

## Dentists' Preventive Attitudes Towards Occupational Exposure to Ergonomic Hazards in Moldavian Region of Romania



### Medical Science

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### ABSTRACT

*The ergonomic hazards represent a significant occupational risk for the dentists. The study aims to assess the dentists' occupational ergonomic problems during patient health-care. Methods. A questionnaire-based study included 280 dentists aged between 27-66 years, from Moldavian Region of Romania.. Data were analyzed using SPSS 14.0 program (p<0.05). Results. Dentists were affected by musculoskeletal disorders in the lumbar spine-20,6%, cervical spine-18,6%, right shoulder-26,3% and right arm-10,6% . The reported symptoms included pain-74,7% and functional limitation-32,5% . The agreed working positions were :the orthostatic position ( 22,9%), sitting position (39,1%) and a position adapted to the patient ( 38,0%). The patient is placed in sitting (17,8%),horizontal (14,5%) or 45 degrees body tilt position (62,3% ). 35,8% of the dentists apply the Four Handed Dentistry requirements. Conclusion. Dentists must adopt a preventive attitude towards occupational musculoskeletal pathology by applying the ergonomic requirements and adopt a healthy lifestyle.*

### INTRODUCTION

Dentists are exposed to ergonomic risk factors including repetitive and tough movements, long workdays, awkward posture, tiring static position (1). The ergonomic occupational environment in the dental office is related to the analysis of individual capabilities and limitations during the professional activity. The medical team must adopt a preventive attitude towards occupational musculoskeletal pathology which consists in using a healthy working position, controlling the forceful movements, choosing the ergonomic instruments and equipments, applying the Four Handed Dentistry technique, reducing stressful situations (2). The particular risk for the dentists to develop musculoskeletal disorders that involve muscles and nerves must be reduced by complying to ergonomic requirements in order to improve the efficiency and safety of the professional activity (3)

The aim of this study was to assess the dentists' occupational ergonomic problems and their preventive attitude during patient dental health-care.

### MATERIALS AND METHODS

It was initiated a questionnaire-based study including 280 dentists from Moldavian Region of Romania. The questionnaire included 18 items regarding the ergonomic issues during the clinical activity in the dental office: working position of the dentist, number of working hours, patients' position, musculoskeletal pathology, collaboration with the dental assistant.

Data were statistically analyzed using the SPSS 14.0 program and chi-square test (p<0.05). The results were processed by age, gender and experience in work.

### RESULTS

Out of the investigated dentists 68,4% were women and 31,6% men. The subjects were aged between 27 and 66 years . The number of years of professional activity of the dentists ranged between 1 and 35.. The workday lasts between 4 to 7 hours for 55,3% of the dentists , over 7 hours for 34,9% and 1 to 4 hours for 13,2% of them .

Dentists are affected by musculoskeletal disorders localized in the lumbar spine-20,6%, cervical spine-18,6%, right shoulder- 16,4% , right arm- 10,6%, right hand wrist -12,5% and right hip (15,1%) (Fig.1).

Significant more female subjects are affected by the cervical spine symptoms than male subjects (41,1% respectively 16,5%) (p<0.05). 28,6% of the dentists in the 35-45 group of age claimed a cervical spine symptom. 11,8% of the 10 to 20 years work experience dentists reported disorders located mainly in the right shoulder. The lumbar spine was affected in 28,3% of the 35-45 group of age, 24,7% of 10 to 20 years working experience group and 36,8% of female subjects.

The main claimed symptoms reported by the dentists included pain (74,7%), functional limitation (32,5%), paraesthesia (18,8%) and muscular spasm (23,5%). The musculoskeletal disorders required medical examination (32,5%), medication (36,6%), physiotherapy (27,2%), rest at home for one to 5 days (21,6%) and hospitalization (2,2%). 46,1% of the dentists practice physical exercises once and 38,6% twice a week.

Regarding the working position, 22,9% of the dentists adopt a orthostatic posture and 39,1% use the sitting position . 38,0% of the subjects agree to a flexible position adapted to the patient and clinical procedure (Fig. 2). No subject in the group over 65 years old use the orthostatic position. The younger dentists (age group of 25-35 years and 35-45 years) prefer the sitting position (32,5%, respectively 38,6%). Female subjects agree to the sitting position unlike male dentists (45,8%, respectively 39,3%).

The patient is placed in sitting vertical position by the 23,2% of the dentists while the horizontal position of the patient is used by 24,5% of them. The "45 degrees" body tilt of the patient is preferred by the 52,3% of the dentists. The subjects with 10 to 20 years working experience prefer the orthostatic position (25,1%) as the 25-35 and 35-45 groups of age (16,4% respectively 30,3%). Females agree to the horizontal position of the patient (32,5%) as opposed to males (22,0%).

