

Original Research Article

Prevalence of musculoskeletal disorders and psychosocial aspects among dentists - A survey

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Abstract

Background: Musculoskeletal symptoms or disorders among dentists have been major concern in recent years. The most frequent injuries occur in spine (neck and back), shoulders, elbow and hands. In order to summarize, the study describes mainly about the prevalence of work related musculoskeletal disorders among dentists, percentage of affection and prevalence of psychosocial aspects among dentists.

Aim and objectives: The aim of the study was to find prevalence of musculoskeletal disorders and psychosocial aspects among dentist and among male and female dentists, among age groups (years) of dentists, between right handed and left handed dentists, between four categories of body mass index among dentists, dentists working in private practice, in academics and in both Private practice and academics, under- graduate and post- graduate level dentists between three categories of clinically experienced dentists between dentists working with assistant and without assistant and to find the prevalence of psychosocial risks among dentists.

Materials and methods: To determine prevalence of musculoskeletal disorders by using standardized Nordic questionnaire for analysis of musculoskeletal symptoms and to determine prevalence of psychosocial aspects by using job content questionnaire.

Results: Results of the study revealed that there is prevalence of work related musculoskeletal disorders among dentists. Among 463 dentist's, total percentage of musculoskeletal affection was

90.7%. The percentage of affection in specific body areas are as follows neck pain 73.8%, Low back 70%, shoulder 62.4%, upper back 23%, elbow 16.7%, hips 14%, ankle 11.2%, knee 7.6%. The prevalence of psychosocial risk was 68%.

Conclusion: From this survey, it can be concluded that there was high prevalence of musculoskeletal and psychosocial risk factors among dentists. These work related musculoskeletal disorders can be prevented by correcting awkward posture when working and taking appropriate ergonomic measures.

Key words

Dentists, Standardized Nordic questionnaire, Job content questionnaire, Musculoskeletal disorders and psychosocial aspects.

Introduction

The workplace is a hazardous environment. The history of occupational hazard awareness can be traced back to the 18th century when Bernardino Ramazzini, who is referred to as the ‘Father of Occupational Medicine’, recognized the role of occupation in the dynamics of health and diseases [1]. Studies have shown that dentists report more frequent and worse health problems than other high risk medical professionals [1]. The term musculoskeletal disorder (MSD) describes a series of micro traumas of bones, joints, ligaments, muscles tendons, bursae, blood vessels and nerves that accumulate in the body and may develop into more serious injury [2]. Dentists assume static postures at work which require more than 50% of the body’s muscle to contract while resisting gravity such prolonged static postures (PSP) results in pain, injury, or career ending MSD. MSD has an impact not only on the physical but also on the psychological and social aspects of the practitioners [3]. So this study was conducted to find prevalence of musculoskeletal disorders and psychosocial aspects among dentists.

Materials and methods

The study was approved by the Ethical committee. This survey was conducted in dental Conference, dental colleges as well as in private, non private dental clinics and through mails. A cross-sectional study consisting of 420 dentists was carried out as per the Inclusion Criteria and the Exclusion Criteria to determine the prevalence of work related musculoskeletal disorders and psycho-social aspects among

dentists. The total duration of the study was 6 months. Standardized Nordic Questionnaire for Analysis of Musculoskeletal Symptoms” is a valid and reliable tool for assessing Work Related Musculoskeletal Disorders (WRMSDS) [4-7]. The job content questionnaire [8] was used to diagnose psychosocial working conditions. Sampling characteristics- A total of 580 dentists were approached in the conference, as well as private clinics and through mails. 510 provided consent for their participation in this study. 510 questionnaires were completed (response rate of 87.93%). After checking for accuracy, during the process of data mining and extraction, 47 questionnaires were excluded (23 incomplete; 24 multiple responses to single response items). Thus a final 463 questionnaires (response rate of 90.78%). were used for analysis. The method was outlined in **Figure – 1**.

Results

Prevalence was analysed by calculating percentage from the questionnaires of the study population. Statistical analysis was done using Microsoft excel 2007.

