

# Work Related Musculoskeletal Disorders in Occupational Therapists and Physiotherapist

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**Abstract:** ***Objective:** A cross-sectional study was conducted to measure work-related injuries among physiotherapists and occupational therapist to find out the susceptibility of work related musculoskeletal disorders in occupational therapy and physical therapy professionals in India and to study the incidence rate of Work related musculoskeletal disorders in OT's and Pt's and to identify the risk factors that results in a work related injury. **Methods:** Self-administered questionnaires was developed using two published instruments previously used with physical therapists {Holder et al. (1999) & Campo et al. (2008)}. The questionnaire had 19 items that covered demographic information, areas of musculoskeletal problems and physiotherapy techniques that could contribute to work-related musculoskeletal disorders. The data obtained were analyzed using the Statistical Package for Social Science version 16 software. **Results & Conclusion:** The result of this study indicates that occupational therapists and physical therapists are at a significant risk of WRI and of developing WMSDs. 60.78% of individuals reported WRI's and the incidence rate for WMSD was found to be 35.29%. The results of this study showed that low back is the most susceptible area of injury followed by the neck region.*

**Keywords:** Musculoskeletal Disorders, Work-Related Injuries, Occupational Therapist, Physiotherapist, Low back pain

## 1. Introduction

An occupational injury can be defined as an injury that results from a work-related event or from a single instantaneous exposure in the work environment leading to death, lost work time, medical treatment other than first aid, loss of consciousness, work restriction, or transfer to another job (Holder NL et al., 1999). Occupational therapists & Physical therapists are at risk of work-related injuries (WRIs) because of the demanding nature of their work. They use patient handling and transfer training as a way to restore function and improve independence. The practice of occupational therapy and physical therapy requires the performance of many labor-intensive tasks related to the delivery of patient care. Such activities include lifting, bending, twisting, reaching, performing manual therapy, and maintaining awkward positions for a prolonged period of time. Both disciplines receive training from their professional curriculum in self-protection while performing these techniques. Many therapists also receive education in ergonomics as part of their academic training and serve in the role of occupational health provider for other employees in their places of work. Despite this level of training and expertise, evidence indicates that these clinicians are at risk for musculoskeletal injuries associated with patient handling (Bork et al., 1996).

Holder et al., 1999 reported the causes and prevalence of occupational musculoskeletal injuries to PTs and PTAs during a 2-year period. The purpose of this study was to examine the reported causes. An occupational injury questionnaire was constructed and mailed. Thirty-two percent of the PTs and 35% of the PTAs reported sustaining a musculoskeletal injury. The highest prevalence of injury was to the low back (62% of injured PTs and 56% of injured PTAs). The PTs reported the upper back and the wrist and hand as having the second highest prevalence (23%). The PTAs reported the upper back as having the second highest prevalence (28%). Darragh A. R., Huddleston W. & King P. (2009) conducted a study to gather new information about

the prevalence, severity, and characteristics of work-related musculoskeletal symptoms and injuries among occupational therapists and to compare this information with physical therapists in the state of Wisconsin. Results indicated annual incidence rate of 16.5 injuries per 100 full-time workers among occupational therapists and 16.9 injuries per 100 full-time workers among physical therapists, a rate similar to workers employed in heavy manufacturing. Campo et al, 2008 conducted a study regarding work-related musculoskeletal disorders in physical therapists. The objectives of this study were to determine the 1-year incidence rate of WMSDs in physical therapists and to determine the effects of specific risk factors. This was a prospective cohort study with 1-year follow-up. Subjects were randomly selected from American Physical Therapy Association members. Ninety-three percent of the subjects who responded to the baseline questionnaire responded to the follow-up questionnaire. The 1-year incidence rate of WMSDs was 20.7%. Factors that increased the risk for WMSDs included patient transfers, patient repositioning, bent or twisted postures, joint mobilization, soft tissue work, and job strain.

## 2. Objectives of the Study

- To find out the susceptibility of work related musculoskeletal disorders in occupational therapy and physical therapy professionals in India.
- To study the incidence rate of WMSD in OT's and Pt's and to identify the risk factors that results in a WRI.

