

Prevalence of Work-Related Muscular and Skeletal Disorder among Surgeons and Nurses in Saudi Arabia: A Cross-Sectional Study among 4 Tertiary Care Centers

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Abstract

The aim of the study is to evaluate the prevalence of symptoms connected to work-related skeletal and muscular disorders among nurses and surgeons in Saudi Arabia. The study is a descriptive cross-sectional one carried out in Saudi Germany hospital, King Abdullah complex, East Jeddah General Hospital and King Abdul-Aziz Hospital. All the hospitals mentioned here are located in Jeddah, Kingdom of Saudi Arabia. It was conducted over the course of 8 months from November 2019 to July 2020. Nordic Musculoskeletal Questionnaire (NMQ) was used in this study while data analysis was conducted via entry of the data collected from the questioner. The musculoskeletal symptoms appeared to be high in female surgeons as compared to male surgeons. This investigation revealed that 95.23% of the participated surgeons experienced musculoskeletal symptoms, while 4.76% of surgeons were not affected at all. On the other hand, 92.85% of nurses exhibited musculoskeletal symptoms, whereas 7.14% of nurses reported no symptoms at all. It was observed that the most abundant area subjected to pain, discomfort and ache was the lower back region among the surgeons and nurses. Lower portion of the back and neck are the most common areas for work related musculoskeletal disorders (MSDs) in both surgeons and nurses but with different percentages. Hence, extensive research efforts are required to develop an in-depth understanding of occurrence of MSDs so that preventive measures can be introduced to minimize the incidence, complications and prevalence associated with them.

Keywords: Low Back Pain; Nordic Musculoskeletal Questionnaire; Skeletal Disorders

Abbreviations

MSDs: Musculoskeletal Disorders; WMSD: Work Related Musculoskeletal Disorders; NMQ: Nordic Musculoskeletal Questionnaire

Introduction

Musculoskeletal disorders (MSDs) are proving challenging and have emerged as a growing problem at the related workplace in our societies. Work related musculoskeletal disorders (WMSDs) is a descriptive and collective term for symptoms aggravated by work and denoted by persistent pain, ache, discomfort and disability. WMSDs are responsible for morbidity in many working populations and are defined as an important occupational problem [1,2]. They represent important occupational health issues in the workplace globally [3].

World Health Organization has valued that 37% of back pain across the world is caused by various occupational settings [4]. MSDs represent a burden on the health system as well as on the social and economic sector due to their related consequences [5]. They lead to musculoskeletal and connective tissue disorders that arises as a result of an event or exposure that lead to overexertion. Examples of such musculoskeletal disorders include hernia, carpal tunnel syndrome, back pain and arthritis [6]. It was further revealed that WMSDs occurred in 60% to 90% surgeons who are involved in open surgery procedures, 20% to 80% for robotic-assisted surgery, 50% to 90% for vaginal surgery and 70% to 100% for conventional laparoscopy. In case of open surgery, risk factors for injury are associated by using headlamps, loupes and microscopes. WMSDs in such cases in surgeon leads to disability but these conditions are not reported to the institutions. Further limitations are faced in the operating room environment as a result of existing research modalities [7].

Contrarily for nurses, transference of patient alone represents the most postural strenuous and physically demanding task. Their condition becomes extremely severe in orthopedics wards due to their physical strenuous involvement in activities like in assisting patient in walking, changing. It should be noted that nurses generally deal with 90% of adult patient whose body weight are above 50 kg and are in unstable medical condition either due to fracture or other problems [8]. Furthermore, various risk factors like repetition and invariability of work, static muscular work, exposure to certain physical aggressors and awkward postures lead to WMSD. It was observed for the surgeons or nurses who work almost in the awkward posture [9].

There are limited studies of musculoskeletal disorders in health care professions in Saudi Arabia. Hence, this study was carried out to observe the incidence of work-related musculoskeletal symptoms in surgeons and nurses working in Saudi Arabia. The results signifies the importance of this problem, which can utilized in developing effective interventional approach for healthcare professional.

Subjects and Methods

This is a descriptive cross-sectional study carried out in Saudi Germany Hospital, King Abdullah Complex, East Jeddah General Hospital and King Abdul-Aziz Hospital. These hospitals mentioned are all located in Jeddah, Kingdom of Saudi Arabia. This study was reviewed and approved by the Ethical Committee of Batterjee Medical College [RES-2019-0034]. Participants confidentiality was ensured throughout the study.

