

Specificity of chronic self-reported occupational hazards among male and female Lithuanian dentists

Alina Pūrienė¹,

Irena Balčiūnienė¹,

Vilija Janulytė¹,

Janina Tutkuvienė²

¹*Institute of Odontology,
Faculty of Medicine, Vilnius
University, Lithuania*

²*Department of Anatomy,
Histology and Anthropology,
Faculty of Medicine, Vilnius
University, Lithuania*

Background. It is known that genders differ in body structure and constitution resulting in different functional capability. These ancestral differences interacting with environmental factors in dental surgery can affect the prevalence of physical complaints among genders. The present study aimed at documenting and evaluating the specificity of self-reported chronic physical health complaints between genders among Lithuanian dentists.

Material and methods. This study was conducted as a postal questionnaire survey of all (n = 2449) licensed dentists registered with the Lithuanian Dental Association. The questionnaire was designed to evaluate female and male dentists' physical health complaints during the last 12 months.

Results. The response rate was 68.2%. In this study, we found that chronic physical disorders are very prevalent among dental practitioners in Lithuania. Chronic back pain (42.8% among men and 53.6% among women) and fatigue (31.6% and 39.7%, respectively) were the most prevalent physical complaints of Lithuanian dentists among both genders. Female dentists suffer from chronic physical disorders significantly more than men. They also tended to report markedly worse general health than men. The chronic physical disorders' experience among genders differed with regard to prevalence, not the succession.

Conclusion. Women are significantly more affected by chronic occupational hazards than men among Lithuanian dentists. The difference of the anthropological data between genders may be the cause; however gender roles in society could also affect the results.

Key words: anthropological measurements, male and female, self-reported chronic physical complaints, occupational hazards

INTRODUCTION

In modern life, job and all social interaction pace has accelerated to the great extent. In many professions job constrains and demands have greatly increased. This has led to a sharp rise in the incidence of work-related disorders. Furthermore, some of professions are characteristic of challenging, prevalent and early onset of occupational health hazards. Dentistry could be among them. Many studies have shown modern dentistry to be hard and demanding work, a hazardous profession (1–6). A wide variety of deleterious work environmental factors are proved to affect physical health of dentists or even aggravate their pre-existing disorders (7–12). Dentists experience high instantaneous and cumulative physical loads during their work day which seems to put them at risk for the occurrence of physical complaints (13–16). Occupational hazards in regard to musculoskeletal complaints, low-back, neck and shoulder pain, hand/wrist disorders, carpal tunnel syndrome are highly prevalent among dental practitioners all over the world (17–21).

Along with the accelerated life pace, sometimes it happens to forget that a worker is a living being, with his inherited genetics, slow adaptation and not only morphologic and functional possibilities but limitations as well. It is known that genders differ in body structure and constitution. Different morphology results in different functional capability. This difference is the result of sex hormones action and manifests at the end of puberty. Men are taller than women; they have more active tissue mass, i. e. bigger bones, muscles, internal organs. As women have smaller bones, more elastic tendons and muscles they are more flexible than men, they also have thicker subcutaneous fatty tissue. The bigger the individual, the bigger morphologic and functional measurements he usually has (22). These are the reasons why men should tolerate high physical load better than women, while minute procedures could be easier accomplished by women than by men. It is very interesting how these ancestral differences interact with environmental factors in dental surgery and affect the physical complaints' prevalence among genders. Chronic physical complaints reveal the constant occupational damage to dentists' health that exceeds morphologic and functional adaptation. Therefore, they should well reflect the specificity of occupational hazards between genders and they were the object of our study.

The aim of this study is to document and evaluate the specificity of self-reported chronic physical complaints between genders among Lithuanian dentists.

MATERIALS AND METHODS

It was a postal questionnaire survey, a part of a large study approved by the Lithuanian Bioethical Committee No 59 conducted in 2006. The same year the questionnaires were sent to all ($n = 2449$) licensed dentists registered with the Lithuanian Dental Association, they included dentists working in various regions of Lithuania, in either public or private dental institutions. After two weeks the questionnaires were sent to non responders, the same was done after another two weeks with three mailing times all in all. The total of 1670 questionnaires were returned, which comprise the response rate of 68.2%.

