

## ORIGINAL PAPER

# Work-related Musculoskeletal Disorders: prevalence, contributing factors and coping strategies among Physiotherapy personnel in Lusaka, Kitwe and Ndola districts, Zambia

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## ABSTRACT

**Background:** Injuries at a work place comprise a substantial part of injury burden. Work-related musculoskeletal disorders (WRMDs) are common in the field of physiotherapy because the nature of job tasks is physically challenging and therapeutic procedures are often repetitive, labour intensive and involve direct contact with patients. The objective of the study was to determine the prevalence, contributing factors and coping strategies for WRMDs among physiotherapy personnel in Lusaka, Kitwe and Ndola districts of Zambia.

**Methods:** Data was collected using a self-administered semi structured questionnaire in a cross sectional study. Data were summarized using percents for categorical variables, mean (standard deviation) for continuous variables, and median (Q<sub>1</sub>, Q<sub>3</sub>) for skewed variables.

**Results:** A total of 120 physiotherapists participated in the survey and of these 82 (68.3%) experienced WRMDs that lasted for more than 3 days in the previous 12 months to the survey. Most (40.7%) participants experienced work-related injuries within the first five years after graduation. The majority of the participants indicated that the following work factors contributed to WRMDs:

treating a large number of patients per day (97.5%), repeatedly performing the same task (94.9%), performing manual therapy techniques (93.2%), working in the same position for long periods (92.1%), and lifting and transferring patients (88.6%).

**Conclusions:** WRMDs are common among physiotherapy personnel in Lusaka, Kitwe and Ndola districts of Zambia. Outcomes underlines the importance of further research with larger sample sizes to examine factors associated with WRMDs among physiotherapy personnel in this country.

## INTRODUCTION

Injuries at a work place comprise a substantial part of injury burden and are an important public health problem that affects not only the person sustaining the injury but also other household members that depend on the injured adult for support<sup>1</sup>. The activities involving patient contact are highly correlated to occupational injuries among health care workers<sup>2,3</sup>. Work-related musculoskeletal disorders (WRMDs) have been defined as musculoskeletal injuries that result from a work-related event<sup>4</sup>. These disorders are common causes of severe long-term pain and physical disability<sup>5,6</sup>.

There are a number of factors that can lead to one developing musculoskeletal disorders. Bork *et al* identified three primary risk factors associated with WRMDs as repetitive movements, awkward

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postures and high force levels<sup>7</sup>. In the field of physiotherapy the three primary risk factors are very common. Physiotherapy is associated with job tasks that are physically challenging and the elements of practice demand continuous bending, repetitive movements, quick response to unanticipated movements by patients and maximum patient support during treatments. Some of the routine procedures include manual therapy and soft tissue mobilizations which require higher levels of force and may be performed in hazardous or awkward postures<sup>8</sup>. In addition, they perform activities that involve transferring of dependant patients (for instance exercise mats to chairs and parallel bars), assisting patients in gait, providing manual resistance during exercise, assisting with mat activities, also lifting and use of heavy equipment during treatment.

Zambia like many other sub-Saharan countries has been adversely affected by the HIV/AIDS pandemic with an infection rate of 14.3% among adults age 15-49 years<sup>9</sup>. This has caused a continued increase in the disease burden. The high disease burden is also, compounded by resurgent epidemics, and high poverty levels<sup>10</sup>. The increasing burden of disease in Zambia has brought about an increased demand on health staff due to increases in the number of patients<sup>10</sup>. It was, therefore, an assumption that the high number of patients seeking physiotherapy services because of complications associated with HIV/AIDS such as stroke and other medical sequelae could expose physiotherapy personnel to WRMDs. There is scanty information on the prevalence and factors associated with WRMDs in Zambia. Hence, in order to contribute to the body of knowledge we conducted a study to determine the proportion of physiotherapy personnel in Lusaka, Kitwe and Ndola districts that experienced WRMDs, determine contributing factors to the development of WRMDs and coping strategies among physiotherapy personnel.

## METHODS

A cross sectional study was conducted among 120 physiotherapists from the 139 registered PTP with

the Medical Council of Zambia. To determine the sample size the Medical Council of Zambia Physiotherapy register was used. However, on this register there were only 139 registered PTP. This number was manageable therefore, everybody on the register was considered for recruitment. Ethical approval was obtained from the Biomedical Research Ethics Committee of the University of Zambia.

