

# A Study To Assess The Prevalence And Associated Factors For Musculo-Skeletal Disorders In Registered Dental Private Practitioners In Bhopal District, Madhya Pradesh

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*Abstract: The prevalence of musculoskeletal complaints in dentists is high although relatively few studies had focus in (in this area) this profession. Dentists are among the workers who are more often susceptible to MSDs; their work includes risk factors that may lead to many pathologies such as tendinitis, synovitis, tenosynovitis, and bursitis. A cross-sectional study was conducted in 200 dentists of Bhopal (Madhya Pradesh) for a period of one year where primary data were collected amongst the licensed dentists registered under Indian Dental Association, Bhopal branch. A pre-structured and pretested Questionnaire was used for interview and observation check list were used as a tool for data collection. Undergraduates who were newly registered and practicing for less than 2 years were more prone for MSD because of their improper working pattern based on the number of treatment done. Out of total registered general practitioners who had a work experience of less than 2 years, three fourth of them reported pain in wrist and neck. Overall knowledge of ergonomics was same among the participants, but majority of the post graduate participants experienced pain in neck and back due to long standing positioning and technique specific treatment.*

**Keywords: MSD, BDS, MDS, WMSD, IDA**

## I. INTRODUCTION

The prevalence of musculoskeletal complaints in dentists is high although relatively few studies had focus in this profession. Musculoskeletal disorders (MSDs) are described as disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, or spinal discs. The term “work-related musculoskeletal disorders” (WMSDs) refers to MSDs that are

made worse or longer lasting by work conditions. MSDs are some of the most important work-related problems currently reported. Dentists are among the workers who are more often susceptible to MSDs; their work includes risk factors that may lead to many pathologies such as tendinitis, synovitis, tenosynovitis, and bursitis. Dental surgeons are normally included within the group of professionals at risk of suffering from MSDs due to prolonged awkward or forced postures at

work and failure to adopt preventive measures.<sup>5</sup>Basic operating posture is considered as an important occupational health issue for dental surgeons. It is generally agreed that the physical posture of the operator should be such that all the muscles are in a relaxed, well-balanced, and in neutral position. Postures outside of this neutral position are likely to cause musculoskeletal discomfort. A thorough understanding of the underlying physiological mechanism leading to these problems is necessary to develop and implement a comprehensive approach to minimize the risk of work-related injury. Recently, "Ergonomics" has become a popular term. The term has been used with most professions, but increasingly in the dental profession. It is a discipline that studies workers and their relationship to their occupational environment. This includes many different concepts, such as how dentists position themselves and their patients, how they utilize equipment, how work areas are designed and how all of these impact the health of dentists.

The overall global prevalence for WRMSDs is 20%-30% and the region more often reported to be affected was the low back. In Madhya Pradesh, almost 1400 dentists are produced every year from at least 15 dental colleges. Out of which, 600-700 dentists are from Bhopal District. Since, number of migrants are more in Bhopal, therefore, approximately, 40% of newly registered dentists, setup their own clinics and remaining go for higher studies or even change their field. So, every year total number of new dental setups is 40-50 in overall Bhopal District (estimated).

Therefore, this study was conducted to assess the prevalence and associated factors for Musculo-skeletal disorders among registered dental private practitioners. This study concluded, the statistical significance of musculo-skeletal disorders with the working patterns, use of advanced technologies and improper positioning while treating patients amongst the dentist. Since, no studies had been conducted yet in middle India (Madhya Pradesh), it is necessary to enlighten the effect of all these factors for work-related musculo-skeletal problems amongst the dentist who are not practicing ergonomically.

## II. METHODS

A cross-sectional study was conducted in Bhopal District (MP), with a population of 2.3 million. Primary data regarding the symptoms of musculo-skeletal problems and its awareness were collected amongst the licensed dentists registered under Indian Dental Association, Bhopal branch. Some of the variables that were looked forward to assess the prevalence of WRMSD were gender, educational level, duration of private practice, no. of hours and days working, height and weight, personal behavior (smoking/drinking alcohol/chewing tobacco), past medical history (Accident/others), clinical setup equipment, instruments and use of any advanced technologies. A convenient sample size of 200 dentists was taken. A final sample of 70 dentists was considered as few of the dentists refused and rest of them were not available at the time of interview. Data was collected by interview method and also by observation. A pre-structured and pretested questionnaire was used for interview. Observation on ergonomics and postures

of the dentists' during their practice was done by using a observation checklist. This study was conducted for a period of 1 year.

