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Musculoskeletal Disorders among Healthcare Workers of Governmental Hospitals in Duhok Governorate

Masood Abdulkareem Abdulrahman[1]*, Omran Azeez Jibraeel[2]

[1] Department of Public Health, College of Health and Medical Technology- Shekhan, Duhok Polytechnic University, Kurdistan Region of Iraq,
EM: masood.abdulkareem@dpu.edu.krd
[2] Department of Public Health, College of Health and Medical Technology- Shekhan, Duhok Polytechnic University, Kurdistan Region of Iraq,
EM: omran.azeez@dpu.edu.krd

*Corresponding author: Masood Abdulkareem Abdulrahman (masood.abdulkareem@dpu.edu.krd)

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Abstract

work related musculoskeletal disorders affect the entire body's muscles, tendons, ligaments, bone, joint, intervertebral disc, and skeleton. Symptoms such as discomfort, numbness, heaviness, and exhaustion are used to diagnose them. The purpose of this article is to find out musculoskeletal disorders among healthcare workers in governmental hospitals in Duhok governorate, Iraq. A cross-sectional study conducted among 1843 healthcare professional (physicians and nurses) who employed at thirteen governmental hospitals in the Duhok governorate, multistage sampling method was used, first, by dividing the population under study into clusters, each hospital represents a cluster; then, according to proportion of each hospital, convenience sampling method used to select 400 healthcare workers. The last 12 months' prevalence of musculoskeletal disorders among healthcare workers was; the lower back pain had the highest proportion 314 (78.5 %), neck pain was 267 (66.75%), prevalence of pain in the shoulders was 251 (62.75%) and Feet pain was 249 (62.25%). Other less common musculoskeletal where pain in Knee joint was 203 (50.75%), Wrist/ Hand 194 (48.5%), thigh pain 141 (35.25%), pain in elbow 131 (32.75%), finally, hip joint had the lowest proportion of pain among other musculoskeletal and it was 126 (31.5%). Low back pain among healthcare had highest prevalence followed by Neck pain, and both of them seem to be increased with the progress of the age of healthcare workers. Statistically, there was a significant correlation between the older age and low back pain and neck pain. Nurses more than physicians were frequently consulted orthopaedic clinics due to musculoskeletal disorders. Statistically, there was a significant difference between physicians and nurses who required orthopaedic Consultation.

Keywords
Musculoskeletal disorders, Healthcare Workers, Governmental Hospitals, Duhok

Musculoskeletal disorders (MSDs) affect the entire body's muscles, tendons, ligaments, bone, joint, intervertebral disc, and skeleton (1). Symptoms such as discomfort, numbness, heaviness, and exhaustion are used to diagnose them (2). MSDs account for one-third of all sick leave cases among healthcare workers (HCWs). MSDs among HCWs are commonly underreported, even in developed countries (3). Globally, MSDs is a major cause of disability (4). The World Health Organization (WHO) reports that MSDs conditions are the most common causes of disability and limitation related to daily living and gainful employment (5). The probability of occurrence of occupational hazards to HCWs varies according to the profession, the nature of the activity, and the hospital unit (6). The

use of appropriate equipment, training and proper handling skills helps workers avoid MSDs (7).

Work-related ergonomic risks at workplace were linked to occurrence of MSDs (8). Epidemiological studies have shown that awkward postures, heavy manual handling and transferring of patients, repetitive movements, monotonous jobs, and standing positions for prolonged hours are ergonomic risk factors associated with nursing occupations (9).

spine disorders, pain and limitations occurred in the majority of surveyed medical workers, which was associated with a decrease in their quality of life. (10). More than 5000 injuries among HCWs are documented each year, according to estimates (3). A higher incidence of LBP is associated with the recurrent or prolonged uncomfortable postures that HCWs frequently engage in (11). LBP has also been reported to have a negative impact on nurse productivity, lowering the overall quality of healthcare services offered to beneficiaries. Furthermore, LBP significantly influences the healthcare system, particularly in terms of absenteeism from work and rising healthcare expenses (12). effective lifting technology can help reduce the time spent in back-harming postures (13). Also, the neck pain is the fourth leading cause of disability, the causes vary broadly, with leading causes being inadequate ergonomics at work, sitting and maintaining neck posture in a non-physiologic position for long periods of time (14).

