



## A Cross Sectional Study of Musculoskeletal Problems Among Dentists in Pondicherry

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### ABSTRACT

**Purpose:** This questionnaire based study was aimed at identifying common occupational hazards affecting dentists in Pondicherry which may help to make dentists aware and to take adequate precautions in their practice to prolong the service imparted to patients as well as improve the overall well being of the dental professionals. The prevalence of work related musculoskeletal problems among dentists in Pondicherry was evaluated with this study.

**Methods:** A pretested and validated questionnaire was used to collect details from practising dentists in Pondicherry. 272 dentists responded to the questionnaire.

**Results:** The data obtained was statistically analysed with SPSS Version 20 for calculating proportion and mean. 84.9% (n=272) of respondents had some kind of musculoskeletal problem affecting different parts of the body. 52.2% had low back pain and 50% had neck pain.

**Conclusion:** The dental professionals are regularly exposed to various health hazards in their day to day practice. Chronic musculoskeletal disease is one of the common ailments affecting majority of dentists. It is important for the dentists to be aware of the work related factors affecting their health and take adequate precautions or modifications in their working environment.

**Keywords:** dentists, occupational hazards, musculoskeletal problems, work related problems

### I. INTRODUCTION

Dental professionals are exposed to various health hazards in their day to day practice. The dental treatment procedures require precision and concentration in addition to long working hours in compromised postures. These could have effect on the health of the practicing dentists and could lead to early burn out. Chronic musculoskeletal problem is one of the common ailments affecting majority of dentists. Technical advancements and modernizations in treatment delivery in modern day dentistry, have not helped to adequately overcome occupational hazards (OH) among dentists. Dentistry is recognized worldwide to be associated with debilitating repercussions from associated OH and is acknowledged as a high risk profession.

A vast majority of dentists recognize OH as a high risk factor associated with their career. Musculoskeletal problems are a major complication for practitioners in the field of dentistry. By nature, dentistry would not lend itself to a healthy posture. The posture during work exposes dentists to physical discomfort, disorders of the musculoskeletal system, and irritation of the peripheral nervous system. The musculoskeletal problems may disrupt the regular professional activity of the practitioners. If not treated, some of these problems may progress to permanent skeletal deformity with impact to early retirement and financial burdens.

### II. OBJECTIVE

To investigate the prevalence of musculoskeletal problems among the dentists in Pondicherry .

### III. MATERIALS AND METHODS

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A self administered, pretested and validated questionnaire was used to collect the data and was sent to all the dentists..A pilot study was done by administering The questionnaire to 10 dentists and was asked about the comprehensibility, language used, length of questionnaire and other suggestions. Accordingly the questionnaire was modified.

The questionnaire included the demographic ,professional and practice details as well as the occupation related various problems. A convenient sampling was done of the dentists practicing in the area. Calculated using the formula  $4pq/d^2$  (P=67.5% at 5% absolute precision) [Nokkhostin&Zafarmand ,2016] Inclusion criteria was the practising dentists with atleast one year of experience and the exclusion criteria was those not willing to participate and those with less than one year of practice.278 dentists responded to the questionnaire of which 6 were excluded as they had less than one year of practice. Data analysis was done in SPSS.ver .20 .Proportion and mean was calculated with the data

#### **IV. RESULTS**

The number of respondents were 278 of which 6 were excluded as they had been practising for less than one Year. The age of the patients ranged from 25-55 years. The maximum respondents were in 25-35 age group (53.3%).followed by 35-45 age group (28.7%).The number of males who responded were 51.8% and females were 48.2% TABLE 1.The number of years of practice ranged from two years of practice to 30 years of practice. The maximum respondents were in 5-10 years of practice (31.25%) and the least was in more than 25 years of practice (1.83%) TABLE 2.64.33% of the respondents practiced for 6-12 hours and 34.1% of the people practiced for 3-6 hours .and 1.4% of the people practised for more than 12 hours. The preferred position of practice was sitting (52.95%) and combined posture of sitting and standing were practised by 47.05%. Four handed dentistry with one chair side assistant was practiced by 73.9 % and six handed dentistry with two assistants by 3.3%.Those dentists who practised without any assistants were 22.8%..