## III. RESULTS

The general objective of the study was to identify the existing health problems of musculoskeletal deformities in dentist at Bhopal and relate the associated factors for health problems with various socio demographic factors, specialization and duration of practice. Most of the respondents were males (67.1%) followed by females (32.9%) in the study, among them General dentists as BDS were 50.6%, 38.8% were post graduates as MDS and remaining 10.6% were awarded by other degrees and certifications. Amongst the respondents (61.8%) BDS were general dental consultant and remaining respondents (38.2%) were from different specializations in their respective fields (Table 1, Figure 1). Maximum of 30.6% of the respondents had 2-5 years of duration of practice, whereas 22.9% had 6-10 years, 20% had 11-19 years and 17.6% had more than 20 years of practice. Newly registered dentists accounted for only 8.8% who were practising for less than 2 years (Table 2). Common complaints experienced by respondents were pain in neck (36.5%) and back (35.3%) whereas pain in wrist and hand accounted for 23.5% and 19.4% respectively. Pain in shoulder accounted for 15.9% whereas pain in thigh/leg was found to be least (4.1%) amongst the total respondents (Figure 2). Except for pain in back/spine, no significant difference found in the symptoms between the qualifications of dentist, where more of dentist (MDS) have reported pain in wrist (Table 3). Most of the participants reported for pain in neck (29.7%) and back (28.1%) who were treating cases for 2-5 years of clinical practice followed by pain in wrist (33.3%) practicing for less than 2 years. Pain in hand for dental practice of 6-10 years was found to be 19.2% whereas pain in shoulder was 17.3%. Dental practitioner for more than 20 years of practice accounted for 6.5% pain in thigh/ leg. Except for pain in wrist no other significance were found (Table 4).

Demography	No. (170)	Percentage
Gender		
Male	114	67.1
Female	56	32.9
Qualification		
BDS	86	50.6
MDS	66	38.8
BDS with PGDHM	15	8.8
MDS with FELLOWSHIP / MBA	3	1.8
Specialization		
Consultant	105	61.8
Oral Surgeon	3	1.8
Prosthodontist	15	8.8
Endodontist	14	8.2
Periodontist	8	4.7

	Orthodontist	12	7.1
	Pedodontist	8	4.7
	Community Dentistry	2	1.2
	Oral Pathologist	3	1.8

Table 1: Distribution of respondents according to Gender, Qualification and Specialization of dentists

Duration	No. (170)	Percentage
Less than 2 Years	15	8.8
2-5 Years	52	30.6
6-10 Years	39	22.9
11-19Years	34	20.0
20 and Above	30	17.6
Total	170	100.0

Table 2: Distribution according to duration of practice of dentists

Symptoms		BDS	MDS	Total	$\chi^2$ value	P value
Pain in Neck	No.	58	4	62	1.764	0.184
	%	47.9%	28.6%			
Pain in Shoulder	No.	24	3	27	0.009	0.673
	%	19.8%	21.4%			
Pain in Back / Spine	No.	52	8	60	0.753	0.005
	%	43.0%	57.1%			
Pain in Hand	No.	25	8	33	7.753	0.315
	%	20.7%	57.1%			
Pain in Wrist	No.	34	6	40	1.008	0.923
	%	28.1%	42.9%			
Pain in Thigh / Leg	No.	5	2	7	0.009	0.119
	%	4.1%	14.3%			
Total	No.	121	14	135		

Table 3: Distribution of symptoms according to qualification of dentist

Symptoms		< 2 Yrs	2-5 Yrs	6-10 Yrs	11-19Yrs	20+ Yrs	Total	$\chi^2$ Value	P Value
Pain In Neck	No	4	19	14	12	13	62	1.258	0.868
	%	26.7%	29.7%	26.9%	23.1%	28.3%			
Pain In Shoulder	No	1	6	9	6	5	27	3.292	0.510
	%	6.7%	9.4%	17.3%	11.5%	10.9%			
Pain In Back / Spine	No	3	18	13	13	13	60	6.671	0.573
	%	20.0%	28.1%	25.0%	25.0%	28.3%			
Pain In Hand	No	2	7	10	6	8	33	3.242	0.518
	%	13.3%	10.9%	19.2%	11.5%	17.4%			
Pain In Wrist	No	5	12	6	13	4	40	7.992	0.029
	%	33.3%	18.8%	11.5%	25.0%	8.7%			
Pain In Thigh / Leg	No	0	2	0	2	3	7	5.158	0.271
	%	0.0%	3.1%	0.0%	3.8%	6.5%			
Total	No	15	64	52	52	46	229		

