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Article

Prevalence musculoskeletal disorders among healthcare practitioners in Taif, Saudi Arabia: A cross-sectional study

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Abstract: Background: Musculoskeletal complaints (MSCs) are a major complaint among Saudi healthcare practitioners. Increased awareness of risk factors may decrease in the prevalence of musculoskeletal disorders. In Taif, Saudi Arabia hospitals, little information is available about the prevalence of musculoskeletal issues and the specific risk factors. **Aim:** The purpose of this study was to estimate the incidence and factors associated with the development of musculoskeletal disorders among healthcare practitioners in Taif city, Saudi Arabia. **Methods:** In Taif, Saudi Arabia, a cross-sectional study via a web-based survey was carried out. The survey using Nordic questionnaires for musculoskeletal disorders analysis had been sent to healthcare practitioners at Taif hospitals, including physicians, nurses, lab workers, and other allied medical practitioners, through an email. Categorical and numerical variables were presented by descriptive statistics. Logistic regression analysis to determine the relationship between independent factors and musculoskeletal disorders. **Results:** 124 participants completed the survey. 54 (43.5%) males and 70 (56.5%) females. 95% and 92% of subjects participating in musculoskeletal symptoms in the last 7 days and 12 months preceding the scan, respectively. lower back pain was the most often reported musculoskeletal symptom by healthcare practitioners (75.8%). Also, in the last 7 days before the survey (67.7%). Neck pain was the second most common musculoskeletal. Females are much more susceptible to lower back pain. Standing for an extended period of time was linked to lower back pain. Neck pain has been linked to excessive bending and twisting, standing for long period during regular practice, and serving large number of patients >15 patients/day. 19.4% of participants were forced to take sick leave for reasons related to MSCs. 66% of the participants recorded that they had pain after starting work, 35% received a medical attention, while 54% of them took medication to relieve pain. **Conclusion:** MSCs are more common in healthcare practitioners at Taif city, Saudi Arabia, with the low back and neck being the most typically afflicted. MSCs are more common in physiotherapists then nurses. Females more affected than males, age between 31 to 40 years. The most commonly reported work risk factors for the development of MSCs were standing for long periods of time, working in awkward or uncomfortable place of work, and serving an excessive number of patients in a day. Physical exercise can reduce the risk of MSCs in healthcare practitioners.

Keywords: musculoskeletal complaints; healthcare practitioners; LBP; western region; Saudi Arabia

1. Introduction

People all over the world might be affected by musculoskeletal complaints (MSCs), which are a substantial contributor to physical impairment [1]. Back pain was

the primary cause of disability worldwide in 2016, according to the global burden of disease (GBD) study, MSCs seen as number two globally, from 20% to 30% of population have musculoskeletal diseases [2]. MSCs may be brought on at work, muscular, nervous, tendinous, and musculoskeletal illnesses associated with the workplace, or joint-related discomforts in various parts of the body that are primarily attributable to the work environment, they are either worse or exacerbated by the conditions at work [3], along with vulnerable body parts such the lower back, neck, shoulders, arms, forearms, hands, and lower extremities [4]. Healthcare practitioners are highly impacted by MSCs during work, and there is an increase public health concern, particularly for healthcare workers, and a significant contributor to temporary job disabilities [5–7].

About half (209 participants or 54.7%) of total 382 participants in a study on work-related musculoskeletal disorders WMSCs among medical practitioners conducted at hospitals in Al Qassim Region, Saudi Arabia, in 2020 reported to have WMSCs [8]. In addition, lower back and neck pain were found to be the most often reported musculoskeletal symptoms between radiologists in a study conducted 2019 on WMSCs in Saudi Arabia [9]. Additionally, another study conducted in Saudi Arabia revealed that 67.0% of orthopedic doctors who participated in the study reported to have musculoskeletal pain [10].

However, little is known regarding the prevalence of musculoskeletal problems and the particular risk factors that affect medical practitioner in Saudi Arabia's especially at Taif hospitals. To the best of our knowledge, this is the first study to look into the frequency of musculoskeletal complaints in Taif city, Saudi Arabia, among health care practitioners. Therefore, this study aims to calculate the prevalence of MSCs among healthcare professionals in Taif city, Saudi Arabia.

