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Work Related Musculoskeletal Disorders: Causes, Prevalence and Response Among Egyptian and Saudi Physical Therapists

[1]Einas Al-Eisa, [2]Syamala Buragadda, [3]Afaf A.M. Shaheen, [2]Amal Ibrahim and [2]Ganeswara Rao Melam

[1]Female Centre for Science and Medical Studies, King Saud University, Riyadh, KSA
[2]Department of Rehabilitation Sciences,
College of Applied Medical Sciences, King Saud University, Riyadh, KSA
[3]Department of Basic Science, Faculty of Physical Therapy, Cairo University, Egypt

Abstract: Work related musculoskeletal injuries are more common among physiotherapists. This study was conducted among Egyptian and Saudi physical therapists to study the prevalence, causes and their response to work related musculoskeletal disorders. Among 200 physiotherapists only 162 answered the questionnaire giving a total response rate of 81%. 63.9% of Egyptian and 74% of Saudi PTs reported a sustaining musculoskeletal injury. Among Egyptian PTs the highest prevalence of injured body parts was neck (25%) and low back (23.4%). The results revealed that more than one-fifth (21.8%) of Egyptian PTs were injured while performing manual therapy techniques. Maintaining a position for prolonged period of time and performing manual therapy techniques had equal rate (21.3%) of prevalence and led to recurrence of symptoms. 17.1% of Egyptian PTs reported making changes in their work habits as avoiding lifting activities and change of prolonged position frequently. The Saudi PTs reported highest prevalence of low back injury (33%) and neck (29%). Bending and twisting (21%) was the commonest cause that led to injuries among Saudi PTs. Lifting (21%) was the main cause that led to recurrence of symptoms. 21% of Saudi PTs avoided lifting activities where as 11% changed their work habits of improved body mechanics as a response to musculoskeletal injuries. Inspite of high prevalence of musculoskeletal injuries among Egyptian and Saudi PTs, majority continued to work without change to another job. Coping strategy like modification of work habits was used as a response to WRMD.

Key words: Musculoskeletal injuries %Work injuries %Saudi physical therapists

INTRODUCTION

Work related musculoskeletal injury is described as an injury resulting from a work related event leading to death, loss of work time, loss of consciousness, work restriction or carrier change. It is also defined as pain originating from muscles, ligaments, tendons, joint capsule, bursa and bone lasting more than three days as a result of work. Health care is one of the largest industries and ironically health care workers are at highest risk of musculoskeletal injuries. These types of injuries are more common among nursing professionals and even physical therapists are at moderately high risk [1-4]. Studies reported a high prevalence of low back pain but it is also more common in other anatomical areas like neck, elbow, wrist and hand. Physical therapists are more susceptible because of labor intensive tasks [5-8]. Musculoskeletal injuries are also associated with manual handling which requires physical force to lift, push, pull, or move an animate or inanimate object. Ultimately these led to restriction of job duties, loss of work time and change to another job.

It is a prime important to have the awareness of work setting in order to understand the prevalence and causes of musculoskeletal injuries among physical therapists. Different work settings include university hospital, public hospital, pediatric rehabilitation centers, home care, private physical therapy clinics etc. [9-11]. Campo *et al*. [12] found that one year incidence rate of work-related musculoskeletal disorders (WRMD) is 20.7%.

Corresponding Author: Syamala Buragadda, Department of Rehabilitation Sciences College of Applied Medical Sciences, King Saud University, Riyadh, KSA, P.O. Box: 10219. E-mail: sbadari@ksu.edu.sa

The physical therapy techniques that increase the risk are patient transfers, bending/twisting postures, manual therapy techniques, soft tissue mobilizations and physical job strain [11-13]. Musculoskeletal injuries include tendinitis, tenosynovitis, ligamentous rupture, subluxation, dislocation, contusion, strain and bursitis [13-15]. The rate of prevalence of these injuries in Australia, America, Britain, Europe and some parts of Middle East like Kuwait was reported [1, 3, 9, 16]. But little data is available on musculoskeletal injuries reported by physical therapists in Egypt and Saudi Arabia [13]. The aim of our study was to investigate the causes, prevalence, risk factors and response to these injuries among Egyptian and Saudi physical therapists.

