Alqalam Journal of Medical and Applied Sciences. 2025;8(3):1612-1617
https://doi.org/10.54361/ajmas.258350

Original article

The Prevalence of Occupational Musculoskeletal Injuries Among Physiotherapists in Greater Tripoli

Keltoum Ajyar*, Aya Ezz Eldin, Sami Mahjoub

Department of Physical Therapy, Faculty of Medical Technology, University of Tripoli, Libya
Corresponding email. keltoumajyar@gmail.com

ABSTRACT
Physiotherapists are frequently exposed to occupational hazards that may result in work-related musculoskeletal disorders (WRMDs) due to repetitive tasks, awkward postures, and physically demanding techniques. Despite the growing awareness of WRMDs in healthcare professions globally, data concerning physiotherapists in Libya remains limited. This study aimed to determine the prevalence of WRMDs among physiotherapists in Greater Tripoli, identify the most commonly affected body regions, explore associated physical risk factors, and examine the coping strategies adopted by physiotherapists. A cross-sectional survey was conducted between May and October 2021. A total of 175 physiotherapists from five public hospitals and four private physiotherapy clinics in Tripoli participated by completing a self-administered Arabic questionnaire based on the modified Nordic Musculoskeletal Questionnaire (NMQ). Data were analyzed using SPSS version 12.0, with chi-square tests applied to examine associations between demographic and occupational variables and WRMDs ($p < 0.05$). The overall prevalence of WRMDs among respondents was 59.4%. The lower back (30%), neck (23.6%), and shoulder (19.2%) were the most frequently affected regions. The most common types of injury reported included vertebral disc disorders (23.4%) and muscle strains or tears (21.7%). Leading risk factors identified were fatigue (27.02%), repetitive tasks (16.89%), and manual therapy (18.91%). Common coping strategies included changing working positions (20.83%), reducing manual techniques (16.66%), and avoiding lifting (13.88%). WRMDs are highly prevalent among physiotherapists in Tripoli, particularly affecting general rehabilitation staff. Ergonomic interventions, increased specialization, and improved working conditions are essential to alleviate the physical burden on physiotherapists.
Keywords. Work-Related Musculoskeletal Disorders, Physiotherapy, Occupational Health, Libya, Manual Therapy, Ergonomics.

Introduction

Occupational injuries are bodily harm resulting from work-related activities and are a significant public health concern worldwide. They arise from exposure to various occupational hazards—physical, chemical, biological, or psychosocial—that are inherent in different professions [1]. The field of Occupational Safety and Health (OSH) aims to prevent such injuries by promoting safe and healthy working conditions. According to the International Labour Organization, OSH is an interdisciplinary approach that seeks to reduce work-related risks and enhance the well-being of workers [2]. Similarly, Occupational Health, as defined by the World Health Organization, focuses on maintaining physical, mental, and social well-being in the workplace [3].

Musculoskeletal injuries are considered one of the largest health problems among physiotherapists, with international prevalence rates up to 91%—primarily affecting the low back, neck, and shoulders [4]. Despite these pervasive risks, safety compliance remains critically low, with fewer than 35% of practitioners routinely using patient-handling assistive devices [5]. This vulnerability is magnified by the healthcare environment's inherently hazardous nature, where injury rates exceed those in the private sector by 40% [6].

The absence of profession-specific safety frameworks is particularly acute in developing regions like Libya, where no published studies have investigated work-related injuries among physiotherapists despite the field's rapid expansion. This knowledge gap hinders the development of culturally relevant safety protocols within a context of evolving occupational health infrastructure [7]. To the best of our knowledge, no published work has examined the prevalence of work-related musculoskeletal injuries among Libyan physiotherapists, although a previous study was conducted by students in the Physiotherapy Department at the Faculty of Medical Technology, University of Tripoli. This study aims to illustrate the prevalence of WRMDs and investigate the relationship between physical risk factors and musculoskeletal disorders among Libyan physiotherapists, as well as identify their causes and coping strategies for WRMDs.

Methods

Ethical Approval

Ethical approval for this study was obtained from the Ethical Committee of the University of Tripoli. All participants provided informed consent before data collection.

