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# Prevalence of musculoskeletal disorders in dental surgeons of Mumbai

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## ABSTRACT

**Introduction:** Work-related musculoskeletal disorders (MSDs) are very common in dental professionals. Dentists spend their workdays in an awkward, static position, performing extremely precise procedures. However, maintaining a steady hand and posture comes at the cost of pain in various body parts of the dentist. Occasional pain from irregular stances or positions is to be expected while the dentists are performing static work. Irrespective of whether dentists work in an institutionalized setup or a private setup, they all are at risk. Hence, this study aims to identify their common musculoskeletal problems.

**Objectives:** To identify various musculoskeletal problems of dental surgeons. **Materials and Methods:** A cross-sectional study carried out in Navi Mumbai and Mumbai, Maharashtra, India among 250 dental surgeons. A questionnaire was developed to incorporate basic information on job profiles and musculoskeletal issues. The data collected were analyzed using an appropriate statistical analysis method. **Results:** Our study found that the most commonly affected area among male subjects was the neck in institutional practitioners and the lower back in private practitioners. In females, the neck was the maximum area of pain followed by the wrist and hand in institutional as well as private practitioners. This investigation of this study revealed that almost all the participants reported musculoskeletal pain. **Conclusion:** The study showed that there was a significant association between the work posture, lifestyle, environmental factors, and MSDs.

**Keywords:** Dental surgeons, prevalence, work-related musculoskeletal disorders

## INTRODUCTION

Occupational health hazards (OHH) are common in many sectors and have not left the profession of dentistry untouched.<sup>[1]</sup> Dentists spend their workdays in an awkward, static position, performing extremely precise procedures. However, maintaining a steady hand and posture comes at the cost of pain in various body parts of the dentist. Occasional pain from irregular stances or positions is to be expected while the dentists are performing static work. Irrespective of whether a dentist works in an institutionalized setup or a private setup, they all are at risk. Hence, this study aims to identify their common musculoskeletal problems.

## MATERIALS AND METHODS

This cross-sectional study was approved by the Ethics Committee of the institution, and informed consent was obtained from all the participants before the study. The data were collected from the conservative dentistry department of various private institutes of Navi Mumbai and a few of the private practitioners of Mumbai and Navi Mumbai, Maharashtra, India. In this cross-sectional retrospective study, convenient sampling method was selected. All the subjects with a minimum of 3 years of work experience were selected. Subjects with previous history of musculoskeletal problems were not considered for the study. The subjects were asked to fill up their demographic details like name, age, gender, dominance, and other work details in the questionnaire.

The questionnaire was distributed to 260 subjects, of whom 250 responded; out of the 250 subjects, 129 were institutional practitioners and 121 were private dental practitioners. The study was conducted for a duration of 6 months.

The subjects (100%) fulfilled the minimum criteria of having a Bachelor of Dental Surgery (BDS) degree. Out of them, 12% had

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done BDS, 56% had done Master of Dental Surgery (MDS), and the rest were pursuing postgraduation (32%).

Institutionalized subjects were taken from the conservative dentistry department whose treatment procedures included exfoliation, root canal treatment, and management of traumatized teeth, which are common procedures done even in private clinics. In this study, 98% of the subjects were right-dominant while only 2% were left-dominant. Four-handed dentistry was practiced by 12% and two-handed dentistry by 88%. The evaluation was carried out as follows: Average practicing years for institutionalized subjects were  $5.49 \pm 1.46$  and for private practitioners were  $11.19 \pm 4.0$  [Table 1].

### Problems of the musculoskeletal system

A total of 250 dentists completed an anonymous questionnaire focused on MSDs. The questionnaire was divided into three sections. The first section included demographic questions regarding gender, age, work duration, and acquired specialization. The second section dealt with the work conditions (working posture, work with or without an assistant) and the organization of the dentist's work. The third section concerned MSDs in the last 12 months and efforts taken by each professional toward his/her health issues. Confidentiality and anonymity about the data were assured. The data were analyzed using graphPad instat software and Student's t-test was used for analysis.

## RESULT

The samples taken for the study were postgraduate students and staff of the conservative dentistry department from the dental colleges in Navi Mumbai (institutional) and private dental practitioners of Mumbai and Navi Mumbai. The questionnaire was distributed to 260 subjects, of whom 250 responded. It was found that 90% of the dentists practiced in a sitting position, 5% in a standing position, and 5% in both these positions; 19% used magnification. Four-handed dentistry was practiced by 12% and two-handed dentistry by 88%. The number of breaks taken was  $> 5$  for all of them in between a treatment session.

