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**Work-Related Musculoskeletal and Psychological Disorders
among Rehabilitation Professionals**

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Abstract

This study is to investigate the relationship between work-related musculoskeletal disorders (WMSDs) and psychological status among rehabilitation professionals at the University Malaya Medical Centre (UMMC). A previous study on nurses reported that 97.3% had WMSDs and 44.3% had psychological stress (Krishnan et al., 2021). A cross-sectional study was conducted from April to July 2024 involving 140 participants from six healthcare professions. Data were collected using the Nordic Musculoskeletal Questionnaire (NMQ) and the Depression, Anxiety and Stress Scale-21 (DASS-21). High prevalence of WMSDs was reported, particularly in the lower back, shoulders, and neck, along with notable depression and stress levels. Positive but non-significant correlations were found between WMSDs and Psychological distress, emphasizing the need for targeted occupational health interventions.

Keywords: musculoskeletal disorders; WMSD; psychological; stress level

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1.0 Introduction

Work-related musculoskeletal disorders (WMSDs) are among the most common health issues faced by workers, including those in the healthcare sector. These disorders affect various body systems, including muscles, tendons, ligaments, joints, nerves, and spinal discs, resulting in pain, discomfort, and physical disability. WMSDs significantly affect the lives and productivity across a diverse range of occupations, including the manufacturing industry, healthcare, and office employees (Ahmed et al., 2025). Beyond individual health

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impacts, WMSDs also impose substantial economic costs associated with lost productivity, increased healthcare expenses, absenteeism, and long-term disabilities, affecting families, workplaces, and society.

While research has focused on WMSDs among nurses and other healthcare professionals, there is a notable lack of studies addressing the impact of these disorders on rehabilitation professionals, such as physiotherapists, occupational therapists, and allied health assistants. Additionally, the psychosocial effects of WMSDs on these workers have not been thoroughly explored.

Musculoskeletal disorders remain a critical public health challenge worldwide, affecting millions of workers across various sectors. Healthcare workers are particularly vulnerable due to the nature of their jobs, which often involve repetitive tasks, manual patient transfers, and prolonged periods of standing or sitting. Common symptoms include pain in the hands, wrists, elbows, shoulders, neck, lower back, and lower extremities, leading to decreased functional capacity and a diminished quality of life (Bolarinde et al., 2019). The risk of injury is especially heightened during patient handling, manual therapies, or extended periods of computer work.

The purpose of this study is to investigate the association between musculoskeletal disorders and psychological health among rehabilitation professionals. This study may enhance understanding of how physical disorders impact psychological well-being, ultimately informing targeted interventions to improve health and work quality in this vital workforce segment.

2.0 Literature Review

2.1 Work-Related Musculoskeletal Disorders in Health Professionals

Musculoskeletal disorders at work (WMSDs) are commonly encountered health problems related to occupational activities. These disorders affect numerous professions globally, especially those that require high levels of physical activity. WMSDs often arise from hazardous movements that involve repeated actions, excessive force, awkward postures, or prolonged periods of inactivity. Such injuries can lead to pain, reduced function, or disability. Common examples include back pain, strain, sprain and carpal tunnel syndrome (Tariah et al., 2020).

The prevalence of WMSDs is a significant area of research because these disorders negatively impact not only individual health but also have substantial socioeconomic consequences. These effects include decreased productivity, increased absenteeism, and rising health insurance costs. The WMSDs substantially affect organisational efficiency and financial performance due to loss of productivity and increased absenteeism (Ahmed et al., 2025).

Particularly in the healthcare sector, workers are at a high risk of WMSDs due to the physical demands of the work. According to Tariah et al. (2020), the prevalence of WMSDs among nurses worldwide is estimated to range from 40% to 85%. A systematic review covering the period from 1990 to 2012 indicated that the prevalence of these disorders among nurses ranges from 40% to 75%. A study conducted in Vietnam found that 47.8% of registered nurses experienced WMSDs over 1 year, while a Malaysian study reported a twelve-month prevalence of 73.1% among nurses. Additionally, the prevalence of low back pain (LBP) was reported at 34% to 63% concerning neck and shoulder pain, respectively.