Data was collected using a self-administered semi-structured questionnaire which was divided into three parts. Demographic data was collected in section A, this included information on work settings, experience and training. Information on WRMDs and work factors was collected in section B. Participants were asked whether they had experienced work related pain or discomfort that lasted for more than 3 days in any body part in the last 12 months prior to the survey. Those that indicated having experienced WRMDs in any body part were further, requested to indicate body parts were they had experienced pain or discomfort. Information on job tasks and coping strategies was collected in section C.

Data was entered into a computer using epi-data. Information was then exported from the epi-data file to SPSS version 16.0 for windows for analysis. **Data were summarised using percents for categorical variables, mean (standard deviation) for normally distributed variables, and median (Q<sub>1</sub>, Q<sub>3</sub>) for skewed variables.**

## RESULTS

Respondents that took part in the study were 120 which included 74 females (61.7%). Both male and female participants had a mean age of 34.4 (SD 7.85) years and BMI of 25.8 (SD 5.0). Most participants (92.5%) were in full time employment. About 2 in 3 participants had diplomas in physiotherapy and only 2.5% had master degrees. The median years of physiotherapy experience was 7.0 (Q<sub>1</sub>=3.5, Q<sub>3</sub>=13.0). The rest of the description is shown in Table 1.

**Table 1:** Socio-demographic characteristics of the participants (n=120)

Factor	Mean (SD)
Age (years)	34.4 (7.85)
Height (Metres)	1.66 (0.09)
Weight (Kilograms)	70.5 (12.43)
Body Mass Index	25.8 (5.0)
<b>Years of Physiotherapy Experience</b>	<b>Mean (Q1, Q3)</b> 7.0 (3.5, 13.0) <b>n (%)</b>
<b>Gender</b>	
Male	46 (38.3)
Female	74 (61.7)
<b>Work Status</b>	
Full Time	111 (92.5)
Part Time	9 (7.5)
<b>Work Setting</b>	
Government Hospital	88 (73.3)
Private facilities	21 (17.5)
Rehabilitation	11 (9.2)
<b>Education</b>	
Diploma	82 (68.3)
Bachelor's Degree	35 (29.2)
Master's Degree	3 (2.5)
<b>Ergonomic Training</b>	
Yes	52 (48.2)
No	56 (51.8)

**Work-related musculoskeletal disorders**

The majority of respondents 68.3% (n=82) experienced work-related pain or discomfort in any body region that lasted for more than 3 days in the last 12 months to the survey.

**Affected body parts of work-related musculoskeletal disorders among respondents**

The lower back was the most commonly affected body part at 52.4% (n=43). The shoulders 30.5% (n=25), upper back 26.8% (n=22), neck 25.6% (n=21) and wrists/hands 15.9% (n=13) were the other sites that were also frequently affected (Table 2).

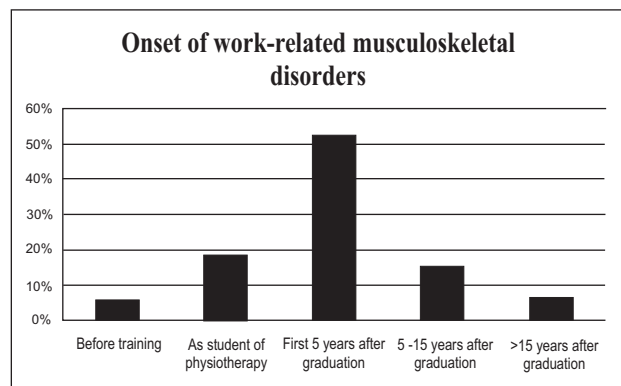
**Table 2:** Commonly affected body parts (Total = 82)

Pain Location	n (%)
Neck	21 (25.6)
Upper Back	22 (26.8)
Lower Back	43 (52.4)
Thumbs	2 (2.4)
Knees	8 (9.8)
Shoulder	25 (30.5)
Elbow/Forearm	6 (7.3)
Wrist/Hands	13 (15.9)
Hips	1 (1.2)
Ankles/Feet	7 (8.2)

**Onset of work-related musculoskeletal disorders among respondents**

Majority of participants 52.4% (n=44) first experienced their work-related injuries within the first five years of their graduation, 19.0% (n=24) had their first experience as physiotherapy students, while 15.5% (n=7) had their first encounter 5-15 years after graduation (Figure 1).