Inclusion criteria: (I) Consultant, (ii) specialist and (iii) senior resident of general surgery, neurosurgery and orthopedic surgery and registered nurses.

Exclusion criteria: (I) Individuals having pain as a result of ankylosing spondylitis, surgery, irregular menstruation cycle, scoliosis, tumor vessel lesions, disc protrusion and spine malformation (ii) Individuals suffering from MSD which was caused by gynecological disease, trauma, cancer and congenital spine disorders (iii) Individual having a history of psychiatric disorder and (iv) Individuals who are on long-term administration of analgesics.

The self-report of musculoskeletal symptoms among surgeons and nurses was examined in this study. A total of 91 individuals, representing surgeons and nurses of all nationalities, and both genders participated in this study. Filling the self-administrated Nordic Musculoskeletal Questionnaire (NMQ) was necessary for all the participants for quantifying the musculoskeletal pain and activity prevention in body regions [10] (Appendix I).

Study area

This study was conducted in Saudi Germany Hospital, King Abdullah Complex, East Jeddah General Hospital, King Abdul-Aziz Hospital (Jeddah, KSA) during the period from November 2019 to July 2020.

Statistical analysis

The entry of the information collected from NMQ was used for analyzing the data. The quantitative data were presented as mean ± standard deviation.

Results

A total of 91 individuals from governmental and non-governmental hospitals in Jeddah were participated in this study. Surgeons represented (46.2%) of the total sample and whereas nurses (58.3%). The majority of surgeons were males 27 (64.3%) and females were 15 (35.7%). The doctors interviewed where mostly surgical residents 22 (52.4%). While the majority of participants were 45(91.83%). males only were 4 (8.16%).

The demographic data and clinical characteristics of all candidates are summarized in table 1.

	Surgeons (n: 42)	Nurses (n: 49)
Age	40.96 ± 4.37	41.92 ± 4.37
Height	179.23 ± 10.31	162.28 ± 8.32
Weight	90.66 ± 18.47	67.27 ± 17.29
BMI	28.22 ± 4.95	24.95 ± 5.32
Number of working hours in operating theater per week	26.6 ± 15.92763	31.91 ± 10.31
Smoker/Non-Smoker	26.2%/73.8 %	32.7%/67.3%

Table 1: Characteristics of surgeons and nurses.

The NMQ was successfully completed by 42 surgeons including 27 males and 15 females. The mean age was found to be 40.96 years, on an average, they have work-load of about 26.6 hours per week. Their main responsibilities include attending outpatient clinics and ward rounds and operating. The result showed that females were suffering more from musculoskeletal symptoms as compared to males which were analyzed by their estimated working hours and types of duties performed. This study further showed that 95.23% surgeons exhibited musculoskeletal symptoms while 4.76% of surgeons showed no symptoms at all. Moreover, it was observed that 95.23% of the surgeons who were reported with musculoskeletal symptoms had an experience of such symptoms in the last one year. The highest prevalence rate of 71.42% (n = 30) was observed in case of lower back region. However, these values were 64.28% and 54.76% for neck and shoulder, respectively (Table 2).

n= (42)	Pain, discomfort, or aches experienced in the last 12 months	
	Yes	No
Neck	64.28%	35.71%
Shoulders	54.76%	45.23%
Upper back	42.85%	57.14%
Elbow	9.52%	90.47%
Wrist/hand	38.09%	61.90%
Lower back	71.42%	28.57%
Hips/thighs	26.19%	73.80%
Knees	38.09%	61.90%
Ankle/feet	33.33%	66.66%

Table 2: Prevalence of WMSDs in different areas among surgeons.

NMQ was successfully furnished by 49 nurses comprising 45 females and 4 males. Mean age of these nurses was 41.92 years, and their duty hours were 31.91h per week. They were involved in heavy lifting, long standing, pushing and lifting patients. Our results showed that 92.85% of nurses suffered from musculoskeletal symptoms, while 7.14% of nurses were having no symptoms at all. Moreover, 92.85% of the respondents had an earlier experience of musculoskeletal symptoms in the last 12 months. The lower back region had the highest prevalence rate of 59.1% (n = 29), followed by 46.9% in neck, 44.8% in shoulders, 44.8% in ankle/feet, 38.7% in knees, 22.4% in wrist/hand, 22.4% in hips/thighs, 16.3% in elbow and 6.1% in upper back (Table 3).

n = (49)	Pain, discomfort, or aches experienced in the last 12 months	
	Yes	No
Neck	46.9%	55.1%
Shoulders	44.8%	53.06%
Upper back	6.1%	93.8%
Elbow	16.3%	83.67%
Wrist/hand	22.4%	77.55%
Lower back	59.1%	40.8%
Hips/thighs	22.4%	77.55%
Knees	38.7%	63.26%
Ankle/feet	44.8%	53.06%

Table 3: Prevalence of WMSDs in different areas among nurses.

