



ORIGINAL RESEARCH PAPER

Orthopaedics

PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDER IN HEALTHCARE PROFESSIONALS IN A TERTIARY CARE HOSPITAL RIYADH, KSA

KEY WORDS: Healthcare workers, work-related injuries, musculoskeletal disorders, Ergonomics occupational injuries.

Lubna Tabassum*	Specialist Family Medicine, King Saud University. *Corresponding Author
Mohammed Lyeeq Ahmed	Specialist Orthopedics, King Saud University.
Naureen Kanwal Satti	Specialist Pediatrics, King Saud University.
Khalid Hamad Al Harbi	Consultant Family Medicine, King Saud University.
Yazeed AlBalawi	Consultant Family medicine, King Saud University.
Fareeza Taskeen Mustafa	General Practitioner, Mc -Master University.

ABSTRACT

Background: Musculoskeletal disorders are a common cause of physical and emotional distress among healthcare professionals. The aim of this study was to see the prevalence of work-related musculoskeletal disorders in healthcare professionals.

Methods: A cross-sectional study was conducted among 100 health care professionals working in King Saud University Hospital, Riyadh. A self-administered questionnaire was sent to the healthcare staff who attended the occupational health clinic. The questionnaire was based on Nordic Musculoskeletal questionnaire to assess the prevalence and severity of musculoskeletal disorder along with the enquiry on demographics, working hours, work experience, nature of the job, coping strategies, and pattern of WRMSD's.

Results: In the present study, 62% of participants reported work-related musculoskeletal disorders including neck, shoulder, lower body joint pains and backache. It was found that an abnormal work posture, prolonged working hours and individuals with more years of work experience had a high prevalence of work-related musculoskeletal disorders.

Conclusion: Work-related musculoskeletal disorders increase with abnormal posture, increased working hours and a prolonged working career. Hence, individuals need to follow adequate ergonomic practices at work to avoid work-related musculoskeletal injuries and their consequences.

INTRODUCTION

WRMSD's (work-related musculoskeletal disorders) are disorders or discomforts sustained by the worker on the musculoskeletal system, peripheral nerves, and neurovascular systems resulting from prolonged exposure to workplace hazards [1]. Musculoskeletal disorders (MSDs) in the workplace are arising as the most common problem in all health care facilities (2). They are the second largest cause of short-term work disability after the common flu [3]. Accordingly, scientific research has identified physical [4] organizational, psychosocial, [5,6,7] and individual health [8] as occupational "risk factors" for the development of WRMSDs. Among the specific disorders, osteoarthritis of hip and knee are most important in lower limbs, while shoulder capsulitis and tendinitis, elbow epicondylitis wrist tenosynovitis and carpal tunnel syndrome are the most common and important disorders of upper limbs.

There are a number of intrinsic and extrinsic factors that have been associated with the aetiology of WRMSDs [9,10-14]. Silverstein et al. [15] reported awkward postures, repetitive movement, and high force levels as the main risk factors that have been causes of WRMSDs. Health care professional usually performs activities that require lifting patients, lifting heavy loads, working in abnormal postures, and transferring patients. These work tasks put health care professionals at high risk for acute and cumulative WRMSDs.

Health care professionals are at more risk to musculoskeletal disorders during the course of their routine and have neglected their health [16]. Studies on WRMSDs among

health care providers have mostly focused on dentist, nurses, physiotherapist, lab technicians, medical receptionist and physicians [17,18,19]. Most common problems are related to the neck, shoulder, elbow, back and knee among the health providers. [20,21,22]. While assessing the patient with musculoskeletal problems, the physician must always consider whether work is the cause or aggravating factor for it.

In this study, we have compared the prevalence, distribution and coping strategies of WRMSDs among different groups of health care professionals working in a tertiary care hospital in King Abdulaziz University Hospital, Riyadh, Saudi Arabia. The study also considers multiple risk factors that add-on to the development of WRMSDs and also has identified the high-risk group.

MATERIALS AND METHODS:

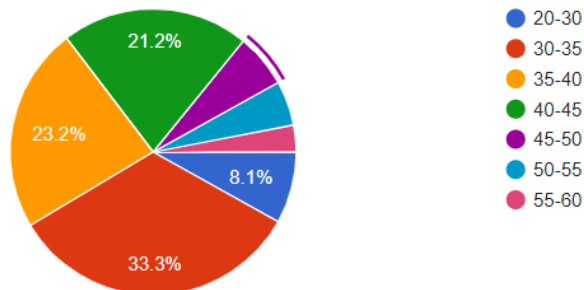
The study was done in a tertiary care hospital in Riyadh, Saudi Arabia and was based on WRMSD among the employees. Employees who attended the employee health clinic were questioned about details of the work involved, demographics and coping strategies. Staff with less than 1 year of service were excluded from the study.

