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Work Related Musculoskeletal Disorders in Physiotherapists: Challenges and Coping Strategies WRMSDs in Physiotherapists

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Abstract:- Background: Work-related musculoskeletal disorders (WRMSDs) is a debilitating condition which affects the younger age physiotherapists. The etiology is their professional working pattern. Reason for sick leaves and loss of work hours have been attributed to WRMSDs. Even though physiotherapists are aware of WRMSDs, a high prevalence is seen among them. The aim was to find out the prevalence and risk factors for WRMSDs in physiotherapists working in Indore city.

Material: 500 physiotherapists participated in this cross-sectional observational study. Questionnaire was used for collecting the data. Young physiotherapists working at least for 8 hours daily with at least 1 year of experience were included. Association between demographic variables and the WRMSDs was done using Pearson Chi-square Test.

Results: The prevalence of WRMSDs was 20.8% in our study. Tendinitis, muscular spasms and ligament sprain were the most common. Lower back pain was complained by most of them. 2-3 weeks of persistent pain was reported. 58.7% took sick leave due to WRMSDs with a duration of 1-14 days. Maintaining same position (59.6%), lifting heavy objects (55.8%), bending and twisting (48.1%), manual therapy (42.3%) and repetitive work (41.3%) were the main etiology of pain. Avoidance of lifting, manual therapy time reduction, posture change and avoiding work when in pain were the common coping strategies adopted by them. There was no relationship between demographic variables and WRMSDs ($p>0.05$).

Conclusion: WRMSDs were seen among young physiotherapists and to cope with that they avoided lifting heavy objects, reduced manual therapy time and avoided work when in pain.

Keywords:- *Work-Related Musculoskeletal Disorders, Manual Therapy, Low Back Pain, Changed Posture, Stop Working When in Pain, Coping Strategies for WRMSDs.*

I. INTRODUCTION

Work-related musculoskeletal disorders (WRMSDs) is defined as pain persisting for more than 3 days owing to their professional work[1]. Physiotherapists are more commonly affected by WRMSDs[2]. Majority of the review done on this topic deals with back pain,[3,4,5,6] but this understates the wide range of issues that might arise. One study[4] done on physical therapists reported a prevalence of 29% of back pain. It was more common in younger therapists. Physical therapists experience more of this pain during their first 4 years of professional experience. One of the largest studies done on physical therapists looked at nine distinct body locations. They reported that low back pain is the commonest of work-related musculoskeletal disorders, followed by wrists and hands, upper back, neck and shoulders, elbows, hips and thighs, knees and ankles and feet in this decreasing order. Spinal symptoms were more common in female and wrist and hand symptoms more in male therapists.

The activities performed by the physical therapists contributes to work-related musculoskeletal disorders. Vibration has an effect on tendons, muscles, joints, and nerves, causing numbness in the fingers, loss of touch, grip, and pain; force of movement and repetitive motion; work posture; posture; perception of low support (coworkers); long-term position; reaching behind the body and backward or twisted movement.

The length of time spent exposed is a significant determinant in the development of musculoskeletal problems. The total exposure period, as well as the number of repetitions per unit time (e.g., each day), are the major determinants (e.g., per day or days per month). The overall load on the musculoskeletal system is determined by the levels of several load factors, such as: The level and direction of forces; duration of exposure; number of times an exertion is performed per unit of time and postural demands.

Manual therapy, such as soft-tissue mobilisation, is commonly performed by physical therapists, exposing the upper limb to risk factors linked with musculoskeletal and neurovascular problems. These experts also undertake tasks such as transferring a patient (from exercise mat to chair to parallel bar, etc.), assisting with activities on the exercise mat, and lifting and using heavy equipment on a regular basis. Therapists are at risk for both acute and chronic musculoskeletal pain as a result of their work[7]. Aside from the nature of therapists' jobs, working in certain clinical specialisations in physiotherapy has also been linked to work-related injuries. One of the most prominent risk factors for the development of WRMSDS was a high BMI.[2]

According to Kroemer, providing alternating activity "that permits breaks in otherwise repetitive or sustained activity" is critical in preventing such diseases.[8] WRMSDS are widely seen in physiotherapists and are constantly expanding.[8]

Despite the fact that physiotherapists have comprehensive understanding of musculoskeletal injuries and injury prevention measures as a result of their training and ongoing professional development, they nonetheless report a high rate of work-related injuries throughout their professional practice.[2]

The present study was undertaken to determine the prevalence and risk factors for work related musculoskeletal disorders (WRMDS) among the practicing physiotherapists of Indore city and to find out the coping strategies adopted by these physiotherapists to deal with work-related musculoskeletal disorders.