In gender distribution, there were 43.8% of males and 56.2% of females. The total sample was 420 (**Table – 1**).

Prevalence of musculoskeletal complaints in study participants

All 420 dentists had at least one work related musculoskeletal symptom in the previous year with an overall period prevalence rate of 100%. The region of symptoms was Neck (73.8%),

Shoulder (62.4%), Elbows (16.7%), Wrists (64.0%), Upper back (23.1%), Low back (70.0%), Hips (14.0%), Knees (7.6%), and Ankles (11.2%) as per **Table - 2**.

Table - 1: Distribution of Dentists according to gender.

Sex	No. of Dentists	% of Dentists
Male	184	43.8%
Female	236	56.2%
Total	420	100%

Table - 2: Prevalence of musculoskeletal symptoms in different body regions among dentists.

Regions	Number	Percent
Neck	310	73.8%
Shoulder	262	62.4%
Elbows	70	16.7%
Wrists/Hands	269	64.0%
Upper back	97	23.1%
Low back	294	70.0%
Hips	59	14.0%
Knees	32	7.6%
Ankles/Feet	47	11.2%

Comparison between anthropometric characteristics and prevalence of musculoskeletal complaints Gender

Male dentists had greater prevalence of musculoskeletal symptoms in low back, n = 154/184 (83.69%), Neck n = 139/184 (75.54%), wrist/hand, n = 51/184 (27.71 %), regions while the female dentists reported symptoms greater in neck, n = 171/236 (72.45%) Low back, n = 140/236 (59.32%) wrist/hand, n = 58/236 (24.57%) regions (**Table - 3**).

Prevalence of Psychosocial risk among dentists was as per **Figure - 2**.

Discussion

This study examined a high prevalence of MSD among dentists. This has been attributed to

prolonged static postures, repetitive movements, use of force and vibrations, which are considered to be risk factors for MSD. In India the prevalence of MSD among dental practitioners is not well documented. Hence this study was undertaken to determine the prevalence and distribution of MSD among dental practitioners. The instruments used in this study are JCQ [8] and SNQ [9]. This study examined the prevalence and distribution of musculoskeletal complaints among a cross section of Indian dentists' population. This study observed the highest response rate among surveys done on dentists compared to earlier studies. Earlier reported response rates ranged from 46% to 69% [10-12]. The prevalence rate observed in this study was highest at 100% similar to findings of Lalumandier, et al. [13] which was done on a mixed population of dental personnel, dentists and dental auxiliaries. Recent systematic review by Hayes, et al. [14] found upper back to be commonly affected among dentists, whereas in this study it was found Neck (73.8%) was very common, followed by low back (70.0%), and then by wrist/hand (64.3%) this pattern of distribution was similar to studies from Queensland [14] and New Zealand [15]. The present study Dentists reported wrist and hands MSD more frequently after Neck and Low back. This might have been due to repetitive scaling tasks performed daily as Dentists. Similarly, female dentists in Brazil and Lithuania reported a higher incidence of MSD compared with males [16, 17]. Studies have also shown that female dentists rate their MSD symptoms worse than male dentists [18] this may be concerning as the dental hygiene profession is predominantly female. The reason for the notable difference in how females report MSD is unclear. This was attributed to the fact that women were more concerned about their health compared to men and tended to report health problems more often and may pay more attention to their health and well-being, or that they may have a lower pain threshold or are less resistant to constant musculoskeletal tension. Prevalence of MSD among the general population of India showed females to have higher prevalence compared to

the males [19]. The current study revealed difference in prevalence of MSD between male and female practitioners, the prevalence of MSD was found higher in females as compared to males. One of the features of significance in this survey was not only musculoskeletal complaint assessed, but psychosocial aspects as well. This study also examined the prevalence of psychosocial aspects among a cross section of Indian dentists' population. The Prevalence of Psychosocial aspects was 68%. A less satisfactory psychosocial work environment may primarily add to the burden and stress to Dentists. The findings of this study are not only of much interest to dentists and epidemiologists, but to physical therapists as well. Under a bio psychosocial framework, physical therapy had been shown to be a treatment of choice for work related musculoskeletal impairments and physical therapists were successful in managing work related low back pain by the use of physical modalities, exercises and manual therapy.