**Figure 1:** Onset of work-related musculoskeletal disorders among respondents



For most of the respondents, the onset of WRMDs was gradual in 72 (70.6%), sudden in 26 (25.5%) and as a result of an accident 4 (3.9%).

**Work factors identified as contributing to work-related musculoskeletal disorders**

The most prevalent work factor commonly identified by respondents as having contributed to the development of WRMDs was treating a large number of patients per day 97.5% (n=77). Other factors included performing the same task over and over 94.9% (n=77), performing manual therapy techniques 93.2% (n=69), working in the same positions for long periods 92.1% (n=70) and lifting and transferring of dependant patients 88.6% (n=70). Details are shown in Table 3 over leaf.

**Table 3:** Work factors identified by respondents as contributing to work-related musculoskeletal disorders

Job tasks	Total	n (%)
Performing same tasks over and over	78	77 (94.9)
Treating a large number of patients in one day	79	77 (97.5)
Not enough rest breaks during the day	74	65 (87.8)
Performing manual techniques	74	69 (93.2)
Working in cramped positions	72	57 (79.2)
Working in same position for long periods	76	70 (92.1)
Bending or twisting back in an awkward way	77	65 (84.4)
Reaching or working away from your body	73	59 (80.8)
Unanticipated sudden movement or falls by patient	77	48 (62.3)
Assisting patient during gait training	76	54 (71.1)
Lifting or transferring dependent patients	79	70 (88.6)
Working with confused or agitated patients	75	45 (60.0)
Lifting heavy material or equipment	77	52 (67.5)
Working at or near your physical limits	74	60 (81.1)
Continuing to work when injured or hurt	76	51 (67.1)
Work scheduling (overtime, length of work day)	74	50 (67.6)
Inadequate training in injury prevention	68	31 (45.6)

**Coping strategies**

As a result of work-related pain or discomfort 68.3% (n=77) respondents reported having modified their treatment approaches towards patients. The most commonly adopted coping strategies identified by the respondents included, modifying patients positions or their position 58.5% (n=48), selecting techniques that would not aggravate or provoke discomfort 56.1% (n=46) and adjusting plinth/bed height before treatment 47.6% (n=39). Other details are shown in Table 4.

**Table 4:** Coping strategies used by participants

Strategy	Always		Sometimes		Never		No Response	
	n	(%)	n	(%)	n	(%)	n	(%)
I get someone else to handle a heavy patient	33	(40.2)	40	(48.8)	7	(5.8)	2	(1.7)
I modify patient's position/my position	48	(58.5)	32	(39.0)	0	(0.0)	2	(1.7)
I use different part of my body to administer a manual technique	23	(28.0)	44	(53.7)	6	(7.3)	9	(11.0)
I warm up and stretch before performing manual techniques	7	(8.5)	32	(39.0)	38	(46.3)	5	(6.1)
I use electrotherapy instead of manual techniques	5	(6.1)	49	(59.8)	22	(26.8)	6	(7.3)
I pause regularly so I can stretch and change posture	24	(29.3)	41	(50.0)	12	(14.6)	5	(6.1)
I adjust plinth or bed height before treating a patient	39	(47.6)	28	(34.1)	10	(12.2)	5	(6.1)
I select techniques that will not aggravate or provoke my discomfort	46	(56.1)	30	(36.6)	1	(1.2)	5	(6.1)
I stop a treatment if it causes or aggravates my discomfort	24	(29.3)	40	(48.8)	14	(17.1)	4	(4.9)

**DISCUSSION**

Information that was obtained from this study indicates that WRMDs were common. Eighty two (68.3%) respondents reported having experienced work-related pain or discomfort at least in one anatomical area that lasted for more than 3 days. This result is similar to the reported prevalence of 68% in Great Britain<sup>11</sup>. However, it is lower compared to the reported prevalences of WRMDs among physiotherapists in the African region. Nigeria reported 91.3% prevalence and in Zimbabwe it was 78%<sup>5,12</sup>. The differences in the results may be attributed to differences in the number of participants. Also, the range of conditions, number of patients attended to per day, the set up of the practice and the availability of basic equipment may influence the development of WRMDs.