II. PARTICIPANTS AND METHOD

The present cross-sectional observational study was conducted in Department of Physiotherapy, Index Medical College, Indore (M.P.) during the period October 2018 To April 2019. We had included 500 practicing physiotherapists working in various hospitals and clinics of Indore city using purposive sampling technique. The inclusion criteria for the study was: Physiotherapist who are doing their clinical practice for a minimum duration of 8 hours per day in the age group 22-32 years of either gender and having at least 1 year of clinical experience and willing to provide their voluntary written informed consent to participate in this study. The exclusion criteria was: Physiotherapists who are in the administrative duty, academics or performing non-clinical work, females physiotherapists who are pregnant, those going to gym for their fitness and those having a fracture of either neck, shoulder or low back region and also those who were not willing to provide consent for participation.

Questionnaire

We had developed a customized self-administered questionnaire for the study. The contents of which were validated by three experts. Two physiotherapists (one internal and one external) and an orthopedic surgeon validated and all three approved to the designed questionnaire.

The questionnaire consisted of two parts: a) Personal information and b) Questions related to musculoskeletal problems.

The personal information inquired about the age, sex, height (cm), weight (kg) and if the physiotherapist is doing some exercises. While the second part inquired about musculoskeletal problems such as Years of experiences, number of contact hours with patients. Number of sick leave, activities responsible for pain like bending and twisting, lifting, maintaining a position for prolong period of time, performing repetitive tasks, alteration in work habits and NPRS, etc. The second part consisted of closed-ended questions with multiple choices. All these information were filled by each physiotherapist.

Methodology

The researcher met each physiotherapist in person and explained in detail about the purpose of the study, how this study will help the physiotherapists in future, etc. After evaluating the inclusion criteria and exclusion criteria and after finding the physiotherapist to be eligible for participation, the self-administered questionnaire was given to the physiotherapist. Prior to this, a written informed consent for participation in the study was obtained from each physiotherapist. Instructions on how to fill the questionnaire was given and then duly filled questionnaires were collected back from the physiotherapist. Each questionnaire was checked for their completeness and clarity of information.

After collecting the 500 questionnaires which were complete in all respects, like complete information, all fields properly filled and legibility, the data from these questionnaires was transferred to Microsoft Excel for analysis.

Descriptive statistics were presented in the form of number of percentages and association between demographic variables and the presence / absence of work related musculoskeletal disorders was evaluated using Pearson Chi-square test. A p value of < 0.05 was taken as statistically significant.

The present study was not funded by any institution and all the expenses related to the study were borne by the researcher.

III. RESULTS

We had included 500 physiotherapists in the present study. Majority of the physiotherapists (58.8%) were in the age group of 26-30 years, 21% in 20-25 years and 20.2% in 31-35 years age group. The mean age was 27.87 ± 2.88 years. There was a slight female predominance in the study (51.8%). 39% of the physiotherapists were doing exercises regularly, while the rest 61.0% were not doing them. Majority of the physiotherapists had an experience between 3-4 years (39.0%), while 22.8% had 0-2 years of experience and 20% had 7-8 years of experience. The experience of these physiotherapists ranged from 1 to 10 years. Each physiotherapist was having at least 8 hours contact time with the patients, ranging upto 11 hours each day. Majority of them (43.6%) were having 9 hours contact time and 32.2% were having 11 hours of contact time. Of these 500 physiotherapists included, only 104 (20.8%) physiotherapists reported to have work related musculoskeletal disorders (WRMSDs).

21 (20.2%) were suffering from ligament sprain, 6 (5.8%) were suffering from muscle spasm, 4 (3.8%) from muscle strain, 33 (31.7%) from other muscular spasms, 38 (36.5%) from tendinitis and 2 (1.9%) were suffering from vertebral disc problem. (Table I)

In 54 (51.9%) physiotherapists the main area of involvement was the lower back, in 24 (23.1%) physiotherapists shoulder alone was involved, in 18 (17.3%) physiotherapists neck alone was involved and in 8 (7.7%) physiotherapists shoulder along with lower back was involved.

87 (83.7%) physiotherapists experienced pain while doing the work, while 17 (16.3%) physiotherapists did not experience any such pain. (Table II)

In the last 12 months, in 23 (22.2%) physiotherapists the pain remained for 1-7 days, in 40 (38.5%) physiotherapists it remained for 2-3 weeks, in 37 (35.6%) physiotherapists it remained for 2-3 months and in 4 (3.8%) physiotherapists it remained for more than 3 months. In 2 (1.9%) physiotherapists the pain was radiating and it mostly radiated to the thigh region.