MATERIALS AND METHODS

After the approval from ethical committee a total of 200 physical therapists was randomly selected from Egyptian and Saudi physical therapy association's membership list. Validated self administered questionnaire was distributed either manually or through e-mail. Each member was asked to complete the questionnaire if they had more than 1 year of clinical experience. Out of 200, 162 responded with a total response rate of 81% (Egyptian PTs 62% and Saudi PTs 100%). Questions included both demographic and occupational history of the physical therapists. The characteristics like age, sex, weight, height and educational qualification were included in demographic data. The occupational history was about specialty, years of experience, type of work setting, working hours, number of patients treated per day and details of musculoskeletal injuries. If the subject experienced at least one work related musculo skeletal injury, then he/ she was asked to answer the type of injury, anatomical area involved, cause and aggravating factor for injury and response to it.

Several strategies were implemented to increase the response rate. Frequent reminders were sent to all respondents after one week. They were asked to return the answered questionnaire within two weeks. After three weeks, another copy was mailed to all non respondents in Egypt and Saudi Arabia. All the respondents were appreciated for their participation and response.

Data Analysis: Data was analyzed using SPSS 10.0 for Windows. Results for the general information items were expressed as mean ± standard deviation and results for items in the occupational portion were expressed as percentages. P^2 test was used to analyze personal characteristics like sex, age, number of years in physiotherapy practice, number of hours per week in direct patient care to that of WRMDs.

RESULTS

In this study, a cross sectional design was used to determine the prevalence, causes and response to WRMD among Egyptian and Saudi PTs.

Demographic Data: Out of 162 (62 Egyptian and 100 Saudi PTs) majority of the respondents were females with a response rate of 52.5 and 67% among Egyptian and Saudi PTs respectively. The mean age was 31.81years for Egyptian and 27.74years for Saudi PTs (Table 1). More detailed analysis of age group revealed that 66.1 and 73% in the age group 20 to 30 years, 18.6 and 23% in the age group 31 to 40 years, 11.9 and 4% in the age group 41 to 50 years and 3.4 and 0% in the age group above 50 years for Egyptian and Saudi PTs respectively (Table 2). Mean height of Egyptian PTs was 167.868 cm and that of Saudi PTs was 162.56 cm while mean weight of the subjects was 72.629 and 70.39 kg for Egyptian and Saudi PTs, respectively (Table 1). Other details of demographic data were outlined (Table 2).

Job Related Factors

Education Status: Nearly equal numbers of Egyptian and Saudi PTs had Master degree (8.5 and 10%, respectively) and 8.5% of Egyptian PTs had a doctoral degree. For both Egyptian (78.3%) and Saudi (87%) PTs, the most common professional rank were physiotherapists with clinical experience between 1 to 10 years (Table 2).

Work Setting and Work Related Injuries Survey: The working place differed between the two groups. The majority of Egyptian and Saudi PTs work in public hospital (44.1 and 67%) for 6 to 8 hours per day while 25.8% of Egyptian PTs and 5% Saudi PTs worked for more than 8 hours per day. The primary specialties for Egyptian PT were general physical therapy (43.2%) and orthopedics (29.5%) where as it was 28 and 36% for Saudi PTs (Table 2).

The frequencies of work related injuries were calculated for both Egyptian and Saudi PTs. Therapists who reported that they have only one musculoskeletal injury were 13.1% among Egyptian PTs and 23% among Saudi PTs. Most of Egyptian PTs (63.9%) and Saudi PTs (74%) have multiple injuries. On the other hand 23% of Egyptian and 3% of Saudi PTs did not report any injury from past two years.

