

Prevalence of Work Related Musculoskeletal Disorders among Dentists in India

Dr. M. Balaganapathy^a, Ms. Sweni Shah^a

^aCharotar University of Science & Technology, Ashok & Rita Patel Institute of Physiotherapy, Changa, Anand, India, balaganapathy.phy@charusat.ac.in, swenishah444@gmail.com

Abstract: Introduction: WRMSDs are of serious concern to many organizations, including industry, insurance, and health care. Among the health-care professionals, dentists are at high risk for developing profession-related disorders such as WRMSDs. Objective: (1) To assess the prevalence of self-reported WRMSDs among dental professionals. (2) To identify the self-management strategies adopted by dentists to compensate with WRMSDs. (3) To identify the level of disability related to neck pain. Methods: It is a cross sectional survey study. In this study, the participants (n=115) were selected from different dental colleges across. A self-administered questionnaire was used. Results: All 115 participants had at least one work related musculoskeletal symptom. The most common regions affected are neck (74.8%) and lower back (40.9%). For self-adopted management strategies they performed self-stretching (46.1%) and started modifying work schedule (35.7%). It is found that the 84 participants were having no disability and 31 participants were having mild disability due to neck pain. Conclusion: Overall, this study suggests that WRMSDs are a reasonably common problem among dentists in India.

Key words: WRMSDs, Dentists, Neck disability index.

1. Introduction

Work related Musculoskeletal disorders (WRMSDs) have become increasingly common worldwide during the past decades [1]. WRMSDs are of serious concern to many organizations, including industry, insurance, and health care. WRMSDs including pain, weakness and paresthesia are reported to be associated with a wide range of occupations [1]. Musculoskeletal disorders are present in 48% of work related disorders and diseases among patients visiting a general practitioner. [2]. WRMSDs arise from repetitive work activities that normally are not hazardous, which become hazardous when the tissue loading exceeds its anatomical and physiological limits [2].

According to the world health organization (WHO) technical report, the management of WRMSDs determines to a largest possible extent the global productivity and work performance of working age adults [3]. Prevalence of WRMSDs had been previously reported for children,[3] general adult population,[4] industrial workers,[5] computer professionals,[6] and lately though among healthcare professionals. Studies reported prevalence of WRMSDs among nurses, [7] physical therapists,[8] physicians,[9] surgeons,[10] and dentists[11].

Among the healthcare professionals, dentists are at high risk for developing profession-related disorders such as WRMSDs. These include exposure to infectious diseases through percutaneous exposure incidents and bio aerosols, musculoskeletal problems, radiation,



dental materials, noise, dermatitis, respiratory disorders, and psychological problems to name a few [1].

Dentistry is a profession that generally produces muscular pain and soreness. Because their work area is narrow, performance of dental treatment results in a very inflexible work posture [2]. An average of 2 out of 3 dental professionals experience occupational pain. Musculoskeletal disorders account for the most common reason (29.3%) for early retirement age in dentists worldwide, followed by cardio-vascular disease (21.1%) and neurotic symptoms (16.5%).[5]

Earlier studies had shown risk factors such as individual characteristics, physical load and psychosocial factors were associated with work related musculoskeletal complaints in dental population in various countries [12-15].

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 [1].

Melis M. et al (2004) conducted a study to determine time to develop musculoskeletal problems amongst a dental student population in Sardinia (Italy). They suggested that ergonomics should be covered in the educational system to reduce risks to dental practitioners.

Diaz-Caballero A.J. et al (2010) carried out a study to identify the ergonomics factors and the presence of muscular pain in dental students practicing at the dental clinics of the college of dentistry, university of Cartagena, Colombia, South America. During the course of the study they found out that 80% of the students reported of muscular pain due to clinical practice.

National differences were found to exist in work related attitudes which in turn influence work performance and WRMSD prevalence. Thus, there arises a need to know about work related musculoskeletal disorders among dentists in India. Many previous studies suggested that neck pain is more common but percentage of disability due to neck pain is not indicated.

2. Objectives of the study

- (1) To assess the prevalence of self- reported WRMSDs among dental Professionals in India
- (2) To identify the self management strategies adopted by dentists to Compensate with work- related musculoskeletal complaints.
- (3) To identify the level of disability related to neck pain.