Out of the total respondents of 272, the percentage of people who had some musculoskeletal complaints of some part of the body was 84.9%.Where as 15.1% had no complaints of any musculoskeletal pain. The maximum complaints was for lower back pain which was 142 (52.2%) followed by neck pain in 50% of the respondents. Shoulder pain was reported by 70 (25.7%).Upper back pain was reported by 22.4%..Pain and paraesthesia of the palm and thumb was reported by 11.7%.Carpel tunnel syndrome was reported by 2 people(0.7%). TABLE 3.

#### **V. DISCUSSION**

Musculoskeletal problems are quite common among practising dentists .Work related factors like the working posture, overstrained and awkward back postures can take a toll on the health of the dentists over a period of time. High back pain and neck pain has been reported in many studies<sup>1</sup> .As this is a demanding profession physically involong high degree of concentration and precision dentists need to have good psychomotor skills, manual dexterity and maintain occupational postures for a long period of time. Despite many advances many occupation related problems still persist. Musculoskeletal disorders are characterised by presence of discomfort, disability or persistent pain in the joints, muscles, tendons and other parts caused by repeated movements and prolonged awkward or uncomfortable body postures. Literature has shown high prevalence of musculoskeletal disorders among dentists<sup>2</sup>.WHO has attributed a multifactorial etiology to musculoskeletal disorders, which means these disorders appear as a consequence of the work exposure to a number of work related risk factors. Study done in Bhopal have shown that 92%(n=93)of dentists reported pain and discomfort of at least one part of the body<sup>3</sup>.Ayers et al in Newzealand had reported that the studies done on the dentists showed that neck pain was the most common complaint 59% (n=56) followed by lower back pain 57% and shoulder pain 45% <sup>4</sup>.A study done among Iranian dentists showed that 67.5% (n=600) had physical problems. Musculoskeletal problems was observed in 51.8% of which the wrist pain was maximum (92.96%) <sup>5</sup>.One of the studies done in Ha'il region of Saudi Arabia had shown similar results as the present study where 77.5% (n=53) had musculoskeletal problems and the most affected part was the lower back(73.5%) followed by neck pain in (66%) of the respondents<sup>6</sup>.The data of prevalence of work related musculoskeletal disorders for different professions can provide the formulation of necessary strategies to prevent them in future <sup>7</sup>. Dental students are not taught about the ergonomics in dental practice in their dental schools. This study might throw some light on this issue as well as recognise the importance of this.

**VI. TABLES**

**Table 1:** Demographics of the dentists studied for occupation related musculoskeletal problems (N=272)

Characteristic	N	Percentage
Age group	25-35	53.3
	35-40	28.7
	40-45	12.5
	45-50	4.0
	More than 50	1.5
Gender	Female	48.2
	Male	51.8
Marital status	Divorced/Separated	.4
	Married	79.4
	Unmarried	20.2
Family status	No children	32.7
	One child	34.2
	Two or more children	33.1

**Table2:** Number of years in practice by the dentists who were studied for occupation related musculoskeletal problems

Number of years	N (%)
1-5	82 (30)
5-10	85 (31.25)
10-15	60 (22.05)
15-25	40 (14.7)
>25	5 (1.83)

**Table 3:** Self-reported musculoskeletal complaints of dentists studied for occupation related problems

Complaints	Number=272	percentage
Neck pain	136	50
Low back pain	142	52.2
Upper back pain	61	22.4
Pain and paraesthesia in palm and thumb	32	11.7
Knee pain	42	15.4
Muscle fatigue	52	19.1
Shoulder pain	70	25.7
Upper arm pain	33	12.1
Elbow pain	9	3.3
Wrist pain	9	3.3
Carpel tunnel syndrome	2	0.7
Leg pain	32	11.8
Ankle pain	13	4.8
myalgia	13	4.8
No complaints	41	15.1

**VII. CONCLUSION**

Work related musculoskeletal disorders are responsible for morbidity in many working population which are multifactorial in origin. Dentists are one of these health care professionals prone to develop work related musculoskeletal disorders. If regularly occurring these discomforts are ignored, it is likely to cause long term musculoskeletal damage leading to deterioration of productivity ,performance and may even detriment their career. The results of the study may help in improving the working environment as well as modifying the technique in practice so that dentists may be able to practice effectively as well as help in their overall well being.

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