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WORK RELATED MUSCULOSKELETAL DISORDERS: A SURVEY OF PHYSIOTHERAPISTS IN TRICITY

[1]Priyanka Maheshwari
[2]Retasha Soni
[3]Niti Parkash

ABSTRACT

Background: Musculoskeletal system disorders are common among health care workers worldwide. They are common causes of severe long-term pain and physical disability. Musculoskeletal disorders (MSDs) are defined as "regional impairments of the muscles, tendons, nerves and joints. Physiotherapy can lead to WRMSDs in physiotherapist because of the nature of their profession. Despite of having expert knowledge of musculoskeletal injuries and injury prevention strategies they still report a high incidence of work-related injuries during their professional practice due to their training and continuous professional development

Methods: A total of 100 Physiotherapists which included 78 females and 22 males in the age group of 21 to 40 years were recruited in the study. The subjects were taken as per the inclusion and exclusion criteria from Tricity.

Results: Pearson's correlation and Chi square analysis was used to determine correlation and the association of prevalence of self-reported musculoskeletal symptoms with personal characteristics, job risk factors and coping strategies. The data obtained from this study documents that majority of Physiotherapists have experienced WRMSDs at some time. The prevalence of WRMSDs among Physiotherapists in Tricity is high (91%). The most common risk factors identified in the present study were dealing with an excessive number of patients in one day; continuing to work while injured or hurt; lifting or transferring dependent patients and work scheduling. In present study, the low back and neck regions were the most commonly affected site among physiotherapists (72.5%) each followed by upper back (28.6 %), shoulder (20.9%), wrist and hand (17.6%), knee (12.1%), ankle and foot (12.1%) and hip (7.70%)

Conclusions: Work-related musculoskeletal disorders are an important health risk within the physiotherapy profession. The prevalence of work-related musculoskeletal disorders among the Physiotherapists in Tricity is high that is 91%. Hence, it supports the research hypothesis of the present study. It is also concluded that the low back and neck (72.5% each) are the most common sites susceptible to injury followed by upper back and shoulder

Keywords: Work related musculoskeletal disorders, Physiotherapists, WRMSDs

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[2]Assistant Professor Mother Teresa Saket College of Physiotherapy, Chandimandir Cantonment, Kalka Road, Chandimandir - Panchkula, Chandi Mandir, Haryana 134107, India.
[3]Assistant Professor Mother Teresa Saket College of Physiotherapy, Chandimandir Cantonment, Kalka Road, Chandimandir - Panchkula, Chandi Mandir, Haryana 134107, India.

CORRESPONDING AUTHOR

[1]Priyanka Maheshwari

Student MPT (Orthopedics), Mother Teresa Saket College of Physiotherapy, Chandi mandir Cantonment, Kalka Road, Chandi mandir - Panchkula, Chandi Mandir, Haryana 134107, India.

INTRODUCTION

Musculoskeletal system disorders are common among health care workers worldwide.[1, 2]Theyare common causes of severe long-term pain and physical disability.[3] Musculoskeletal disorders (MSDs) are defined as "regional impairments of the muscles, tendons, nerves and joints. When the surrounding work environment and the performance of work contribute in causing such kind of disorders, then they are called work-related musculoskeletal disorders (WRMSDs).[2] The common WRMSDs among medical professionals including Physiotherapists are pain in low back, neck, shoulder, hand, wrist, elbow, and upper back.[2,4]

Physiotherapist are highly-educated, licensed health care professionals who can help patients in reducing pain and improving or restoring mobility.[5] They can treat people at any stage of life, when movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors. In addition to the clinical practice, they are involved in research, education, consultation, and administration.[5, 6]

Studies done till date on Physiotherapists provide some indication that various job tasks may increase the risk for WRMSDs.[7] The three most important risk factors that have been associated with WRMSDs are repetitive tasks, uncomfortable postures and high force levels.[1,3,6]In addition, these professionals routinely perform activities that involve transferring a patient (from exercise mat to chair, to parallel bar etc.), assisting with activities on the exercise mat, lifting and using cumbersome equipment.[1, 3, 4, 6] These work tasks put them at an increased risk for development of both acute and cumulative musculoskeletal pain. [1, 6]