Table 4: Distribution of symptoms according to duration of practice of dentist

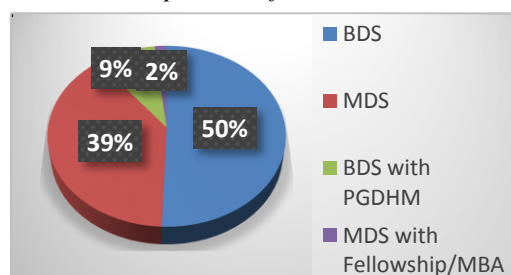


Figure 1: Distribution of dentists according to their qualifications

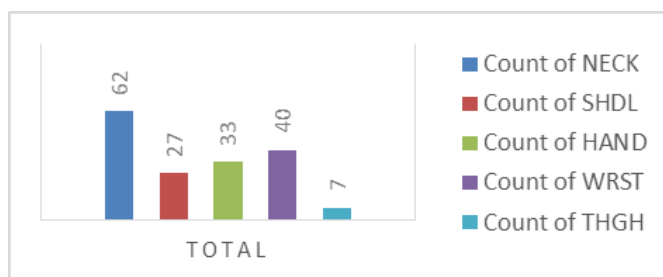


Figure 2: Distribution pattern of symptoms experienced by dentist in different body parts

#### IV. CONCLUSION

Most of the dentists were aware of improper ergonomics in practice which can lead to musculoskeletal disorders. More than 60, out of the total respondents, reported for pain in neck and back with respect to their duration of clinical practice. Pain in wrist accounted for 40%. Out of total registered general practitioners who had a work experience of less than 2 years, three fourth of them reported pain in wrist and neck. Overall knowledge of ergonomics was same among the participants, but majority of the post graduate participants experienced pain in neck and back due to long standing positioning and technique specific treatment. Orthodontists, among MDS, were found to be more prone for pain in wrist. Duration of practice and number of working hours were associated factors for aggravating WMSD. Since, this study was conducted in Bhopal district, capital of Madhya Pradesh state, an intervention is needed to improve the awareness regarding proper ergonomic practices. Since the study was carried out for a limited time period on a small sample of dentists practicing privately, the study may not be generalized on all dentists working in dental colleges. The study can be further extended as case control for implementing awareness programme as to make the dentists follow and practice proper ergonomics. There was constraint of time and the resources. Timing of practice and busy schedule of dentist were also the limitations for collecting data on time.

#### REFERENCES

- [1] Alexopoulos et al., Musculoskeletal Disorders BMC2004, 5:16 licensee BioMed Central Ltd <http://www.biomedcentral.com/1471-2474/5/16>.
- [2] Kakosy T, Németh L. Musculoskeletal disorders caused by hand-arm vibration. Global Occup Health Network. 2003; 4(winter):3-6.
- [3] Carvalho MV, Cavalcanti FI, Miranda HF, Soriano EP. Partial rupture of supraspinous tendon in a dentist: A case report. FIEP Bull. 2006; 76:131.
- [4] Doorn JW. Low back disability among self-employed dentists, veterinarians, physicians and physical therapists in The Netherlands. Acta Orthop Scand. 1995;263 (Suppl):1-64.[PubMed]
- [5] Szymanska J. Disorders of the musculoskeletal system among dentists from the aspect of ergonomics and prophylaxis. Ann Agric Environ Med. 2002;9:169-73.

- [PubMed]
- [6] Valachi B, Valachi K. Mechanisms leading to musculoskeletal disorders in dentistry. J Am Dent Assoc. 2003; 134:1344–50. [PubMed]
- [7] Pollack R. Dental office ergonomics: How reduce stress factors and increase efficiency. J Can Dent Assoc. 1996; 62:508–10. [PubMed]
- [8] Ergonomics in dentistry and the prevention of musculoskeletal disorders in dentists. Available from: [www.Dentnews.eu/](http://www.Dentnews.eu/)

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