

Relationships of Work-Related Upper Limb Musculoskeletal Disorders in Dental Jobs

¹Freshteh Osmani and ²Roghaye Farhadi Hassankiadeh

¹Infectious Disease Research Center, Birjand University of Medical Sciences, Birjand, Iran and ²Department of Biostatistics and Epidemiology, School of Public Health, Kermanshah University of Medical Sciences, Kermanshah, Iran

Abstract: Background: Upper limb musculoskeletal disorders are a health problem among in dental jobs. The aim of the study was to investigate of upper limb musculoskeletal disorders among dental jobs. **Methods:** A cross-sectional study was carried out among 190 in dental jobs of in Tehran cities of Iran in 2016. A modified Nordic questionnaire with interview was used to collect data on individual characteristics and musculoskeletal disorders, Univariate analyses and multiple logistic regression analysis were then performed. **Results:** In this study dental jobs were participated with age (mean \pm SD) 33.56 \pm 9.33 yrs., duration of employment 10.19 \pm 8.85. Prevalence rate of reported upper limb musculoskeletal disorders in each body site was 72.4% in previous 12-month. The most prevalent musculoskeletal complaints was neck pain (33.3%). Significant relations were found between occurrence of upper limb musculoskeletal disorders and age, gender, heavy work (P-value<0.05). **Conclusion:** For important action in reduce Upper limb musculoskeletal disorders, design station works by ergonomics of standards and exercise often work are suggested.

Keywords: Limb Musculoskeletal Disorders, Dental Jobs.

INTRODUCTION

Musculoskeletal disorders mean pain and injure muscular and skeletal (1). In Upper limb musculoskeletal disorders is a major health problem in the world and common health problem among health care workers (1). Work related upper limb musculoskeletal disorders (MSDs) have a multifactor etiologic that includes not only physical stressors but also psychosocial risk factors (2). In clinical laboratory, microscope workers are exposed to continuous static muscular work and an increased risk of upper limb musculoskeletal disorders in the neck, shoulder and upper extremities (3-4). Several work-related psychosocial factors introduced in many studies includes job demand, stress at work, lack of support, and pressure time (5-7). Study Forouzan (2015) showed, Assessment of the physical status of the subjects showed that 82.8% of subjects were at high risk of musculoskeletal disorders. The majority of musculoskeletal pains were in the neck (55.9%) and the shoulder (43.8%). Moreover, 68.9% of the subjects had experienced pain at least once over the last year. Significant relationships were observed between musculoskeletal pain and daily work hours and number of patients, but the pain was not significantly associated with BMI and experience (8). Results 88% of the dentists reported at least one musculoskeletal disorder and 83.8% suffered from neck pain. In the multivariate analyses, working hours per day were associated with neck pain (9).

The first aim of this study was to investigate the prevalence of upper limb musculoskeletal disorders (MSD) among dental jobs. Another aim was to examine the relation between personal characteristics, psychosocial factors and complaints of neck, shoulder, and hand/wrist.

MATERIALS AND METHODS

A cross-sectional epidemiological study was conducted among 190 personnel of upper limb musculoskeletal disorders among dental jobs of Iran in 2016. Upper limb musculoskeletal disorders (MSD) complaints in different

body regions neck, shoulders, hand/wrist during work were ascertained by the standardized Nordic questionnaire, for example:

[1] The socio-demographic characteristics (age, gender, BMI, marital status, physical activity, smoking, level of education, duration of employment.)

[2] Psychosocial factors (stress at work, job control, pressure time, communication, bonus,). For continuous variables and χ^2 test for categorical variables. Subsequently, all independent variables that showed significant associations with a p value <0.05 in at least one of the body regions, were included in a multivariate logistic regression model. All analyses were conducted model, due to its high correlation with age because of multi-collinearity problem. The statistical analysis was done according to the SPSS 16.0 statistical programmer and the level of significance was set up at P < 0.05.

RESULTS

In this study 190 dental jobs were participated with age (mean \pm SD) 33.56 \pm 9.33 yrs, duration of employment 10.19 \pm 8.85 yrs and work hours per day 8.37 \pm 2.36 (Min=4, Max = 18 hours).