Table 1: Demographic data of the respondents to questionnaire

	Egyptian (n=62) Mean ± SD	Saudi (n=100) Mean ± SD
Age (years)	31.810	27.74
Height (cm)	167.868	162.56
Weight (kg)	72.629	70.39
Years as PT	9.280	6.37
Hours per day in direct patient care	7.310	5.63

Table 2: Demographic description of the participants

		Egyptian (n=62) %	Saudi (n=100) %
Sex (gender)	Male	47.5	33
	Female	52.5	67
Age (year)	20-30	66.1	73
	31-40	18.6	23
	41-50	11.9	4
	> 51	3.4	0
Marital Status	Single	47.5	33
	Married	52.5	67
Education	Bachelor	78.7	90
	Diploma	4.3	0
	Master	8.5	10
	Doctor	8.5	0
Professional rank	PT	78.3	87
	PT assistance	5.0	4
	Academic coordinator	1.7	3
	Senior PT	15.0	6
Years as a PT (Professional experience)	1-10	74.6	89
	11-20	10.2	9
	21-30	13.6	2
	31-40	1.7	0
Working venues	UH	18.6	26
	PH	44.1	67
	PRC	13.6	0
	H C	0.0	0
	PPC	20.3	0
	Others	3.4	7
Area of specialty	Orthopedics	29.5	36
	General PT	43.2	28
	Neurology	11.4	23
	Cardiopulmonary	11.4	4
	Pediatric	4.5	9
Hours per day in direct patient care (working hours)	3-5	9.7	9
	6-8	64.5	86
	> 8 hours	25.8	5
Number of patients (caseload)	1-10 patient	66.7	69
	11-20 patient	27.1	31
	21-30 patient	2.1	0
	> 30 patient	4.2	0
Number of musculoskeletal injuries due to work within last 2 years	One only	13.1	23
	More than one	63.9	74
	No	23.0	3

UH: University Hospital PH: Public Hospital PRG: Pediatric Rehabilitation Center HC: Home Care PPC: Private Physical therapy clinic

Body Parts Affected: Regarding the body parts that were affected, Egyptian PT respondents reported prevalence rate for WRMD in neck (25%), low back (23.4 %,), shoulder (15.3%) and wrist/hand (14.5%). Body part that was least affected by injury with less than 1% of respondents was hip. Saudi PTs reported the prevalence rate in low back (33%), neck (29%), knee (13%) and upper back (12%). In contrast to Egyptian PTs, the least affected body parts with less than 1% of respondents were elbow and ankle/foot (Fig. 1).

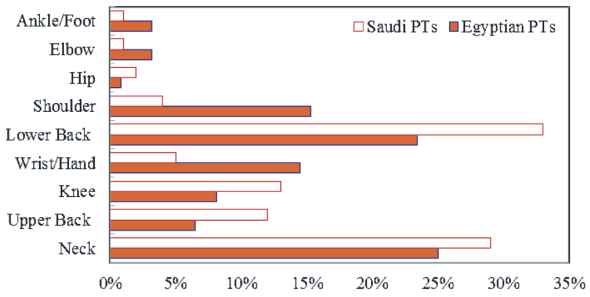

Fig. 1: Body parts affected of Egyptian and Saudi physical therapists respondents

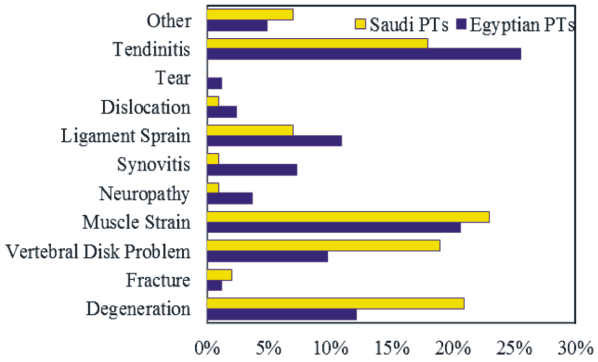

Fig. 2: Type of injury reported among Egyptian and Saudi physical therapists respondents

Types of Injuries: The most common types of injuries reported among Egyptian PTs were tendinitis (25.6%), muscle strain (20.7%), degeneration (12.2%), vertebral disk problems (9.8%), ligament sprain (11%) and synovitis (7.3%). Saudi PT respondents reported muscle strain (23%), degeneration (21%), vertebral disk problem (19%), tendinitis (18%) and ligament strain (7%) (Fig. 2).