In 45 (43.3%) physiotherapists manual therapy was responsible for pain, in 24 (23.1%) physiotherapists pain was during bending and twisting, in 17 (16.3%) physiotherapists pain was due to maintaining same position for long, in 14 (13.5%) physiotherapists pain was due to lifting and in 2 (1.9%) physiotherapists each the pain was due to awkward position and while transferring the patient, respectively. (Table III)

61 (58.7%) physiotherapists had taken sick leave for their work related musculoskeletal injuries. Duration of sick leave ranged from 1 to more than 14 days. Majority of them (45.9%) taking sick leave of 1-7 days. For their problems, 14 (13.5%) had taken consultation from doctor. In 87 (83.7%) physiotherapists the pain increased after sustaining an injury.

In 62 (59.6%) physiotherapists maintaining the same position increased the pain, in 58 (55.8%) physiotherapists pain increased due to lifting objects, in 50 (48.1%) due to bending and twisting, in 44 (42.3%) due to giving of manual therapy, in 43 (41.3%) due to performing of repetitive tasks, in 42 (40.4%) due to performing overhead activities, in 36 (34.6%) while transferring the patient, in 20 (19.2%) pain increased due to pushing or pulling loads and in 13 (12.5%) due to remaining in awkward position. (Table IV)

All the physiotherapists changed their working habits after an injury. They either avoided or performed less of those activities which caused them pain. 25 (24.0%) avoided lifting and performed less manual therapy; 21 (20.2%) changed their posture; 20 (19.2%) avoided lifting, changed posture, performed less manual therapy and stopped working when in pain; 13 (12.5%) avoided lifting and changed posture; 13 (12.5%) avoided lifting, changed posture and stopped working when in pain; 8 (7.7%) avoided lifting, reduced manual therapy, changed posture and stopped working when in pain; 2 (1.9%) avoided lifting and stopped working when in pain and another 2 (1.9%) changed posture and stopped working when in pain. 78 (75%) limited or reduced their physiotherapy time.

The severity of the pain was assessed using visual analogue scale (VAS). 87 (83.7%) physiotherapists said they had moderate pain and 17 (16.3%) physiotherapists said they had severe pain.

In our study we did not find any relationship of age; gender; doing exercises; years of work experience; contact hours with the patients and work related musculoskeletal disorders ($p>0.05$).

DISTRIBUTION OF PHYSIOTHERAPISTS ACCORDING TO TYPE OF WORK RELATED MUSCULOSKELETAL INJURIES

Type of work related musculoskeletal injuries	Number	Percentage
Tendinitis	38	36.5
Other muscular spasms	33	31.7
Ligament sprain	21	20.2
Muscle spasm	6	5.8
Muscle strain	4	3.8
Vertebral disc problem	2	1.9
Total	104	100.0

DISTRIBUTION OF PHYSIOTHERAPISTS ACCORDING TO AREA OF INVOLVEMENT

Area of Involvement	*Number*	*Percentage*
Lower back	54	51.9
Shoulder alone	24	23.1
Neck alone	18	17.3
Shoulder with lower back	8	7.7
Total	104	100.0

DISTRIBUTION OF PHYSIOTHERAPISTS ACCORDING TO THE ACTIVITY RESPONSIBLE FOR PAIN

Activity Responsible for Pain	*Number*	*Percentage*
Manual therapy	45	43.3
Bending and twisting	24	23.1
Maintaining same position for long	17	16.3
Lifting	14	13.5
Awkward position	2	1.9
Transferring the patient	2	1.9
Total	104	100.0

DISTRIBUTION OF PHYSIOTHERAPISTS ACCORDING TO ACTIVITIES WHICH INCREASES THE PAIN

Activity which increases the pain	*Number*	*Percentage*
Maintaining same position for long	62	59.6
Lifting	58	55.8
Bending and twisting	50	48.1
Manual therapy	44	42.3
Repetitive tasks	43	41.3
Overhead activities	42	40.4
Transferring patient	36	34.6
Pushing or pulling loads	20	19.2
Awkward position	13	12.5

IV. DISCUSSION

We had included 500 physiotherapists in our study who were mostly in the age range of 23-32 years, with a slight female preponderance. The mean age was 27.87 ± 2.88 years. All the physiotherapists who participated are young adults. Around 39% were doing regular exercises. A study done on Nigerian physiotherapists reported a significantly higher incidence in females[9], while we found only a slight predominance, but not significant one.

Most of the physiotherapists had an experience between 3-4 years with an experience range upto 10 years. At least 8 hours of patient contact time was reported by every physiotherapist with majority of them working for 9 hours a day and in some it even went upto 11 hours.

