, and the findings showed an association between musculoskeletal disorders and both physical workload and psychological (work) stress.<sup>35</sup>

Although there is no other comparable study, more descriptive studies can be found on job satisfaction, musculoskeletal disorders, and psychological well-being. In previous studies, a relatively high prevalence of musculoskeletal disorders was found amongst dental hygienists as well as dentists.<sup>6-11,22,30,31,34</sup> Most complaints reported in those studies were neck, shoulder, and upper and lower back pain. In our research, similar results were found; Lithuanian dental hygienists had the most complaints with musculoskeletal disorders in their upper back, lower back, shoulders, and head.

Job satisfaction amongst dental hygienists has also been investigated in several countries, including the UK, Holland, Denmark, Israel, and South Korea. High job satisfaction levels were reported.<sup>11,17</sup> In the current study, Lithuanian dental hygienists reported job satisfaction higher than an average of 3.87 out of 5, whereas a previous study conducted amongst Lithuanian dentists documented a satisfaction of 4.06 out of 5.<sup>23</sup> The higher satisfaction of Lithuanian dentists might be explained by the fact that dental hygienists were recognised as part of primary health care only in January 2019.<sup>1</sup> The study performed amongst Lithuanian dental assistants showed a low or very low level of job satisfaction.<sup>36</sup> The main factors of low job satisfaction in dental assistants in the study were relationships with colleagues and managers; in contrast, this study found that Lithuanian dental hygienists experienced high satisfaction with relationships with their colleagues. This might be influenced by the nature of the performed tasks. Dental assistants mainly depend on the dentists and managers of the clinics, and dental hygienists have more freedom in planning their job, making more independent decisions.

The psychological well-being of dental hygienists is also poorly investigated, and there is a lack of recent data on this subject. Some studies on stress and burnout can be found reporting a low risk of burnout, and a more recent study indicated that burnout was related to emotional demands.<sup>12-</sup> <sup>15,22,32,33</sup> This present study confirmed that depression is more likely to occur when head, shoulder, and upper back pain is present, and more frequent neck pain is associated with more nervousness and feelings of inferiority, headache with nervousness, insomnia, anxiety, and feelings of loneliness.

This study has some limitations. First, the population studied was quite young, and half of the respondents worked only part-time as dental hygienists. This can explain the correlations found between musculoskeletal/psychological symptoms and job satisfaction, although this was statistically significant but weak. Another explanation for relatively good perceived job satisfaction amongst this sample of oral health professionals could be the phenomena designated "relative deprivation." Although we did not investigate the income level of dental hygienists and dental hygienists working as dental assistants, it can be presumed that dental hygienists had higher incomes. However, for the 40% with the lowest income in the population, the effect of relative deprivation on health is considerably reduced according to the study from Sweden published in 2003.<sup>37</sup> Second, subjective job satisfaction may be caused by an objective work situation and by the relative position compared with the work situation of another individual.<sup>34</sup> Third, a possible influence on job satisfaction level might be observed due to the dual-practice type of the studied population. Those practicing only as dental hygienists might experience higher job satisfaction, as they are more independent in their work compared to those practicing as dental assistants.

A possible limitation of the present research is also that, due to the COVID-19 crisis, these research findings of data collected before the coronavirus pandemic may provide indications as to what might be areas of concern for the future.

# Conclusions

According to the results of this study, Lithuanian dental hygienists were quite satisfied with their job yet sometimes experienced work-related musculoskeletal and psychological symptoms. Their physical health score and total psychological health score were significantly correlated with all job satisfaction criteria. The better the self-evaluation of physical and psychological health, the higher the job satisfaction reported.

#### Author contributions

Research concept and design: G. Rederiene, Y.A.B. Buunk-Werkhoven. Collection and assembly of data: G. Rederiene. G. Aidukaite Data analysis and interpretation: Y.A.B. Buunk-Werkhoven, G. Aidukaite Writing the article: G. Rederiene, G. Aidukaite. Critical revision of the article: Y.A.B. Buunk-Werkhoven. Final approval of the article: G. Rederiene, Y.A.B. Buunk-Werkhoven, A. Puriene.

# **Conflict of interest**

None disclosed.

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