

Survey of The Prevalence of Job Related Musculoskeletal Disorders Among Dentists of Tabriz City

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ABSTRACT

Introduction: Preventing occupational stresses of the body is a critical purpose that could guarantee the physical and functional health of dentists. Present study was aimed to assess the prevalence of occupational related musculoskeletal disorders among dentists of Tabriz city.

Method and material:

Nordic musculoskeletal disorders questionnaire was distributed among dentists of Tabriz city. Nordic questionnaire was conveyed by researchers to the dental office and was asked dentist to give appropriate answer to questions. Data were analyzed using descriptive measurements (mean \pm standard deviation, percent and frequency). Logistic regression test was utilized to assess the association of characteristics of participants with their level of musculoskeletal disorders.

Results:

The result of the study showed that 54.8 % of dentists expressed signs and symptoms of musculoskeletal disorders. There were also a significant relationship between musculoskeletal disorders of the wrist and shoulder and overall years of work experience. ($p=0.011$, $p<0.05$). Prevalence of musculoskeletal disorders was significantly higher in high age. ($p=0.015$, $p<0.05$), and among general dentists was significantly higher than specialists ($p=0.032$, $p<0.05$)

Conclusion:

The result of the current study showed that overall prevalence of musculoskeletal disorder is remarkable but, fortunately it is not as high as the data which is reported in some literature.

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Introduction

Musculoskeletal disorder (MSD) is an injury to musculoskeletal system including muscles, tendons, ligaments, nerves, discs, blood vessels, etc. This injury may be caused by sudden event or a cumulative trauma [1]. MSD is one of the most common causes of work related disabilities among dentists in developed and developing countries [2]. Rampancy of this disorder leads increasing health care costs, reducing power and quality of work and premature retirement [2, 3]. Prevalence of MSD among dentists differs from 63 to 93% worldwide [4]. Inappropriate postures, excessive pressure on back, neck and shoulder and psychological stresses are risk factors for MSD and often cause pains and impair functional abilities of dentists suffering from disorder [5]. In the questionnaire based study by Marshal et al, 442 Australian dentists were assessed for MSD disorders. The result of the survey showed that 82% of participants have symptoms of MDS. In similar studies which carried out in some of the Iran's cities, high prevalence of MSD symptoms was reported. [6, 7, 8]

According to the influence of MSD on quality of life and career of dentists, preventing and early treatment of these disorders are very important. In this regard, the first step is to estimate the prevalence of the problem among dentists. Present study was aimed to assess the prevalence of occupational related musculoskeletal disorders among dentists of Tabriz city

Methods and Materials

This cross-sectional questionnaire-based survey was approved by ethics committee of Tabriz University of medical sciences and carried out from June 2015 to May 2016. The questionnaire was distributed among dentists of Tabriz city, included in the study by cluster sampling method.

The inclusion criteria consist of the dentists who had at least 3 years of work history. Dentists who had work history less than three years; previous history of Physical trauma caused by disease and dentists who did not give informed consent was not included in the study.

Nordic musculoskeletal disorders questionnaire is one of the most comprehensive questionnaire utilized to measure musculoskeletal pain and disorder. Reliability and validity of questionnaire had been confirmed by different studies and also it's Persian translated manuscript had been validated. [9]

The questionnaire addresses two main sections. In the first chapter demographic and individual characteristics of participants were ascertained. Age, weight, total height, history of working based on number of years, educational status, attending in post graduate specialty program, attending in exercise activity, being left or right hand and duration of work per day were reported by dentists.

The second section of questionnaire comprises of independent chapters which evaluates musculoskeletal disorder and pain of back, neck, shoulder and hand/wrist.

Overall profile of Nordic questionnaire was designed in a way that assessed musculoskeletal disorders. The questionnaires was conveyed by researchers to the dental office and was asked dentist to give appropriate answer to question if they were agree to attend in the study.