Discussion

This research hypothesizes that there could be a significant rise in musculoskeletal disorders in health professionals especially surgeons and nurses who are working in Saudi Arabia.

Surgeons

The musculoskeletal symptoms (pain-discomfort-ache) in the surgeons during the last 12 months exhibited 71.42% in lower back, followed by 64.28% in neck, 54.76% in shoulders 42.85% in upper back, 38.09% in wrist/hand, 38.09% in knees, 33.33% suffer about ankle/feet, 26.19% in hips/thighs and 9.52% in elbow. These reasons were explained by the opinion of the surgeons owing to their long duties in the operations which causes neck pain. The surgeons usually adopt a more sustained lumbar flexion posture during these procedures while working on the various anatomical regions throughout any given procedure. Moreover, due to the extended hours of work and the need of maintaining a static posture while performing movements of very fine eye-hand coordination.

A descriptive study on surgeons performing minimally invasive surgeons (MIS) in various surgical specialties showed that 116 (90%) surgeons reported MSDs. The highest prevalence appears to be in those surgeons who are most experienced. Moreover, the most prevalent zone to be affected in these surgeons was found to be the lower back area (54%) and the least was found to be the right hand (28%). Surgeon experience was found to be inversely proportional whereas the muscle strength was found to be directly proportional to the incidence of MSDs [11].

The current study shows that female surgeons have higher prevalence rates of musculoskeletal symptoms in all anatomic regions, the difference is due to the fact that they have different physical responses to the same tasks. Some studies explain the presence of the difference in the size of the female body, that it is smaller than the male body and their muscles have less capacity [12].

Nurses

Nurses results showed (pain-discomfort-ach) in the last 1 year, lower back region had the highest frequency in terms of the prevalence rate (59.1%), followed by (46.9%) in the neck, (44.8%) in the shoulders, (44.8%) in the ankle/feet, (38.7%) in the knees, (22.4%) in the wrist/hand, (22.4%) in the hips/thighs, (16.3%) the in elbow, and (6.1%) in the upper back.

The findings are directly in line with previous findings of Narsigan [13] who stated that nurses are susceptible to WMSD, specifically LBP. The risk factors of LBP are the high physical demand of the nursing profession. Similar conclusion by Davis, K.G [14] who concluded that pain in the nursing profession has been commonly inspected worldwide, with a main focus on LBP.

Another study was conducted among nurses via a national survey in Portugal. The results showed the strongest relation between work tasks and symptoms in the last 12 months to be between standing/walking and lower back pain, whereas the weakest relation was found to be between drug administration and neck pain [15]. There answers about risk factors included, long standing, pushing and lifting patients also, stress were very common answer.

Their opinions in agreement with Parry DA [16] who concluded that health care professionals are exposed to work-related mental illnesses, including anxiety and fatigue.

Also, cigarette smoking could be a risk factor, we found that there are 26.2% of surgeons are smokers and 32.7% of nurses are smokers, Abate M [17] found that Cigarette smoking has had harmful effects on the back. He suggested that the relation between disc degeneration and smoking include an adverse toxic activity of nicotine, increased degradation of collagen, and reduced blood and oxygen supply.

A studied conducted in the Midwestern region in the US showed the factors from two prospective, individual factors and physical factors [18]. Individual factors were attributed to increasing age and its association with discomfort in the various joints and a greater BMI and its specific association with an increased incidence of discomfort of the foot joints [19]. Regarding the gender, no significant tendency towards WMSDs occurrence in one gender over the other has been found [20].

The other arm discussed physical factors, these showed that a greater direct correlation among the sample was identified between WMSDs and duration during which the usage of lifting aids of patients [21].

Conclusion

Lower back and neck are the most common sites for work related musculoskeletal disorders in both surgeons and nurses but with different percentages. More research with more accurate data is required to provide in-depth understanding for the basis of development of MSDs and the preventive measures to reduce the prevalence, incidence and complications of MSDs in healthcare professionals.

Conflicts of Interest

Authors had no conflict of interest.

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