The pathogenesis behind this suggests that the muscle and tendons are designed to be used regularly.[2] However, when frequency and duration of loading exceed the ability of muscle and tendon to adapt, inflammation occurs which is followed by degeneration, micro tears, and scar formation.[2] Clinical findings for the tendon pathology suggested that there is reduced lubrication between tendons and tendon sheath due to excessive relative movement, high peak loads and cumulative strain, which leads to frictional damage to tendon due to its long term sliding of it under load. [6] Once a tendon is injured, the muscle to which it is attached must compensate by working harder to provide support for the extremity and joint. [2] An increase in the level of muscle support results in fatigue and strain.[8] For proper functioning, muscle requires an adequate supply of oxygen.[3]

There are many questionnaires which are used for the evaluation of MSD. Self - constructed questionnaire (SCQ) and Nordic Musculoskeletal Questionnaire (NMQ) were adopted in this study. There has been an exponential growth in the field of physiotherapy in Tricity which includes Chandigarh, Panchkula and Mohali. Various studies on work-related musculoskeletal disorders have been done worldwide but this area is still untouched in India. The aim of this study was to evaluate WRMSDs prevalence among Physiotherapists working in Tricity and to find out the risk factors that develop into WRMSDs, thereby providing basic knowledge to preempt musculoskeletal symptoms in Physiotherapists and to identify preventive measures to reduce their risk of WRMSDs.

MATERIALS AND METHODS

This validation study was approved by the ethics committee of Mother Teresa Saket College of Physiotherapy.

STUDY DESIGN

Cross sectional survey study design
Sample size: 100 Physiotherapists (78 females and 22 males) were included according to the inclusion and exclusion criteria.
Sampling method: Convenient random sampling
Source of data collection: Subjects were taken from Tricity (Chandigarh, Panchkula, and Mohali).
Duration of study: Four months

INCLUSION CRTERIA

1. Both male and female Physiotherapists.
2. Age group of 21– 40years.
3. Physiotherapist working in different areas- Academic, Outpatient clinic, Private Clinic, Intern, Home visits.

EXCLUSION CRITERIA

1. Undergraduate students.
2. Past history of physical trauma.
3. Any diagnosed case of degenerative disorders, inflammatory diseases, or any congenital anomalies.
4. Subjects with cardiovascular diseases or severe pulmonary diseases.
5. Subjects who had undergone any orthopedic surgery.
6. Pregnant females.

MATERIAL USED:

Questionnaires:
1. Self- constructed questionnaire

It consisted of three section regarding demographic data and occupational health; perceptions on job risk factors that may contribute to development of work-related musculoskeletal disorders and coping strategies which consisted of fifteen, seventeen and eight questions respectively.

2. Standardized Nordic Questionnaire.
   It is the most frequently used symptom questionnaire, designed for all musculoskeletal disorders. It was used to assess the nature and severity of self-reported musculoskeletal complaints with respect to nine body areas such as neck, shoulder, elbows, wrists/hands, upper back, lower back, hips, knees and ankles/feet. The occurrences of these symptoms over the past week (weekly prevalence) and over the past year (annual prevalence) were captured.

PROCEDURE

Pilot Study:

Self-constructed questionnaire was applied on a small sample size of 15 Physiotherapists for a pilot study. It gave useful results which gave knowledge about Physiotherapists and helped in constructing a better questionnaire.

Final Study:

A formal approval of the study was taken from the Research and Ethics Committee. A total of 100 Physiotherapists which included 78 females and 22 males in the age group of 21 to 40 years were recruited in the study. The subjects were taken as per the inclusion and exclusion criteria from Tricity. The purpose of the study and procedure was explained to the subjects and an informed written consent was also taken. They were made clear that their responses will be kept confidential and were only be used for research purpose. Then the subjects were instructed how to fill the self-constructed questionnaire and standardized Nordic questionnaire which thereafter handed over to them. The completed questionnaires were taken from them. From the completed questionnaires, the data was statistically analyzed to retrieve the information about the prevalence of work related musculoskeletal disorders among Physiotherapists in Tricity.

DATA ANALYSIS:

The data was collected through questionnaire was analyzed and summarized descriptively and was presented in frequency and frequency percentage of survey response. All the statistical analysis was conducted using SPSS (Standard Package for Social Sciences) Version-19.0 software. Scatter diagrams were used to represent the correlation between two entities.

