

Prevalence of Musculoskeletal Pain among Dentists in Shiraz, Southern Iran

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Abstract

Background: Occupational diseases are worldwide. Some dentists believe that they are at a higher risk for development of some musculoskeletal disorders for the postures they should have during work.

Objective: To determine the prevalence of musculoskeletal pain and their associated occupational factors among dentists from Shiraz, southern Iran.

Methods: In a cross-sectional study, 90 dentists of 375 members of Fars Dental Association were selected at random and asked to complete a self-administered questionnaire. The questions were about personal characteristics, job history, some work characteristics mostly pertaining to dentistry including physical risk factors at work plus any report about the occurrence of low back pain (LBP) and neck pain.

Results: Of the 90 questionnaires distributed, 82 (91%) were completed and returned for analyses. Of 82 studied dentists, 42 (51%) were female (mean±SD age of 36±6.6 yrs) and 40 (49%) were male (mean±SD age of 39.4±8.7 yrs). 27 (33%; 95% CI: 23%–43%) dentists had LBP; 23 (28%; 95% CI: 18%–38%) had neck pain; and 10 (12%; 95% CI: 5%–19%) had both. Of these 60 dentists who had pain, 27 (45%; 95% CI: 32%–58%) had radicular pain and 28 (47%; 95% CI: 34%–59%) felt numbness and/or paresthesia in their limbs. 33 (55%; 95% CI: 42%–68%) of 60 dentists with musculoskeletal complaint could not identify any factors for their pain. The prevalence of neither LBP nor neck pain were significantly different between men and women. The place of work and the prevalence of complaint of musculoskeletal pain were also not significantly correlated. None of the studied work-related risk factors had a significant association with the complaint of musculoskeletal pain.

Conclusion: Although the prevalence of LBP and neck pain is high among dentists, we could not find any correlation between the studied work-related risk factors and musculoskeletal disorders. We concluded that dentistry, *per se*, is probably not an initial factor for development of neither LBP nor neck pain, but it could accentuate the symptoms.

Keywords: Musculoskeletal diseases; Occupational health; Low back pain; Neck pain; Dentists; Prevalence; Epidemiology

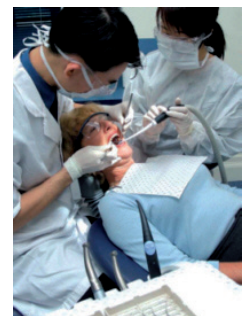
Introduction

Occupational health hazards are common.^{1,2} With promotion of industrial life, the prevalence of

musculoskeletal disorders have increased markedly during the past decades.³ One reason for this increase is work-related activities.⁴ The most complaints in workers

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TAKE-HOME MESSAGE

- The prevalence of musculoskeletal pain is high among dentists.
- Most of dentists complaining of pain, get no treatment or only use analgesics for controlling their pain.
- Dentistry is not *per se* an ignition for development of neck and low back pain. Rather, it would accelerate the process and thus, increase the severity of symptoms.

are low back pain (LBP) and neck pain.^{5,6}

Many factors at work could predispose people to develop musculoskeletal disorders. Lifting or carrying loads, whole-body vibration, having a static posture for a long time, and frequent bending and twisting have been proved to be the physical load risk factors consistently associated with work-related back and neck disorders. There is evidence for a causal relationship between low back and/or neck injuries and disorders with workplace exposures to forceful exertions, awkward posture, and vibration. Taking into account all these, dentists who are exposed to such deleterious work-related factors, may be at a higher risk of developing LBP and neck pain.^{7,8} Many dentists believe that overstrained and awkward back postures, taking a static posture for a long time, and frequent bending neck during their work, expose them to develop several musculoskeletal disorders such as LBP and neck pain.

In most studies, only a few of risk factors have been taken into consideration.^{9,10} This makes it difficult to figure out the impact of specific risk factors since most studies did not control appropriately for so many coexisting risk factors. In Iran,

only a few studies have been conducted on the simultaneous occurrence of different musculoskeletal complaints and their interrelationships.^{11,12} We therefore, conducted this study to determine the prevalence of LBP and neck pain and its associated factors in dentists.