Study Design

This research employed a cross-sectional study design to investigate the prevalence and characteristics of work-related musculoskeletal disorders (WRMDs) among physiotherapists in Tripoli, Libya.

Received*: 28-05-2025 -* ***Accepted****: 22-07-2025 -* ***Published****: 04-08-2025*

Study Duration and Setting
The study was conducted over six months, from May to October 2021. A total of 200 printed questionnaires were distributed by hand to physiotherapists working across a range of public and private healthcare facilities in Tripoli. The sample was drawn from five public hospitals and four private physiotherapy centers

Participants
A total of 200 physiotherapists were invited to participate. Of these, 175 completed and returned the questionnaire, yielding an effective response rate of 87.5%. Twenty-five physiotherapists were excluded due to their refusal to participate without providing specific reasons.

Inclusion and Exclusion Criteria
Inclusion Criteria
Male and female licensed physiotherapists are currently working in public hospitals or private clinics in Tripoli. Physiotherapists are present at their workplaces during the distribution period.

Exclusion Criteria
We had excluded non-physiotherapy healthcare personnel and physiotherapists who were not present at the time of questionnaire distribution.

Data Collection
Data collection was conducted between May and June 2021 using a structured self-administered questionnaire, which was distributed and collected in person. The instrument was adapted from previously validated surveys and included a modified version of the Nordic Musculoskeletal Questionnaire [8].

Assessment Tool
The Nordic Musculoskeletal Questionnaire (NMQ) is a widely recognized epidemiological tool for assessing musculoskeletal symptoms across various body regions. Although not intended for clinical diagnosis, the NMQ enables consistent data collection on symptom prevalence in occupational settings. In this study, an extended version (NMQ-E) was utilized to evaluate both 12-month and lifetime prevalence of symptoms, their severity, and their impact on work and daily activities [9,10].

Data Analysis and Statistics
Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 12.0. Results were expressed as numbers and percentages. Chi-square tests were employed to analyze the influence of personal characteristics (sex, age, and years of physiotherapy practice) on WRMDs. A two-tailed p-value > 0.05 was considered statistically significant.

Results
A total of 175 physiotherapists participated in the study, resulting in a response rate of 87.5%. The demographic characteristics of the respondents are shown in Table 1. Most participants were younger than 40 years (93.1%), and 62.3% were female. The majority had less than 15 years of experience (70.3%) and reported working 6–10 hours daily in direct patient care (67.4%).

Table 1. Percentages of respondents describing the whole sample

Characteristics	Frequency (n)	Percentage%
Whole sample (n)	175	87.5
Age group (years)		
<40	163	93.1
>40	12	6.9
Gender		
Male	66	37.7
Female	109	62.3
Years as PT		
<15	123	70.3
>15	52	29.7
Hours per day in direct patient care		
-4	19	10.9
6-10	118	67.4
10-12	31	17.7
+12	7	4 .9

Received*: 28-05-2025 -* ***Accepted****: 22-07-2025 -* ***Published****: 04-08-2025*

Among the 175 participants, 59.4% (n = 104) reported experiencing work-related musculoskeletal disorders (WRMDs). As shown in Table 2, a higher percentage of affected individuals were female (65.4%) and had fewer than 15 years of experience (67.3%). However, there were no statistically significant associations between WRMDs and age, gender, years of experience, or hours spent in direct patient care ($p > 0.05$).

Table 2. Percentages of respondents describing the WMSD s group

Characteristics	Frequency (n)	Percentage%	P value
WRMDs group (n)	104	59.4	
Age group (years)			
<40	96	92.3	0.597
>40	8	7.7	
Gender			
Male	36	34.6	0.382
Female	68	65.4	
Years as PT			
<15	70	67.3	0.597
>15	34	32.7	
Hours per day in direct patient care			
-4	10	9.6	
6-10	72	69.2	
10-12	17	163	
+12	5	4.8	

WRMDs = Work-related musculoskeletal disorders.

The most commonly affected body region was the lower back (30%), followed by the neck (23.6%) and shoulders (19.2%). These distributions varied among different physiotherapy subspecialties. General rehabilitation physiotherapists were the most affected group across all body regions, as shown in (Table 3).