This result shows the basic characteristics of the study population. 72/4/% of the respondents reported at least one musculoskeletal complaint in previous 12-month. %64.7 reported less than 3 and 35.3% reported more than 3 musculoskeletal complaints. The highest prevalence rates were found neck (33.3%) and shoulder (24/4%).

Table 1: Prevalence of musculoskeletal complaints among dental jobs.

Disorders	n/N	%
Trunk		
Neck	52/156	33/3%
Shoulder	38/156	24/4%
Arms		
Elbow	11/156	7/1%
Wrist	25/156	16%

*Address correspondence to this author at the School of Medicine - Centro Universitario Municipal de Franca (Uni-FACEF), Sao Jose, Brazil; Email: drmbarbosa@gmail.com

Table 2: Risk factors associated with the presence of upper limb musculoskeletal disorders among in dental jobs.

Risk factors	Neck		Shoulders		Hand/wrist	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Age	1.061	(1.015–1.110)	1.040	(0.989–1.094)	1.071	(1.005–1.141)
Gender	2.49	(0.958–6.51)	5.353	(1.690–6.955)	4.282	(10.76–17.036)
Heavy work at home	0.460	(0.178–1.191)	0.736	(0.250–2.168)	0.120	(0.21–0.701)
Daily work-shift in hours	1.145	(0.961–1.364)	1.147	(0.937–1.404)	1.081	(0.837–1.395)

Table 1 presents the 12-month prevalence of complaints of neck, shoulder and hand/wrist. In this study the Statistical associations between symptoms in each body region and independent variables age, gender, physical activity, level of education, look after children under 4 yrs., heavy work at home.

Between these Individual and psychosocial factors age, gender, heavy work at home, daily work-shift in hours showed significant associations in at least one of the body regions, with a p value <0.05. Subsequently, all of these were included in a multivariate logistic regression model. In multiple logistic regression analyses (Table 2) all statistical associations were confirmed. Age (P-value=0.030), gender (P-value=0.014), heavy work at home (P-value=0.013), associated with any of the musculoskeletal complaints. Gender (P-value=0.049), was associated with pain. Age (P-value=0.10) associated with neck pain. Gender (P-value=0.004) and low control (P-value=0.014) were associated with shoulder pain. Heavy work at home (P-value=0.019) associated with hand/wrist pain.

DISCUSSION

Although in many research psychosocial factors have been described in healthcare research as important risk factors for upper limb musculoskeletal disorders only one study on dental jobs was performed which aimed at investigating such factors, and no significant association was found (10). But in our study significant association was found between lower control at work and hand/wrist, shoulder and musculoskeletal complaints at anybody regions. Also communication at work identified as a significant risk factor for leg pain among dental jobs. In study by to monotonous work, high perceived work load, and time pressure, data also suggest that low control on the job and lack of social support by colleagues are positively associated with musculoskeletal disease (10-11). In research among Iranian nurses and other research the results indicated that high prevalence of self-reported musculoskeletal symptoms at neck, wrist/hand reports, was associated with psychosocial factors and specifically stress (5-7), but in present study no association was found with stress.

CONCLUSION

The study results showed prevalence of musculoskeletal complaints in dental jobs is high and low control was identified as risk factor for all upper limb musculoskeletal disorders except neck pain The risk of upper limb musculoskeletal disorders can be greatly reduced through effective intervention strategies management measures, education training programs about safe work practices, improved psychosocial factors and ergonomically designed workplace and next study find

relation economics ergonomic by reduce musculoskeletal disorders (12-13).

For this work, design study cost musculoskeletal disorders and invest ergonomic (12-13).

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Author Contribution

RF: data collection and compilation of the paper
 Both authors: compilation & careful editing and revision of the paper
 FO: data collection and assistance in compilation of the paper
 RF, FO: performed the statistical analysis and drafted the manuscript. All authors read and approve the final version of manuscript.

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Availability of Data and Materials

The datasets during and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

This trial was registered in Iranian Registry of Clinical Trials (Irct ID: IRCT2014051117649N1). The study was authorized to use human subjects by the university human research ethics committee. Written informed consent was obtained from each subject.

Consent for Publication

Not applicable.

Competing Interests

The authors declare that they have no competing interests

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