2. Methodology

This study has been approved by the Scientific Research Ethics Committee at King Faisal Medical Complex in Taif. A cross-sectional study was done at Taif hospitals in Saudi Arabia from the period of January 2023 till May 2023 targeted all medical care practitioners, including physicians, nurses, lab workers, and other allied medical practitioners. Hospital administrative (non-medical) staff were excluded from the study. Data was collected using an online survey. The questionnaire was distributed to 124 healthcare practitioners. Before beginning our actual investigation, a pilot study was conducted with 10% of our sample size (12 participants) to evaluate the validity of our questionnaire and determine the time for each participant to complete it.

A standardized, anonymous questionnaire was used and distributed electronically using Google forms. The survey was comprised of 25 multiple-choice questions covering the following areas: (1) background and demographic information, (2) work-related data, (3) workstation evaluation, and (4) identification of work-related musculoskeletal symptoms.

A cover letter describing the purpose of the study, informing participants of the voluntary nature of their participation, and assuring their anonymity was provided along with the survey questionnaire. Participants were encouraged to contact the research investigator for any queries related to the study, using the provided contact

information. The standard Nordic musculoskeletal questionnaire (NMQ), a valid and reliable screening, and surveillance tool was used to determine which body parts were affected by musculoskeletal symptoms resulted from the work [11].

It included the following questions about nine body parts (neck, shoulder, elbow, wrist/hand, upper back, lower back, hip/thigh/buttock, knee, and ankle):

1) Have you had trouble (ache, pain, or discomfort) in the last 12 months?
2) Have you had trouble in the last 7 days?
3) Have you been prevented from carrying out normal activities (e.g., job, housework, or hobbies) due to this trouble in the last 12 months?

In this study, the outcome was the presence of musculoskeletal symptoms in any of the nine body parts, which restricted the performance of normal activities in the last 12 months. The responses of the outcome variables were dichotomized: responses of "left", "right" or "bilateral" in any body part were coded as a "yes", whereas a respondent who indicated "no" for all body parts was coded as a "no". Data was extracted into a Microsoft Excel Spreadsheets.

2.1. Statistical analysis

The statistical package for social sciences software, version 23.0 (SPSS Inc., Chicago, IL), has been used for data analysis. To analyze the distribution of individual demographic features, conditions of work, and musculoskeletal disorders, a descriptive statistic was used. Binary logistic regression was used to evaluate the effect of factors on a dichotomous dependent variable. The multicollinearity between independent variables was checked before running the regression models. A *p*-value of less than 0.05 indicates that it is statistically significant.

3. Results

3.1. Participants demographic data

Table 1. Basic demographic data of participants.

Variable	Variable	*N*	%
Age	20–30	62	50.0
	31–40	36	29.0
	41–50	10	8.1
	51–60	16	12.9
Gender	Male	54	43.5
	Female	70	56.5
Profession	Physician	40	32.3
	Pharmacist	8	6.5
	Physiotherapist	10	8.1
	Radiologist	8	6.5
	Laboratory specialist	6	4.8
	Nurse	46	37.1
	Medical secretary	2	1.6

Table 1. (*Continued*).

Variable	Variable	*N*	%
Profession	Social service	2	1.6
	Social worker	2	1.6
Height (cm)	140– 150	8	6.5
	151–160	34	27.4
	161–170	50	40.3
	171–180	28	22.6
	181–190	4	3.2
Weight (kg)	40–50	16	12.9
	51–60	32	25.8
	61–70	28	22.6
	71–80	28	22.6
	81–90	4	3.2
	91–100	14	11.3
	> 100	2	1.6
Handedness, *n* (%)	Right–handed	116	93.5
	Left–handed	8	6.5
Exercising, *n* (%)	Yes	44	35.5
	No	80	64.5

N: number of participants; %: percentage.

