Introduction

According to the World Health Organization, health is a state of physical, mental, and social well-being. Given a continuous social interaction between health care providers and their patients, healthy practitioners are particularly important for a successful dental practice and the well-being of patients. The social interaction of a dentist is influenced by the unique work setting and by personal characteristics. There is increasing evidence that unique working conditions in dentistry can significantly affect the health of dentists. Studies suggest an increased vulnerability among dental professionals to certain disorders and afflictions that can only be categorized as profession-related1–7). Dentistry is known to be a demanding profession. A wide variety of deleterious work environmental factors are proved to affect the physical health of dentists or even aggravate their preexisting disorders3, 4, 8–11). Studies have shown that dentists report more frequent and worse health problems than other high-risk medical professionals8). Dentists characterize their profession as hard and demanding work, sometimes requiring more patience and physical self-sacrifice than they are able to give. After Lithuania regained its independence and during the transition period, their work-related constrains increased because the character of work...
and its amount substantially changed. Before independence there were only public dental institutions, with an increase of private practices occurring after 1991. Dental work in Lithuania is now more intensive because many dentists are working in more than one institution and for more than six hours per day. These increased job constraints may affect the general health of Lithuanian dentists.

The aim of the current study therefore, was to document and evaluate dentists’ self-reported physical health complaints and indicate disorders that were diagnosed and treated during the previous twelve months.

Subjects and Methods

This paper describes the second part of a large investigation of Lithuanian dentists’ health, the details of which have been published elsewhere. Briefly, our study involved a postal questionnaire survey of dentists working in various Lithuanian regions in both public and private dental institutions, and was part of a large study approved by Lithuanian Bioethical Committee (No.59). In 2006, questionnaires were sent to all (N=2,449) licensed dentists registered with the Lithuanian Dental Association. After two weeks, questionnaires were sent to non-responders and the same was done after another two weeks with three mailing times all in all. A total of 1,670 questionnaires were returned, which comprise the response rate of 68.2%. The questionnaire was designed to evaluate dentists’ self-reported general and physical health during the previous 12 months and to explore the existing complaints about their health as well as their previous and present illnesses. The questionnaire comprised 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 level of agreement with the given statement or experienced state of a listed disorder. The chronic condition was defined if respondents experienced it on either a frequent or very frequent basis. The demographic characteristics of the responding dentists were also assessed.

Statistical analysis was undertaken using MS Office Excel and SPSS version 15.0 software package, with data analyzed using descriptive and analytical methods. Differences in proportions were tested by Pearson’s χ² test and the Student’s t-test. As the age of respondents greatly influenced the prevalence of physical disorders, to compare their prevalence between gender, general practitioners and specialists, it was standardized by Lithuanian dentists’ age (with data obtained from the Lithuanian Dental Association). The direct standardization method was used. Bivariate analyses were performed to determine which factors associated with physical complaints and with “good” or “very good” general health. The possibility of physical complaints and good general health regarding age, gender, specialization, working hours, institution type, and the possibility of good general health with regard to age, gender and physical health complaints was assessed. Age and working hours 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 the Enter method. Two multiple logistic regression models were carried out. In the first one, the dependent variables were the presence of referred different complaints and “good” or “very good” general health. Age, gender, specialization, working hours and institution type were included into this model as independent variables. The dependent variables, except general health, became independent ones and together with age and gender were included into the second multiple logistic model, in which “good” or “very good” general health was the dependent factor. Only significant results are presented.

Results

Of all respondents in the current study, 17.4% worked as specialists and 82.6% worked as general dental practitioners. The gender breakdown was 15.1% male and 84.9% female. One third worked exclusively in public institutions, while 50.0% worked only in private institutions and 18.7% combined work in both public and private institutions. Their mean work experience was 22.41 yr and the mean working time was 38.23 h per week. Further demographic details are described elsewhere.