Our study found that the most commonly affected areas in male subjects were the neck in institutional practitioners Graph 1 and the lower back in private practitioners. Graph 2 in females, the neck was the maximum area of pain followed by the wrist and the hand in institutional practitioners as well as private practitioners Graphs 3 and 4 this investigation of our study revealed that all the participants have musculoskeletal pain.

## DISCUSSION

### Gender

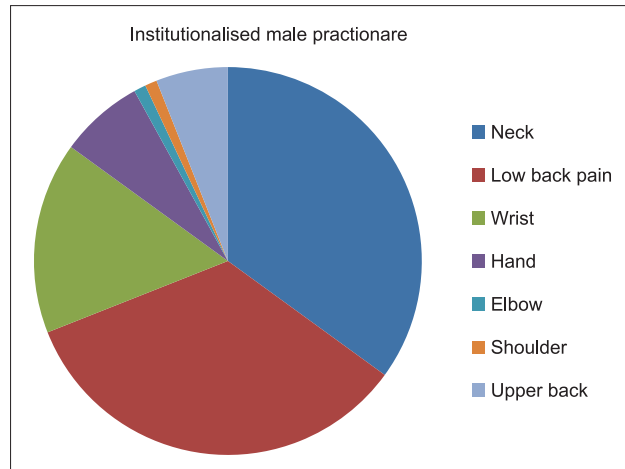
Our study found that the most commonly affected areas in male subjects were the neck in institutional practitioners and the lower back, upper back, wrist, and shoulder in private practitioners. In females, the neck was maximum area of pain followed by the lower back, the wrist, and the hand in institutional as well as private practitioners. Involvement of the wrist and the hand is seen more in female practitioners as compared to male practitioners. According to Yamalik *et al.*, gender is strongly associated with chronic complaints and the act of seeking medical help. Women experience poorer general health and seek medical care.<sup>[2]</sup> The percentage of MSD is less in female private practitioners, which could be due to less practicing hours. This study revealed that almost all the participants reported musculoskeletal pain.

### Number of practicing years

A lower percentage of musculoskeletal disorders (MSDs) was found in dentists of a higher age group; this could be attributed to their better coping measures, given their greater experience.<sup>[3]</sup> Another reason could be that young dentists work more in their early years of practice, leading to MSDs and the resultant muscle stiffness and pain encourage them to keep fit; hence, they experience less pain in their later years.<sup>[4]</sup>

### Magnification

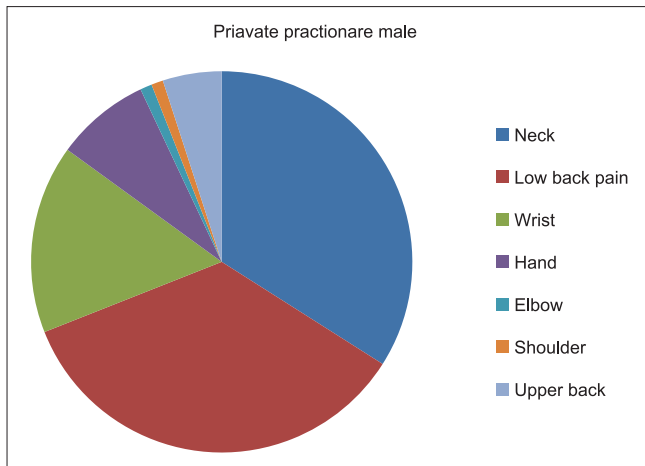
In this study, the neck and the upper back were the common areas that were involved. It was seen that proper selection,



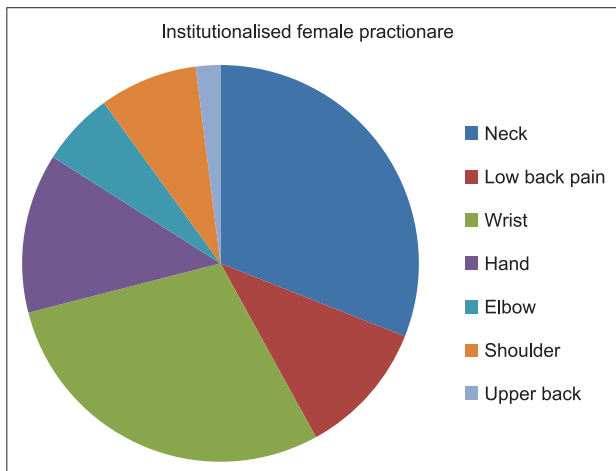
Graph 1: Prevalence of musculoskeletal pain in various parts of the body in institutional male practitioners