A total of 123 surveys were sent to employees attending the employee clinic of King Abdulaziz University Hospital and out of these 107 replied .7 surveys were not included in the data analysis due to incomplete answers. The hospital is a tertiary care hospital which has services related to Ophthalmology, ENT and Primary care set up. The duration of sample

collection was 3 months from January – March 2020. The modified standard Nordic questionnaire consisted of queries on three upper limb segments (shoulder, elbow, wrist/hands/thumbs) three lower limb segments (hip/thigh, knee, ankle/feet) and three trunk segments (neck, upper back and lower back). The symptoms were classified as either last 12 months or as last 7 days. Demographic questions pertaining to age, gender height weight, marital status, country of origin were enquired. Coping strategy questions were based on number of breaks in the shift, helping hand, stretching and warm up exercises, number of leaves and duration of break in each shift.

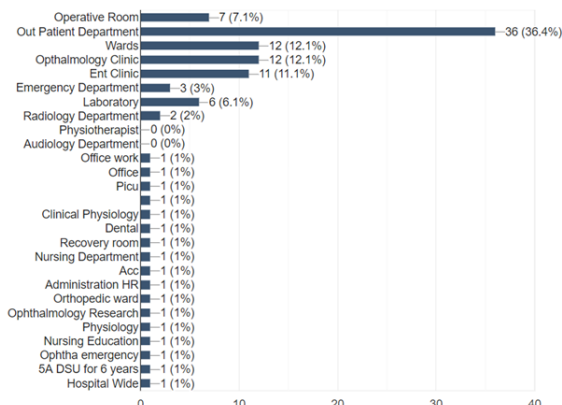
RESULTS:

The results show that out of 100 participants, 88% were female and 11 % were male respondents. Average weight was 64 kg, height was 154 cm and an average BMI was 26.2. Age distribution of participants showed that 33.3% were of ages 30-35 years, 23.2% were in the age group 35-40 years and rest were above 40 years of age. The maximum age of participants was 60 years (Fig: 1).



(Fig: 1) 46% were Filipinos, 34% were Indians, 1% Kenyans, 2% Pakistanis, 10% Saudis, 4% were Sudanese and 2% from Syria.

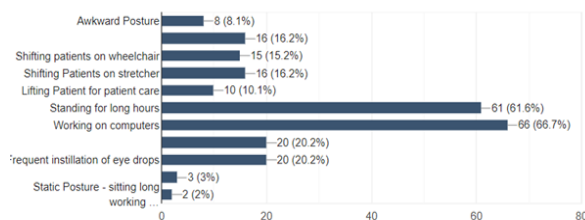
The majority of participants were nurses, i.e., 74% while doctors constituted 13% and the rest of the staff was from non-clinical areas. Majority of participants (94 %) used to work 40 hours a week and 6% used to work less than 40 hours a week. 36% of participants were working in the outpatient department with sitting and having an awkward posture. 12% of participants were from wards which involved shifting and carrying patients. 7% of respondents were from the operation room who had prolonged standing during the working hours. Ophthalmology and ENT department staff were 11% and 12% respectively (Fig: 2). They were also having an awkward sitting posture during working hours and prolonged sitting. Rest of candidates were from other clinical and non-clinical areas with a variety of working posture ranging from prolonged sitting and standing to abnormal neck postures while working in front of computers.



(Fig: 2) Area Of Work

Stretching and changing posture regularly during work was reported by 27% of staff, getting someone to help handle a heavy patient was reported by 57.4% and only 23.4% did warm up before duties. These figures show that self-care and following ergonomics was ignored by more than half of the staff.

Nature of job led to awkward postures and various manifestations in the form of neck pain, backache, leg and joint discomfort. 66% of participants reported working for long hours in front of desktops and computers (Fig: 3). Prolonged standing was reported by 61% of participants and the majority of them were working in wards (67%, p=0.0321) and operation rooms (23%, p= 0.053) thus showing the significant relationship of work-related symptoms due to abnormal posture in these two work areas. Lifting and shifting of patients were reported by 26.6% of participants out of this 71 % were working in wards (p=0.05).



(Fig:3) Working Posture

In the present study, 62% of participants reported work-related musculoskeletal disorders including neck pain, shoulder pain, backache, and lower body joint pains. Greater number of working years (a prolonged working career) was associated with prolonged duration of neck pain, shoulder, hand and hip pain. Majority (62%) had more than 40 working hours in a week. The strength of association of neck pain was found to be 0.506 (50.6%), having a statistically significant relationship (p<0.001). This is 0.471 (47.1%) for low back ache which is statistically significant (p<0.001). Hip/thigh pain strength of association with duration was 0.386(38.6%) showing a significant correlation (p<0.001), and for wrist/hand pain, this was 0.355(38.6%) with p<0.001.