Results from the current study revealed that the overall majority of dentists fully agreed with the statement that their work is difficult physically (80.8%), while 16.9% of respondents partially agreed and about 2.3% did not agree. Of all dentists, 3.0% reported their general health as bad or very bad. About half (50.4%) reported their general health as satisfactory and 46.6% rated themselves to be in good or very good general health. Very good general health was only reported by the minority of respondents (3.4%). Of the entire group, 1.3% of dentists aged 34 yr and younger reported their general health condition as bad or very bad and 24.6% of this age group reported satisfactory general health. According to multiple logistic regression analysis increasing age had a significant negative impact on dentists’ general health. Each additional year of age lessened the possibility of “good” or “very good” general health by 6% (Table 1). Fatigue, headache, hand problems, chest pain and especially mus-
Musculoskeletal complaints had a highly negative impact on dentists’ general health (Table 2). Any physical health complaint as inquired was indicated by more than half of Lithuanian dentists. The vast majority of respondents (94.7%) complained of being physically burned-out and 40.5% experienced this disorder chronically. A total of 91.0% of dentists reported suffering from back pain and it was most likely to become chronic among all the physical disorders reported. Chronic back pain was experienced by 57.1% of all dental practitioners. Headache manifested in 88.7% of dentists, with a chronic headache reported by every fifth practitioner (23.4%). General musculoskeletal complaints were also very common as 86.5% of dentists suffered from them and 39.0% indicated their symptoms to be chronic. Hand problems such as pain and carpal tunnel syndrome were expected complaints associated with dental practice. Unsurprisingly, 83.1% of Lithuanian dentists reported these complaints. A total of 30.4% of dentists experienced chronic hand problems. Although chest pain was less frequent than other physical complaints, it indicates a serious health condition. More than a half of dentists (53.8%) reported having felt chest pain during the previous year, and chronic chest pain was felt by 10.0% of dentists.

According to multiple logistic regression analysis, self-reported physical health complaints were significantly related to respondents’ age as regards headache, hand problems and chest pain. Increasing age significantly increased the possibility of hand problems (OR: 1.03;
95%CI: 1.02–1.04) and chest pain (OR: 1.04; 95%CI: 1.03–1.05), but decreased the possibility of headache (OR: 0.98; 95%CI: 0.97–0.99). Working hours were significantly related only to headache. Each additional working hour increased the possibility of headache experience by 2% (OR: 1.02; 95%CI: 1.44–3.04). There was no significant relation between specialization and working in different dental institutions as regards all physical health complains (Table 1).

When standardized by age, all physical disorders were significantly more prevalent among women than among men (Fig. 1), however, the possibility of only headache (OR: 2.09; 95%CI: 1.44–3.04), musculoskeletal complaints (OR: 1.58; 95%CI: 1.10–2.27) and hand problems (OR: 1.68; 95%CI: 1.21–2.34) was higher in women than in men according to multiple logistic regression analysis (Table 1). When standardized by age, all physical disorders were significantly more prevalent among general practitioners than specialists (Fig. 2) nevertheless, according to multiple logistic regression analysis; specialization had no impact on self-reported physical disorders (Table 1). Respondents also reported their diseases and treatment during the previous 12 months. According to this data, almost one third of respondents (29.6%) suffered from hypertension. One respondent noted having experienced a myocardial infarction and 2.1% of dentists indicated having angina pectoris. Heart insufficiency had been diagnosed in 4.7% and diabetes mellitus in 2.2% of respondents during the previous 12 months. Joint diseases were also very common and were diagnosed in one out of every four (26.0%) respondents. Of all respondents, 2.1% had been diagnosed with oncological diseases and 4.8% indicated traumas and intoxications. Allergy was also a frequently diagnosed condition among practitioners (22.6%). Other diseases were diagnosed in 16.9% of dentists, i.e. one out of six respondents. One out of three respondents (32.8%) were healthy and had no diagnosed or treated disease during the previous 12 months.

