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Musculoskeletal pain patterns in a group of Sudanese surgeons

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Abstract

Background: Surgeons frequently experience work-related musculoskeletal pain, which is a prevalent problem. This study aims to evaluate the patterns of musculoskeletal pain among a group of Sudanese surgeons. **Methodology**: This study utilized a cross-sectional survey design, in which 84 volunteers residing in the city of El-Obeid, located in the Northern Kordofan state, participated. We randomly selected contributors between May 2024 and June 2024, without taking into account their age or gender. **Results:** About 65.5% of the subjects, consisting of 75% females and 63% males, reported experiencing lower back pain. 43% of individuals reported experiencing neck pain, with 37.5% being women and 44% being men. The study found that males have a higher risk of experiencing neck pain. We calculated the relative risk (RR) to be 1.250, with a 95% confidence range (95%CI) of 0.501-3.122. A quarter of the participants, specifically 37.5% of females and 22% of males, reported experiencing shoulder pain. The likelihood of experiencing shoulder pain is slightly higher in females compared to males, with a relative risk (RR) of 1.178 (95% confidence interval [CI]: 0.880–1.576). **Conclusion:** Musculoskeletal discomfort is common among surgeons of various specialties in Sudan. The most often reported musculoskeletal pain was lower back, neck, and shoulder discomfort.

Keywords: Musculoskeletal pain, Surgeon, Back pain, Sudanese

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Introduction

Work-related musculoskeletal disorders (WRMSDs) are a leading source of illness and injury among healthcare professionals. The presence of pain and suffering not only affects the productivity of the individuals experiencing it, but also reduces the quantity and quality of work they are able to perform. This has both primary and secondary repercussions for productivity [1]. Discomfort can originate from several musculoskeletal components, such as muscles, joints, ligaments, or tendons. Distinguishing the source of pain from these numerous tissues poses difficulty [2]. Surgeons, like all other healthcare workers, are susceptible to acquiring work-related musculoskeletal disorders (WMSDs) and other related conditions. A significant proportion of surgeons experience work-related musculoskeletal complaints that worsen with continued surgical activity [3, 4]. Researchers reported the prevalence of work-related musculoskeletal disorders (WMSDs) for 13 specific body locations, including the neck, back (including the upper back, mid-back, and lower back), shoulders, elbows, wrists, fingers, thumbs, hips, knees, and ankles [5].

Between 79% and 88% of active surgeons experience musculoskeletal pain as a result of performing surgeries. Nevertheless, there is limited knowledge regarding the precise onset of when these problems start to have a noticeable impact on a patient's clinical condition. Training-induced musculoskeletal pain is a recurring condition that hampers normal bodily function. The neck is the most prevalent, intense, and incapacitating location. These findings offer a specific focus for therapies aimed at mitigating the effects of chronic pain on patient care, physician well-being, and long-term career sustainability [6]. The issue of musculoskeletal discomfort among surgeons is a multifaceted domain that requires careful consideration. It necessitates individual behavioral adjustments as well as changes in the organization, attitudes, and management [7].

However, there is a lack of data addressing this topic from Sudan. Therefore, the purpose of this study is to evaluate the

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patterns of musculoskeletal pain among a group of Sudanese surgeons.

Materials and Methods

A total of 84 volunteers residing in the city of El-Obeid, located in the Northern Kordofan state, participated in this cross-sectional study. We randomly selected the contributors between May 2024 and June 2024, without considering their age or gender. We intentionally created and utilized an online survey to gather data on musculoskeletal discomfort among surgeons. In addition to the participants' demographic characteristics, the study also included other information, such as questions assessing discomfort in various musculoskeletal areas.

Ethical Consent

We instructed each participant to review the ethical consent before they completed the questionnaire. The study protocol received approval from the ethics committee at the Prof. Medical Research Consultancy Center. Approval number**:** 0009/MRCC.6/24).

Statistical analysis

We organized the collected data into standardized spreadsheets and input it into computer software (SPSS) for analysis. The analysis included determining frequencies, cross-tabulations, relative risk, and conducting a Chi-square test, all with a 95% confidence interval.