Tasks Leading to Injury: The results revealed that more than one fifth of Egyptian PTs were injured while performing manual therapy techniques (21.8%). Other most common activities that led to injuries were maintaining a position for a prolonged period of time (16%) and bending/twisting (12.6%). In addition to above, activities of transferring a patient and responding to an unanticipated or sudden movement had equal prevalence rate of 5%. Less than 1% of respondents were injured as a result of other activities (0.8%) but none of the participants were injured due to slipping-tripping-falling. In contrast to Egyptian PTs Saudi PTs reported highest rate of WRMD while performing bending/twisting (21%) activities. Rate of injuries with other tasks was manual therapy techniques (14%), performing repetitive tasks (13%) and working when physically fatigued (13%) (Table 3).

Recurrence of Symptoms: Egyptian PTs reported most common activities that caused recurrence of symptoms were maintaining a position for prolonged period of time (21.3%), performing manual therapy techniques (21.3%), lifting (15.7%), bending/twisting and repetitive tasks (10.2%). The top four activities in Saudi PTs that caused recurrence of symptoms were lifting (21%), bending/twisting (18%), maintaining a position for prolonged period of time, performing repetitive tasks and walking (11%) and performing manual therapy techniques (9%) (Table 4).

Response to Injuries

Changes in Work Habits: As a result of the musculoskeletal injuries most of the respondents did some change in their work habits. The four most common alterations in work habits cited by Egyptian PTs were avoiding lifting and frequent change of working position (17.1%), decreased use of manual techniques (15.2%), improved body mechanics (9.5%), stop working when hurt and taking more rest breaks during work day (7.6%). Saudi PTs also reported avoiding lifting activities (21%) as their most common change in work habits, followed by increased number of rest breaks during work day (12%), frequent change of working position and stop working when hurt (11%) and decreased use of manual techniques and increased use of other personnel (9%). Additional alterations in work habits were also presented (Table 5).

Other Responses: Following injury, the other responses reported by Egyptian PTs were visiting a physician (37.5%), rest (28.6%), medications (27.3%), reporting officially at work place (22.9%), performing exercises (18.2%) and use of occupational knowledge (2.6%). Among Saudi PTs majority (33%) took medication, rest (31%), visiting a physician (22%), reporting officially at work place (15%), performing exercises (9%) and use of occupational knowledge (1%) (Table 5).

Consequences to Work Related Injuries: As a consequence, directly after the injury 60.4% Egyptian PTs and 22% Saudi PT respondents lost a half day work. As a long term effect of injury, 72.9% Egyptian and 56% Saudi PTs experienced exacerbations of symptoms due to clinical practice which led to their alterations in work habits. Fifty one percentage of Egyptian and 30% of Saudi PT respondents reported that they had not limited their patient contact time as a result of injury. 63.3% of Egyptian and 43% of Saudi PT respondents stated that they would not consider a job change because of injury.

Table 3: Percentage of respondents who reported various tasks leading to injury

Activities that led to injuries	Egyptian (n=62) %	Saudi (n=100) %
Applying modalities	11.8	8
Performing repetitive tasks	9.2	13
Bending/Twisting	12.6	21
Transferring a patient	5.0	8
Lifting heavy equipment or patients	8.4	7
Slipping-Tripping-Falling	0.0	1
Maintaining position for a prolonged period of time	16.0	8
Performing manual therapy techniques	21.8	14
Working in an awkward or cramped position	1.7	3
Responding to an unanticipated or sudden movement by patient	5.0	2
Working when physically fatigued	7.6	13
Others	0.8	2

Table 4: Percentage of respondents who reported that job activities caused their symptoms to recur

Activities that caused injure to recur	Egyptian (n=62) PT (%)	Saudi (n=100) PT (%)
Bending or twisting	10.2	18
Lifting	15.7	21
Maintaining a position for a prolonged period	21.3	11
Performing manual therapy	21.3	9
Performing repetitive tasks	10.2	11
Transferring a patient	4.6	7
Performing overhead activities	2.8	0
Reaching	0.0	2
Climbing stairs	1.9	7
Squatting	4.6	0
Walking	4.6	11
Working in an awkward or cramped position	0.9	1
Others	1.9	2