As explained in **Table 1** above, 124 participants responded to the survey with a highest response being from 40 physicians (32.3%), and the lowest were two responses reported as a percentage of (1.6%) received from each department of medical secretary, social service, and social workers. 54 (43.5%) participants were male and 70 (56.5%) participants were female (56.5%). The majority of the participants (79%) were between the ages of 20–30 (50%) and 31–40 (29%) year-age, 35 % of those surveyed claimed to engage in some form of physical activity or sport, 116 (93.5%) of the respondents were right-handed.

3.2. The participants' work environment

Table 2 provides an overview of the participants' work environment.

Table 2. Participants' work environment.

Variable	Variable	*N*	%
No of patients/day	1–5 patients	14	11.3
	6–10 patients	26	21.0
	11–15 patients	28	22.6
	> 15 patients	56	45.2
Work hours/week	10–20 h	16	12.9
	21–30 h	8	6.5
	31–40 h	22	17.7
	>40 h	78	62.9

Table 2. (*Continued*).

Variable	Variable	*N*	%
Carry heavy objects while working	Yes	50	40.3
	No	74	59.7
Standing for long periods while working	Yes	106	85.5
	No	18	14.5
Bending or twisting while working	Yes	96	77.4
	No	28	22.6
Workplace is comfortable	Yes	60	48.4
	No	64	51.6
Get an appropriate rest period during the working day	Yes	58	46.8
	No	66	53.2

N: number of participants %: percentage.

As described in **Table 2** above, 56 (45.2%) of the participants see more than 15 patients per day, while only 14 (11.3%) see 1 to 5 patients per day. The majority of the participants 78 (62.9%) spend more than 40 hours per week at their workstation, 50 (40%) of the participants showed that they have to carry heavy weights during working, while 74 (60%) do not. 85.5% of the participants (106) stand for long periods while working, Moreover, 96 (77.4%) of the participants reported bending or twisting during working, 64 (51.6%) of the participants reported that the workplace is uncomfortable, and 66 (53.2%) of the participants noted they do not get sufficient rest throughout the working day.

3.3. Incidence of musculoskeletal pain associated to work at various body areas

Table 3. The incidence of musculoskeletal pain at various body areas and intensity of pain in 7 days and 12 months before the survey.

		Pain at last 7 days		Pain at last 12 months	
		N	%	*N*	%
Region	Neck	62	50	84	67.7
	Shoulder	54	43.5	82	66.1
	Elbow	18	14.5	26	21
	Wrist	24	19.4	40	32.3
	Hand	28	22.6	52	41.9
	Lower back	84	67.7	94	75.8
	Hip	22	17.7	40	32.3
	Knee	54	43.5	62	50
	Foot	50	40.3	64	51.6
Intensity of Pain	Mild	40	32.3	40	32.2
	Moderate	64	51.6	68	54.8
	Sever	14	11.3	6	4.8

N: number of participants %: percentage.

Table 3 shows incidence of musculoskeletal pain at various body areas and intensity of pain in 7 days and 12 months before the survey.

118 (95%) of the total respondents reported having musculoskeletal pain in at least one body area in the seven days prior to the study. Overall, 114 individuals (92%) said they had symptoms in the 12 months prior to the research.

The musculoskeletal pain changed depending on the bodily part that was impacted. A large percentage of the participants experienced lower back (67.7%), neck (50%), shoulder (43.5%), knee (43.5%) or foot (40.3%) symptoms in the seven days before to the survey. These areas were also the most often impacted in the 12 months before the survey. The study participants reported varying degrees of musculoskeletal pain intensity; in the seven days prior to the study, 32.3% reported mild pain, 51.6% reported moderate pain, and 11.3% reported sever pain; while in the 12 months prior to the research, 32.3% reported mild pain, 54.8% reported moderate pain, and 4.8% reported sever pain.

3.4. Pain characteristics

Table 4 shows the musculoskeletal pain characteristics reported by the participants of the study.

Table 4. The musculoskeletal pain characteristics reported by the participants.