RESULTS

The data obtained from this study documents that majority of Physiotherapists have experienced WRMSDs at some time. The prevalence of WRMSDs among Physiotherapists in Tricity is high (91%). In this study, out of total subjects of 100 Physiotherapists, there were 78 females (78%) and 22 males (22%). Out of total subjects who suffered from WRMSDs, 69 out of 78 females accounts for 88.5% and 22 out of 22 males accounts for 100%. The result of 100% prevalence among males in this study is due to higher job risk factors with "major problem" as compared to females. These include dealing with an excessive number of patients in one day (59.1%); lifting or transferring dependent patients (54.5%); continuing to work while injured or hurt (54.5%); work scheduling (45.5%); not enough rest breaks or pauses during the workday (31.8%); performing the same task over and over (31.8%); bending or twisting your back in an awkward way (22.7%) by the males.

In present study, out of total respondents 24.17% (22) were involved in Private clinic & Home visit ; 15.38% (14) were in Private Clinic; 12.08% (11) were in Hospital & Home Visit; 13.18% (12) were in Hospital; 5.49% (5) were in Academics & Hospital; 6.59% (6) in Intern and Home Visit; 3.29% (3) were in Intern; 3.29% (3) were in Outpatient & Home Visit; 4 (4.39%) in Academics, Hospital & Home Visit; 3.29% (3) in Home visit ; 2.19% (2) in Outpatient; 2.19% (2) in Outpatient & Hospital ; 1.09% (1) in Academic, Outpatient & Home visit; 1.09% (1) in Academic & Outpatient; 1.09% (1) in Academic ; 1.09% (1) in Other.

But if individually involvement is seen in particular area, then out of total respondents 54.9% (50) were involved in home visits, 39.6% (36) were in private clinic, 37.4% (34) were in hospital, 13.2% (12) were in academics, 9.9% (9) were in outpatient and intern and least 4.5% (1) was in other.

In present study, out of total respondents, the percentage within WRMSDs were 36.3% (33) who were involved in recreational activities and 63.7% (58) were not involved in recreational activities and no significant correlation was found between the two ($R = -0.017$; $p = 0.863$) .

In present study, the low back and neck regions were the most commonly affected site among physiotherapists (72.5%) each followed by upper back (28.6 %), shoulder (20.9%), wrist and hand (17.6%), knee (12.1%), ankle and foot (12.1%) and hip (7.70%)

In present study, among female respondents (n = 69), the area most affected was highest in the neck 52 (75.4%) followed by low back 49 (71.0%); upper back 21(30.4%); shoulder 12 (17.4%); wrist / hand 11 (15.9%); knee 10 (14.1%); ankle & foot 9 (13%); hip 7 (10.1%) and least in elbows 3(4.3%). Among male respondents (n = 22), it was highest in the low back 17 (77.3%); followed by neck 14 (63.6%); shoulder 7 (31.8%); wrist / hand 5 (22.7%); upper back 5 (22.7%); elbows 3 (13.6%); ankle & foot 2 (9.1%); knee 1(4.5%) and least in hip 0(0).

Figure 1: Pie chart representing the division of total number of subjects (n = 100) into males and females.

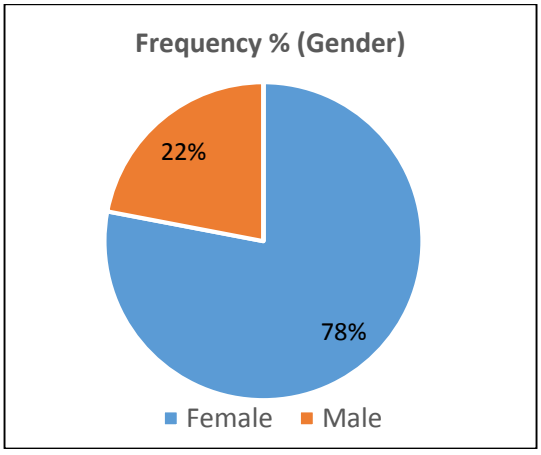


Figure 2: Pie Chart representing the division of total number of subjects (n = 100) on the basis of age.