Results

This study examined a group of 84 surgeons, whose ages ranged from 27 to 70 years, with a mean age of 38±8 years. Among the 84 surgeons, 68 (80%) were males and the remaining 16 (20%) were females, resulting in a male-to-female ratio of 4.25:1.00. The majority of surgeons, specifically those between the ages of 36 and 40, followed by the age groups of 31–35 and 41–45, comprising 28.6%, 26%, and 19%, respectively, out of a total of 84 surgeons. While the age distribution for males was similar to the whole population, females appeared to have a substantially younger age profile. We discovered that approximately 62% of females were younger than 35 years old. Nearly 97.6% of the participants in the study resided in metropolitan regions, as stated in Table 1 and Figure 1

Table 1. Distribution of the study subjects by sex, age, and residence

Variable	Females	Males	Total
≤30 years	5	6	11
31-35	5	17	22
36-40	4	20	24
41-45	2	14	16
≥46	0	11	11
Total	16	68	84
Residence			
Urban	15	67	82
Rural	1	1	2
Total	16	68	84

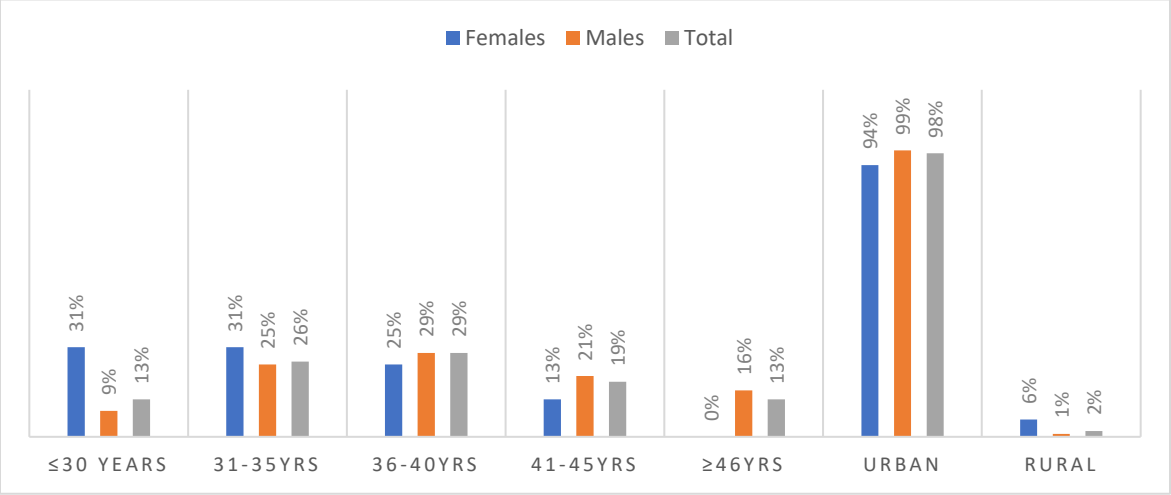

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Figure 1. Description of the surgeons by age, sex, and residence.

Table 2 and Figure 2 show the distribution of study participants by gender and pain site. 36/84 people (43%), including 6/16 (37.5%) women and 30/68 (44% males), reported neck pain. Males have a higher incidence of neck pain, with a relative risk (RR) of 1.250 (.501-3.122) and a 95% confidence interval (CI). About 21 (25%), including 6 (37.5%) females and 15 (22%) males, reported shoulder pain. Female sex is associated with a higher risk of shoulder pain; RR (95% CI) = 1.178 (0.880–1.576).

9 people (10.7%), including 2 women (12.5%) and 7 men (10.3%), mentioned upper back pain. 55 (65.5%) participants, including 12 (75%) females and 43 (63%) males, reported lower back discomfort. Five people reported forearm pain: one woman and four men.

Around 16 (19%) people reported hand pain, including 2 (12.5%) women and 14 (87.5%) men. 21 (25%) participants, comprising 6 (37.5%) women and 15 (22%) males, reported leg pain. The risk of female sex-related leg pain is 1.178 (95% CI) (.880-1.576).

Six people complained of knee joint pain (3 men and 3 women). Seven people experienced ankle joint pain: four females and three males. Nine people (4 females and 5 males) reported foot pain

Table 2. Distribution of the study subjects by pain site

Variable	Females (n=16)	Males (n=68)	Total
Neck pain			
No	10	38	48
Yes	6	30	36
Total	16	68	84
Shoulder Pain			
No	10	53	63
Yes	6	15	21
Upper Back Pain			
No	14	61	75
Yes	2	7	9
Lower Back Pain			
No	4	25	29
Yes	12	43	55
Forearm Pain			
No	15	64	79
Yes	1	4	5
Hands Pain			
No	14	54	68
Yes	2	14	16
Leg Pain			
No	10	53	63
Yes	6	15	21
knee Joint Pain			
No	13	65	78
Yes	3	3	6
Ankle Joint Pain			
No	12	65	77
Yes	4	3	7
Foot Pain			
No	12	63	75
Yes	4	5	9