Variable	Not	%
Took sick leave	24	19.4
The pain started after joining work	82	66.1
Seek medical care	44	35.5
Take any medications to relieve pain	68	54.8
Pre-existing injury at the site of the pain?	22	17.7
Pain caused by a disease or a specific medical history?	12	9.7

About fifth (19.4%) of the participants were forced to take sick leave for reasons related to musculoskeletal pain, while the vast majority did not take any. 66% of the participants recorded that they had pain after starting work, 35% received a medical attention, while 54% of them took medication to relieve pain.

3.5. Logistic regression analysis

Table 5 shows the logistic regression analysis for musculoskeletal pain at last 7 days

Table 6 shows the logistic regression analysis for musculoskeletal pain at last 12 months.

The logistic regression method was used in order to determine the relationship between risk factors and musculoskeletal complaints (**Tables 5** and **6**). Females had an increased risk of having lower back pain, and standing for long periods of time while working was associated with lower back discomfort. Healthcare professionals between the ages of 30 and 40 years are more prone to neck and wrist pain.

Table 5. The logistic regression analysis for musculoskeletal pain at last 7 days.

Region	Variables		Odds ratio	95% CI*		*p*-value*
				Lower	Upper	
Neck	Workplace is comfortable	Uncomfortable	5.133	1000.742	15.131	0.003
Shoulder	Workplace is comfortable	Uncomfortable	4.019	1000.374	11.759	0.011
Elbow	Carry heavy objects while working	Carry heavy objects	0.147	0000.028	0.781	0.025
Wrist	Age	30:40 y	8.000	1000.061	60.324	0.044
Lower back	Gender	Female	5.205	1000.634	16.582	0.005
Hip	Carry heavy objects while working	Carry heavy objects	0.188	000.044	0.799	0.024
	Workplace is comfortable	Uncomfortable	5.478	1000.075	27.916	0.041

95% CI: confidence interval and *p*-value: significant if $P \leq 0.05$ and non-significant if $P \geq 0.05$.

Table 6. The logistic regression analysis for musculoskeletal pain at last 12 months.

Region	Variables		Odds ratio	95% CI*		p-value*
				Lower	Upper	
Neck	Age	30:40 y	0.175	0.033	0.921	0.040
	No of patients/day	>15 patients	0.103	0.012	0.896	0.039
	Carry heavy objects while working	Carry heavy objects	0.160	0.041	0.630	0.009
	Bending or twisting while working	Yes	0.250	0.072	0.867	0.029
	Workplace is comfortable	Uncomfortable	30.792	10.211	110.871	0.022
Shoulder	Ex's	No	0.193	0.049	0.758	0.018
	Bending or twisting while working	Yes	0.185	0.052	0.662	0.009
	Workplace is comfortable	Uncomfortable	40.333	10.386	130.553	0.012
Elbow	Carry heavy objects while working	Yes	0.215	0.058	0.807	0.023
Wrist	Workplace is comfortable	Uncomfortable	30.111	10.000	90.679	0.050
Lower back	Standing for long periods while working	Yes	0.186	0.042	0.821	0.026
Hip	Workplace is comfortable	Uncomfortable	30.111	10.000	90.679	0.050
Foot	Standing for long periods while working	Yes	30.571	10.186	100.752	0.024

95% CI: confidence interval and *p*-value: significant if $P \leq 0.05$ and non-significant if $P \geq 0.05$.

There is a positive correlation between uncomfortable workplace and neck, shoulder, and hip pain. Also, the same between carrying heavy objects and neck, elbow, and hip pain. Moreover, excessive bending and twisting during work was found to be correlated with neck and shoulder pain. Standing for long period was also found to be correlated with lower back and foot pain. Also, serving large number of patients per day was positively correlated with neck pain, while lack of exercise was correlated with shoulder pain.

4. Discussion

MSCs is a common complaint among Saudi healthcare practitioners. The most common sites of involvement are the lower back and neck. MSCs may be come on at work by factors that are mostly related to the work environment; they are either made worse or exacerbated by the working conditions. since they are subjected to a slew of difficulties at work, ranging from standing for long periods of time to awkward body

positions [12]. Healthcare practitioners who are aware of the individual and work-related risk factors for musculoskeletal illnesses can aid in the prevention and treatment of these disorders. Increased understanding of risk factors may result in a reduction in the prevalence of musculoskeletal illnesses [13].