Table 1: Demography of the study population

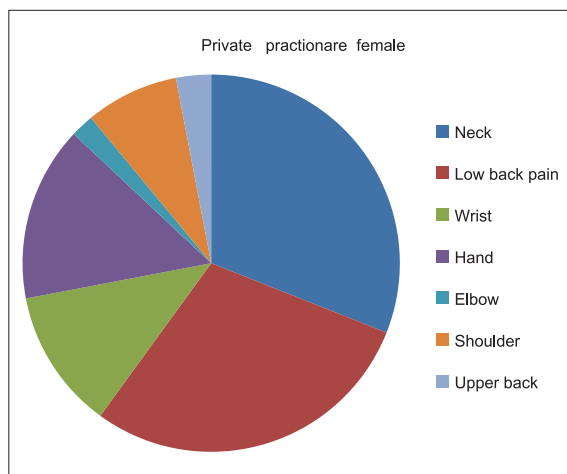
Variables		All subjects	Males	Females
Institutional	Age (years)	$28 \pm 1.17$	$28 \pm 1.16$	$28 \pm 1.18$
	Body mass index (BMI)	$22.48 \pm 1.87$	$22.88 \pm 1.25$	$22.21 \pm 1.85$
	Practicing years (years)	$5.49 \pm 1.46$	$5.6 \pm 1.23$	$4.89 \pm 1.5$
Private	Practicing hours (h)	$8.36 \pm 1.86$	$8.23 \pm 1.45$	$7.51 \pm 1.52$
	Age (years)	$36.73 \pm 4.14$	$36.73 \pm 1.18$	$36.74 \pm 3.14$
	BMI	$23.97 \pm 1.77$	$23.85 \pm 1.25$	$24.10 \pm 1.97$
	Practicing years (years)	$11.19 \pm 4.0$	$11.21 \pm 3.4$	$10.23 \pm 3.32$
	Practicing hours (h)	$7.96 \pm 0.84$	$8.36 \pm 0.57$	$6.91 \pm 0.51$



**Graph 2:** Prevalence of musculoskeletal pain in various parts of the body in private practitioners (males)



**Graph 3:** Prevalence of musculoskeletal pain in various parts of the body in institutional female practitioners



**Graph 4:** Prevalence of musculoskeletal pain in various parts of the body in private female practitioners

adjustment, and use of magnification systems led to decreased neck pain and lower back pain, thereby allowing the operators

to maintain healthier postures;<sup>[5]</sup> however, in this study, very few practitioners, that is, only private practitioners (19%) were found to use the magnification system.

**Posture**

Alternation between the two muscle groups helps in shifting the workload from one group to another and acts as an effective tool in preventing injuries.<sup>[6]</sup> In our study, we found that only 5% of the dentists used both standing and sitting postures. Sitting is the most common position used by both institutionalized and private practitioners. Recent dental chairs have a lot of modifications available as per requirements but it was observed that none of the dentists used any adjustment to keep his/her posture normal.

**Periodic breaks and stress**

A minimum of five breaks by the dentists was noted in this study; the maximum number of dentists in our study were keen on completing one patient at a stretch. Long working hours without breaks can increase the operators’ pain.<sup>[7]</sup> Scheduling of microbreaks regularly shows less discomfort among the operators as it replenishes and nourishes the stressed structures.<sup>[8,9]</sup>

The lower back, upper back, shoulder, wrist, and hand are the commonest affected areas observed in this study, irrespective of gender and setup of practice.

Poor working posture, lack of fitness, ignorance of the ways to maintain an optimum posture, job stress, and competition could be the possible reasons behind MSDs. Indian dentists are especially less oriented toward ergonomic considerations. Hence, this study proposes the reconsideration of ergonomic issues in the dental profession and suggests appropriate intervention.

**CONCLUSION**

MSDs are extremely prevalent in dental professionals. The lower back and upper quadrant are the most prevalent areas as these are used the most in this occupation.

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