Data were analyzed using descriptive measurements (mean \pm standard deviation, percent and frequency). Logistic regression test was utilized to assess the association of characteristics of participants with their level of musculoskeletal disorders. Prevalence odds ratio with confidence interval of 95% was used to measure association. Univariate logistic regression test was used to evaluate potential risk factors of musculoskeletal disorders. P-value number less than 0.05 was considered significant. All statistical analysis was performed and calculated in SPSS 16.

Results

Among 144 dentists attended in the study, 38 participants (26%) were woman and 108 (74%) were men. Average age , weight and height of participants were 42.4 years, 75.6 kg and 170.8 cm respectively.126 (86/9%) of dentists were general dentists and 19 (13.1%) were specialists. 38 (26%) of dentists attended in regular exercise training program while 108 (74.2%) did not attending in programs. Average daily working hours in the dentists surveyed in the study were recorded approximately 7/4 hours.

The result of the study showed that 54.8 % of dentists expressed signs and symptoms of musculoskeletal disorders. Incidence of musculoskeletal disorders in different parts of the body is shown in figure 1.

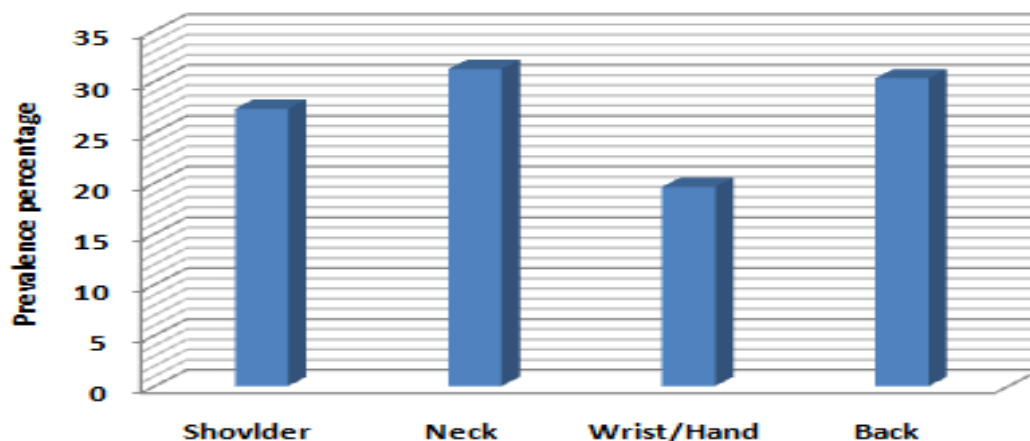
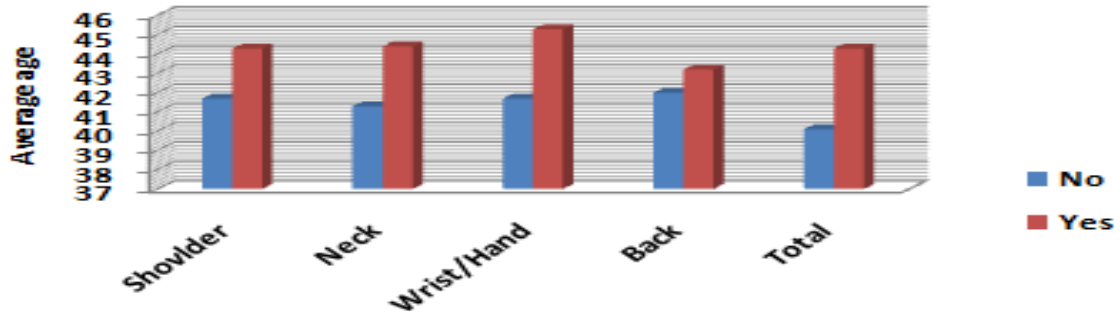


Figure 1. prevalence of musculoskeletal disorders in different parts of body

A significant relationship was observed between age and overall musculoskeletal disorders. prevalence of musculoskeletal disorders was significantly higher in high age ($p=0.015$, $p<0.05$). But relationship between musculoskeletal disorders of the special part of the body and age did not reach to significant level.