Table - 3: Prevalence of musculoskeletal symptoms in different body regions among male and female dentists.

Gender	Male	Female
Neck	139	171
Shoulder	45	52
Elbows	10	10
Wrists/hands	51	58
Upper back	50	47
Low back	154	140
Hips	23	36
Knees	13	19
Ankles/Feet	21	26

Summary

In order to summarize, the study describes mainly about the prevalence of work related musculoskeletal disorders among dentists, percentage of affection and prevalence of psychosocial stress among dentists. Among 463 dentist's, total percentage of musculoskeletal affection was 91%. The prevalence of psychosocial risk was 68%. These work related

musculoskeletal disorders can be prevented by correcting the awkward postures when working and taking appropriate ergonomic measures such as monitor distance and height, proper arm and foot support, height of the chair, taking frequent breaks in between and as well maintaining one's body fitness. The study results suggest that effective intervention strategies most likely have to take into account both ergonomic improvements and cognitive-behavioural aspects.

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Figure - 2: Prevalence of Psychosocial risk among dentists.

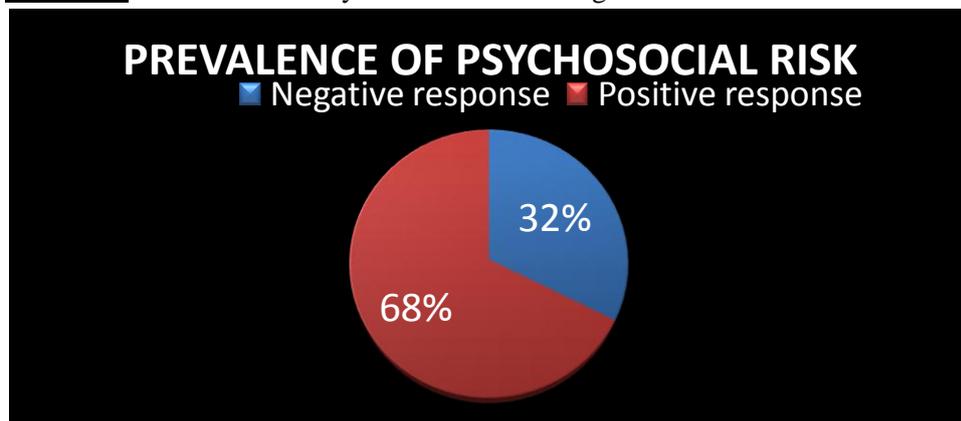
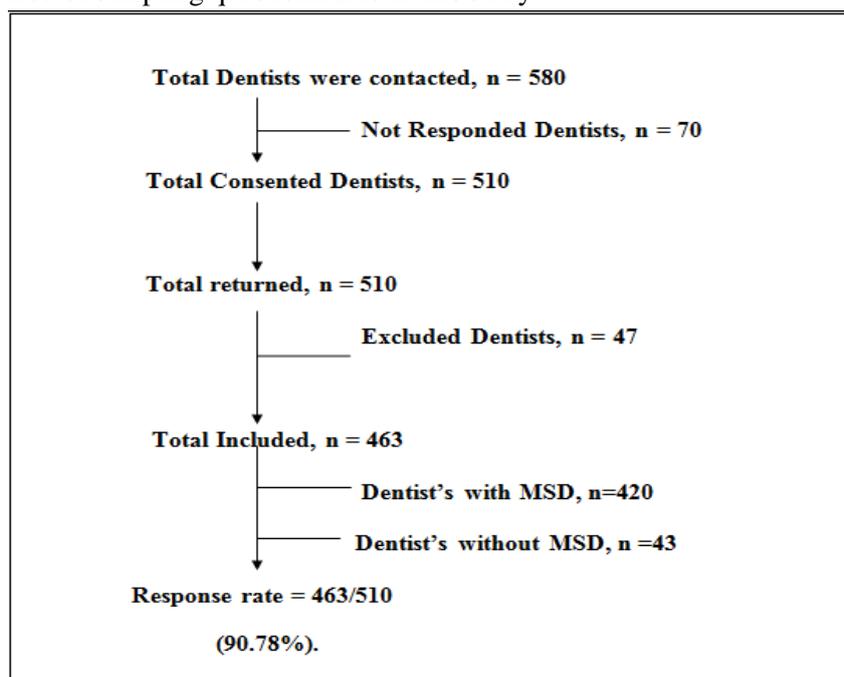