Table 3. Percentages describing the frequency of WRMDs and prevalence of WRMDs according to body part

Body part	Frequency of WRMDs	%	Frequency of WRMDs in different subspecialties %				
			General Rehab.	Ortho. Rehab.	Neuro. Rehab.	Cardio. Rehab.	Pedi. Rehab.
Neck	59	23.6	47.1	4.8	0.0	0.9	2.8
Shoulder	48	19.2	40.3	1.9	0.0	0.0	1.9
Upper Back	32	12.8	4.8	2.8	0.0	0.0	1.9
Elbow	4	1.6	0.9	0.0	0.0	0.0	0.9
Wrist/ Hand	6	2.4	2.8	0.9	0.9	0.0	0.9
Lower Back	75	30	53.8	5.7	0.0	0.9	3.8
Hip / Thigh	3	1.2	0.9	0.0	0.0	0.9	0.0
Knee	16	6.4	8.6	1.9	0.0	0.9	0.0
Ankle/Feet	7	2.8	3.8	0.9	0.0	0.0	0.9

The most frequent injury types reported by participants were vertebral disc problems (23.4%), muscle strain or tear (21.7%), followed by tendonitis (8.0%), ligament sprain (5.7%), and dislocation (1.1%), as presented in Table 4.

Table 4: percentages describing the main types of injury

Type of injury	Frequency (n)	Percentage%
Vertebral disk	41	23.4
Muscle strain or tear	38	21.7
Ligament sprain	10	5.7
Tendonitis	14	8.0
Dislocation	2	1.1
Neuritis	1	0.6
Other	25	14.3

Regarding the number of affected areas, 62.5% of physiotherapists reported experiencing WRMDs in more than one anatomical region, while 37.5% had injuries limited to one region, as detailed in (Table 5).

Received*: 28-05-2025 -* ***Accepted****: 22-07-2025 -* ***Published****: 04-08-2025*

Table 5: percentages of respondents describing the injured in one or more than one anatomic region

Injury	Frequency (n)	Percentage%
One injury	39	37.5
One or more injuries	65	62.5

As shown in Table 6, the factors that most frequently led to WRMDS were working while physically fatigued (27.02%), performing manual therapy (18.91%), and repetitive tasks (16.89%). Activities that most exacerbated symptoms during clinical work included long working hours (25.54%), bending or twisting (9.78%), and working in awkward positions (9.24%).

Table 6. Proportions of respondents who reported that specific activities either caused the injury or exacerbated their condition

The activity that caused the injury	(%)	(%)	Exacerbating activity
Applying modalities	6.08	9.78	Bending or twisting
Slipping. Tripping. Falling	5.40	9.24	Working in the wrong position
Working when physically fatigued	27.02	5.43	Climbing stairs
Maintain position during the transfer of a patient	9.45	8.69	Maintain bending position
Performing repetitive tasks	16.89	25.54	Work for a long period
Performing manual therapy	18.91	8.15	Transferring patient
Responding to an unanticipated or sudden movement by a patient	2.02	4.34	Performing general activities
Bending or twisting	8.78	4.34	Waking
Lifting heavy equipment or patients	5.40	9.23	Performing manual Techniques
		3.80	Working in appropriate and unsanitary conditions
		6.52	Performing repetitive tasks
		4.89	Other

The most commonly adopted coping strategies by physiotherapists with WRMDs were: Changing working positions frequently, reducing manual techniques, and avoiding lifting (20.83%, 16.66%, 13.88% respectively) as shown in Table 7.

Table 7. Proportions of respondents who reported altering work habits as a result of an occupational musculoskeletal

Altered work habits	(%)
Change work schedule	8.33
Avoid lifting	13.88
Increased use of mechanical aid	4.86
Change working posture frequently	20.83
Increase the use of other employees	4.16
Reducing manual techniques	16.66
Increase administrative time	6.25
Take more rest breaks or pause during the workday	9.03
Use improved body mechanics	6.25
Decrease patient time	4.16
Other	5.55

Discussion

WRMDs are the most common cause of chronic pain and physical disability that could affect contemporary workforces. In this context, musculoskeletal injuries are considered one of the largest health problems among physiotherapists [10]. The purpose of this study is to explore the prevalence of WRMDs and to investigate their relationship with physical risk factors among Libyan physiotherapists, and to identify their causes and coping strategies.