There were also a significant relationship between musculoskeletal disorders of the wrist and shoulder and overall years of work experience ($p=0.011$, $p<0.05$). Dentists with remarkable disorders in wrist and shoulder showed high working experience.

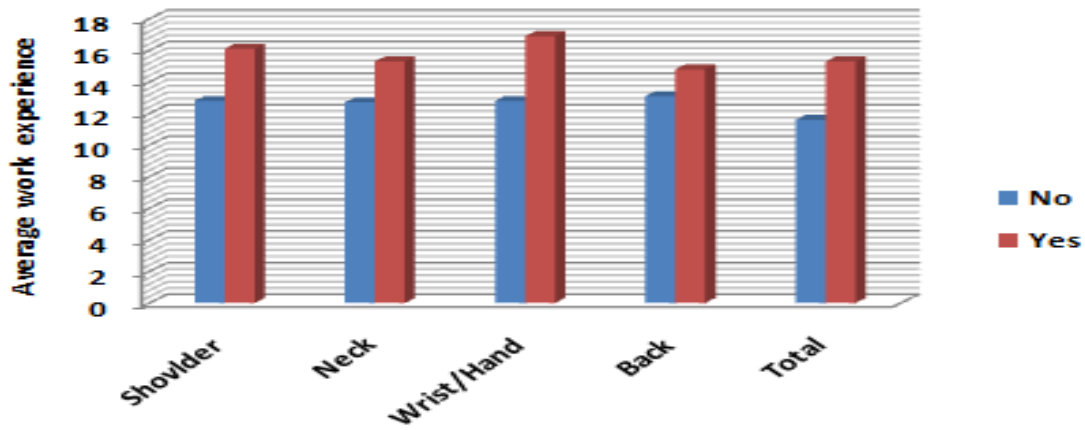


Figure 3 . Average work experience and presence or absence of musculoskeletal disorders in different organs

No significant difference was observed between educational degree of participants (general dentists vs specialists) and prevalence of musculoskeletal disorders of the especial organ of the body. However overall prevalence of musculoskeletal disorders among general dentists was significantly higher than specialists. ($p=0.032$, $p<0.05$)

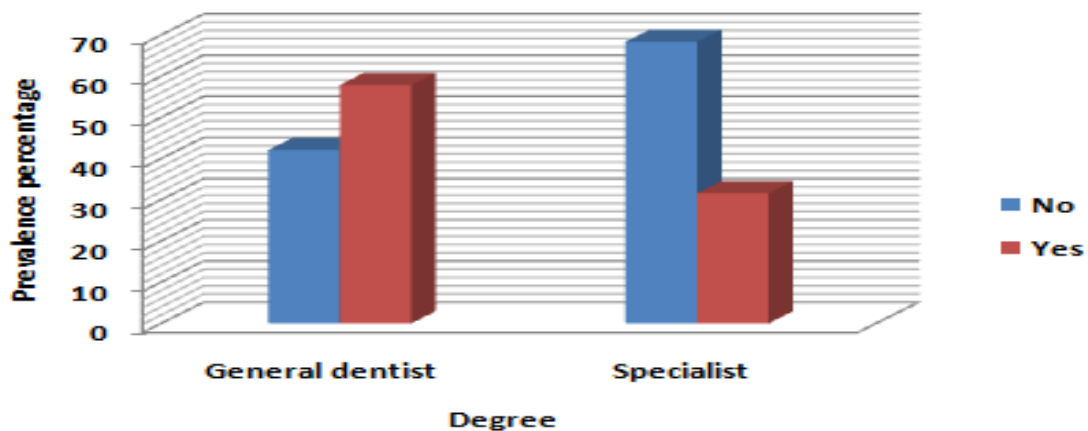


Figure 4, prevalence of musculoskeletal disorders among general dentists vs specialists

The results of this study showed that dentists had serious problem in doing daily activities, significantly suffering from neck, shoulder and back ($p<0.05$).