The questionnaire was designed to evaluate female and male dentists' self-reported general and physical health during the last 12 months, to explore the existing complaints. The questionnaire consisted mainly of structured questions, and only a few open questions were added where additional deeper insight was necessary. Likert type scales were used with answers from 1 to 5 allocated according to the experienced state of health and degree of a listed disorder. The chronic condition was defined if respondents experienced it on either a frequent or a very frequent basis. Demographic characteristics of the responding dentists were also assessed.

Statistical analysis was undertaken using the MS Office Excel and SPSS version 15.0 software package. Differences in proportions were tested by Pearson χ^2 test and Student's *t*-test. As the

age of respondents greatly influences the prevalence of physical disorders, to compare their prevalence between genders, general practitioners and specialists, it was standardized by Lithuanian dentists' age (the data were received from the Lithuanian Dental Association). The direct standardization method was used. The bivariate analyses were performed to determine which factors associated with physical complains and with "good" or "very good" general health among genders. The possibility of physical complains and good general health regarding age, specialization, working hours, institution type was assessed. Age and working hours in all our study were analyzed as continuous variables. The joint impact of the aforementioned risk factors on physical complaints and general health was studied by means of multiple logistic regression analysis using Enter method. Two multiple logistic regression models for genders were carried out separately. In the first one, the dependent variables were the existence of different complains and "good" or "very good" general health. Age, specialization, working hours and institution type were included into this model as independent variables. The dependent variables, except general health, became the independent ones and together with age were included into the second multiple logistic model, where "good" or "very good" general health was the dependent factor. Only significant results were taken into consideration.

RESULTS

Of all, 15.1% of the respondents were males and 84.9% were females.

Table 1. The multiple logistic regression analysis of demographic and other factors for the prediction of chronic physical disorders' prevalence and indication of "good" or "very good" general health among genders

Dependent variables	Independent variables	Men		Women	
		p	OR (95% CI)	p	OR (95% CI)
"Good" or "very good" general health	Age*	0.000	0.95 (0.93–0.97)	0.000	0.94 (0.93–0.95)
	General practitioner	0.387	0.78 (0.44–1.37)	0.043	0.72 (0.52–0.99)
	Specialist		1.00		1.00
Fatigue	Age*	0.444	1.01 (0.98–1.04)	0.019	1.01 (1.00–1.02)
	General practitioner	0.271	1.42 (0.76–2.63)	0.034	1.41 (1.03–1.94)
	Specialist	0.014	1.00	0.000	1.00
	Working hours*		1.03 (1.01–1.06)		1.02 (1.01–1.03)
Musculoskeletal complaints	Age*	0.766	1.00 (0.97–1.02)	0.000	1.02 (1.01–1.03)
Hand problems	Age*	0.685	1.01 (0.98–1.04)	0.000	1.02 (1.01–1.04)
	Working in private institution	0.800	1.16 (0.36–3.70)	0.048	1.45 (1.00–2.09)
	Working in both private and public institutions		1.00		1.00

p – significance level; OR – odds ratio; CI – confidence interval.

* – continuous variables.

Note. Independent variables entered: age, specialization, working hours and institution type. Only significant results are given.

Table 2. The multiple logistic regression analysis for the prediction of "good" and "very good" general health among men and women

Independent variables	Men		Women	
	p	OR (95% CI)	p	OR (95% CI)
Age*	0.000	0.94 (0.92–0.97)	0.000	0.93 (0.92–0.94)
Back pain	0.081	0.58 (0.91–1.07)	0.000	0.56 (0.42–0.74)
Fatigue	0.076	0.54 (0.28–1.07)	0.000	0.51 (0.39–0.68)
Musculoskeletal complaints	0.016	0.39 (0.18–0.84)	0.000	0.47 (0.35–0.64)
Hand problems	0.229	1.77 (0.70–4.51)	0.003	0.60 (0.43–0.84)
Headache	0.617	0.78 (0.29–2.11)	0.012	0.66 (0.48–0.91)
Chest pain	0.162	0.21 (0.02–1.88)	0.023	0.44 (0.22–0.89)

p – significance level; OR – odds ratio; CI – confidence interval.

