

# Prevalence of Work Related Musculoskeletal Disorders Among Physicians, Surgeons and Dentists: A Comparative Study

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## Abstract

**Background:** Work related musculoskeletal disorders (MSDs) are one of the common occupational hazards among health care providers. **Aim:** The objective of this study was to evaluate MSDs in terms of perception of pain experienced by physicians, surgeons and dental surgeons during professional work. **Subjects and Methods:** The study was conducted with 100 physicians practicing either modern or alternative medicine, 100 surgeons of various specialties and 100 dental surgeons. Self-reporting work related questionnaire on MSDs were distributed, including information on the location of MSD symptoms in the past 12 months and the pain experienced. **Results:** Musculoskeletal pain was most prevalent among dentists 61% (61/100), followed by surgeons 37% (37/100) and physicians 20% (20/100). Nearly 15% of physicians (3/20), 40% (15/37) of Surgeons and 60% (35/61) of Dentists had MSD problems in more than one site. **Conclusion:** Within the limitations of the study, there is a higher prevalence of MSDs experienced by dental surgeons than physicians and surgeons. More research is needed on musculoskeletal problems with dental surgeons and other specialty doctors with an emphasis on a larger sample sizes and correlating other factors such as age and sex of the doctor, duration of practice, working hours per week, physical activity and working environment.

**Keywords:** Dentist, Musculoskeletal pain, Physician, Surgeon

## Introduction

Doctors are exposed to a range of work related risk factors that may result in various occupational diseases, of which musculoskeletal disorders (MSDs) are common. Musculoskeletal disorders are defined as musculoskeletal complaints, musculoskeletal symptoms or musculoskeletal pain that reflect a number of conditions, such as neck pain, back pain, shoulder pain, pain of limbs, carpal tunnel syndrome, myofascial dysfunction syndrome, atypical facial pain etc.<sup>[1]</sup> One end of the spectrum, MSD can be mild and infrequent; at the other end, MSDs can be severe, chronic and debilitating.<sup>[2]</sup>

Fortunately, good ergonomic practices can drastically reduce the likelihood of severity of MSD.

An overview of the incidence and the prevalence of musculoskeletal complaints among health care providers may assist inadequate prevention of work-related diseases and consequently provide a safer and healthier environment for them.

Occupational diseases are not only physical, psychological and social disease, but also have economic and security impacts when they reach a level of severity that directly affects working capacity, leading to absences and early retirement.<sup>[3]</sup> A number of studies have found that the mechanisms leading to work-related musculoskeletal pain are multi-factorial.<sup>[4]</sup> This pain can be attributed to numerous risk factors, including prolonged static postures, repetitive movements, suboptimal lighting, poor positioning, genetic predisposition, mental stress, physical conditioning, age and obesity.<sup>[5]</sup> It is generally agreed that the physical posture of the doctor while providing care, should be such that all muscles are in a relaxed, well-balanced and neutral

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position. Postures outside of this neutral position for a prolonged period are likely to cause musculoskeletal discomfort.<sup>[6]</sup>

Hence, a study was conducted among physicians, surgeons and dentists practicing in and around Vijayawada, to determine the pertinent MSDs in terms of perception of pain experienced due to the rigors of their respective professional works and its effect on their job.

## Subjects and Methods

The study design was presented to Research ethics committee and Ethical clearance was obtained. A self-reporting general questionnaire and Standard Nordic MSD questionnaire (Kuorinka *et al.* 1986), which is a valid and reliable questionnaire that includes various parameters related to MSD, an information sheet and a reply paid envelope was given to 120 physicians both practicing modern and alternative medicine, 120 surgeons of various specialties and 120 dental surgeons practicing in and around Vijayawada, Andhra Pradesh, India, in January to march 2012. Informed consent was obtained from all the doctors participated in the study. All the ethical aspects were respected by assuring the participants about the confidentiality of information obtained from them.

### Inclusion criteria

Doctors with 30-60 years age group, with minimum 5 years of practice and with minimum 50 h of clinical work per week were included in our study.

### Exclusion criteria

Doctors with any systemic diseases such as uncontrolled diabetes, which may influence the musculoskeletal system and doctors who did not fulfill the inclusion criteria were excluded from this study.

Information on MSD was given, which also included location of symptoms in the past 12 months, interference with daily activities, medical treatment sought in the previous 12 months. The doctors were also questioned about the number of sick leaves taken for their MSDs in the previous 12 months. The questionnaire comprised of multiple choice and “fill in the

blank” style questions. Additional information was requested on age, gender, number of years since graduation, field of medical practice, number of hours worked per week and number of patients treated per day. Among positive responses of 115, 112 and 118 from physicians, surgeons and dentists respectively 10, 8 and 15 were rejected either because of incompletely answered questionnaire or because of systemic problems. From this 5, 4 and 3 responses from physicians, surgeons and dentists respectively were randomly eliminated to make the final sample as 100 per group.