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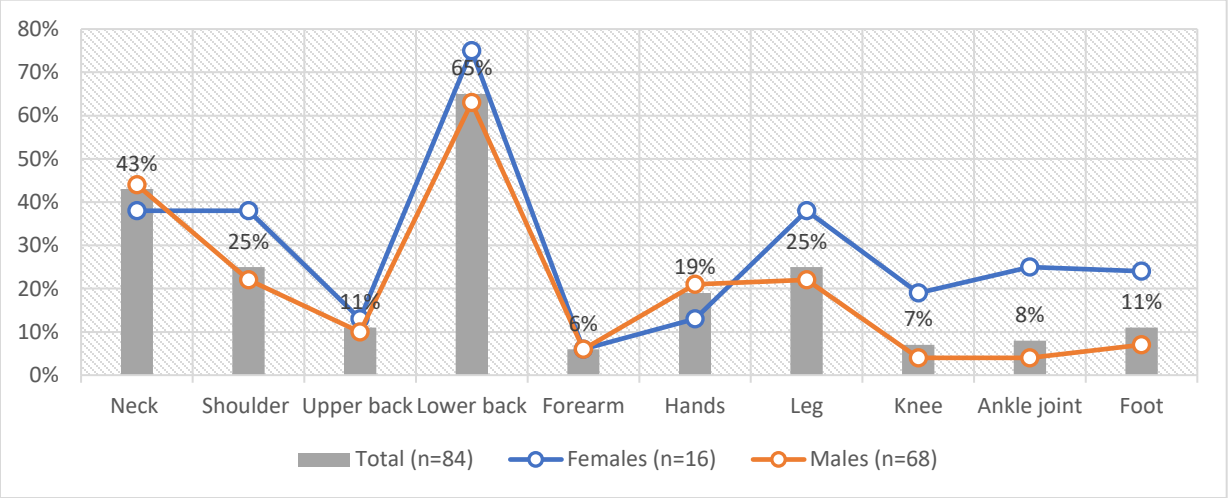

Figure 2 provides a description of the study subjects categorized by their respective pain sites.

Table 3 and Figure 3 describe the study's patients' distribution by age and pain site. Neck discomfort was most common in the age group 31–35 years, followed by 36–40 and 41–45 years, with 11/36 (30.5%), 9/36 (25%), and 8/36 (22%), respectively. Shoulder pain and upper back pain were more common among younger people, as seen in Table 3. Lower back pain was most common in the 31–35 age group, followed by 36–40 and 41–45 years, with 16/55 (29%), 15/55 (27%), and 11/55 (20%), respectively. Hand pain was more common between the ages of 31 and 40, as seen in Table 3. Leg and knee pain were more common among younger surgeons. However, calculating these values across all age groups reveals substantial variations in the proportions, as illustrated in Figure 3.

Table 3. Study subjects' age and pain sites distribution

Variable	≤30 years	31-35	36-40	41-45	≥46	Total
Neck Pain						
No	8	11	15	8	6	48
Yes	3	11	9	8	5	36
Total	11	22	24	16	11	84
Shoulder Pain						
No	7	17	18	13	8	63
Yes	4	5	6	3	3	21
Total	11	22	24	16	11	84
Upper Back Pain						
No	10	18	22	16	9	75
Yes	1	4	2	0	2	9
Total	11	22	24	16	11	84
Lower Back Pain						
No	5	6	9	5	4	29
Yes	6	16	15	11	7	55
Total	11	22	24	16	11	84
Hands Pain						
No	8	17	19	14	10	68
Yes	3	5	5	2	1	16
Total	11	22	24	16	11	84
Leg Pain						
No	7	17	16	13	10	63
Yes	4	5	8	3	1	21
Total	11	22	24	16	11	84
knee Joint Pain						
No	9	19	24	16	10	78
Yes	2	3	0	0	1	6
Total	11	22	24	16	11	84