Knee, mid back ache, shoulder and elbow pain were associated with prolonged working careers, however the relationship was not statistically significant, the p value being 0.070, 0.106, 0.862 and 0.356 respectively.

DISCUSSION:

Our study reports the high prevalence of MSWRDS in healthcare professionals in our hospital. Increased prevalence was associated with increased working hours, length of working career and nature of job.

Musculoskeletal disorder was more common in females in our study which is similar to a study done in Japan where incidence was high among women [23].

In present study 42% of participants reported work related musculoskeletal disorders including neck, shoulder, lower body joint pains and backache which is similar to a study done in India where a similar prevalence was reported in lab workers [24]. However a study done in Nigeria shows that 84% of nurses who participated in the study had musculoskeletal disorders.

Our study found that WRMSD are more common with abnormal posture, sitting and standing for long hours and related to the nature of job. Prolonged standing, lifting and shifting of patients were significantly associated with WRMSD. Similar results have been reported in studies where abnormal posture was a major cause of work-related disorders [25-26] The study also demonstrated that work related injuries

increased with increasing age and in staff with a prolonged working career. Similar results were found in a study where injuries were related to gender and increasing age [27]. Neck pain was the most reported symptom followed by lower back ache and hand pain. Literature search shows that some studies have reported back ache and muscle spasm [27], shoulder and backache [28] as the most common symptoms [29]. Preventive measures or coping strategies in our study were reported by a lesser number of staff than reported in literature in similar studies where the preventive measures were adopted by more than half of the staff [30-31].

The limitations of our study are small sample size and a data collection from a single hospital with limited number of specialties in the study. The symptoms assessed were based on questionnaire where a subjective bias cannot be ruled out.

CONCLUSION:

Work related musculoskeletal disorders are a common presentation among healthcare workers. It is therefore necessary to do screening for such disorders and workers should be educated and advised to properly follow the occupational guidelines during working hours to avoid such injuries. Preventive measures include:

1. Training and education with regards to optimal working conditions and risk awareness.
2. Induction period for the newly employed to get adjusted to the work at their own pace.
3. Job enlargement or frequent rotation to provide relief from the work that is associated with repetitive use.
4. Frequent rest breaks, task optimization, rehabilitation program and redeployment are other strategies for prevent WRULD.

REFERENCE:

1. European Agency for Safety and Health at Work. *Work-Related Musculoskeletal Disorders: Back to Work Report*. Luxembourg;2007.
2. Yelin EH, Felts WR. A summary of the impact of musculoskeletal conditions in the United States. *Arthritis Rheum*. 1990;33:750-5. [PubMed] [Google Scholar]
3. Yelin EH, Henke CJ, Epstein WV. Work disability among persons with musculoskeletal conditions. *Arthritis Rheum*. 1986;29:1322-33. [PubMed] [Google Scholar]
4. Winkel J, Mathiassen S. Assessment of physical work in epidemiology studies: Concepts, issues and operational considerations. *Ergonomics*. 1994;37:979-88. [PubMed] [Google Scholar]
5. Bongers PM, de Winter CR, Kompier MA, Hildebrandt VH. Psychosocial factors at work and musculoskeletal disease. *Scand J Work Environ Health*. 1993;19:297-312. [PubMed] [Google Scholar]
6. Devereux JJ, Buckle PW, Vlachonikolis IG. Interactions between physical and psychosocial work risk factors increase the risk of back disorders: An epidemiological study. *Occup Environ Med*. 1999;56:43-53. [PMC free article] [PubMed] [Google Scholar]
7. Devereux JJ, Vlachonikolis IG, Buckle PW. Epidemiological study to investigate potential interaction between physical and psychosocial factors at work that may increase the risk of symptoms of musculoskeletal disorder of the neck and upper limb. *Occup Environ Med*. 2002;59:269-77. [PMC free article] [PubMed] [Google Scholar]
8. Ringleberg J, Voskamp P. TUTB Proposals for Guidelines. Brussels: European Trade Union Technical Bureau for Health and Safety; 1996. Integrating Ergonomic Principles into C-Standards for Machinery Design. [Google Scholar]
9. Punnett L, Wegman DH. Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. *Journal of Electromyography and Kinesiology*. 2004;14:13-23. doi: 10.1016/j.jelekin.2003.09.015. [PubMed] [CrossRef] [Google Scholar]
10. Chiou WK, Wonk MK, Lee YH. Epidemiology of low back pain in Chinese nurses. *Int J Nurs Studies*. 1994;31:361-368. doi: 10.1016/0020-7489(94)90076-0. [PubMed] [CrossRef] [Google Scholar]
11. Smedley J, Egger P, Cooper C, Coggon D. Manual handling activities and risk of low back pain in nurses. *Occup Environ Med*. 1995;52:160-163. doi: 10.1136/oem.52.3.160. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
12. Lusted MJ, Carrasco CL, Mandyk JA, Healey S. Self reported symptoms of the neck and upper limbs in nurses. *Appl Ergon*. 1996;27:381-387. doi: 10.1016/S0003-6870(96)00030-0. [PubMed] [CrossRef] [Google Scholar]
13. Yip YB. A study of work stress, patient handling activities and the risk of low back pain among nurses in Hong Kong. *Journal of advanced nursing*. 2001;36:794-804. doi: 10.1046/j.1365-2648.2001.02037.x. [PubMed] [CrossRef] [Google Scholar]
14. Alexopoulos EC, Burdorf A, Kalokerinou A. Risk factors for musculoskeletal disorders among nursing personnel in Greek hospitals. *Int Arch Occup Environ Health*. 2003;76(4):289-294. [PubMed] [Google Scholar]
15. Silverstein BA, Fine LJ, Armstrong TJ. Occupational factors and carpal tunnel syndrome. *Am J Ind Med*. 1987;11:343-358. doi: 10.1002/ajim.4700110310. [PubMed] [CrossRef] [Google Scholar]
16. Saiyed HN, Tiwari RR. Occupational health research in India. *Ind Health*. 2004;42:141-8. [PubMed] [Google Scholar]