Subject and Methods

A. Study settings, population and design of the study

A cross-sectional study conducted among 1843 healthcare professional (physicians and nurses) who employed at thirteen governmental hospitals in the Duhok governorate, from October 31, 2021, to July 31, 2022. A multistage sampling method was used, first, by dividing the population under study into clusters, each hospital represents a cluster; and then, according to proportion of each hospital, convenience sampling method used to select 400 healthcare workers.

B. Ethical Considerations

Both the Scientific Committee of Duhok Polytechnic University/ College of Health and Medical Technology and the Ethical Committee of the General Directorate of Health in Duhok governorate/ directorate of planning approved the protocol of the study with Reference number: 18082021 -8- 1 6 in 18 of August 2021.

C. Data collection and instrument of the study

A designed questionnaire was the instrument of the study for collecting data. Errors and ambiguous questions in the questionnaire corrected by expert support before applying the study. A pilot study was carried out on 20 HCWs in two canters (thalassemia and renal dialysis) at the Akre district of health; the questionnaire remained unchanged after the pilot study. Data collected through direct interview between researcher and respondents.

Data analysis

Through the SPSS software version 25, the data were analysed and chi-square statistical tests were used to determine the correlation and difference between variables.

Results

Prevalence of MSDs among HCWs in hospitals of Duhok province

Table 1. Demonstrates the prevalence MSDs among HCWs in the past 12 months. The LBP was the highest disorder among them since 314 (78.5 %) of HCWs had periods of discomfort in the lower back, 172 (43%) had more than three episodes of pain, in contrast, suffering from pain in the hip joint was the lowest occurrence and it prevalence was 126 (31.5%).

Table 1. Distribution of MSDs among HCWs

	Types of MSDs (Pain distribution)	Once (%)	Two times (%)	Three times (%)	> Three times (%)	Never (%)
1	Neck	38 (9.5	56 (14)	49 (12.25)	124 (31)	133 (33.25)
2	Elbow	18 (4.5)	37 (9.25)	27 (6.75)	49 (12.25)	269 (67.25)

3	Low back pain	19 (4.75)	46 (11.5)	77 (19.25)	172 (43)	86 (21.5)
4	Hip	12 (3)	27 (6.75)	29 (7.25)	58 (14.5)	274 (68.5)
5	Thigh	10 (2.5)	24 (6)	39 (9.75)	68 (17)	259 (64.75)
6	Feet	18 (4.5)	45 (11.25)	63 (15.75)	123 (30.75)	151 (37.75)
7	Shoulder	18 (4.5)	70 (17.5)	71 (17.75)	92 (23)	149 (37.25)
8	Wrist/ Hand	29 (7.25)	42 (10.5)	50 (12.5)	73 (18.25)	206 (51.50)
9	Knee	22 (5.5)	41 (10.25)	42 (10.5)	98 (24.50)	197 (49.25)

Neck pain and age groups

Table 2. shows the prevalence of pain in the neck among HCWs and its distribution in different age groups. 267 (66.75%) of them had episodes of pain in their neck, and 124 (31%) of them had more than three times of pain in last year. The highest average occurrence of neck discomfort within the single age group was for category 50-54 years old 15 (75%), followed by the age group 25-29 years, which was 103 (71%). Statistically, the age group 45-49 years significantly had the higher prevalence of pain among other age groups of healthcare personnel.

Table 2. Distribution of pain in the neck among age groups

Age group	Once (%)	two times (%)	three times (%)	>three times (%)	Never (%)	Total (%)
25-29 years	13 (8.97)	18 (12.41)	17 (11.72)	55 (37.93)	42 (28.97)	145 (100)
30-34 years	8 (8.99)	8 (8.99)	11 (12.36)	25 (28.09)	37 (41.57)	89 (100)
35-39 years	4 (8.70)	4 (8.70)	1 (2.17)	11 (23.91)	26 (56.52)	46 (100)
40-44 years	10 (17.55)	12 (21.05)	7 (12.28)	14 (24.56)	14 (24.56)	57 (100)
45-49 years	3 (9.38)	7 (21.87)	7 (21.87)	10 (31.25)	5 (15.63)	32 (100)
50-54 years	0 (0)	5 (25)	3 (15)	7 (35)	5 (25)	20 (100)
55 years and older	0 (0)	2 (18.18)	3 (27.28)	2 (18.18)	4 (36.36)	11 (100)
Total	38 (9.5)	56 (14)	49 (12.25)	124 (31)	133 (33.25)	400 (100)
p. value 0.01						