The incidence of work-related musculoskeletal disorders (WRMSDs) in our study was 104 out of 500 (20.8%) which is lower than that reported by many authors. The reported prevalence in USA was 61%[10], in Australia it was 91%[11] and in Nigeria it was 91.3%,[9] while it is comparable to a study which reported an incidence of 20.7%.[12] The probable reason for this low incidence could be that majority of the physiotherapists had a lesser number of years of experience in doing physiotherapy.

Majority of our physiotherapists remained in pain for at least 2-3 weeks, around one-fifth of them experienced pain of less than 7 days and rest had pain of more than 2 months. With a small percentage of them reporting of radiation of pain to the thigh region. Majority of the physiotherapists reported moderate pain, while 16.3% reported severe pain. In a study done by Glover et al[13] reported that 42% of their physiotherapists experienced pain of more than 3 days.

Nearly 60% of took sick leave due to work related musculoskeletal injuries and at least for a period of 1 week, with a range from 1 to more than 14 days.

In our study we found no relationship between age; gender; doing exercises; years of work experience; contact hours with the patients and work-related musculoskeletal disorders ($p>0.05$). These findings are comparable with the study done by Nordin et al[2] who also found that age, work hours per week and years of experience did not differ significantly among participants who reported WMSDs and those who did not experience WRMSDs ($P > 0.05$).

Tendinitis, ligament sprain and muscle spasm were the commonest diagnosis seen in the present study. Around 2% physiotherapists were suffering from vertebral disc problem. Lower back was involved in 52%, shoulder alone in 23%, neck alone in 17% and around 8% experienced pain in both the shoulder and the lower back. 84% experienced pain while performing the work. 84% physiotherapists reported increase in pain after sustaining an injury. Salik et al[7] also reported that 26% had injuries occurring mostly in the low back, hand-wrist in 18%, shoulders in 14% and neck in 12% physiotherapists. Ganiyu et al[14] reported that among health care workers the most common complaint was low back pain (71.6%), followed by shoulder (46.7%), and neck (42.2%). The upper back (14.7%) and elbow (8.3%) were the areas of the body that were least impacted.

Around 60% physiotherapists reported pain due to remaining in the same position for long periods of time. With around 55% of them reporting pain due to lifting of the objects, 48% due to bending and twisting, 42% experienced pain while giving manual therapy, 41% reported pain while performing repetitive tasks, 40% due to performing overhead activities, 35% reported pain during shifting of the patient, 19% reported pain while pushing or pulling the loads and 13% reported while working in awkward positions. A study[13] reported three most significant occupational risk factors contributing to injury are performing the same duties over and again, working in the same posture for extended periods of time, and treating a high number of patients in one day. Passier et al[15] in their study also reported work postures and movements, lifting or carrying, patient related factors and repetitive tasks to be the risk factors for work related musculoskeletal disorders. Nordin et al[2] in their study reported that manual therapy has been linked to an increased risk of WRMD, with health care workers who conducted manual therapies on a regular basis having 3.5 times the risk of musculoskeletal injuries as those who did not.

Consultation from a doctor was taken by 13% physiotherapists. Salik et al[7] reported that 69% of their physiotherapists visited a physician for their pain.

To cope with these disorders, in the present study, all the physiotherapists modified their working life-style in such a way that it reduced pain and reduced the stress on their musculoskeletal system. Majority of them avoided lifting and performed less manual therapy; many changed their posture; many of them stopped work when they are in pain and nearly one-third physiotherapists limited or reduced their physiotherapy time. According to the study done by Adegoko et al[9] to cope with the WRMDs 64.3% physiotherapists modified their position and/or the patient's position. 13% of physiotherapists left their profession and 62.6% modified the method of treatment due to their WRMDs. Salik et al[7] in their study reported that 33% of the physiotherapists had limited their patient contact time due to injury. Passier et al[15] in their study identified the problems and found organisational strategies, workload or work allocation, work practices, work environment and equipment, physical condition and capacity, and education and training to be the strategies to cope with these disorders.

The only limitation of the study was that the results are completely dependent on the information given by the physiotherapists, which may carry the physiotherapist's bias while filling the data and this may either underestimate or overestimate the results.

V. CONCLUSION

Work-related musculoskeletal disorders (WRMSDs) are commonly encountered by physiotherapists. The most common cause of these disorders is related to ergonomics while performing the work. Lower back is most commonly affected and, in many situations, there is absence from duty. Tendinitis, ligament sprain and muscle spasm are the commonest problems seen. In our study, we found that modification in the lifestyle while doing the professional work is the only solution to cope with these conditions.

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faced by them and provide inputs for the future physiotherapists for coping strategies to be adopted to combat these WRMSDs.

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