**Discussion**

Even though one in every two dental specialists reported satisfactory general health and only 3.0% of dentists reported their general health condition as bad or very bad, the results of the present study have demonstrated that the majority of Lithuanian dentists do experience physical health problems. A similar situation was reported in the Netherlands where one out of ten dentists indicated having poor general health and three out of ten poor physical health. The majority of Lithuanian dentists (80.8%) have agreed with the statement that their work is physically difficult. The high prevalence of fatigue (94.7%) may be associated with specific features of their work. During the previous 12 months more than half of Lithuanian dentists had suffered from fatigue and musculoskeletal complaints in various regions of the body, i.e. any physical health complaint as inquired was indicated by more than half of Lithuanian dentists. Many studies in other countries show the derangement of physical health and wellbeing of dental specialists. A previous study in Lithuania also showed that substantial numbers of Lithuanian dentists suffered from mental impairments. According to our findings, physical disorders and illnesses appear early in dental careers. Quite a high number of dentists aged 34 yr and younger reported their general health condition to be satisfactory (24.6%), bad or very bad (1.3%). A few previous studies have shown that physical disorders may appear early in the dental career, particularly among students. In the USA, more than 70% of dental students of both sexes reported pain by their third year. A study in Turkey shows a high prevalence of pain among dental male and female students: headache (34%, 22%), neck pain (67%, 43%), back pain (56%, 47%), upper limb pain (46%, 43%) and shoulder pain (78%, 58%) respectively. These facts are daunting and emphasize the importance of paying attention to occupational health knowledge gained during school years, to be actively concerned about ergonomics and an early diagnosis and treatment of these profession-related disorders.

Musculoskeletal disorders in general (86.5%) particu-
larly back pain (91.0%) and hand pain (83.1%) appear to be widespread health problems among Lithuanian dentists. Fatigue and back pain are the most prevalent physical complaints of Lithuanian dentists. A study in Greece showed that 62% of dentists reported at least one musculoskeletal complaint\(^1\); while 87.2% of Australian dentists reported having experienced at least one musculoskeletal symptom in the past 12 months\(^20\). In India, neck and back disorders have previously been reported at a higher frequency that hand and wrist complaints\(^21\). In the USA, 29% of dentists reported symptoms of peripheral neuropathy in the upper limbs or neck\(^22\). Regarding chronic conditions, back pain and fatigue were the most prevalent of all physical disorders, suggesting that the back region of dentists may be most affected by constant strain.

The surprisingly high prevalence of physical disorders in Lithuanian dentists may result from the lack of understanding of ergonomic principles, uncomfortable working environment and the residual effects of treating seated patients, which was a common practice during the Soviet period due to outdated equipment. A study in the Netherlands\(^23\) has shown that recommendations to reduce musculoskeletal disorders are often only partially implemented even in a highly motivated group. Barriers that made a change difficult included changing old routines and financial aspects of dental practice.

Among the diseases diagnosed and treated during the past 12 months, hypertension (29.6%), joint diseases (26.0%) and allergy (22.6%) were the most prevalent. More dental specialists in Lithuania were found to suffer from these disorders compared to the general population of a similar age (accordingly 22.8%, 11.1% and 4.2%, respectively)\(^24\). This may indicate that they are profession-related disorders. The high prevalence of allergies among dental professionals indicates them to be at great risk of developing this disorder due to potential exposure to chemicals which are often allergenic\(^25, 26\). Skin irritation due to exposure to allergenic chemicals was their frequent complaint. Neck pain, back pain, waist pain and joint pain due to long periods at fixed positions was also common among laboratory assistants. The inconvenient working posture increased the risk of waist pain, neck pain and sleep disorders. This could be true to similar work constrains related to dental work.

According to multiple logistic regression analysis, female dentists may be more likely than males to suffer from headache, musculoskeletal complaints and hand problems. Reasons for this could be; women have a lower threshold for pain, they pay more attention to and take better care of their health, higher susceptibility or lower resistance to constant strain. Men are less engaged in family affairs and usually spend more time in their specialty, but their constitution could help them to withstand deleterious profession-related factors which do not result in physical health disorders to the same extent as for women\(^32, 33\). The fact that only one out of three respondents (32.8%) was healthy, i.e. had no diagnosed or treated disease during the past 12 months, also shows a serious health situation.

It should be noted that dentists in Lithuania perform hard and intensive work. They often work long hours, sometimes in poorly designed working environments and in harmful working conditions. The results of our study suggest that physical health disorders are a major health problem among Lithuanian dentists. These disorders could be defined as profession-related and suggest that in Lithuania there is an increased vulnerability of dentists to certain disorders and illnesses. High numbers of physical disorders should make practitioners actively concerned about their early diagnosis and treatment. Further research is therefore needed to elucidate the causes of physical health problems among dental practitioners, as this will be a major step towards finding the solutions of this occupational health problem.

References

3) Myers HL, Myers LB (2004) ‘It’s difficult being a den-