Participants of this study showed a higher response rate (87.5%) compared to other similar studies conducted in Nigeria, Turkey, Australia, and the USA (58.1%, 59%, 53%, and 80%, respectively) [11-14]. This response rate was quite similar to another study conducted in India (85%) [15].

In this study, there was no association between gender and WRMDs (P = 0.382), but female physiotherapists had a higher prevalence rate of WMSDs than males (65.4% vs. 34.6%). This finding was consistent with

Received*: 28-05-2025 -* ***Accepted****: 22-07-2025 -* ***Published****: 04-08-2025*

studies conducted in other countries [12,15-18]. Gender differences in muscular and physical strength may explain this outcome.

There was no significant association between age and WMSDs (P = 0.597). A large age gap could explain this finding, as the majority of participants in this study were young (<40 years old, 92.3%). Similarly, there was no significant association between years of experience and WMSDs (P = 0.297). This may be because a large number of participants (67.3%) had less than 15 years of practical experience, which is consistent with other studies [19][17] and differs from others [20].

This study found that 62.5% of physiotherapists complained of WMSDs in more than one anatomical region. This high prevalence may be due to risk factors such as lack of appropriate equipment (e.g., suitable chairs, adjustable beds), high patient loads, and lack of specialization. The lower back region was the most common site for WRMDs (32.5%), followed by the neck (27.7%) and shoulder (22%). These findings align with global research [15, 16, 21]. According to some studies, the high incidence of lower back pain among physiotherapists is mainly attributed to duties requiring prolonged standing and frequent bending [22]. Neck pain may result from sustained cervical flexion, while shoulder pain may be due to lifting patients.

The most common injuries among physiotherapists in this study were vertebral disc problems (23.4%), muscle strain or tear (21.7%), and tendinitis (8.0%). These may result from prolonged static postures, bending, twisting, and poor ergonomics. These findings are supported by previous research [11,15,23]. The most frequently cited work factors were long working hours, poor posture, and lack of proper equipment and preventive measures. The impact of the COVID-19 pandemic likely exacerbated these challenges. Interestingly, moving patients and remaining in the prone position were not significant contributors to WRMDs in this study, contrary to previous research findings [12,15].

The most common coping strategies among the physiotherapists in our study were changing work position frequently, minimizing manual techniques, and avoiding lifting. These findings align with other studies [23,12]. However, reducing care time and using assistive devices were the least utilized strategies, which is similar to findings in Nigeria [15].

Limitations

The main limitation of this study, common to all cross-sectional designs, is the inability to establish a temporal relationship between exposure and outcome, as both were assessed at the same time. Another limitation is the relatively small sample size. Additionally, the health conditions and restrictions during the COVID-19 pandemic may have influenced data collection and responses.

Recommendation

The study highlights the need for professional specialization, improved ergonomic infrastructure, targeted training, and institutional policies to reduce injury risks. It also recommends that future studies be conducted with a larger and more diverse sample size to enhance the generalizability and applicability of the findings across the broader physiotherapy workforce in Libya.

Conclusion

This study provides data related to the prevalence work work-related musculoskeletal disorders among physiotherapists in Tripoli. The results show musculoskeletal complaints common among female physiotherapists than among males. The most frequently affected body parts were the lower back, followed by the neck, the shoulder, then the knee, and the upper back. the specific activity causing occupational injury for physiotherapists in this study was work when physically fatigued, and performing manual therapy. As for the activities that caused the recurrence of symptoms, they were working for a long period and bending or twisting. The findings also indicate that general (non-specialized) physiotherapists were more susceptible to WRMDs, particularly in the lower back, neck, and shoulders.