## 3. Methodology

Investigators designed a questionnaire on a surveying site and directed its hyperlink to the therapists in India who were present on a social networking site (facebook) and who agreed to participate in the study. Few of the survey questionnaires were distributed amongst the OT's and PT's. Once the data was collected, it was analyzed on the spss16 software and conclusions were derived.

**Sample:**

51 individuals participated in the study having a minimum clinical experience of 2 years were taken as a sample out of which 18 met the inclusion criteria.

**4. Research Design**

A cross-sectional design was used for this study. The primary Variables of interest included self-reported WRIs, self reported musculoskeletal symptoms, and WMSDs; characteristics of symptoms and disorders; area of practice; treatment of the injury; symptom or disorder; and position or practice change.

**Tool**

We developed a survey using two published instruments previously used with physical therapists {Holder et al. (1999) & Campo et al. (2008)}. The questionnaire composed of predominately closed-ended questions (Appendix). The demographics portion of the questionnaire was designed to obtain general information, including gender, age, weight, height, years of experience, setting and state in which employed, and hours of patient contact. The remainder of the questionnaire elicited information pertaining to job-related musculoskeletal injuries. Respondents who had been injured were asked about the type of injury incurred and the body part affected, the activity being performed at the time of injury, the work setting in which the injury occurred, and whether the injury was reported and a physician was consulted. They were also asked whether there was time lost from work as a result of the injury, what activities caused symptoms to recur, and whether the injury caused the respondent to alter his or her work habits, reduce patient contact hours, or change employment setting. Researchers used a stringent case definition of a WMSD, based on the work of Campo et al. (2008), to identify therapists who reported no injuries but who experienced pain. The definition was designed to identify WMSDs serious enough to cause problems at work but to avoid symptoms that were minor complaints. The definition identified a person as having a WMSD if he or she rated pain of at least 4 of 10 on a visual analog scale (from 0–10) that lasted more than 1 week or was present at least once a month (Campo et al., 2008).

**Data Analysis**

All questionnaires were analyzed using the Statistical Package for Social Sciences (SPSS 16) computer software program. The mean, standard deviation, and range were calculated for age, height, weight, years of experience, and hours per week in direct patient care of all respondents. Frequencies were taken out for the body parts affected, type of injury, activities causing injury, self treatment, exacerbation of symptoms, limiting area of practice etc. Incidence rate of WMSD was calculated using the formula-  

$$\frac{\text{Total no. of therapists with one or more injury}}{\text{Total no. of therapists exposed in a year}} * 100$$

**Demographics**

51 individuals participated in the study, out of which 31 reported injuries in the past one year due to their work practise. According to the definition of WMSD as given by Campo et al. (2008), 18 therapists were found to have

WMSD. The mean age was 32 years and the mean BMI was found to be 24.4.

**Injuries in past 1 year**

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	31	60.8	60.8	60.8
NO	20	39.2	39.2	100.0
Total	51	100.0	100.0	

**Participation was maximal from the south zone**

	Frequency	Percent	Valid Percent	Cumulative Percent
north zone	6	11.8	11.8	11.8
south zone	23	45.1	45.1	56.9
east zone	19	37.3	37.3	94.1
west zone	1	2	2	96.1
central zone	2	3.9	3.9	100
Total	51	100	100	

Further analysis was done on the 18 candidates who were found to have WMSD. The incidence rate of WMSD was found to be 35.29% using the above mentioned formula. 83.3% males had WMSD over 16.7% females.

Total no of participation				
	Frequency	Percent	Valid Percent	Cumulative Percent
Male	41	80.4	80.4	80.4
Female	10	19.6	19.6	100.0
Total	51	100.0	100.0	

Total no of participants having WMSD				
	Frequency	Percent	Valid Percent	Cumulative Percent
Male	15	83.3	83.3	83.3
Female	3	16.7	16.7	100
Total	18	100	100	

Out of the total OT's who participated in the study 39.3% were found to have WMSD and 27.7% of the total PT's were found to have WMSD. The survey showed that the maximum number of injured therapist worked at rehabilitation setup (33.3%) and in hospitals (27.8%)

	Frequency	Percent	Valid Percent	Cumulative Percent
Academic	3	16.7	16.7	16.7
Hospital	5	27.8	27.8	44.4
Clinic	2	11.1	11.1	55.6
Rehab	6	33.3	33.3	88.9
School	2	11.1	11.1	100.0
Total	18	100.0	100.0	

Maximum number of injured candidates reported injury to the lower back (38.9%), followed by injury to the neck (22.2%).