17. Guo HR, Chang YC, Yeh WY, Chen CW, Guo YL. Prevalence of musculoskeletal disorder among workers in Taiwan: A nationwide study. *J Occup Health*. 2004;46:26-36. [PubMed] [Google Scholar]
18. Praemer A, Furner S, Rice DP. Musculoskeletal conditions in the U.S. 1999. [Last accessed on 2012 December 08]. Available from: <http://www.medicalreporter.health.org/tmr1099/orthopaedics.html>.
19. Alexopoulos EC, Stathi IC, Chairman F. Prevalence of musculoskeletal disorders in dentists. *BMC Musculoskelet Disord*. 2004;5:16. [PMC free article] [PubMed] [Google Scholar]
20. Alexopoulos EC, Burdorf A, Kalokerinou A. A comparative analysis on musculoskeletal disorders between Greek and Dutch nursing personnel. *Int Arch Occup Environ Health*. 2006;79:82-8. [PubMed] [Google Scholar]
21. Tinubu BM, Mbada CE, Oyejemi AL, Fabunmi AA. Work-Related Musculoskeletal Disorders among Nurses in Ibadan, South-west Nigeria: A cross-sectional. *BMC Musculoskelet Disord*. 2010;11:12. [PMC free article] [PubMed] [Google Scholar]
22. Picavet HS, Schouten JS. Musculoskeletal pain in the Netherlands: Prevalence, consequences and risk groups, the DMC (3)-study. *Pain*. 2003;102:167-78. [PubMed] [Google Scholar]
23. Onishi T, Kurimoto S, Suzuki M, Imaeda T, Hirata H. Work-related musculoskeletal disorders in the upper extremity among the staff of a Japanese university hospital. *International archives of occupational and environmental health*. 2014 Jul 1;87(5):547-55.
24. Agrawal PR, Maiya AG, Kamath V, Kamath A. Work related musculoskeletal disorders among medical laboratory professionals: a narrative review. *Int J Res Med Sci*. 2014 Oct;2(4):1262-6.
25. Tinubu BM, Mbada CE, Oyejemi AL, Fabunmi AA. Work-related musculoskeletal disorders among nurses in Ibadan, South-west Nigeria: a cross-sectional survey. *BMC Musculoskelet Disord*. 2010 Dec 1;11(1):12.
26. Daniel SV, Umar MS, Ahmad NM, Joseph ZD. Work-Related Musculoskeletal Disorders: Prevalence Among Clinical Radiographers in Teaching Hospitals in North-Western Nigeria. *Journal of Radiography & Radiation Sciences*. 2018 May;32(1).
27. Alrashed WA. Ergonomics and work-related musculoskeletal disorders in ophthalmic practice. *Imam Journal of Applied Sciences*. 2016 Jul 1;1(2):48.
28. Anderson SP, Oakman J. Allied health professionals and work-related musculoskeletal disorders: a systematic review. *Safety and health at work*. 2016 Dec 1;7(4):259-67.
29. Alnaser MZ, Aljadi SH. Physical therapists with work-related musculoskeletal disorders in the State of Kuwait: A comparison across countries and health care professions. *Work*. 2019 Jan 1 (Preprint):1-8.
30. Ganer N. Work related musculoskeletal disorders among healthcare professional and their preventive measure: a report. *Ijrsrset*. 2016;2(4):693-8.
31. Gopal K, Thomas M, Sreedharan J. Work-related musculoskeletal disorders (WMSD) in hospital nurses: Prevalence and coping strategies. *Gulf Medical Journal*. 2012;1(S1):S159-63.