Insufficient data exists about the prevalence of musculoskeletal issues in Saudi Arabia's., Taif hospitals, as well as the specific risk factors that predispose medical workers to them. To the best of our knowledge, this is the first study to investigate the frequency of musculoskeletal complaints among health care practitioners in Taif city, Saudi Arabia. The goal of this study was to quantify the prevalence of MSCs among healthcare workers in Taif, Saudi Arabia.

This study conducted between January 2023 and May 2023. The survey included 124 healthcare participants work in Taif hospitals, participants were 54 (43.5%) men and 70 (56.5%) women, including 40 physicians (32.3%), 8 pharmacists (6.5%), 10 physiotherapists (8.1%), 4 radiologists (6.5%), 6 laboratory specialists (4.8%), 46 nurses (37.1%), 2 medical secretaries (1.6%), 2 social service (1.6%), and 2 social workers (1.6%).

Our study found that there was an elevated prevalence of musculoskeletal symptoms among healthcare practitioners, with up to 95% and 92% of subjects participating in musculoskeletal symptoms in the week and 12 months preceding the scan, respectively.

According to research, a high majority of health professionals reported the presence of MSCs in one or more areas of the body, with the lower back being one of the most common [14]. This is aligned with the findings of our study, which revealed that in the 12 months preceding the survey, lower back pain was the most often reported musculoskeletal symptom by healthcare practitioners (75.8%), and in the last 7 days before the survey (67.7%). This frequency was much greater than the global prevalence of lower back pain, which was estimated that between 20% and 30% of people have a musculoskeletal disorder [2].

Moreover, neck pain was the second most common musculoskeletal ailment among our participants, with 67.7% experiencing neck discomfort that limited their daily activities in the 12 months before conducting the study, and 50% of discomfort in the last 7 days before starting the study. Studies previously published revealed that the 12-month prevalence of neck discomfort ranged from 30 to 50% [15].

According to a published review, all health professionals are at high risk of MSCs induced by work, but three careers within the health profession, notably nurses, physiotherapists, and dentists have a substantially higher reported risk of getting these disorders [14]. In our survey, we discovered that physiotherapists (100%) were the most impacted by neck pain, followed by nurses (82%). Also, back pain impacted the most nurses (87%), followed by physiotherapists (80%). However, in terms of knee discomfort, 100% and 52% of physiotherapists and nurses were affected, respectively.

Physiotherapists should be aware about musculoskeletal problems and how to prevent them. However, they are at a greater risk of acquiring musculoskeletal problems due to risk factors such as constant bending, working in uncomfortable positions for long periods of time, repetitive functions, and lifting and moving patients [16].

Nurses face physical and emotional stress on a regular basis as a result of transporting heavy medical equipment and dealing directly with patients. The lifetime cumulative prevalence of back pain increased from 31% at the start of nursing school to 72% at graduation and 82% after 5 years of experience [17].

The result of this study showed that there is a link between gender and lower back discomfort, with females being impacted more than males. There are three broad explanations for gender differences in musculoskeletal pain: (1) women are more willing to report pain than men; (2) women are more vulnerable to developing musculoskeletal pain due to a variety of sex-linked biologic factors (hormones or physiology), variations in pain sensitivity, or variances in social or psychologic factors; and (3) women are more vulnerable to risk factors for musculoskeletal pain than men [18].

In our study, we discovered that healthcare practitioners between the ages of 31 and 40 are more prone to neck pain than those who are older (40–60 y). This was consistent with the findings of Cromie et al [19] who reported that young people are inclined to be more active at work and less directed than older professionals, making them more prone to gaining musculoskeletal pain [19]. Also, more prone than younger (21–30 y) which is compatible with Tinubu et al (2010) who found that increasing clinical experience leads to more musculoskeletal-related injuries and discomfort, which validates our findings. Furthermore, nurses with 20 years of experience are four times more likely to have problems than less experienced nurses [20].