* – continuous variable.

The study showed that about half of the respondents reported their general health as satisfactory, bad or very bad. Women tended to report significantly worse general health than men ($\chi^2 = 6.68$, $p = 0.036$). Of all, 3.4% of women indicated bad or very bad general health, 50.9% of them said to have satisfactory health, and only 45.8% reported good or very good general health. In contrast, 1.2%, 46.1%, 52.7% of men, respectively, rated their general health. According to multiple logistic regression analysis, increasing age had a significant negative impact on dentists' general health among both genders. Each additional year of age lessened the possibility of "good" or "very good" general health by 6% in men and by 7% in women. Female general practitioners had a significantly lesser possibility of good general health by 28% than female specialists (Table 1). Back pain, fatigue, musculoskeletal complaints, hand problems, headache and especially chest pain had a markedly higher negative impact to female dentists' general health, whereas only musculoskeletal complaints had a significant negative impact on male dentists' general health (Table 2).

Surprisingly high numbers of respondents reported chronic physical health complaints during the last year.

Chronic back pain (without specified location) was the most prevalent chronic physical complaint among both genders. It was an attendant condition among dental practitioners. Even 42.8% of men and 53.6% of women, who responded, experienced it.

Very high numbers of dentists indicated other disorders also. 31.6% of men and 39.7% of women indicated experiencing chronic fatigue. Chronic musculoskeletal complaints manifested in 22.8% of men and 35.5% of women.

Pain in hands, carpal tunnel syndrome and all chronic hand problems in general were the expected complaints among dental practitioners. Unsurprisingly, 15.6% of men and 26.9% of women reported to be suffering from them.

Chronic headache manifested in 10.7% of men and 22.4% of women.

Chronic chest pain was less frequent than other physical complaints among both genders. However, this chronic condition indicates serious health problems that should be instantly addressed. Even 4.1% of men and 5.6% of women suffered from chronic chest pain during the last year.

The succession of the prevalence of different chronic physical health complaints during the last year between genders did not differ. However, all the chronic physical health complaints except chest pain were significantly more frequently indicated by women. Female gender suffered from chronic back pain ($\chi^2 = 9.58$, $p = 0.002$), fatigue ($\chi^2 = 5.78$, $p = 0.016$), musculoskeletal complaints ($\chi^2 = 10.26$, $p = 0.001$), hand problems ($\chi^2 = 14.16$, $p = 0.0001$) and headache ($\chi^2 = 17.44$, $p = 0.0001$) markedly more frequently. Chronic chest pain was also indicated more often by women, but the difference between genders was not significant ($\chi^2 = 0.92$, $p = 0.338$).

According to multiple logistic regression analysis, self-reported chronic physical health complaints were significantly related to respondents' age only among women with regard to fatigue (OR = 1.01; 95% CI = 1.00–1.02), musculoskeletal complaints (OR = 1.02; 95% CI = 1.01–1.03), and hand problems (OR = 1.02; 95% CI = 1.01–1.04). Increasing age significantly increased the possibility of experiencing problems. Specialization was significantly related only to chronic fatigue among women. Female general practitioners had the increased possibility for fatigue by 41% even (OR = 1.41; 95% CI = 1.03–1.94), compared to specialists. Working hours were significantly related to chronic fatigue among both genders. Each additional working hour increased the possibility of experiencing it by 3% among men (OR = 1.03; 95% CI = 1.01–1.06) and by 2% among women (OR = 1.02; 95% CI = 1.01–1.03). The type of dental institution was significant for women in regards to hand problems. Female dental practitioners working in private institutions had the possibility of increase for hand problems by 45% (OR = 1.45; 95% CI = 1.00–2.09) compared to working in both private and public institutions (Table 1).

To eliminate the influence of gender differences between the respondents and all the Lithuanian dentists on our data, we standardized it by the Lithuanian dentists' age. The standardized data of the prevalence of chronic physical disorders is presented in Fig. 1. All the physical disorders were significantly more prevalent among women than among men (Figure).

