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Prevalence of Work Related Musculoskeletal Disorders among Dentists in Surat

Mishra Neeti^{1*}, Mishra anil², Mistry Ridhi³, Pandya Esha⁴ and Prajapati Neha⁵

¹SPB Physiotherapy college, surat, INDIA

²Shreemad Rajchandra Physiotherapy college, surat, INDIA

^{3,4,5}BPT,SPB Physiotherapy college, surat, INDIA

E Mail - dr.neetimishra@gmail.com, Bardoli.anilmpt@gmail.com

ABSTRACT

Work-related musculoskeletal disorders are impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, bones and the localised blood circulation system, that are caused or aggravated primarily by work and by the effects of the immediate environment in which work is carried out. In dentistry, improper working habits, inconvenient posture as well as repetitive tasks such as: root canal instrumentation, cavities preparation and filling, scaling or root planning, contribute greatly to both, musculoskeletal disorders (MSDs) and psychological stress, and finally cause fatigue. The study was conducted with 100 dental surgeon ; orthodontist ;private practitioner and academic.

Self-reporting work related Nordic questionnaire on musculoskeletal disorder were distributed, including information on the location of musculoskeletal disorder symptoms and pain in the past 12 months. The study revealed that there is a prevalence of workrelated musculoskeletal disorders among dentists in surat .It was found that 91 persons in the study were suffering with WRMD affecting more than one parts of the body. About 65% of the dentists suffered from neck pain and 48% of the dentists suffered from shoulder pain. .The symptoms of MSD increased with the numbers of years of practice and age and had a gender prediction towards female.

KEYWORDS-WRMDS, Dentists ,Prevalence ,Shoulder pain ,Neck pain ,Surat.

***Corresponding author**

Neeti Mishra

Associate Professor,

SPB Physiotherapy college,surat,dr.

Email; neetimishra@gmail.com

INTRODUCTION

Work-related musculoskeletal disorders are impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, bones and the localized blood circulation system, that are caused or aggravated primarily by work and by the effects of the immediate environment in which work is carried out. Most work-related MSDs are cumulative disorders, resulting from repeated exposure to high or low intensity loads over a long period of time. However, MSDs can also be due to acute traumas, such as fractures, that occur during an accident.

These disorders mainly affect the back, neck, shoulders and upper limbs, but can also affect the lower limbs. Different groups of factors may contribute to MSDs, including physical and biomechanical factors, organizational and psychosocial factors, individual and personal factors. These may act uniquely or in combination that may contribute to the development of MSDs..

Dentists at work are susceptible to the occupational health hazards and development of cumulative trauma disorder. They often assume static positions that are uncomfortable and asymmetric. The dental operators sit or stand for prolonged periods and maintain the head, neck and shoulder in flexion position for long intervals. With prolonged static posture (PSP's). neuronal alignments, ischemia and trigger points, disc herniation / bulging, may develop.

In dentistry, improper working habits, inconvenient posture as well as repetitive tasks such as: root canal instrumentation, cavities preparation and filling, scaling or root planning, contribute greatly to both, musculoskeletal disorders (MSDs) and psychological stress, and finally cause fatigue.^{8,9} This condition can result in the decrease of productivity and quality of work. A review of literature suggested that there is scarcity of data regarding the prevalence of wrmds among dentists in india and particularly in surat..

To help define the problem and its relationship to work factors, Standardised Nordic questionnaire have been developed for the analysis of musculoskeletal symptoms in an ergonomic or occupational health context. The questions are forced choice variants and may be either self administered or used in interviews. The reliability of questionnaire has been shown to be acceptable. . The intraclass correlation coefficient of participants' answers ranged from 0.89 to 0.96¹³

AIM -of this study was therefore to ,survey status of WRMDS among dentists from Surat city in Gujarat .

PURPOSE OF THE STUDY- was to describe the characteristics of work-related musculoskeletal complaints among dental hygienists. The following were the specific aims for this study ,Identify the prevalence for different anatomic locations of musculoskeletal complaints among

dentist surveyed in Surat, Examine the association between work practices and demographic characteristics of dentist, and musculoskeletal complaints, Identify whether changes have occurred in daily work practices and personal activities as a result of musculoskeletal complaints. To determine how early musculoskeletal disorders (MSDs) develop in dental professionals and to explore the potential differences among distinct dental specialties.

METHODOLOGY-it was a cross sectional observational study. Population included 40 males and 51 females of 30-60 years of age group. Simple random sampling technique was used and the study duration was for 6 months. The study setting was ,post graduates and faculty members of dental department at SPB Physiotherapy college, Surat and other specialized dental hospitals of Surat.The sample size was 100.