Body Parts Involved				
	Frequency	Percent	Valid Percent	Cumulative Percent
Neck	4	22.2	22.2	22.2
U. back	2	11.1	11.1	33.3
L. back	7	38.9	38.9	72.2
Shoulder	2	11.1	11.1	83.3
Wrist hand	2	11.1	11.1	94.4
Ankle foot	1	5.6	5.6	100
Total	18	100	100	

61.1% reported injuries due to muscle strain while 11.1% of individuals reported ligamentous injury and injury involving the vertebral disc.

Type of injury				
	Frequency	Percent	Valid Percent	Cumulative Percent
ligamentous	2	11.1	11.1	11.1
Muscle strain	11	61.1	61.1	72.2
neuropathy	1	5.6	5.6	77.8
tear	1	5.6	5.6	83.3
Vertebral disc involvement	2	11.1	11.1	94.4
undiagnosed	1	5.6	5.6	100
Total	18	100	100	

Maintaining a position for a prolonged period of time and performing a manual therapy task were the highest reported activities that caused injury with a response rate of 22.2%.

	Frequency	Percent	Valid Percent	Cumulative Percent
Bending or twisting	3	16.7	16.7	16.7
Lifting	1	5.6	5.6	22.2
Maintaining a position for prolonged period	4	22.2	22.2	44.4
Performing a manual therapy task	4	22.2	22.2	66.7
Performing repetitive task	3	16.7	16.7	83.3
Transferring a patient	2	11.1	11.1	94.4
Working in an awkward position	1	5.6	5.6	100
Total	18	100	100	

50% of the therapists who were found to have WMSD officially reported their injuries. Only 38.9% of the people showed a doctor while 61.1% did not see a doctor for the same. The results of the survey showed that 94.4% of the therapists usually go for some self treatment or treatment from the colleagues. It was also found that only 33.3% of the individuals missed at least half of the day because of the injury and 83.3% continued working while injured.

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	9	50.0	50.0	50.0
NO	9	50.0	50.0	100.0
Total	18	100.0	100.0	

Visiting A Doctor				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	7	38.9	38.9	38.9
NO	11	61.1	61.1	100.0
Total	18	100.0	100.0	

Self Treatment or Treatment From Colleagues				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	17	94.4	94.4	94.4
NO	1	5.6	5.6	100.0
Total	18	100.0	100.0	

Continue Work While Injured				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	Yes	Yes	Yes	Yes
NO	No	No	No	No
Total	Total	Total	Total	Total

Missing at Least Half of the Day Because of the Injury				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	6	33.3	33.3	33.3
NO	12	66.7	66.7	100
Total	18	100	100	

77.8% of the people reported exacerbation of the symptoms and considered bending and performing manual therapy task as the most common activities that cause symptoms to exacerbate.

Exacerbation of Symptoms Due to Clinical Practise				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	14	77.8	77.8	77.8
NO	4	22.2	22.2	100
Total	18	100	100	

Activities Causing Symptoms To Exacerbate				
	Frequency	Percent	Valid Percent	Cumulative Percent
N.A	3	16.7	16.7	16.7
Bending	5	27.8	27.8	44.4
Lifting	2	11.1	11.1	55.6
Maintaining a position for a prolonged period	1	5.6	5.6	61.1
Performing manual therapy task	4	22.2	22.2	83.3
Performing repetitive task	2	11.1	11.1	94.4
Transferring a patient	1	5.6	5.6	100
Total	18	100	100	

50% of the individuals reported that they have limited the patient contact time due to the injury and 83.3% of individuals agreed to the fact that they have altered their work habits. 27.8% of people change their working position frequently and 16.7% of individuals take more rest, breaks during the work day.