3. Materials and Methods

Study design- Cross-sectional survey study.

Study population

In this study, the PG 1st, 2nd and 3rd year students (n=115) were selected from different dental colleges across India. The participants were explained about the importance of this study and about the questionnaire. The informed consent was obtained from the

participants.

Data Collection tool: A self-administered questionnaire consisting of 22 items based on Nordic questionnaire was used for screening of WRMSDs.

It includes components like, Number of working hours per day , Number of patients treated per day , Duration of working hours on dental chair per day, Treatment time duration for each patient , Time spent on sustained forward bent trunk postures with each patient, Time spent in rotated and/or side-bent trunk postures with each patient , Time spent with arm working above his/her shoulder level with each patient , Time spent in wrist bent position with each patient , Time spent forcefully gripping a tool with each patient , Time spent as rest periods or breaks between procedures on a single patient , Time spent as rest periods or breaks between patients

The self-adopted management strategies by the participants for musculoskeletal pain are also assessed.

It includes components like, Did not do anything, Started taking more frequent breaks between patients, Started modifying work schedule, Reduced working hours on the dental chair, Visited a general practitioner/orthopedic surgeon/physical therapist , Started avoiding clinical work , Tried using modified ergonomic tools , Performed self-stretching, Undertaken physical therapy treatment Adjusted/modified work station , Took medications for symptom relief.

To know the percentage of level of disability due to neck pain, neck disability index (NDI) were filled by the participants which consisting of 10 items that includes pain intensity, personal care, reading, concentration, work and activities like driving, sleeping and recreation. Procedure:

1. Instruction and questionnaire was provided to eligible participants.
2. Informed consent was taken.
3. Completed questionnaire was returned by the participants.
4. Response rate is 100%

4. Results

In this study Demographic data like age, gender, height, weight, current level of fitness, hand dominance, positions of work and Work pattern characteristics also assessed, All 115 participants had at least one work-related musculoskeletal symptom in the previous year. The most common regions affected are neck (74.8%), lower back (40.9%), upper back (35.7%) and wrist/hand (23.5%). For self-adopted management strategies they performed self-stretching (46.1%), started modifying work schedule (35.7%) and took medications for symptoms relief (34.8%).



Table 1: Mean score of perceived work load of agriculture and livestock activities by farm women

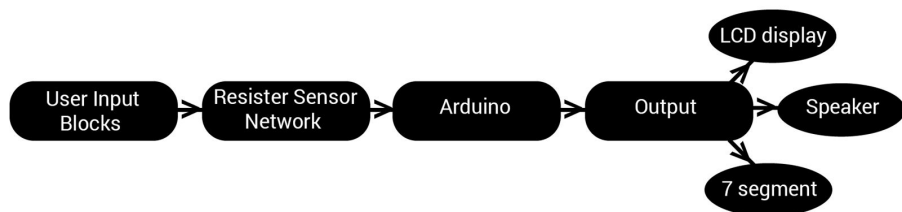
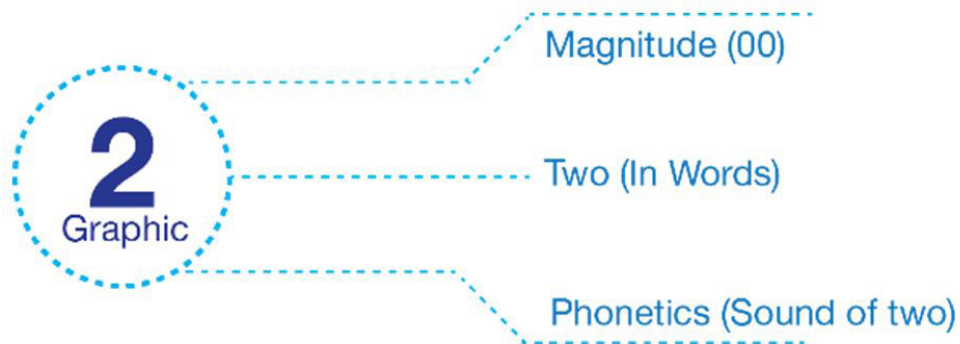
S.N	Activities	Mean score
i.	Leveling and making ridges and furrows	2.98
ii.	Sowing	2.97
iii.	Transplanting	2.97
iv.	Manuring /Fertilizer	2.50
v.	Irrigation	2.50
vi.	Weeding and inter culturing	2.87
vii.	Harvesting	2.88
viii.	Picking and cutting	2.49
ix.	Vegetable plucking	2.79
x.	Stripping	2.8
xi.	Decortications	2.94
xii.	Sieving grain	2.68
xiii.	Threshing and winnowing	2.86