Table 5: Proportions of respondents who reported alteration in work habits and other responses

Coping strategies	Egyptian (n=62) PT (%)	Saudi (n=100) PT (%)
Avoid lifting	17.1	21
Change working position frequently	17.1	11
Change work schedule	5.7	2
Decrease manual techniques	15.2	9
Encourage patient responsibility for carrying out treatment	7.6	3
Increase use of mechanical aids	3.8	0
Increase administrative time	1.0	5
Decrease patient care time	2.9	10
Increase use of other personnel	4.8	9
Stop working when hurt or when symptoms occur	7.6	11
Take more rest breaks or pauses during the workday	7.6	12
Use improved body mechanics	9.5	7
Other responses		
Use of occupational knowledge	2.6	1
Rest	28.6	31
Medication	27.3	33
Exercise	18.2	9
Visiting a physician	37.5	22
Reporting officially	22.9	15

DISCUSSION

The main finding of this study was that Egyptian and Saudi physical therapists are also at high risk for WRMD as their counterparts elsewhere [2-4, 9, 15]. The response rate was high among Saudi PTs (100%) whereas Egyptian PTs was only 62% and majority was females. Most of Egyptian (66.1%) and Saudi (73%) respondents were in between the age group 20-30 years and our result is in consistent with previous studies that younger population is at high risk [3, 4]. 63.9% Egyptian and 74% Saudi PTs reported more than one musculoskeletal injury within the past two years and both Egyptian (44.1%) and Saudi (67%) PT subjects were working in a public hospital setting. This finding suggests that PTs working in public hospital based settings has a greater prevalence for WRMD.

The study data revealed that almost equal number of subjects was injured in both the groups. The most common site of injury was neck for Egyptian and low back for Saudi PTs. Previous studies reported that the initial onset of work-related low back pain frequently occurred within the first five years of practice as a physical therapist and before the age of 30 years (injury between ages of 20-25 years). The results concluded that the newly graduated and younger qualified physiotherapists need more mechanical aids and adequate training to avoid WRMSD injury [4, 5, 10, 13]. Egyptian PTs reported tendinitis as most common type of injury and nearly one-fifth of the respondents were injured while performing manual therapy techniques. Muscle strain was the most common type of injury and most of the respondents were injured while lifting and bending activities among Saudi PTs. These variations in the WRMSD prevalence among Egyptian and Saudi physical therapists may be due to the variation in the clinic infrastructures, working hours, number of patients treated, clinical knowledge and skills.

Strategies employed by respondents to minimize further injuries also varied widely from self-protective strategies such as to avoid lifting, change of working position and decreasing the use of manual techniques. In addition, encouraging patient responsibility for carrying out treatment, stop working when hurt and taking more rest breaks during the work day were the three alterations of work habits that were followed by Egyptian and Saudi physical therapists. The strategies employed by physiotherapists in different countries varied from use of aids and equipment, change of work setting or reducing patient contact hours, exercise and further training in lifting skills [2, 4, 7]. One-fourth of Egyptian and one-third of Saudi PTs seek medical treatment and took rest as a part of their treatment. Despite all, the percentage of respondents who did some limitation in their work was equal at the same level with the percentage of respondents who did not do any limitation as a result of injury. Moreover, physical therapy job is still considered popular in spite of musculoskeletal injury risk and it can be seen by the percentage of respondents who did not consider changing the job following the injury. Previous studies showed the rate of injured PTs who visited physician is very low and the reason was that a high proportion (61%) tend to self-diagnose or seek help from a colleague who is specialized in musculoskeletal injuries rather than taking time to visit a physician [3, 6].

Egyptian and Saudi physical therapists are not exception of WRMSDs. The injuries are more common with low back and neck. The younger physical therapists are at higher risk. Self-protective strategies, preventive measures at work place and focus on ergonomics were implemented as a response to the injuries.

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