Figure - 1: Method of sampling questionnaires in this study.



Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms

<i>Trouble with the locomotive organs</i>		
<i>Have you at any time during last 12 months had trouble (ache, pain, discomfort) in :</i>	<i>To be answered only by those who have had trouble</i>	
	<i>Have you at any time during the last 12 months been prevented from doing your normal work (at home or away from home) because of the trouble?</i>	<i>Have you had trouble at any time during the last 7 days?</i>
<i>Neck</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes
<i>Shoulder</i> 1. No 2. Yes, in the right shoulder 3. yes, in the left shoulder 4. yes, in both shoulder	1. No 2. yes	1. No 2. yes
<i>Elbows</i> 1.No 2. Yes, in the right elbow 3. yes, in the left elbow 4. yes. In both elbow	1. No 2. yes	1. No 2. yes
<i>Wrists/hands</i> 1.No 2. Yes, in the right wrist/hand 3. yes, in the left wrist/hand 4. yes, in both hands/wrists	1. No 2. yes	1. No 2. yes
<i>Upper back</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes
<i>Low back (small of the back)</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes
<i>One or both hips/thigh</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes

<i>One or both knees</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes
<i>One or both ankles/feet</i> 1. No 2. yes	1. No 2. yes	1. No 2. yes

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Job Content Questionnaire (selected items)

	Strongly disagree	Disagree	Agree	Strongly agree
1. My job requires that I learn new things	1	2	3	4
2. My job involves a lot of repetitive work	1	2	3	4
3. My job requires me to be creative	1	2	3	4
4. My job allows me to make a lot of decisions on my own	1	2	3	4
5. My job requires a high level of skill	1	2	3	4
6. On my job i am given lot of freedom, to decide how i do my work	1	2	3	4
7. I get to do a variety of things on my job	1	2	3	4
8. I have a lot to say about what happens on my job	1	2	3	4
9. I have an opportunity to develop my own special abilities	1	2	3	4
10. My job requires working very fast	1	2	3	4
11. My job requires working very hard	1	2	3	4
12. My job requires lots of physical effort	1	2	3	4
13. I am not asked to do an excessive amount of work	1	2	3	4
14. I have enough time to get the job done	1	2	3	4
15. I am free from conflicting demands others make	1	2	3	4
16. My job security is good	1	2	3	4
17. People I work with are competent in doing their jobs	1	2	3	4
18. People I work with take a personal interest in me	1	2	3	4
19. People I work with are friendly	1	2	3	4
20. People I work with are helpful in getting the job done	1	2	3	4
21. Much physical effort	1	2	3	4
22. Lift heavy loads	1	2	3	4
23. Rapid physical Activity	1	2	3	4
24. Awkward Body Position	1	2	3	4
25. Awkward Arm Position	1	2	3	4

		Not all likely	Not too likely	Somewhat likely	Very likely
26. Sometimes people permanently lose jobs they want to keep. How likely is it that during the next couple of years you will lose your present job with your employer?		1	2	3	4
	Regular and steady	Seasonal	Frequent layoff	Both seasonal and frequent layoff	other
27. How steady is your work?	1	2	3	4	5
	Never	Faced possibility once	Faced possibility more than once	Constantly	Actually laid off
28. During the past year, how often were you in a situation where you faced job loss or layoff?	1	2	3	4	5