Doctors with 30-60 years age group, with minimum 1 years of practice and with minimum 50 hours of clinical work per week were included in our study. 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. Out come measures were Prevalence of work related musculoskeletal disorders via Nordic questionarre

PROCEDURE- The study was presented to Research ethics committee and Ethical clearance was obtained. written consent was obtained from all the participants on a voluntary basis to conduct the study. The tools (self administered questionnaire and Nordic questionnaire), was developed specifically for the study purpose by modifying the Ergonomics Recommendations for Dental Programs from Indian Health Service, and Musculoskeletal Disorders Rating Scale.

The study was conducted with 100 dental surgeons, orthodontist,private practioner and academicians . Self-reporting work related questionnaire on musculoskeletal disorder were distributed, including information on the location of musculoskeletal disorder symptoms and pain in the past 12 months.

A self-reporting general questionnaire and Standared Nordic musculoskeletal disorder questionnaire . which is a valid and reliable questionnaire that includes various parameters related to musculoskeletal disorder, an information sheet and a reply paid envelope was given to 100 dental surgeons ; private practioners and dental academicians in surat . A list of the dental practitioners with contact numbers was obtained from the state dental association. Prior appointment was taken through telephone and a self-administered questionnaire was handed over to the dental practitioners at their respective clinics. The method for answering the questionnaire was explained and the

questionnaire was collected according to the convenience of the practitioners over a maximum period of one week. A pilot study was performed on fifteen dental practitioners before commencing the study.

The instrument used in this study is the Standardized Nordic Questionnaire (SNQ). This questionnaire records the prevalence of MSD in terms of musculoskeletal symptoms (ache, pain, discomfort) in the preceding 12 months. SNQ consists of structured, forced, binary, or multiple choice variants. It consists of two parts a general questionnaire and a more specific questionnaire focusing on the neck, shoulders, and back¹³. The general questionnaire records whether musculoskeletal symptoms are present and if so in which area are they localized and whether they are ongoing (presence of musculoskeletal symptoms during the last seven days). The SNQ includes a diagram of the human body viewed from the back, divided into nine anatomical areas.. The recording also included demographic variables such as age, gender, qualification, duration of practice, average patients seen per day, nature of practice, and whether the subjects were right handed or left handed.

The specific questionnaire focuses on anatomical areas in which the musculoskeletal symptoms are most common (neck and shoulders) These questions analyze more thoroughly the severity of the symptoms in terms of their effect on activities at work, during leisure time, and in terms of total duration of symptoms during the preceding 12 months

STATISTICAL ANALYSIS-all categorical answers for every subject were entered into an excel data base and descriptive statistics were carried out. All statistical tests were carried out using SPSS Software version 18.

GENDER

Sex	no. of dentists	
Male	40	44%
Female	51	56%

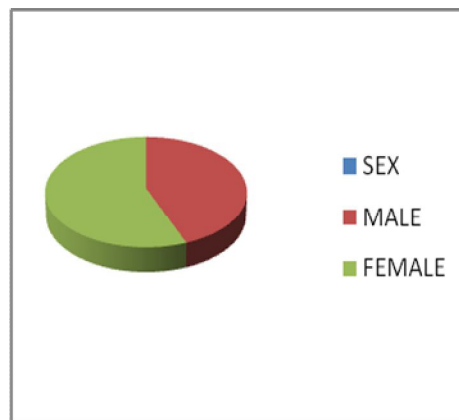


Figure 1 Demonstrates gender distribution of Dentists

Height(cm)	171
Weight(wt.)	74.71
BMI	26.71

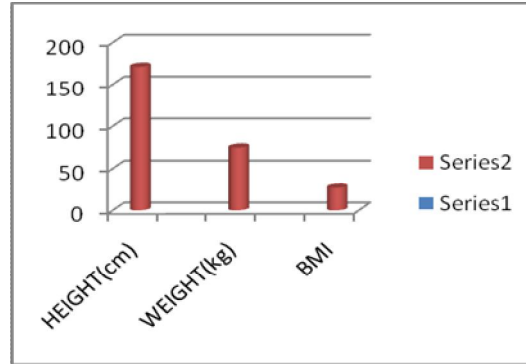


Figure 2 Demonstrates BMI distribution of dentists

Work experience-

Years	no. of dentists	Percentage
<5	36	40%
5-10	37	40.65%
>10	18	19.78%

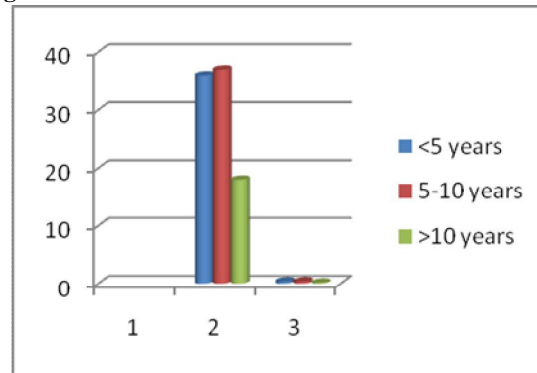


Figure 3-Demonstrates work experience of dentists

Type of dental care-

Work type	no. of dentists	Percentage
Orthodontists	40	44%
Both GP and orthodontics	51	56%