The relationship between the "presence or absence of musculoskeletal disorders" and "weight", "sex", "height", "work experience", "right or left-handed," "average hours of work", "regular exercise did not reach significant level.

Discussion

A cross sectional self-perceived questionnaire-based study was conducted to evaluate the prevalence of MSDs. Overall prevalence of MSDs among dentists was 54%. High prevalence of MSD between dentists is well documented. Most studies in other parts of world reported a notable prevalence of musculoskeletal disorder [10-11]. A study of dentists in Australia, a prevalence of 64% was reported and in southern Thailand 78% of dentists experienced signs and symptoms of MSD pain in past 12 month [11, 12]. In the recent study prevalence of MSDs in different body parts was also evaluated. Neck (30%) and by a subtle difference lower back (29%) was determined to be the most prevalent parts of the body that showed musculoskeletal disorders. In other studies, dentists reported numerous prevalence of neck and back complaints. In the United States, Australia and Poland prevalence of lower back disorder seems to be considerably higher than recent study with respective percentage of 57%, 60% and 54% [13-14].

Similar trend of high neck complaint was observed in Australia (57%) and Poland (56%) [14, 15]. However low prevalence of MSDs was also noted. For example prevalence of neck pain among US dentist and dental hygienist was 28% which is in agreement to this study [13]. The prevalence of shoulder complaints was 28%. Hand/wrist determined to be the lowest prevalence with respective 18%. While some studies reported low occurrence of hand/wrist complaints (34%) and shoulder complaints (28%) [16,18], others reported higher prevalence in hand/wrist (64%) and shoulders (53%)[13-16].

The result of recent study showed that general dentists experienced more signs and symptoms of MSDs compared to specialists. General dentists often perform different dental procedures which numerous occupational hazards may be exerted to their body parts compared to specialists which often concentrate their activity in their own field of specialty. On the other hand learning the principles of correct body position during different dental procedures may be more time-consuming for general dentist. Dentists suffered from neck, back and shoulder pain, often experienced significant problems on doing their daily activities but MSDs of other body parts had not significant effect on their daily functional activities.

In the current study, dentists with higher working experience reported higher prevalence of hand/wrist and shoulder pain. Some studies noted that cumulative effect of these occupational stresses resulted in occurrence of such complaints [17]. However others noted that experienced dentists often learn to adjust their working postures and prevent from suffering trauma [18].

Since Nordic questionnaire is a self-reported survey of assessing musculoskeletal disorders, precise results can be obtained by performing physical examination of responders. However because it is inexpensive and less time-consuming, it is an accepted method for evaluation of MSDs. [19]

Many studies stated that dental practice necessarily involves frequent, ongoing mechanical compromises to job performance and this may result in muscular imbalance, neuromuscular inhibition, and pain and dysfunction mainly due to cumulative micro trauma and repetitive use of awkward positions. As postures outside the neutral posture can cause MSD problems, maintaining a neutral and basic operating posture which permits relaxed muscles and well-balance is vital. [20-21].

Repeatedly leaning towards the patient can cause strain and overexertion in the lower back extensors [22]. Appropriate seating and positioning according to the patient is crucial. On the other hand,

Considering appropriate training during educational course seems to be important and maintaining standard ergonomics must be emphasized in all educational and practical courses [21].

Conclusion

The result of the current study showed that overall prevalence of musculoskeletal disorder is remarkable but, fortunately it is not as high as the data which is reported in some literature which that was beyond 70%. However according to the population included in the study, the current prevalence is reminding. Given the different results reported in the literature, it is necessary to conduct more concrete studies which include broad number of dentists.

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