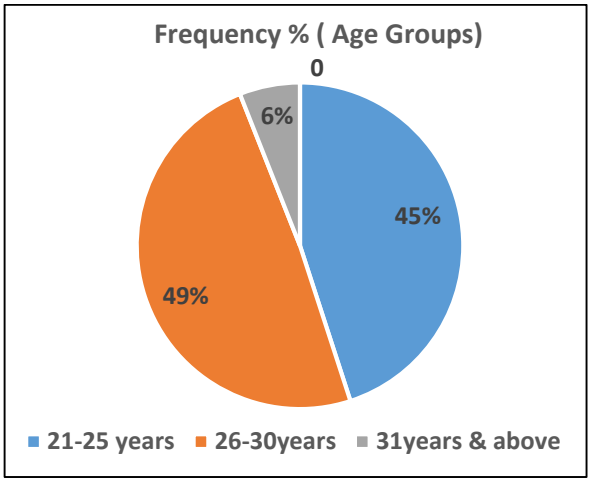


Table 1: Division of subjects according to body mass index (BMI)

BMI	Frequency	Frequency %
Underweight	5	5%
Normal	73	73%
Overweight	21	21%
Obese	1	1%
Total	100	100%

Figure 3: Pie chart representing the division of total number of subjects (n = 100) based on WRMSDs

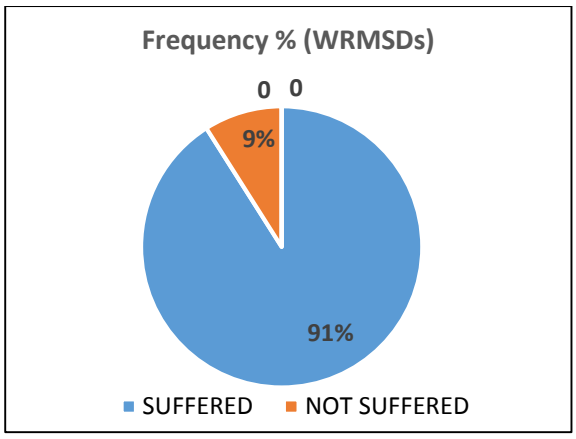
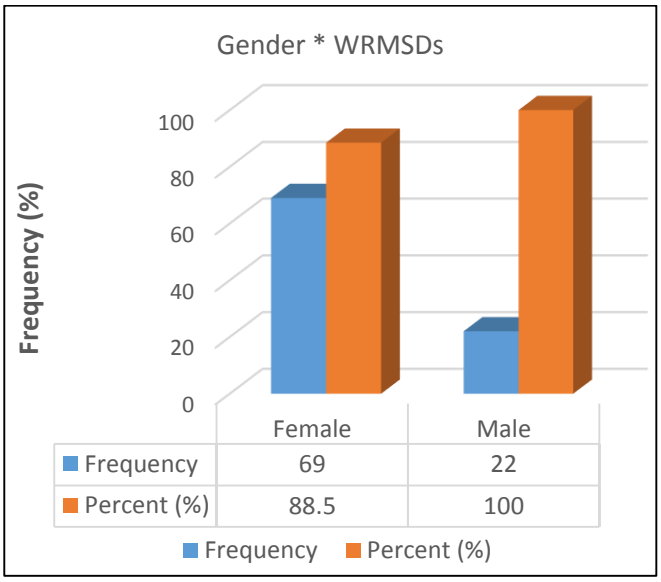


Figure 4: Bar graph representing the division of respondents (n = 91) based on percentage within gender who suffered from WRMSDs.



DISCUSSION

The prevalence of WRMSDs among Physiotherapists in Tricity is high (91%). This is in consistent with many studies which also reported its prevalence which ranged from58% to 91%.[9] In addition to this, Cromie et al. (2000)[9] found similar results that 91% of therapist reported that they had experienced WRMSDs at some time where as Babatunde et al. (2008)[10] reported 91.3% in Nigeria andChung et al. (2013)[11] reported 92.4% among Physiotherapists.