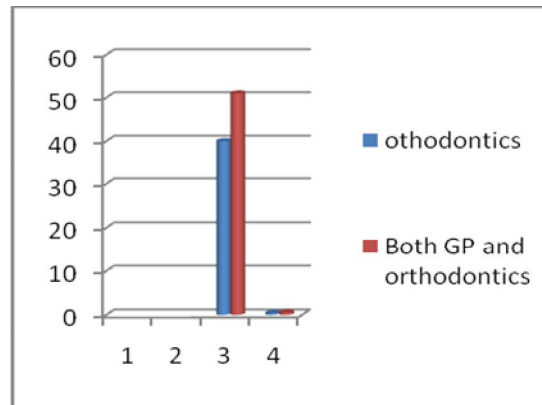


Figure 4 demonstrates type of dental care

Age-(years)

Age	no. of dentists	Percentage
20-30	37	40%
31-40	33	36%
41-50	14	15%
Above 50	7	3%

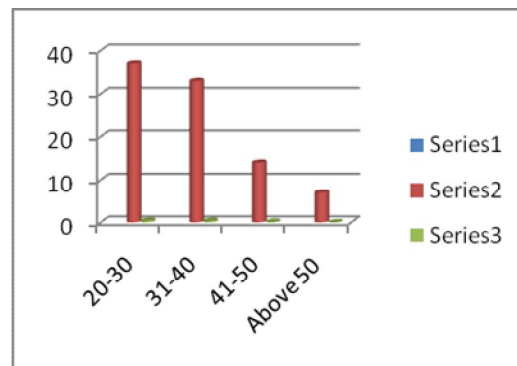


Figure 5 demonstrates age distribution of dentists

Orientation

No.of dentists	Handedness
68 75%	right
23 25%	left

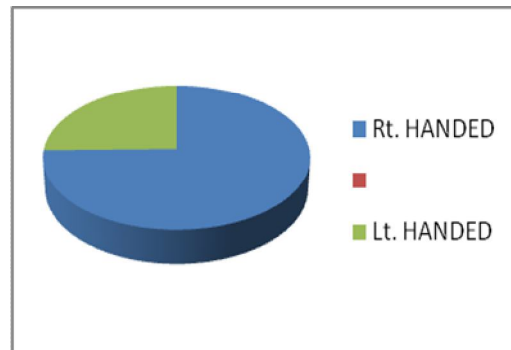


Figure6 demonstrates left and right handedness

Work on weekends

No work on Sundays	38	41.75%
Work on sundays	53	52.74%

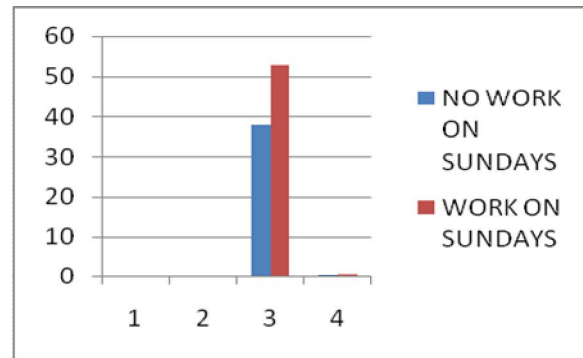


Figure 7 demonstrates working pattern of dentists

Life partner

Dentists	43	42.75%
Non-dentists	48	52.74%

Exercise regular

Answer	no. of dentists	
Yes	53	58.20%
No	38	41.75%

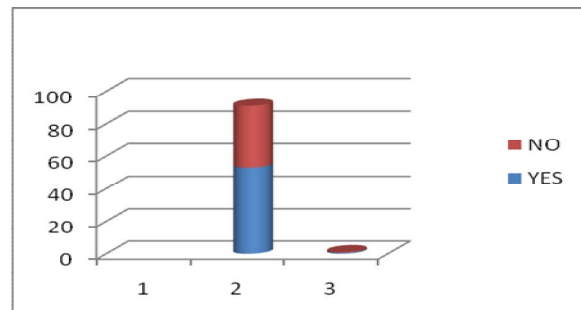


Figure 8. demonstrates no. of dentists exercising regularly

RESULT-

A total of 91 subjects answered the questionnaire, 44% of which were male and 56% were female. The mean of Age±SD was 30.14 ±8.7 within a range from 20 to 50 years. 44% of the participants were general dentists and 56% were specialists. Their major tasks were operative dentistry followed by endodontic, prosthodontics, oral surgery, and periodontics. Sixtyeight participants (73%) had complained of musculoskeletal pain, while 24 (26%) had no complaint, 18 (19.6%) had only one painful site and 50 (59.4%) suffered from pain in more than one site. There