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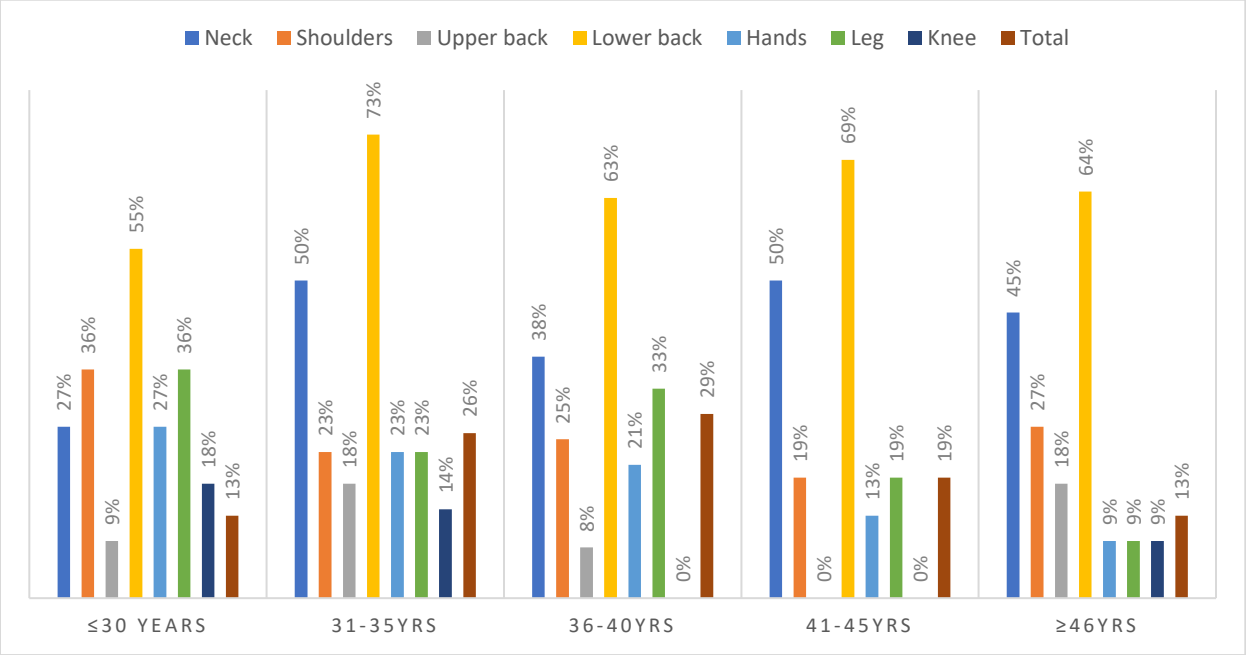

Figure 3. Description of the study subjects by pain proportions within the entire age groups.

Discussion

This study looked at the patterns of musculoskeletal pain among a sample of Sudanese surgeons. The most common musculoskeletal pain in this study was lower back pain (65.5%). Lower back pain (LBP) is one of the most prevalent presenting complaints worldwide, with over 80% of the population experiencing an episode at least once in their lifetime [8]. Lower back pain (LBP) is the most frequent type of musculoskeletal ailment and a major occupational issue for healthcare workers, particularly surgeons. Thirty-eight percent of surgeons reported back pain. General surgeons showed the highest occurrence, followed by gynecologists. Surgeons with a longer average length of work experience had a considerably higher proportion of back pain patients. Back pain, on the other hand, did not appear to be associated with the surgeon's gender, dominant hand, specialty, or other working circumstances [9]. However, their larger sample size and the fact that they counted all back pain could explain the differences between our findings and those of this study.

The current study's findings revealed that neck pain was widespread among this group of surgeons. 66.7% of surgeons reported neck pain during the course of a year. According to the Neck Incapacity Index, more than half (52.8%) of people experienced incapacity due to mild (45.5%), moderate (6.5%), or severe (.8%) neck pain. Neck pain caused 17.5% of surgeons to miss work, with a median absence of 3.5 (IQR, 2–7.8) days [10]. Neck pain is common among a variety of medical specialties, including laparoscopic surgeons, dentists, plastic surgeons, ophthalmologists, urologists, and orthopaedic surgeons. The 1-month prevalence of neck pain was 74.4% (134/180 surgeons). One hundred eighteen surgeons (88%) reported solely neck pain, while 16 surgeons (11.9%) reported both neck and radicular arm pain. Given the high frequency of neck pain, we must develop general health, work, and ergonomic guidelines and recommendations to help avoid and reduce the burden of neck pain among spine surgeons [11]. In this study, 25% of participants reported having shoulder pain. Shoulder pain is one of the most common musculoskeletal diseases, affecting 6.9 to 26% of the population. Researchers have identified numerous causes of shoulder pain, with rotator cuff tendinopathy being the most common. Work-related musculoskeletal pain is common in the medical industry, but orthopedic surgeons handle the vast majority of patients. Various circumstances, such as long hours and physically demanding operations, or the unusual positions orthopedic surgeons must assume during their surgeries, frequently cause the pain [12].

According to studies, neck and/or shoulder pain (NSP) is a common and unavoidable occupational health concern among healthcare practitioners [13]. General

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surgeons are at significant risk for work-related musculoskeletal diseases (WRMSDs), particularly in the neck and back. In a Japanese study, the prevalence of WRMSDs was 65.1%, with 79.2% having had them at least once in their lives. WRMSDs of the neck and back were more common after open surgery (44.3%, 42.5%) than after laparoscopic surgery (28.2%, 31.1%), but there was no significant difference in shoulder discomfort. Age was the most significant risk factor for WRMSDs, and pain ratings, prevalence of chronic pain, and incidence of WRMSD-related absence from work all increased with age [14]. In conclusion, musculoskeletal discomfort is common among Sudanese surgeons of various specializations. The lower back, neck, and shoulder were the most commonly reported areas of musculoskeletal pain. Interventions involving physical activities and microbreaks are considered necessary.

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