The most common risk factors identified in the present study were dealing with an excessive number of patients in one day; continuing to work while injured or hurt; lifting or transferring dependent patients and work scheduling. This is in accordance with the studies done by Obembe et al. (2008) who reported that the work-related activities most commonly cause injuries among physical therapists as they are mostly involved in

performing manual therapy techniques; transferring patients and maintaining a position for a prolong period of time.[12] West et al. (2004) also highlighted working in the same position for longer periods, working in static postures with flexion or rotation; continuing to work while injured and performing manual therapy techniques as these activities commonly lead to injuries.[13]

In this study, the mean age of the respondents was 26.03 ± 2.818 years. Out of total subjects who suffered from WRMSDs, 42 out of 45 subjects which accounts for 93.3% were in 21-25 years age group, 43 out of 49 subjects which accounts for 87.8% were in 26-30 years age group and 6 out 6 subjects which accounts for 100% were in 31years age group and above representing percentage within age groups. This result agrees with previously published trial by Campo et al. (2008) that WRMSDs were associated with increasing age.[14]A proposed explanation for high percentage of WRMSDs in almost every age group would be not adopting proper coping strategies which include not taking help from assistant therapists or other (72.5%) and not taking rest in between treating patients (71.4%).

In this study, the mean of clinical experience of the respondents was 2.87 ± 1.884 years, range between 0.2 to 8.5 years. Statistically there was no significant correlation between WRMSDs and clinical experience which is corroborated by Salik et al. (2004) who also reported WRMSD was not correlated with clinical experience.[14] The younger professionals are vulnerable to adopt suboptimal ergonomic job practices.

In this study, the mean body mass index (BMI) of the respondents was 22.037 ± 2.8682 kg/cm^2. According to World Health Organization, who suffered from WRMSDs were4 out of 5 subjects which accounts for 80% in underweight, 65 out of 73 subjects which accounts for 89%in normal, 21 out of 21 subjects which accounts for 100% in overweight and 1 out 1 subject which again accounts for 100% in obese category representing the percentage within BMI. This depicts that majority of the respondents were overweight and obese. As major proportion of Physiotherapists has fallen in normal category (65) and least in obese (1), so the data is not much statistically comparable.

In present study, the low back and neck regions were the most commonly affected site among physiotherapists (72.5%) each followed by upper back (28.6 %), shoulder (20.9%), wrist and hand (17.6%), knee (12.1%), ankle and foot (12.1%) and hip (7.70%) which is consistent with previous research.[15] In this study it may be due to the high percentage of respondents who deals with excessive numbers of daily patients, lifting or transferring dependent patients and continuing to work while injured or hurt. In addition, therapists were not adopting proper coping strategies that were modifying patient's position or their position (34.1%), taking rest in between treating patients (28.6%) and least used was taking help from assistant/other therapist 25 (27.5%). This is in consistent with findings from previous studies which have been done internationally, found that the prevalence of work related low back pain (LBP) ranged between 22% and 74%. In addition to this, similar work has been done by Siqueira et al. (2008)[16] who found that 78.58% physical therapist in the city of Recife, Brazil had complaint of LBP where as Babatunde et al. reported 69.8% of LBP.

Therefore, WRMSDs can affect Physiotherapist's work life in more than one factor. Adequate preventive and appropriate management strategies are recommended to minimize work-related injuries in the physiotherapy practice which can help in improving their work performance. Awareness among Physiotherapists will ultimately lead to an improvement in their productivity and quality of life.

There are a few limitations observed in this study which includes small sample size, the only personnel who were present at the time of data collection took part in the study and the study was carried out only in a small area thereby putting restrictions in generalizing the results. Various suggestions for future research are further investigation is needed to develop preventive measures; further research with larger sample size is suggested, other health care professional could be included in the study for comparison and subjects of all age groups could be included in future research, for generalization of outcome.

CONCLUSION

Work-related musculoskeletal disorders are an important health risk within the physiotherapy profession. The prevalence of work-related musculoskeletal disorders among the Physiotherapists in Tricity is high that is 91%. Hence, it supports the research hypothesis of the present study. It is also concluded that the low back and neck (72.5% each) are the most common sites susceptible to injury followed by upper back and shoulder. Therefore, it is recommended that education programs on prevention and coping strategies for musculoskeletal symptoms in Physiotherapists should be made mandatory in

order to decrease the risk of WRMSDs which will ultimately improve the quality of life.

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