The data collected were tabulated and subjected to SPSS version 16 software (Chicago IL, USA) for descriptive statistical analysis.

## Results

The data on MSD among physicians, surgeons and dentists in terms of pain and its effect on the job were presented in Table 1. Of the 100 in each group, the highest prevalence of musculoskeletal pain was in dentists 61% (61/100), followed by surgeons 37% (37/100) and least in physicians 20% (20/100). Table 2 showed that 15% (3/20) of physicians with MSD, 40% (15/37) of surgeons with MSD and 60% (35/61) of dentists with MSD had MSD problems in more than one site. Among physicians, most of the musculoskeletal pain was distributed in the neck and lower back region, whereas among dentists and surgeons musculoskeletal pain was distributed to other parts of the body also, though in majority MSD was experienced in the neck and lower back regions. A total of 36 dentists had pain and discomfort in different parts of the body that caused the absence from work in last 12 months

**Table 1: Description of MSD among physicians, surgeons and dentists**

Doctors (n=100)	Pain/discomfort in last 12 months	Pain not affecting job	Pain affecting job
Physicians	20	15	5
Surgeons	37	25	12
Dentists	61	46	15

MSD: Musculoskeletal disorder

**Table 2: Description of MSD site distribution among physicians, surgeons and dentists in last 12 months**

Doctors	Neck	Shoulder	Upper back	Elbow	Hand/fingers	Lower back	Hips	Knees	Ankle/feet	More than 1 site
Physicians	8	0	2	0	0	10	0	0	0	3
Surgeons	11	8	5	5	8	20	12	16	15	15
Dentists	30	18	12	4	22	24	0	5	10	35

MSD: Musculoskeletal disorder

**Table 3: Description of MSD site distribution among physicians, surgeons and dentists which prevented them attending job in last 12 months**

Doctors (100)	Neck	Shoulder	Upper back	Elbow	Hand/fingers	Lower back	Hips	Knees	Ankle/feet	More than 1 site
Physicians	1	0	0	0	0	4	0	0	0	1
Surgeons	3	2	0	2	2	6	1	4	1	8
Dentists	10	2	2	1	2	8	0	1	2	8

MSD: Musculoskeletal disorder

was presented in Table 3. As shown in Table 4, descriptive statistics showed the most common operating positions among physicians, surgeons and dentist. The consulting position was standing position in 95% (95/100) of surgeons, sitting position in the dental chair in 86% (86/100) of dentists while 82% (82/100) of physicians operating position were sitting position in a normal chair. Role of physical activity among the groups is described in Table 5. Nearly 72% of dentists (72/100) and 85% (85/100) of physicians had some sort of physical activity where as 24% (24/100) of the surgeons were involved with some physical activity.

## Discussion

Work related MSDs are one of the most important occupational health issues among health care workers. Musculoskeletal pain can be an occupational health problem for medical professionals, particularly surgeons and dental surgeons, who maintain static postures using precision hand and wrist movements.<sup>[7,8]</sup>

There are limited studies about musculoskeletal pain in Indian population, both work related and non-work related. These studies report a wider range in prevalence of musculoskeletal pain in Indian population, ranging between 15% and 18% respectively.<sup>[9,10]</sup> Overall musculoskeletal pain in the general community in Delhi was found to be 25.9% and the pain was found to be more frequent in females (31.3%) when compared with males (20.9%).<sup>[11]</sup>

In our cross-sectional study, we found highest prevalence of musculoskeletal pain among dentists (61%), followed by surgeons (37%) and least in physicians (20%). We found that the prevalence of musculoskeletal pain in physicians was comparable to that of the general population. This may be due to comfortable working conditions and better ergonomic postures during working. More surgeons experienced musculoskeletal pain than physicians because of their standing position during surgeries (95%). Though 95% of times surgeons do their job in a standing position, they experience

musculoskeletal pain in lesser number (37) than dentists (61), who perform their job in a standing position only 14% of the times. This difference observed may be because of poor ergonomics maintained in Dentistry, inability to perform '6 Hand Dentistry', inadequate operator light, inadequate magnification and limited accessibility to the operating area. Fewer physicians and surgeons had MSD problems when compared with workers involved in heavy works such as Agriculture and Dairy farming industries (44.7%). It is also reported that MSDs were more common in subjects who perform heavy physical work, particularly those in jobs that involve kneeling and squatting.<sup>[12]</sup> A study was carried out to find the prevalence of musculoskeletal complaints among physicians and the results showed that was low, less than other healthcare workers, but similar to those reported in the general population.<sup>[13]</sup>

Musculoskeletal co-morbidity was high and a significant proportion of the subjects reported chronic complaints, medical care seeking and absenteeism from work. Repeated prolonged static postures are thought to initiate a series of events that could account for pain, injuries, or career-ending problems.<sup>[14]</sup> Though no doctor suffered from career-ending problems because of MSD in our study, significant number of doctors, i.e., 6 physicians, 29 surgeons and 36 dentists suffered from absenteeism from job. Furthermore, the frequency and duration of absenteeism from work due to MSD was maximum among dentists and least among physicians in our study, may be due to the factors discussed above.