Lower back pain

Table 3. Shows the distribution of LBP in all age groups. HCWs who complained of LBP more than three times were 172 (43%). Ten out of eleven (90.9%) of 55 years and older suffer from LBP; in the age group 50-54 years. Sixteen from twenty (80%) had LBP. It seems that the prevalence of LBP increases with the progress of the age of HCWs. It seems that the LBP occurs in all age groups of HCWs, and the age group 55 years and older significantly had higher rate of LBP among other age groups

Table 3. Distribution of low back pain

Age group	Once (%)	two times (%)	three times (%)	>three times (%)	Never (%)	Total (%)
25-29 years	10 (6.9)	11 (7.59)	20 (13.79)	80 (55.17)	24 (16.55)	145 (100)
30-34 years	5 (5.62)	12 (13.48)	19 (21.35)	35 (39.33)	18 (20.11)	89 (100)
35-39 years	1 (2.17)	8 (17.39)	7 (15.22)	13 (28.26)	17 (36.96)	46 (100)
40-44 years	1 (1.75)	7 (12.28)	11 (19.30)	20 (35.09)	18 (31.58)	57 (100)
45-49 years	2 (6.24)	4 (12.50)	11 (34.38)	11 (34.38)	4 (12.50)	32 (100)
50-54 years	0 (0)	2 (10)	4 (20)	10 (50)	4 (20)	20 (100)

55 years and older	0 (0)	2 (18.18)	5 (45.46)	3 (27.27)	1 (9.09)	11 (100)
Total	19 (4.75)	46 (11.50)	77 (19.25)	172 (43)	86 (21.50)	400 (100)
p. value 0.017						

Shoulder pain

The prevalence of pain in the shoulders among HCWs is shown in Table 3. The highest rate of pain occurred among the age group 45-49 years; since 26 HCWs from total 32 (81.3%) had the pain, followed by the age group. 25-29 years and 99 out of 145 (68.3%). The occurrence of shoulder pain in the 55 years and older group was the lowest since only 3 out of 11 HCWs (27.27%) suffer from the pain. Overall, Statistically, the age group 45-49 years had significantly higher proportion of pain in the shoulders among other age groups.

Table 4. Distribution of shoulder pain

Age group	Once (%)	two times (%)	three times (%)	>three times (%)	Never (%)	Total (%)
25-29 years	8 (5.52)	18 (12.41)	24 (16.55)	49 (33.79)	46 (31.73)	145 (100)
30-34 years	4 (4.49)	21 (23.60)	13 (14.61)	18 (20.22)	33 (37.08)	89 (100)
35-39 years	0 (0)	7 (15.22)	9 (19.56)	7 (15.22)	23 (50)	46 (100)
40-44 years	5 (8.77)	10 (17.54)	11 (19.30)	7 (12.29)	24 (42.11)	57 (100)
45-49 years	1 (3.13)	10 (31.25)	7 (21.87)	8 (25)	6 (18.75)	32 (100)
50-54 years	0 (0)	2 (10)	7 (35)	2 (10)	9 (45)	20 (100)
55 years and older	0 (0)	2 (18.18)	0 (0)	1 (9.09)	8 (72.73)	11 (100)
Total	18 (4.50)	70 (17.50)	71 (17.75)	92 (23)	149 (37.25)	400 (100)
p. value 0.005						

Other MSDs among HCWs

Figure 1. Demonstrates the distribution of other less common MSDs in different parts of the body among HCWs. For example, elbow pain occurred for 131 (32.75%) of them. In addition, 48 (31.57%) of physicians had pain in their elbow, while 83 (33.46%) of nurses had it. Statistically, the difference between physicians and nurses was not significant. 126 (31.5%) was the prevalence of the hip pain, from total 152 physicians 51 (33.55%). In comparison, from total 248 nurses 75 (30.24%) pain in their hip, and there was no significant difference between physicians and nurses and the prevalence of pain in the hip. Pain in the thigh happened for 141 (35.25%), and the frequency and proportion of physicians and nurses who had pain in the thigh was 43 (28.28%) and 98 (39.51%), respectively, the prevalence of pain in the thigh among nurses was significantly higher than physicians.