Conflict of interest. Nil

References

1. World Health Organization. Global strategy on occupational health for all: the way to health at work. Geneva: World Health Organization; 1995. Report No.: WHO/OCH/95.1.
2. International Labour Organization. Introduction to occupational health and safety. Geneva: International Labour Organization; 2010.
3. World Health Organization. Occupational health: a manual for primary health care workers. Geneva: World Health Organization; 2020.
4. Campo MA, Weiser S, Koenig KL. Musculoskeletal injuries in physical therapists: a systematic review. J Occup Rehabil. 2008;18(1):3-19.
5. Glover W, McGregor A, Sullivan C, Hague J. Work-related musculoskeletal disorders affecting members of the Chartered Society of Physiotherapy. Physiotherapy. 2005;91(3):138-47.
6. United States Department of Labor. Occupational Safety and Health Administration (OSHA): worker injury and illness rates [Internet]. 2016 [cited 2024 Feb 1]. Available from: https://www.osha.gov
7. Dajpratham P, Sura-Amrit P, Prateepavanich P. Prevalence of work-related musculoskeletal disorders in

Received: *28-05-2025* - ***Accepted***: *22-07-2025* - ***Published***: *04-08-2025*

physical therapists. J Med Assoc Thai. 2010;93(3):222-8.
8. Kuorinka I, Jonsson B, Kilbom Å, Vinterberg H, Biering-Sørensen F, Andersson G, et al. Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. Appl Ergon. 1987;18(3):233-7.
9. Crawford JO. The Nordic musculoskeletal questionnaire. Occup Med (Lond). 2007;57(4):300-1.
10. Rugelj D. Low back pain and other musculoskeletal health problems among physiotherapists. Zdrav Var. 2003;42(1):20-6.
11. Adegoke BOA, Akodu AK, Oyeyemi AL. Work-related musculoskeletal disorders among Nigerian physiotherapists. BMC Musculoskelet Disord. 2008;9:112.
12. Salik Y, Özcan A. Work-related musculoskeletal disorders: a survey of physical therapists in Izmir-Turkey. BMC Musculoskelet Disord. 2004;5:27.
13. Holder NL, Clark HA, DiBlasio JM, Hughes CL, Scherpf JW, Harding L, et al. Cause, prevalence, and response to occupational musculoskeletal injuries reported by physical therapists and physical therapist assistants. Phys Ther. 1999;79(7):642-52.
14. Bork BE, Cook TM, Rosecrance JC, Engelhardt KA, Thomason ME, Wauford IJ, et al. Work-related musculoskeletal disorders among physical therapists. Phys Ther. 1996;76(8):827-35.
15. Kumar RS, Sundaram A. Work-related musculoskeletal disorders among physiotherapists in India: a prevalence study. Int J Physiother Res. 2014;2(6):801-5.
16. Cromie JE, Robertson VJ, Best MO. Work-related musculoskeletal disorders in physical therapists: prevalence, severity, risks, and responses. Aust J Physiother. 2000;46(2):91-100.
17. Campo MA, Darragh AR. Work-related musculoskeletal disorders are associated with impaired presenteeism in allied health care professionals. J Occup Environ Med. 2012;54(1):64-70.
18. Vieira ER, Kumar S. Working postures: a literature review. J Occup Rehabil. 2004;14(2):143-59.
19. Molumphy M, Unger B, Jensen GM, Lopopolo RB. Incidence of work-related low back pain in physical therapists. Phys Ther. 1985;65(4):482-6.
20. West DJ, Gardner D, Luxon A. Back pain in the health professions: a study of occupational therapists and physiotherapists. Occup Med (Lond). 1992;42(2):61-6.
21. Glover W. Work-related musculoskeletal disorders among UK physiotherapists. Br J Ther Rehabil. 2002;9(9):370-8.
22. Luan HD, Hai NM, Giang HT, Hai HA, Van NT. Musculoskeletal disorders: prevalence and associated factors among district hospital nurses in Haiphong, Vietnam. Biomed Res Int. 2018;2018:9081640.
23. Chiwaridzo M, Makotore V, Dambi JM, Mhlanga M. Work-related musculoskeletal disorders among registered physiotherapists in Zimbabwe: a cross-sectional study. BMC Res Notes. 2017;10:107.

Received*: 28-05-2025 -* ***Accepted****: 22-07-2025 -* ***Published****: 04-08-2025*