Most research publications are focused on nursing professionals, leaving rehabilitation providers such as physical and occupational therapists, as well as other allied health workers who also face significant physical demands, underrepresented. Furthermore, while there is ample evidence concerning the physical health effects of WMSDs, it is important to recognize that psychological factors are also relevant for rehabilitation providers and should be considered in future research.

2.2. Psychological status of work-related musculoskeletal disorders (WMSDs)

The overall psychological well-being of individuals is demonstrably lower in populations experiencing musculoskeletal disorders compared to those without such conditions (Lindert et al., 2022). The relationship between physical conditions and psychological health creates a complex challenge for healthcare systems, as the chronic nature of these conditions can lead to persistent distress and impaired quality of life (Sabri et al., 2023).

Depression, anxiety, and stress are reported to be the top causes of global disability across all professions and social class income. Severe mental illness impairs emotional, cognitive, and social performance and may produce equally impairing effects on productivity and underemployment. More specifically, depression is characterized by persistent feelings of sadness, loss of pleasure and interest, negative self-views (or low self-esteem), disturbances in sleeping and eating, fatigue, and impaired concentration.

Numerous studies indicate that nursing and medical professions are significantly affected by WMSDs; however, there is a limited number of studies that highlight rehabilitation workers, such as physiotherapy, occupational therapy, nurses, and medical staff in rehabilitation, in relation to WMSDs and their impact on psychological well-being.

3.0 Methodology

3.1 Materials and Methods

Study Design and participants

A cross-sectional study was conducted at the University Malaya Medical Centre (UMMC) from April 2024 to July 2024. The purposive sampling method was used to select the participants. Participants were recruited from all rehabilitation professionals, including physiotherapists, occupational therapists, speech therapists, rehabilitation doctors, rehabilitation nurses, and medical assistants from

UMMC, as the study population. The study participants were selected by following the inclusion criteria of the present study: all rehabilitation providers in the University Malaya Medical Centre (UMMC). Additionally, the participants were between the ages of 19 to 60 years old (both genders) and were working at UMMC for at least 1 year. They were excluded if they had any known psychological disorders, had any medical illness or neurological and musculoskeletal injuries, were pregnant women, previous history of fracture on the lower limb or spine, and a history of infection, tumour, osteoporosis, fracture, or inflammatory arthritis. Sample size was calculated using G*Power analysis, with statistical significance at $p < 0.05$ (Jamaludin et al., 2022). Therefore, the sample size of this study includes at least 140 participants out of 150 in the overall population of rehabilitation professionals in UMMC.

Research instruments

The data for the investigation were gathered through a structured questionnaire, which included demographics and a self-administered section, the Nordic Musculoskeletal Questionnaire (NMQ) for screening musculoskeletal disorders, and the Depression, Anxiety, and Stress Scale-21 (DASS-21) for psychological status. This questionnaire was created and distributed in Google Forms among the rehabilitation professionals in the University Malaya Medical Centre. Following the completion of the questionnaires, the participants received a short presentation about the purpose and importance of the study. All of the participants were anonymous and were kept confidential.

3.2 Data analysis

IBM SPSS Statistics version 29 was used to analyse the data for this study. Descriptive statistics were used to describe the demographic and study variables. The relationship between work-related musculoskeletal disorders (WMSDs) and the Depression, Anxiety, and Stress Scale (DASS-21) score was analysed using the independent sample t-test and associations between nominal or ordinal variables using the chi-square test. Pearson correlation coefficient (r) was used to measure the strength of the relationship between two variables, ranging from -1 to +1. A significance level of 0.05 was considered in all analyses.

3.3 Study ethics

The Medical Research Ethics, University Malaya, was approved under MREC ID: 202382-12735 and the Faculty Health Sciences Ethics Review Committee (Universiti Teknologi MARA) (FERC/FSK/MR/2023/00375). The study was conducted with all subjects who gave written informed consent. Participants were informed of the study purpose, and their participation was voluntary with the right to withdraw from the study without any effect. Participants' confidentiality and anonymity were guaranteed during the data collection process

4.0 Findings

4.1 Evaluation of the relationship between self-reported emotional distress and work-related musculoskeletal disorders

Table 1.1 shows the correlation coefficients indicating the degrees of correlation between work-related musculoskeletal disorders (WMSDs) and the Depression, Anxiety, and Stress Scale (DASS-21) score for low back pain in 12 months. Medical assistants showed a highly significant correlation ($r = 0.766$) between WMSD severity and DASS-21 scores among the healthcare workers. The association between WMSD severity and psychological distress of the physiotherapists at UMMC was moderately strong and positive correlation ($r = 0.638$) for low back pain.