Materials and Methods

There are 375 dentists in Fars Dental Association. Using a simple random sampling method, 90 dentists were selected and asked to complete a self-administered questionnaire. After two weeks, 82 (91%) of the 90 dentists completed and returned the questionnaire. The questions were about age, gender, job history, some work characteristics mostly pertaining to dentistry including physical risk factors at work plus any report about the occurrence of LBP and neck pain, place and duration of employment, number of patients visited per month, time and duration of work per day, design and arrangement of the patient's and dentist's chairs, the posture of body while working, awkward working postures in which the back is bent or twisted, prolonged sitting per each work session, various types of treatments provided each day (surgery, root canal, and filling or tooth extraction), whether looking consistently in the dental mirror, and the place where the dentist sits while working on the patient (above or side of the patient). Before the start of the study, the questionnaire was given to four dentists and all of them approved its relevance. Therefore, the questionnaire had face validity.

Part of the questionnaire was allotted to LBP and/or neck pain and included questions about presence of LBP and/or neck pain; duration of musculoskeletal complaint; whether the pain has begun before the participant works as a dentist; factors aggravating pain (categorized as "sudden rotation of cervical or lumbar spine,"

Table 1: Characteristics of pain in the studied dentists

Characteristics of Pain	LBP* (n=27)	Neck Pain (n=23)	LBP and Neck Pain (n=10)
Factors aggravating			
Carrying heavy objects	9 (33%)	1 (4%)	6 (60%)
Direct trauma	4 (15%)	1 (4%)	1 (10%)
Sudden rotation	1 (4%)	3 (14%)	1 (10%)
Unknown	13 (48%)	18 (78%)	2 (20%)
Severity			
Mild	13 (48%)	9 (40%)	6 (60%)
Moderate	10 (37%)	10 (42%)	3 (30%)
Sever	4 (15%)	4 (18%)	1 (10%)
Treatment			
No treatment	12 (44%)	11 (48%)	7 (70%)
Drugs	8 (30%)	7 (31%)	2 (20%)
Physiotherapy	6 (22%)	4 (17%)	1 (10%)
Exercise	1 (4%)	1 (4%)	0

*LBP: Low back pain

“direct trauma to the neck, back or head,” “carrying heavy objects,” and “unknown factors”); the frequency of experiencing pain (categorized as “always,” “sometimes,” and “during work day”); complaint in the upper or lower limb (e.g., feeling pain, paresthesia, and numbness). Severity of pain was measured using a ten-point visual analog pain scale: the results were categorized as “mild” (score: 1–3), “moderate” (score: 4–7) and “severe” (score: 8–10). The participants were also asked if they received any treatments. Their responses were categorized as either “no treatment,” “drug,” “exercise,” or “physiotherapy.”

Statistical analysis

Data were coded and analyzed by SPSS® for Windows® ver 10. The mean of two normally-distributed continuous variables was compared with *Student’s t* test. Frequencies were compared with χ^2 or

Fisher exact test, when appropriate.

Results

Eighty-two of 90 dentists completed and returned the questionnaires for analyses, hence a response rate of 91%. Of 82 dentists, 40 (49%) were male (mean±SD age of 39.4±8.7 yrs) 42 (51%) were female (mean±SD age of 36±6.6 yrs) (p=0.049). The mean±SD service time was 12±5.5 years in men and 11±8.7 years in women (p=0.538). Pain has begun after employment as a dentist in 66 (80%; 95% CI: 72%–89%) dentists. Fifty-nine (72%; 95% CI: 62%–82%) dentists had more pain during work.

Twenty-seven (33%; 95% CI: 23%–43%) dentists had LBP; 23 (28%; 95% CI: 18%–38%) had neck pain; and 10 (12%; 95% CI: 5%–19%) had both. Of these 60 dentists who had pain, 27 (45%; 95% CI: 32%–58%) had radicular pain and 28 (47%; 95% CI: 34%–59%) felt numbness

Table 2: Distribution of risk factors studied in dentists with and without pain.