Posture	Force	FCR	ECR	Correlation formula (y=mX + C
NENW	Force	0.91	0.92	Force=(0.0037*volt)+0.0130/ Force=(0.0074*volt)+0.0269
NEEW	Force	0.95	0.89	Force=(0.0038*volt)+0.0076/ Force=(0.0083*volt)+0.0320
NEFW	Force	0.87	0.89	Force=(0.006*volt)+0.0107/ Force=(0.0134*volt)+0.0166
EENW	Force	0.90	0.92	Force=(0.0043*volt)+0.0099 Force=(0.0095*volt)+0.0245
EEEW	Force	0.94	0.94	Force=(0.0031*volt)+0.0115 Force=(0.0097*volt)+0.0399
EEFW	Force	0.94	0.96	Force=(0.006*volt)+0.0140 Force=(0.0153*volt)+0.0169
FENW	Force	0.94	0.89	Force=(0.0047*volt)+0.01 Force=(0.0101*volt)+0.0236
FEEW	Force	0.89	0.90	Force=(0.0023*volt)+0.0127 Force=(0.0079*volt)+0.0305
FEFW	Force	0.76	0.87	Force=(0.0062*volt)+0.0357 Force=(0.0151*volt)+0.0276

It is found that the 84 participants were having no disability (Score of 0-4) due to neck pain and 31 participants were having mild disability (Score of 5-14) due to neck pain.



Fig. 1 Farmers working on different hand tools in field
a –Rajasthani Sickle, b – long handled hoe





5. Discussion

This study shows that prevalence of WRMSD among dentists in India are high. In one study they found a significant association between lack of physical activity and number of regions affected and in our study only 53% are participating in physical activity so this might be one of the risk factor for higher prevalence of WRMSD.

Few Earlier studies showed that neck and shoulder disorders are common among Swedish and Danish dentists. In Canadian study LBP was most pre-valent (59%) followed by neck (56%) and shoulder (47%).

Akesson et al. assumed that the work posture of dentists plays an important role as a risk factor for the development of work-related disorders. Poor ergonomic work habits such as prolonged constrained work position with e.g. neck or spine flexion may imply a risk factor. Self Adopted management strategies are practiced by most of the dentists which includes stretching (47%) and started modifying work schedule (36%).

Based on Neck Disability Index 73% of the dentists are having no disability followed by mild disability (27%) due to neck pain.

6. Conclusion

Overall, this study suggests that WRMSDs are a reasonably common problem among dentists in India. This study has shown high prevalence rate of neck pain among dentist. The level of disability due to neck pain is very low among dentists. Awareness should be created among dentists regarding WRMSDs and an effective educational and management strategy needs to be implanted to prevent WRMSDs among dentists.

Acknowledgements

We thank to participants agreeing to participate. We thank to Dr. Prakash, for his support and guidance in every aspect of this study and Mr. Vikas Ratanpara, helping with data analysis.

References

1. Vishwas Madaan, Dr. Amit Chaudhari, 2013. "Prevalence and risk factor as-sociated with musculoskeletal pain amongst students of MGM Dental College - a cross sectional survey." IDJSR 0033
2. Vijaya K Kumar, Senthil P Kumar, Mohan R Baliga, 2014 "Prevalence of work-related musculoskeletal complaints among dentists in India: A national cross-sectional survey." 10.4103/0970-9290.118387
3. Sharma P., Golcha V, 2011 "Awareness among dentists of physical activity role in preventing MSD" IJDR22(3) 380-384
4. Finsen L, Christensen H, Bakke M, 2007 "Musculoskeletal disorders among dent-ists and variation in dental work" Appl Ergon ;29:119-25.