In our study, we discovered that healthcare practitioners who see more than 15 patients each day are more likely to develop neck pain. According to previous study, working for long periods of time and treating an excessive number of patients in a single day's time were the highest risk factors for developing musculoskeletal-related injuries during the course of their clinical practice [20]. Moreover, the findings revealed a link between bending or twisting and neck pain, as 77 of the participants who had to twist and bend excessively for greater access throughout their job reported neck pain.

Healthcare practitioners who stood for an extended period of time were more likely to experience back discomfort than those who did not. Prolonged standing may result in static prolonged strain on the lumbar spine tissues which may lead to develop discomfort. This lack of movement may be caused by excessive co-contraction and subsequent poor trunk and hip muscle control [21].

In the current study, healthcare practitioners who work in uncomfortable environments were more likely to have neck, shoulder, wrist, or hip discomfort than those who work in comfortable environments. Work-related stress has been linked to MSD, people who are affected by both physical and psychosocial forces have poorer outcomes than those who are only affected by one or the other [22].

The current investigation found a link between a lack of regular exercise and the development of musculoskeletal discomfort. In this study participants who actively participated in athletic activities and are regularly exercising (35.5%) reported fewer pain incidents than those who rarely exercise (64.5%). This may reflect the high rates of musculoskeletal pain in this study, as two-thirds of the participants did not engage in any form of exercise. The incorporation of physical activities into the daily routine may allow the healthcare practitioners to break any harmful habits and achieve

successful lifestyle modifications. Continuous stretching and strength training may eventually alleviate musculoskeletal pain [23].

In the current study, 66% of the individuals reported increased MSCs since they start their employment. The impact of MSCs on work was minimal, as only about 19 % of the respondents took medical leave owing to job-related musculoskeletal pain in the previous 12 months. MSCs are thought to account for nearly one-third of all cases of absence from work among health care professionals [7]. Around 35.5% of healthcare practitioners obtained medical therapy for pain. also 54.8% of them took medication to relieve pain.

In general, MSCs are rarely caused by a single factor. None of the causal factors work independently, but the formation of a condition requires a combination and interaction of numerous elements. Handling loads, especially when bending or rotating, doing repetitive or sudden movements, being in awkward and static body positions, work in heat or cold environment, apply fast-paced nature of work, and prolonged sitting or standing in the same position are all physical risks and organizational risk factors [7].

4.1. Limitations

The actual number of responses was lower than expected. The symptoms of musculoskeletal pain were self-reported and that can introduce bias, as those who reported musculoskeletal complaints were more likely to react than those who did not. The study's cross-sectional approach may restrict the findings' generalizability to wider populations, as it is based on a survey, recollection inaccuracies may have an impact on its reliability. The study was applied on a limited area that may affect generalization of findings. the study used online survey which has lack the control over the respondents.

5. Conclusion

MSCs are more common in healthcare practitioners working in Taif city, Saudi Arabia, seen in one or more body parts, with the low back and neck being the most typically afflicted. MSCs are more common in physiotherapists then nurses coming next. Females are more affected than males, and age between 31 to 40 years being the most. The most commonly reported work risk factors for the development of MSCs were standing for long periods of time, working in awkward or uncomfortable place of work, and serving an excessive number of patients in one day. Physical exercise generally can reduce the risk of MSCs for all healthcare practitioners.

Author contributions: Conceptualization, HSG and AAA; methodology, HSG; software, ABS; validation, ABS, RSA and AMA; formal analysis, HSG; investigation, AAA; resources, HHA; data curation, SAA; writing—original draft preparation, HSG; writing—review and editing, AAA and AMA; visualization, RSA; supervision, HHA; project administration, SAA. All authors have read and agreed to the published version of the manuscript.

Ethical approval: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of

King Faisal Medical Complex in Taif (protocol code 2022-A-39 and 21-12-2022). Informed consent was obtained from all subjects involved in the study.

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

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