was 41.75% dentists who did not work on Sunday and 51.75% worked on sundays. Nineteen respondents had a family history of musculoskeletal disorders. The NMQ revealed that the common painful sites were neck 41% followed by shoulder and back respectively 71%.

The mean age of the work experience is 13.69%. the percentage of orthodontists having experience more than 10 years was 19.78%. 40.65% of the dentists had experience between 5-10 years.40% of the dentists had experience less than 5 years. The data also indicated that there were about44% of the orthodontists, where as both General Practitioner and prosthodontists constituted 56% of the total population. Personal life of dentists revealed that 47.25% had their life partner as dentists. Where as 52.74% dentists life partner were non dentists. The study also showed that 58.30 % exercised regularly whereas 41.75% of the dentists did not exercised regularly.

The prevalence of work related musculoskeletal disorder among dental professionals was found to be high, with at least 85% of the respondents reporting development of some musculoskeletal pain after joining the dental profession. Out of these respondents, 52% reported that they were suffering from pain at the time of the survey. Our data suggests that age, gender, duration of contact with patients per week, the chairs used in the clinics, and area of dental specialty were all related to this high prevalence.

Discussion- The present study found that most of the dental surgeons had some kind of musculoskeletal pain and stiffness while performing their professional work in the last 6 months. Karwaski *et a* reported that the symptoms are a product of many risk factors including prolonged static postures, repetitive movements, and poor positioning.

Ratzen,on the other hand, linked musculoskeletal pain occurrence in the dentists to the frequent assumption of static postures, which usually requires more than 50% of the body's muscles to contract to hold the body motion less, while resisting gravity. Repeated prolonged static postures are thought to initiate a series of events that could account for pain, injuries, or career-ending problems seen in MSDs. In our study, we observed that majority of the dental surgeons had bad postures while performing their professional work.

Bernard found that 48% of workers had work-related neck disorder and 37% had work-related shoulder disorders. Contrary to this, our study showed that 73.3% had work-related neck disorders, 86.6% had back pain, and 20.6% had work-related shoulder disorders.

Our findings are the same as those of previous similar studies done around the world, such as in reporting dentistry to be a high risk profession for development of WRMDs. In most of these

studies, back pain was the most reported WRMD among dentists, with its prevalence ranging from 37% and 55% In our study, along with pain in the neck region, pain in the back and shoulder regions, etc. , also showed a high prevalence.

The respondents in our study were relatively younger, with 76% of them under 40 years of age. Among these respondents, at least 40% had work experience of less than 5 years .The high prevalence of work-related pain in these young professionals is either due to overload in the work setting, faulty ergonomics, or incorrect techniques used during treatment of patient. Such professionals are at the beginning of their career. As WRMDs are known to increase with age, if dental professionals suffer pain at this point in their lives, the problem could grow, making it difficult for them to practice in the future. Strategies need to be developed that can help them to continue clinical practice without such problems

Our study is in line with the previous studies showing WRMDs to be gender related⁸.The prevalence of WRMDs after joining the dental profession was found to be high in female professionals compared with their male counterparts.

We need to emphasize the role of ergonomics, counseling, proper techniques of patient handling, etc., during the training of dental professionals so that they can work efficiently. We need to devise primary as well as secondary prevention strategies to decrease the prevalence of WRMDs among dental professionals so that can effectively take care of patient and focus on their work.

The sample size was small .The main focus was only on neck and upper limb joints and lower limb joints were not included. The duration of the study was small. No long term follow up was taken. Neither risk factors nor intervention was seen for WRMD in dentists.

Further, studies can be done with large sample size. Also the study can be done including lower back and lower limb muscles. Further analysis and diagnosis specific to MSD can be done and studies regarding the intervention which can be helpful in treating MSDs in dentists. Studies can be done to find out new dental instruments compatible with ergonomics to reduce musculoskeletal disorders.

Conclusion-The study reveals that there is a high prevalence of workrelated musculoskeletal disorders among dentists in Surat .In this study ,neck and shoulder were commonly affected among dentists in Surat.The symptoms of MSD increased with the numbers of years of practice and age and had a gender prediction towards female. Limited ergonomics in the work environment of the dentists resulted in MSD .

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