Total of 194 (48.5%) of HCWs had pain in hand/ wrist, 69 (45.39%) of physicians and 125 (50.4%) of nurses suffered from pain in hand/ wrist, the occurrence of pain in the wrist was significantly higher among nurses than physicians. Episodes of discomfort in the knee joint had occurred for 203 (50.75%) HCWs. The proportion of physicians who had knee pain was 80 (52.63%), and this proportion was slightly more than that of nurses, 113 (49.59%). Statistically, there was not significant difference regarding prevalence of knee pain between physicians and nurses.

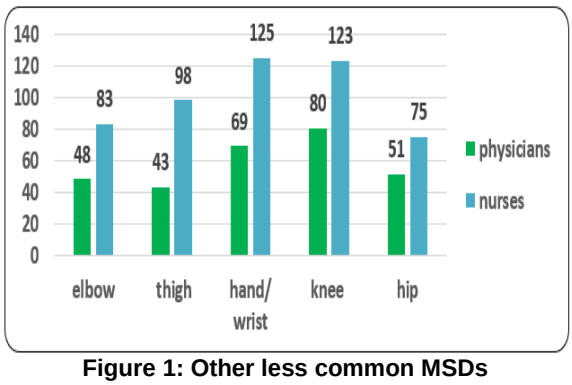

Figure 1: Other less common MSDs

Consulting of orthopaedic due to MSDs

Figure 2. Shows that 184 (46%) HCWs visited a clinic of orthopaedic physicians due to

MSDs. 52 (34.21%) of the Physicians and 132 (53.23%) of the nurses went to orthopaedic clinics for MSDs. Statistically, there was a significant difference between physicians and nurses who required orthopaedic treatments.

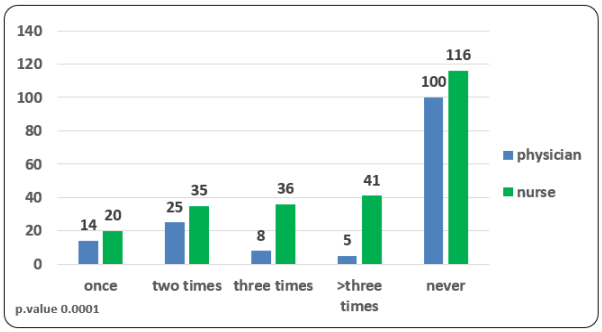

Figure 2: Consulting of orthopaedic due to MSDs

Discussion

MSDs incur a significant economic burden on governments, particularly in terms of costs, reduced productivity, increased disability and absenteeism in both developed and developing countries (15). It is estimated that almost one third of all cases of absence from work among HCWs are related to MSDs. Researches also shows that a large proportion of HCWs report the occurrence of MSDs in one or more regions of the body, with a problem with the lower back being one of the most common (16). Physicians, healthcare professionals, nurses, laboratory technicians, and medical waste handlers are the most vulnerable healthcare employees (17).

According to the findings of our research, the most common types of MSDs among HCWs were LBP, pain in the neck, pain in the shoulders, and pain in the feet accordingly. In addition, prevalence of MSDs requiring medical consultation in orthopaedic clinics was only 46%. Across-sectional study conducted in Benha University Hospitals in Egypt, the most affected site with MSDs was LBP (81%) followed by neck (47.2 %). While, elbow was the least affected site (14.2%).

The rate of MSDs in different parts of world has been varied, Brazil (93.0%) and Turkey (90.0%) Nigeria (85.0%), which was higher than those showed in Mexico (76.0%), Japan (70.0%), Canada (66.0%), and the United States (60.0%). The evidences showed that nearly three out of four nursing personnel (73.2%), suffered from pain or discomfort in at least one of any of body region during the past 12 months (18).

Prevalence of LBP

LBP is the most critical factor affecting output loss, ranking second among disorders causing labor loss in developed countries (19). In current study the occurrence of LBP was significantly associated with older age groups, the prevalence among nurses alone was 77.4% and among physicians was 80.2%. In a study carried out among Nurses in Kirkuk General Hospitals, the last 12-month prevalence of LBP was (52%). Another study among Nurses in Erbil Teaching Hospitals reveals, also in the previous 12-month prevalence of LBP was the most prevalent 75%, (2).

The prevalence of LBP among HCWs in south-western Saudi Arabia prior 12 months of conducting the study was 73.9%, furthermore, the prevalence of LBP requiring medical consultation in neurosurgical or orthopaedic clinics was only 20% (11). In Africa and exactly in Kibuli Muslim Hospital the prevalence was 84% among the HCWs (21).