Table 1.2 reporting the correlation coefficients between work-related musculoskeletal disorders (WMSDs) and the Depression, Anxiety, and Stress Scale (DASS-21) score for shoulder pain in 12 months. The correlation between the WMSD-scaled score and psychological distress was robust in rehabilitation nurses ($r = 0.934$), indicating a strong association between WMSD and psychological distress. Positive correlation between WMSDs and DASS-21 scores was stronger among speech therapists (moderately strong; $r = 0.736$) than among occupational therapists (weak; $r = 0.290$) for shoulder pain.

This pattern of associations indicated a general pattern in which the participants with more severe WMSDs reported more depression, anxiety, and stress.

Table 1.1: Relationship Between WMSDs and DASS-21 Subscales at lower back pain in 12 months

Designation	DASS Subscale	Level	N (%)	p Value	r value
Medical Assistant	Dryness of mouth (anxiety)	Strong disagree	14(73.7%)	>0.05	0.766*
		Somewhat disagree	3(15.8%)		
		Somewhat agree	1(5.3%)		
		Strongly agree	1(5.3%)		
Physiotherapist	Dryness of mouth (anxiety)	Strong disagree	57(66.3%)	>0.05	0.638*
		Somewhat disagree	19(22.1%)		

Somewhat agree 4(4.7%)
 Strongly agree 6(7.0%)

**r value: Correlation is significant at the 0.01 level

*p value: Significantly different from at the 0.05 level

Table 1.2: Relationship Between WMSDs and DASS-21 Subscales at shoulder pain in 12 months

Designation	DASS Subscale	Level	N (%)	p Value	r value
Nurses	Lack of positivity (Depression)	Strong disagree	2(28.6%)	>0.05	0.934*
		Somewhat disagree	3(42.9%)		
		Strongly agree	2(28.6%)		
Speech therapy	Unmotivated (Depression)	Strong disagree	7(87.5%)	>0.05	0.736*
		Somewhat disagree	1(12.5%)		
Occupational therapy	Unmotivated (Depression)	Strong disagree	10(66.7%)	>0.05	0.290*
		Somewhat disagree	4(26.7%)		
		Strongly agree	1(6.7%)		

**r value: Correlation is significant at the 0.01 level

*p value: Significantly different from at the 0.05 level

5.0 Discussion

The objective of this study was to investigate the relationship between work-related musculoskeletal disorders (WMSDs) and psychological status (depression, anxiety, and stress) among rehabilitation professionals working at the University Malaya Medical Centre (UMMC). The results showed the different strengths of correlation between WMSD severity and psychological distress across professional groups. While these relationships were non-significant, they indicate a trend that is worthy of further consideration.

The high prevalence of WMSDs found in the rehabilitation professionals in the present study has also been reported in other studies, indicating that health care workers are at a higher risk for musculoskeletal disorders based on the physical demands of work. Rahman et al. (2017) pointed out that the prevalence of WMSDs among healthcare staff members is high, mainly as a result of performing repetitive movements, awkward positions, heavy lifts, and static tasks. Patient transfer, manual therapy, and prolonged computer work are common in rehabilitation facilities, and this factor increases susceptibility to WMSDs (Yasobant & Rajkumar, 2014).

Our results are consistent with those of Amin et al. (2020), who also mentioned that WMSDs are common among healthcare workers in Malaysia and that they frequently experience discomfort in the lower back, neck, and shoulders. In this study, significant positive moderate to strong correlations between lower back WMSDs and distress were found in medical assistants and physiotherapists in particular. These results corroborate the emerging evidence that WMSDs are not merely a physical problem; however, psychological aspects were also involved with Backet et al. (2013) and Awang et al. (2017).