The lower back was the most commonly affected body part at 52.4% (n=43) this study. These findings are consistent with the results of previous studies in the African region and elsewhere that implicated the lower back as the most commonly affected anatomical area among physiotherapists ranging between 45% and 79.6%<sup>13,14,15,7,12</sup>. These results are also correlated to the daily treatment tasks being



performed by PTP which may contribute to stress in these anatomical areas, such as treating a large number of patients per day, lifting or transferring of dependant patients, working in the same position for a long period, doing the same task over and over and performing manual therapy techniques. Also, most of the practice settings are general hospitals. Patients in these facilities are usually, very ill because of complications associated with HIV/AIDS such as stroke and the number of patients attended to per day is quite high thereby, increases on staff demand Majority of respondents 40.7% noted having experienced their first episodes of WRMDs during the first five years of professional practice. A proportion of these respondents (70.6%) also, reported a gradual onset of musculoskeletal symptoms. These outcomes are very similar to those reported in most of the other studies done on WRMDs among physiotherapists<sup>14,5,16,11,4</sup>. This according to Glover *et al*, is attributed to newly qualified staff being inexperienced in handling patients and reluctant or embarrassed in seeking assistance from colleagues when doing physically demanding tasks<sup>11</sup>. Furthermore, newly qualified staff may not have yet developed strategies for coping with the physical demands of the job.

To avoid symptoms of WRMDs, respondents commonly associated with modifying patients position or my position, selecting techniques that will not aggravate or provoke my discomfort, adjusting plinth or bed height before treating a patient, getting someone else to handle a heavy patient, stopping a treatment if it causes or aggravates or provokes my discomfort and pausing regularly so I can stretch and change posture. This result is consistent to that of Abidemi *et al* and Glover *et al* who reported that the four most important preventive strategies commonly adopted by physiotherapists in response to sustaining musculoskeletal disorders at work as: adjusting plinth or bed height, modifying their position or that of their patients, obtaining assistance when handling a heavy patient and ceasing a patients treatment if such treatments aggravates or provokes their symptoms<sup>15,11</sup>. Further, Glover *et al* states that physiotherapists changed their field of work or departments due to WRMDs<sup>11</sup>. In this study most respondents work in government hospitals, these

tend to be more restrictive settings in terms of change in work habits or areas of practice or limiting patient contact. Also, positions for PTP in these facilities are limited. This gives a “limited career option Change.” It is therefore, unlikely for PTP to change their field of work or departments as a way of avoiding or relieving WRMDs.

Treating a large number of patients per day, performing same tasks over and over, performing manual therapy techniques and working in the same position for a long period, in this order, are across cutting job tasks or work factors that respondents in the present study commonly identified as contributing to the development of WRMDs. In previous studies investigations revealed similar results<sup>13,16,11,4</sup>. However, in these other studies, the researchers also, analysed the muscle work during such activities and linked the factors to individual musculoskeletal disorders. For example, performing manual therapy techniques was linked to wrist/hand musculoskeletal disorders<sup>4,8</sup>. It is important to note that while performing various tasks PTP may also be simultaneously exposed to a number of different other factors that interact, thereby, making it difficult to identify the real cause of injury. Again, it is important to note that participants self identified the work factors. The responses may, therefore, be a reflection of their own beliefs rather than the actual contribution to their disorder.

The main limitation of this study is the convenient sampling technique that was used. Only personnel who were present at the time of data collection took part in the study. To this effect, there was no generalization of results even though similar scenarios were expected in other parts of the country. This study also, relied on self reported data and respondents may not have easily recalled all incidences surrounding episodes of WRMDs.

## CONCLUSION

WRMDs are common among physiotherapy personnel in Lusaka, Kitwe and Ndola districts of Zambia. This study has provided baseline data on the prevalence for work-related musculoskeletal disorders among physiotherapy personnel here in

Zambia. Studies are needed to establish factors associated with WRMDs among physiotherapy personnel in this country.

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