Neck and lower back were the most commonly affected sites of MSD in physicians (40% and 50% respectively) and dentists (40% and 50% respectively) whereas hips, elbows and knees were the least commonly affected. This may be due to bending of their neck and back by dentists, especially while treating maxillary teeth. Lower back, hips, knees, ankle and neck were the worst affected sites of MSD in surgeons, whereas upper back and elbows were least affected. This may be because of prolonged standing and bending posture during surgeries.<sup>[7,8]</sup>

About 15% of physicians with MSD, 40% of surgeons with MSD and 60% of dentists with MSD had MSD problems in more than one site. This may be because of complex body postures during dental treatment, unorganized working conditions in the majority of clinics and excess working hours without intermittent rest periods. A study was conducted to assess the prevalence of self-reported work-related musculoskeletal disorders (MSD) among dental professionals in India and found an overall 1-year period prevalence rate of 100% for MSDs.<sup>[15]</sup>

Relieving pain and stiffness and improving physical function are the primary goals of therapy for MSD. Non-opioid analgesics and non-steroidal anti-inflammatory drugs have been the mainstay of medical treatment to reduce both pain

**Table 4: Description of most common operating positions among physicians, surgeons and dentists**

Doctors (100)	Sitting in a normal chair	Sitting in operating chair	Sitting in dental chair	Standing
Physicians	82	12	0	0
Surgeons	0	5	0	95
Dentists	0	0	86	14

**Table 5: Description of physical activity practices among physicians, surgeons and dentists**

Doctors (100)	Physical activity	No physical activity
Physicians	85	15
Surgeons	24	76
Dentists	72	28

and inflammation quite effectively, but their long-term use is associated with various adverse effects such as increased risk for gastrointestinal bleeding,<sup>[15]</sup> hypertension congestive heart failure,<sup>[16]</sup> renal insufficiency. Before deciding on specific non-pharmacologic and pharmacologic options, it is important to understand the degree of the patient's symptoms, concerns, disability and what the MSD pain means to him or her.<sup>[17]</sup>

Aging being a strong risk factor for MSD, psychological and emotional stresses would also have a contributory role in the initiation and aggravation of MSD.<sup>[18]</sup> It has been suggested that the presence of depressive symptoms predicts future MSDs but not vice versa.<sup>[19]</sup> A clear link is established between psychological variables with neck and back pain. Stress, fatigue, emotional distress or anxiety, sleep disturbances, cognitive dysfunction, poor quality-of-life and pain behavior were found to be significant factors involved in MSD.<sup>[20]</sup>

We observed in our study that physical activity, in any form was found to be helpful in decreasing MSD in all groups. Age seems to be an important factor in MSD pain. Prevalence of MSD pain increased with an increase in age, remarkably in age groups over 50.<sup>[21]</sup>

Reasons may be multi-factorial like an increase in body threshold for pain, decrease in stress and anxiety levels with regular physical activity. This is a proven fact, especially with Yoga activity, improving physical and psychological elements, thereby minimizing musculoskeletal pain in doctors.<sup>[22]</sup>

Overweight and obesity were found to be an significant risk factors for musculoskeletal pain. Subjects with body mass index (BMI) >24.9 suffered from MSD pain 1.7 times more than subjects with BMI <24.9.<sup>[23]</sup>

One difficulty in evaluating work related MSD pain is the inability to decide whether the pain is work related or age related or general health related or a combination of all these factors. Limitations of our study include the inability to correlate the role of age, sex, duration of practice, weekly working hours, rest periods during practice, clinical assistance and working conditions to the musculoskeletal pain experienced by various doctors. Future studies should aim at better understanding of MSD pain to derive proper recommendations to minimize and treat MSD pain. Even with the limited knowledge of MSD, the following can be recommended to prevent and minimize work related MSD pain.<sup>[24]</sup>

- Engage in adequate physical activity for fitness
- Maintenance of ideal body weight
- Proper ergonomics recommended
- Proper assistance at work by practicing 4 hand dentistry
- Planning a break in between patients
- Avoiding of smoking and alcohol consumption, if any.

## Conclusion

There is highest prevalence of MSDs experienced by dentists among physicians, surgeons and dentists. Majority of dentists had MSD problems in more than one site, which may be due to the complex nature of work. Musculoskeletal complaints may be work-related and act as specific risk factors for doctors, which require further attention. Detailed studies between doctors of different specialties are needed, to arrive at more specific understanding to plan better preventive methods.

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