51,4 % of the dentists collaborate with a dental assistant and 35,8% of them state to meet the Four Handed Dentistry requirements.

The majority of the dentists appreciate that the Dental Universities must provide a most substantial education in ergonomics by curriculum and post-graduation courses (84,6%) but 15,4% of them are not sure about their utility (4,9% females and 5,3% males). 22,4% of the subjects which do not appreciate the importance of the ergonomic education belong

to the group of 1 to 5 years working experience. The majority of the subjects consider that ergonomics does not imply loss of working time-75,4%.

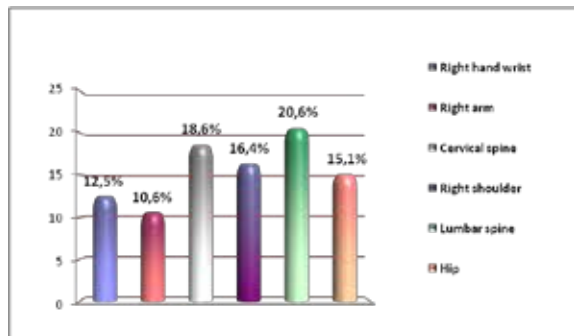


Figure. .1. Dentists’ musculoskeletal disorders

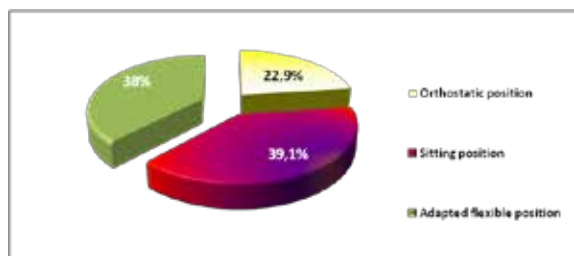


Figure. 2. Dentists’ position during the clinical activity

**DISCUSSIONS**

The prevention of the occupational musculoskeletal disorders is the primary objective of dental ergonomics by controlling the working position, specific movements, use of dental instruments and health practices (4)(5). In our study, regardless gender, the majority of the dentists appreciate the importance of education in this domain in the Dental Universities but 15,4% of the subjects are not interested by those aspects.

The posture position adopted by the dentist represents an essential ergonomic risk factor. As expected in the present study the older dentists and the male subjects prefer the orthostatic position during their activity compared with the younger dentists and the female subjects who like the sitting position.

Regarding the musculoskeletal symptoms the results of a systematic review among dental professionals (Hayes-2009) concluded that the most prevalent regions for pain in dentists are the back (36.3-60.1%) and neck (19.8-85%) (6).

The findings of our study conform this aspects and are similar to those reported by a survey on Danish dentists for the low back pain (50%) but are lower in relation to the disorders located in the right shoulder (65%). (7) A comparable prevalence was reported in Israel - 55% lower back symp-

toms (Ratzon 2000) (8) and in Australia-54% lower back pain (Leggat 2006) (7). In Saudi Arabia the data obtained by AlWazzan (2001) showed a prevalence of 73.5% for the back pain complains (9).

The disorders of the musculoskeletal system are an important source of occupational injuries and lead to significant loss of working days. For the dentists from Moldavian Region of Romania the occupational musculoskeletal symptoms imposed rest at home for one to five days in almost one third of the subjects, a much higher percentage compared to the results reported by Leggat : 9.1 % dentists taking leave in the previous 12 months because of a musculoskeletal disorder (7). According to the localization of the musculoskeletal symptoms the sick leaves reported by dentists in a study from India were between 1 and 7 days in 30 % of the low back disorders, 29% for neck and 29% for shoulder and between 8 and 30 days in 10% for low back, 5% for neck and 9% for shoulder (10).

The number of working hours for the dentists in Europe and U.S. is highly variable, most often between 35 and 40 hours a week (11). In Moldavian Region of Romania half of the subjects work 4 to 7 hours per day, 20 to 35 hours a week.

Four Handed Dentistry is ergonomically the optimal way to provide dental care, to increase efficiency and productivity, to reduce stress and fatigue and to increase the safety of the dental treatments (12). The answers to our questionnaire lead to the conclusion that only half of the dentists collaborate with a dental assistant which is involved in the application of Four Handed Dentistry effective techniques in one third of the dental offices.

**CONCLUSION**

The dentists are highly exposed to occupational risk factors which affect them physically, mentally and emotionally. Dentists’ musculoskeletal pathology is an significant work related challenge which must be controlled by applying efficient ergonomic requirements and a healthy lifestyle.

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