In a study among physicians in Saudi Arabia post COVID-19 lockdown, the prevalence of LBP was the most reported area both in the 7 days and the 12 months preceding the study (23.02%) and (42.44%) respectively (22). A Systematic Review and Meta-analysis on WRMSDs Among Surgeons and Interventionalists, the 12-month prevalence estimate of LBP was back pain was 59% (23).

Prevalence of neck pain

267 (66.75%) of HCWs had episodes of pain in their neck and the prevalence among nurses was 67.7%, and it was significantly associated with older age group. In five Erbil teaching hospitals the prevalence of neck pain among nurses was 46% (2). While, in another study among nurses in Ranya and Qaladiza districts of health the prevalence was 48.4% (24). Worldwide, in a systematic review on a total number of 34 articles (covering the years from 2007 to 2017) and published in 2018, conducted among nurses and focused on the prevalence of MSDs, the neck pain in the

prior 12 months and one week of conducting studies was (49.8%, 27.0%), respectively (18). A Systematic Review and Meta-analysis on WRMSDs among Surgeons and Interventionalists, the 12-month prevalence estimate of neck pain was 65% (23).

Prevalence of pain in shoulder

The prevalence of shoulder Pain among HCWs was 251 (62.75%), 60.5% of physicians and 64.1% of nurses. While the prevalence among nursing professionals in Ranya and Qaladiza districts of health was (38.5%) (24), and among nurses in Erbil teaching hospitals was (69 out of 175) 39% (2).

In the study among physicians in Saudi Arabia post COVID-19 lockdown, the prevalence of shoulders pain was in the one week and the 12 months preceding the study was (15.92) and (33.62), respectively (22), and among EMS Personnel in Saudi Arabia, Riyadh 33.9 % in the shoulders in previous 12 months and 14.7 % in the shoulders in last week (15). A Systematic Review and Meta-analysis study estimated that wat 12-month prevalence estimation of shoulder pain among physicians was 52% (23).

Other MSDs among HCWs

Usually, and according to the nature and efforts perfumed by the worker, some parts of human body seems to be more affected by ergonomic hazards than other parts. Also in healthcare setting, and regarding to the nature and specialist of HCWs some parts of his body are more affected by ergonomic hazards and relatively had more MSDs than other body parts. The associated factors were workload, occupational factors (heavy or awkward lifting, bending or twisting the neck, walking for long periods of time, standing for long periods of time, and maintaining shoulder abduction for long periods of time), psycho-social factors (mental stress and psychological fatigue in the work place), and contract/temporary employment status, in addition to demographic factors (25). In current study, result reveals that pain in hip, elbow, thigh, wrist, knee, and feet had less prevalence than other most common MSDs, such as LBP, neck pain and pain in shoulders. Same results were found among nurses in Erbil teaching hospitals and LBP, neck pain and pain in shoulders had most prevalence, furthermore, the same top three pain among other MSDs
was found among nursing professionals in Ranya and Qaladiza Districts of health (24). Globally, the ranking of 12-month period prevalence of MSDs in at least one body site was Pain and discomfort were mostly found in the lower back, knees, shoulders, and neck, followed by wrists/hands, ankles/feet, upper back, hips/thighs and elbows (25). And in a systematic review, the most MSDs among physicians during previous 12-month prevalence estimation were pain of neck, shoulder pain, back pain, and upper extremity, sequentially (23). But, in a study among Iranian physician knee pain had a highest prevalence followed by LBP, neck pain and pain in shoulders (26).

Conclusions

LBP among HCWs had highest prevalence among other MSDs followed by Neck pain, and both of them seems to be increased with the progress of the age of HCWs. Statistically, there was a significant correlation between the older age and LBP and neck pain. Nurses were more frequently consult orthopedic clinics for MSDs than physicians. Statistically, there was a significant difference between physicians and nurses who required orthopedic Consultation.

Sources of Support: None

Conflict of interest: The authors declare no conflict of interest.

Ethical approval: Both the Scientific Committee of Duhok Polytechnic University/ College of Health and Medical Technology and the Ethical Committee of the General Directorate of Health in Duhok governorate/ directorate of planning approved the protocol of the study with Reference number: 18082021 -8-16 at 18 of August 2021.

Informed consent

Informed consent was obtained from each participant prior to their involvement in the study.

Author Contributions

Both authors contributed equally regarding the design, collection, and analysis of data. Also,

they contributed to the writing of the article.

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