Factor	With Pain Complaint (n=60)	Without Pain (n=22)	p value
Center of employment			
Governmental	8 (13%)	4 (18%)	0.582
Private	17 (29%)	4 (18%)	0.407
Both	35 (58%)	14 (64%)	0.951
Visits per month			
Visit	105±50	96±65	0.508
Surgery	41±21	33±19	0.121
Root canal	44±21	39±22	0.348
Filling or extraction	120±70	91±59	0.088
Duration of work per day (hrs)	6.8±3	7.2±4	0.627
Length of work per session (hrs)	1.7±1	1.8±1	0.689
Attention to suitable posture	35 (58%)	13 (59%)	0.951
Proper arrangement of chairs	52 (87%)	20 (91%)	0.603
Position of dentist relative to patient			
Right side	48 (80%)	18 (84%)	0.854
Left side	2 (3%)	1 (3%)	0.796
Above the head	10 (17%)	3 (13%)	0.739
Method of looking			
With mirror	10 (16%)	5 (23%)	0.283
Without mirror	19 (32%)	5 (23%)	0.702
Both methods	31 (52%)	12 (54%)	0.817

and/or paresthesia in their limbs. Thirty-three (55%; 95% CI: 42%–68%) of 60 dentists with musculoskeletal complaint could not identify any factors for their pain. The remaining 27 participants attributed their pain to carrying heavy objects, di-

rect trauma and sudden rotation. Most of the participants got no treatment or only used analgesics for controlling their pain (Table 1). None of the studied risk factors had significant effect on the prevalence of musculoskeletal pain (Table 2).

Discussion

Although we found a high prevalence of LBP and neck pain in dentists, we could not find any correlation between the studied work-related risk factors and development of musculoskeletal disorders. The prevalence of occupational LBP and neck pain in dentists was reported between 37% and >55%.¹³⁻¹⁷ So far, many factors for development of musculoskeletal pain have been studied. However, we studied additional variables that may cause musculoskeletal disorders. To the best of our knowledge, there is scarce information about the epidemiology of musculoskeletal disorders in our region. Some studies showed that work-related complaints are higher in ophthalmologists, factory workers and those live in rural areas.^{11,12,18}

It has been proven that postures which may exert a higher pressure on intervertebral disk as well as prolonged spinal hypomobility are among important factors leading to degenerative changes in the lumbar spine and subsequent LBP. Since such postures are not uncommon in daily practice of a dentist, some authors believe that they are at a higher risk of developing musculoskeletal disorders than other job groups—nonetheless, our results showed that the prevalence of LBP and neck pain in dentists is even lower than other study groups.^{11,12,18} Furthermore, there is a relationship between prolonged, static (motionless) muscle contractions and muscle ischemia/necrosis. Weakness in those muscles of the trunk and shoulder which maintain body posture (posture muscles) may lead to poor operator posture. As muscles adapted by lengthening or shortening to accommodate these postures, an imbalance between the forces exerted by muscles may result in structural damage and pain. Muscle strengthening can therefore, prevent the development of such disorders.

We found that the majority of dentists did not perform any specific exercises to prevent or lessen the pain of their back and neck. Moreover, only 19% of dentists with pain underwent physiotherapy to get rid of pain (Table 1).

Twenty-eight percent of our dentists complaining of pain received medications for relieving their pain. Al Wazzan, *et al*, in their study, reported that only 37% of those suffering back and neck pain sought medical treatment and concluded that these symptoms among dental personnel are not severe enough to ask for medications.¹⁹ Only 11% of our studied dentists complained of severe pain; the remaining had none, mild or moderate pain. This might be a reason why although the prevalence of complaint from musculoskeletal disorders in dentists is high, they usually get no medications for it.

The prevalence of the pain and discomfort, obviously, increases by advancement of age and service time of the employees.

Considering that the distribution of work-related risk factors did not significantly differ between those dentists with and without pain complaint, we concluded that dentistry is not *per se* an ignition for development of neck and low back pain. Rather, it would accelerate the process and thus, increase the severity of symptoms.

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Conflict of Interest: None declared.

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