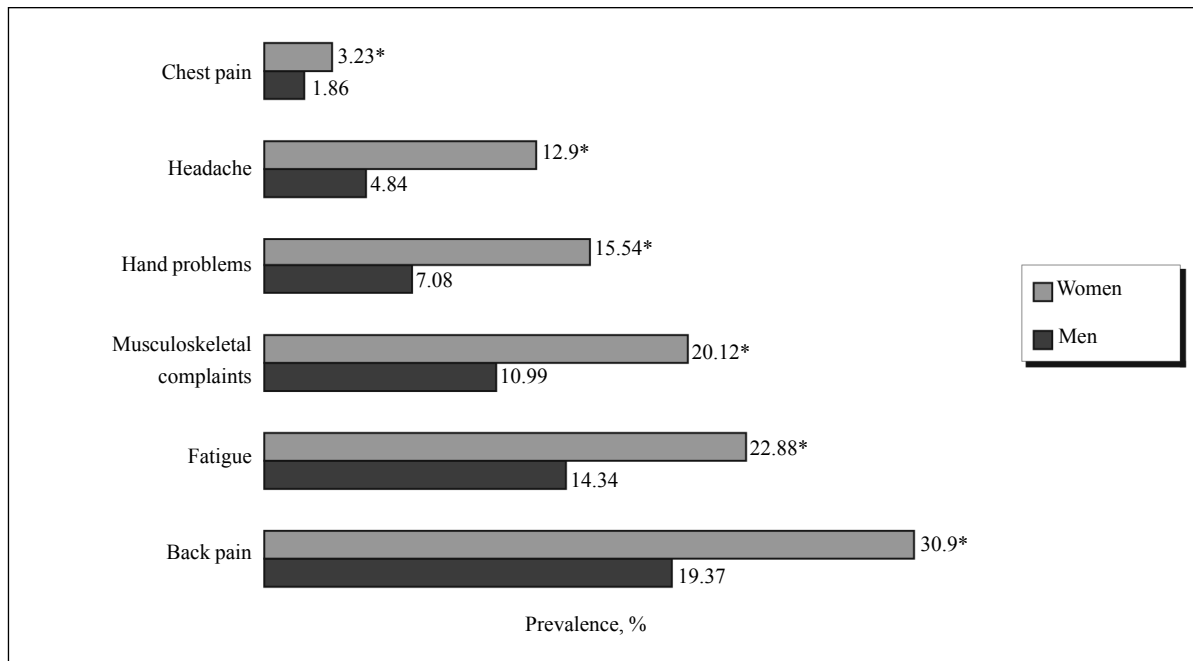


Figure. The prevalence of chronic physical disorders among genders, standardized by Lithuanian dentists' age

* – $p < 0.05$ in comparison with men.

DISCUSSION

The results of this study revealed that morphologic and functional adaptation of the body is not able to fully compensate constant occupational damage effects on the dental practitioner's health, and high numbers of Lithuanian dentists, regardless of the gender, suffer from chronic health problems. Even more than half of them have complaints about their general health, which is the result of experiencing different chronic health problems (Table 2). A similar situation of derangement of physical health and well-being of dental practitioners is shown by many foreign studies. For example in Norway, 81% of dentists have experienced some sort of musculoskeletal discomfort during the last 12 months (23). In a Greek study, 62% of dentists reported at least one musculoskeletal complaint, and 30% of them indicated chronic complaints (24).

Chronic musculoskeletal disorders in general (22.8% among men and 35.5% among women) and in the form of back pain (42.8% and 53.6%, respectively) and hand problems (15.6% and 26.9%) were wide-spread health problems among Lithuanian dentists. Chronic back pain and fatigue (31.6% and 39.7%) were the most prevalent physical complaints of the Lithuanian dentists between both genders. This may indicate that dentists' back and general well-being may be most affected by constant strain. High prevalence of back pain among dentists has also been reported in Saudi Arabia. There it was found in almost three-quarters of dental personnel (25). In a Belgium study, low back pain was experienced by 54% of dental practitioners (26).

There are many odds ratios among males that are insignificant compared to female ones. This could be due to low male respondents' number as dentistry is a predominantly female profession. Since all the Lithuanian dentists registered with the

Lithuanian Dental Association were sent the questionnaire, more detailed analysis of the situation is possible only by increasing the response rate of the respondents.