Limiting Patient Contact Time				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	9	50	50	50
NO	9	50	50	100
Total	18	100	100	

Altering Work Habits				
	Frequency	Percent	Valid Percent	Cumulative Percent
YES	15	83.3	83.3	83.3
NO	3	16.7	16.7	100
Total	18	100	100	

Activities That Are Done Differently				
	Frequency	Percent	Valid Percent	Cumulative Percent
N.A	2	11.1	11.1	11.1
Avoid lifting	2	11.1	11.1	22.2
Change work position frequently	5	27.8	27.8	50
Change work schedule	2	11.1	11.1	61.1
Decrease manual techniques	1	5.6	5.6	66.7
Encourage patient responsibility	1	5.6	5.6	72.2

Increase administrative time	2	11.1	11.1	83.3
Take more rests and breaks	3	16.7	16.7	100
Total	18	100	100	

When the participants were inquired whether they have limited their area of practise, 50% agreed to it and 5.6% were in the favour of changing jobs because of this injury or fear of another injury.

## 5. Result and Discussion

The result of this study indicates that occupational therapists and physical therapists are at a significant risk of WRI and of developing WMSDs. 60.78% of individuals reported WRI's and the incidence rate for WMSD was found to be 35.29%. Out of all the OT's who participated in the study 39.3% were found to have WMSD and of all the PT's who participated 27.7% were found to have WMSD. It was found that the maximum number of therapists who reported injuries and worked in a rehabilitation setup followed by those who worked in hospitals. The results of this study showed that low back is the most susceptible area of injury followed by the neck region. 38.9% of the individuals who were found to have WMSD had low back injuries. Inappropriate positions during therapy can be attributed as the one of the important causes of injuries. The clinical culture of health care providers is one in which altruism is valued, so admitting an injury caused by patient care is difficult. Both respondents with injuries and those with WMSDs had symptoms that were exacerbated by clinical practice; they worked while in pain and reported that their conditions interfered with work, but few limited patient contact time or missed work. It was found that only 33.3% missed half of the day and 83.3% of people admitted that they continued working while injured. Majority of the individuals believed that the symptoms of their injury was aggravated due to the clinical practice and felt the need to alter work habits. Even after experiencing pain due to the practice only half of the population reported that they are limiting their area of practice and only 5.6% preferred changing jobs. Therapists may not be reporting injury because they are able to self-treat, recognize early symptoms of an injury, and access clinical colleagues (Waldrop, 2004). Other studies suggest that therapists may perceive the injury as a weakness on their part because of their expertise in the area of patient handling and movement (Cromie et al., 2000). Therapists also play a role in preserving the occupational health of their colleagues. Occupational and physical therapists have a dual role within many health care settings. For example, within the hospital, occupational therapists and physical therapists are often responsible for training the patient care staff in good body mechanics to avoid injury. Reporting an injury that they teach others to prevent could be a major barrier. Therapists rely on good body mechanics to avoid injury. Biomechanical evidence confirms this finding and has demonstrated that there is no safe way to lift a dependent patient (Marras, Davis, Kirking, & Bertsche, 1999). Even a transfer task with a light patient who is compliant results in spinal loading that exceeds tissue thresholds (Marras et al., 1999; Ulin et al., 1997). Minimal-lift and no-lift programs can be implemented in many

medical facilities, and therapists will be expected to train nursing personnel in the use of the equipment and to integrate the equipment and lifting restrictions into practice. Although mechanical lift devices and other minimal-lift equipment can protect therapists from some musculoskeletal injuries and disorders, therapists must also consider the best way to facilitate independence in their patients while reducing the amount of unassisted handling they perform.

## 6. Limitations of the Study

The current study has several limitations. First, as a cross-sectional study that relies on self-report, it has the possibility of selection bias and recall bias. The sample size is small since not all the therapists present on the social networking size agree to participate in the study. For further studies some other method could be chosen to reach a larger group of people. This study cannot provide information about predicting injuries; it can only examine associations between variables.

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