WMSD-related physical discomfort and functional disability may exert an adverse impact on mental health. Depression, anxiety, and stress are commonly comorbid with chronic pain conditions, thereby leading to a vicious cycle between physical pain and emotional discomfort (Yeshaw & Mossie, 2017). Our findings are consistent with this observation: higher WMSDs were reported to be correlated with depression, anxiety, and stress scores in our study, especially for healthcare providers such as medical assistants, physiotherapists, and rehabilitation nurses.

Also, depression has been proven to be a risk factor for poor outcomes of recovery in patients with musculoskeletal disorders. Carriere et al. (2014) observed that the WMSD sufferers of the depressive condition sought longer recovery periods and a higher level of absenteeism. Such a relationship may account for the fact that some occupations in our study, e.g., rehabilitation nurses and speech therapists, showed statistically significant, strong positive associations between shoulder WMSDs and psychological distress. Mental and emotional stress combined with physical stress may cause increased perceived severity of musculoskeletal complaints.

Furthermore, the notion of emotional labour is particularly pertinent to practitioners. Emotional labour involves the regulation of emotions to comply with organizational requirements and is especially relevant in direct patient care professions (Kim & Choo, 2016). This may manifest as either surface acting (hiding felt emotions) or deep acting (changing felt emotions to conform to role requirements). Psychological strain, which could amplify emotional and physical health problems, has been associated with both types of emotional labour. Rehabilitation professionals, who frequently encounter difficult situations where they have to project a calm and sympathetic attitude, are at increased risk of stress from emotional labour, which in turn increases their risk of WMSDs and psychological problems.

Of course, despite these important trends, it is important to note that no correlations in this study reached the level of statistical significance, probably due to the lack of power in the sample size. Jamaludin et al. (2022) also stressed the need for sufficient sample

sizes in studies of occupational health outcomes. While the sample size of our research, with 140 participants, was adequate for preliminary analysis, the power for identifying a significant association may have been insufficient, particularly with the inclusion of different professions.

Nevertheless, the positive associations demonstrate the importance of promoting integrated interventions related to occupational health to address the needs of physical and mental health. Adjusting workplace strategies such as ergonomic measures, appropriate rest intervals, safe patient handling training, and accessible mental health support programmes might be strongly recommended. Further research, using larger, multicentre samples and, perhaps, longitudinal designs, is needed to investigate the causality between WMSDs and psychological health among healthcare workers.

6.0 Implications, recommendations, and conclusions

6.1 Practical implications and recommendations

The limitations of this study were one clinical setting and had a small sample size cannot be generalized to all population. Future research suggests to have longitudinal interventions should further evaluate the long-term impact of interventions on reducing WMSDs and psychological stress at the healthcare level. Other than that, future studies are recommended to have a large sample size to generalize to this population and to have multiple hospitals or centers that have rehabilitation groups. Despite the prevalence of studies, recommended to have intervention studies, such as ergonomic interventions and mental health support programs for rehabilitation professionals to show any impact on quality of life among WMSD workers.

6.2 Conclusion

This research requires researchers for evidence-based ergonomic interventions and mental health programs for rehabilitation professionals. Workstation designs, such as correct lifting techniques, scheduled rest breaks, and the tools to assist work more easily, can reduce the risk of work-related musculoskeletal disorders. Additionally, it is recommended that psychological distress related to work strain be reduced by enhancing the present work environment through stress management programs, psychological counselling, and peer support programmes. Periodic ergonomic risk assessment, along with trained staff in ergonomic working principles, must be part of healthcare organizations. This will, in turn, prompt policymakers and hospital administrators to invest proactively in a healthy and productive life in physical and mental well-being for rehabilitation professionals.

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Paper Contribution to the Related Field of Study

This work contributes to the gain of knowledge about risks for the health of the worker in the health care service sector, more specifically for rehabilitation professionals. It focuses on the effect of workplace surroundings and its demands on staff health and well-being in both physical in terms of WMSDs and psychological terms, by covering health outcomes in general. The results indicate the need to continue building work environments that provide ergonomic and mental health support alike. At the same time, findings from this study could provide useful baseline data for future environmental and behavioural research in workplace design, staff safety, and intervention on occupational health in the healthcare settings in Malaysia.

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