According to our study, substantial gender differences were found: women reported significantly worse general health than men. The prevalence of all the chronic physical health complaints except chest pain was significantly higher among them also. This gender difference could not be explained by age as after the adjustment for the Lithuanian dentists' age, all the chronic physical health complaints, chest pain included, were significantly more prevalent among women than among men.

These obvious differences could be due to different anthropological factors between genders. Men have bigger bones, joints, muscles, internal organs. And the bigger the morphology of the body, the greater functional measurements it has, and the larger functional load it can withstand, the easier adaptation can take place. However, the succession of the prevalence of different chronic physical health complaints among genders did not differ, which partly denies the presumption that because of more elastic tendons and muscles women should adapt to functional hand load more and complain of hand problems less than men.

Another explanation might be the difference in gender roles, i. e. different cultural expectations for men and women. Seemingly, women tend to pay more attention and care more about their health matters, while men are less engaged in health issues, which often seem to be only a detail in a whole. A usual cultural expectation for men is to present as healthy, self-confident, imperturbable and strong individuals, therefore, this could have resulted in less physical health complaints among them (27, 28). Given that our data is based on self-reports it is still unclear whether the differences between the two genders found in our study should be attributed to real, anthropological mea-

surements influenced by the difference in prevalence of chronic physical disorders or this difference can be at least partly explained by different gender roles.

In this study we found that chronic physical disorders are highly prevalent among dental practitioners, and that female dentists suffer from chronic physical disorders significantly more than men. The chronic physical disorders' experience between genders differs with regard to prevalence, not to the succession. The difference of the anthropological data between genders may be the cause; however gender roles in society could also affect the results. A deeper evaluation of differences in chronic physical disorders' prevalence with a focus on their causes would be a logical continuation of this study.

Received 20 November 2007

Accepted 6 February 2008

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Alina Pūrienė, Irena Balčiūnienė, Vilija Janulytė, Janina Tutkuvienė
**LĒTINIŲ PROFESINIŲ NEGALAVIMŲ YPATUMAI TARP
ODONTOLOGŲ VYRŲ IR MOTERŲ**

S a n t r a u k a

Lytys skiriasi savo kūno sandara ir konstitucija, o tai pasireiškia skirtingu funkcinu pajėgumu. Šie skirtumai odontologų darbe gali turėti įtakos skirtingam profesinių fizinių sutrikimų paplitimui tarp lyčių. Šio darbo tikslas buvo ištirti ir įvertinti lėtinį fizinės sveikatos sutrikimų specifiką tarp odontologų vyrų ir moterų.

Medžiaga ir metodai. Paštu buvo išsiųsti klausimynai visiems (N = 2449) Lietuvos odontologų rūmų nariams – gydytojams odontologams. Klausimyno pagrindą sudarė klausimai apie odontologų vyrų ir moterų juntamus fizinės sveikatos sutrikimus per pastaruosius 12 mėnesių.

Rezultatai. Atsakė 68,2% Lietuvos gydytojų odontologų. Atsiųstų anketų analizė rodo, kad lėtiniai fizinės sveikatos sutrikimai yra labai

paplitę tarp respondentų. Lėtinio nugaros skausmu skundėsi 42,8% vyrų ir 53,6% į anketas atsakusių odontologų moterų, lėtinio fiziniu pervargimu – atitinkamai 31,6% ir 39,7% Lietuvos odontologų. Odontologės moterys lėtiniais fizinės sveikatos sutrikimais skundėsi statistiškai patikimai dažniau nei vyrai. Jos taip pat nurodė patikimai blogesnę bendrą fizinę sveikatą.

Išvados. Tarp Lietuvos gydytojų odontologų moterys dažniau skundžiasi lėtiniais fizinės sveikatos sutrikimais nei vyrai. Šie sveikatos skirtumai galėtų būti aiškinami antropologiniais lyčių ypatumais. Įtakos galėjo turėti ir skirtingas lyčių vaidmens supratimas visuomenėje, kai moterys pripažįsta sveikatos problemas dažniau ir lengviau nei vyrai.

Raktažodžiai: antropologiniai matmenys, vyrai ir moterys, lėtiniai fiziniai nusiskundimai, profesinės ligos