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Impact of Work-Related Musculoskeletal Disorders on Egyptian Pediatric Physical Therapists: One-Year Follow-Up Study

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ABSTRACT

Work-related Musculoskeletal Disorders (WMSDs) have a significant impact on pediatric physical therapists but few studies have addressed the issue. The effects of WRMDs on productivity, quality of patient care and therapists' quality of life and long-term career plans are unknown. The purpose of this study was to determine the impact of working with work-related musculoskeletal disorders on pediatric physical therapists. A self-administered questionnaire was distributed to 150 pediatric physical therapists. The questionnaire gathered demographic data as well as information on occurrence and consequences of musculoskeletal complaints in the previous 12 months. The response rate to the baseline questionnaire was 70.66%. Sixty five percent of the subjects who responded to the baseline questionnaire responded to the follow-up questionnaire. Ninety therapists (84.9%) had WRMDs; they noted substantial effects of work-related musculoskeletal disorders at work and in their career plans. Work-related musculoskeletal disorders are prevalent in pediatric physical therapists. This may affect their career plans. There is a need to plans to reduce the risk of injury.

Key words: Musculoskeletal disorders, WMSDs, patient care, therapists' quality of life, long-term career plans

INTRODUCTION

A Work-Related Musculoskeletal Disorder (WRMD) is defined as a musculoskeletal injury that results from a work-related event. This may result in lost work time, work restriction, or transfer to another job. These types of injuries are common among physiotherapists (Cromie *et al*., 2002).

Musculoskeletal injuries are considered one of the largest health problems among physiotherapists, because the nature of the work that therapists expose themselves to have a high risk of pain. Although physiotherapists have expert knowledge of musculoskeletal injuries and injury prevention strategies because of their training and continuous professional development, physiotherapists still report a high incidence of work-related injuries during their professional practice (Nordin *et al*., 2011).

The work-related musculoskeletal disorders among the child care workers could be high given the fact that the workers frequently lift the children and conduct physical actions under inappropriate postures and it might have a negative impact on absence-days (Horng *et al*., 2008).

Apart from the nature of the job of therapists, working in certain specific clinical specialties in physiotherapy is also reported to contribute to injuries during work. The only specialty areas of practice related to WMSDs were sports physical therapy, private practice and pediatrics (Cromie *et al*., 2000).

Sharan and Ajeesh (2012) reported that every one person among six physiotherapist change the carrier profile due to workplace injury of MSD problems. The physiotherapist finding difficulties in working in any particular position change their way of treatment or change the type of patients.

In the long term, injured physiotherapists may change the type of clients they treat and alter their work setting as a consequence of their pain.

Evidence exists that therapists typically continue to work despite pain and most continue to work while injured or in pain. Therapists are able to recognize symptoms, use physical agents, perform therapeutic exercises and self-treat. These factors help explain why therapists choose to continue working while in pain (Bork *et al*., 1996).

Work-related pain may affect clinical longevity. Research has indicated that 31% of physical therapists with work-related pain considered changing jobs or changed jobs because of their condition (Darragh *et al*., 2009).

The purpose of this study was to explore the most prevalent consequences of 1 year musculoskeletal injury on pediatric physical therapists in Egypt, to examine the experience of working with pain and how that interacts with work and career planning in pediatric physical therapists.

MATERIALS AND METHODS

Subjects: One hundred and fifty pediatric physical therapists from different governments in Egypt were invited via mailing, interviewing or via groups of pediatric physical therapists on Facebook. Physical therapists with at least one year of work experience in their current work settings were invited to participate in this study. Participant pediatric physical therapists working in different working sittings in Egypt participated in this study. All candidates should be working for pediatric population for at least one shift a week.

Instrumentation: Musculoskeletal symptoms were investigated using a self-administered, purpose-designed questionnaire that is adapted from the standardized Nordic Musculoskeletal Questionnaire (NMQ) which is used to record work related musculoskeletal symptoms in working populations (Kuorinka *et al*., 1987).

A four-part, self-administered questionnaire was used in this study. Part one collected the participant's personal characteristics and included questions about age, gender, family history and exercise habits. Part two collected information on the participant's education and current work history. Part three assessed occurrence of musculoskeletal complaints using a standardized Nordic questionnaire. Part four addressed consequences of working with WRMDs.

Procedure: One hundred and fifty copies of the questionnaire were distributed and mailed among prospective participants who were selected according to the previous sited criteria. The questionnaire was explained to each participant prior to filling it. A contact number and mail address was provided in case of further explanation. Participating pediatric physical therapists were asked to complete and return the questionnaire within 2 weeks. An Email reminder was sent out 1 week before the closure of the 2 weeks data collection period and 1 week later.

To follow up on respondents, each questionnaire was coded with a unique number. One year later, the follow-up questionnaire was mailed to every subject who responded to the baseline questionnaire.

Statistical analysis: The questionnaire was entered and analyzed using SPSS (Version 16). Descriptive statistics were used to estimate the prevalence of WMSDs and demographic

characteristics. Frequencies and cross-tabulations were used to compare musculoskeletal disorders prevalence between demographics (gender, age, etc.) and work history (experience, setting, specialty, etc.). Chi-square tests were also used to assess these relationships. Statistical significance was evaluated at " = 0.05.

RESULTS

One hundred and six (70.66%) pediatric physical therapists responded to the baseline questionnaire. The follow-up questionnaire was mailed to each of the remaining 106 subjects who responded to the baseline questionnaire. Responses to the follow-up questionnaire mailing were received from 69 physical therapists (65%) before the deadline.

Exposure and background data was taken from the baseline data file. Outcomes were taken from the follow-up data file.

Descriptive characteristics of subjects participating in the study: The percentage of female respondents was slightly larger (55.7%) compared to (44.3%) male respondents. Most of therapists (70.8%) were younger age in the age category from 20 up to 30 years old.

It was noticed that almost half of the participating therapists were overweight (48.1%) with BMI (25-29.9). Only 34% (36 therapists) were exercising regularly. While 66% of all participants were not exercising (70 therapists). The majority of therapists surveyed 83% (88 therapists) were with professional experience as a pediatric physical therapist less than 10 years of experience.

Prevalence of work related musculoskeletal disorder among pediatric physical therapists in Egypt: As shown in Table 1, most participating pediatric physical therapists suffered from musculoskeletal problems in one area at least during the last year with 90.6% (96 therapist) while non injured pediatric therapists were 10 with 9.4%.

The most common injured regions were neck, shoulder, wrist and hand, lower back and knee. While elbow, upper back, hips and thighs and ankles were the least complaint region of the participating therapists.

Frequency of injury in pediatric physical therapists: Results showed that the majority of injured therapists were suffering from more than one injured region. As illustrated in Table 2 almost one third of participating therapists suffered from four injured areas.

Table 1: Prevalence of work related musculoskeletal disorder among pediatric physical therapists in Egypt

Parameters	No. having injury	Percentage (n = 106)
Neck	67	63.2
Shoulder	62	58.5
Elbow	4	3.8
Hand/wrist	60	56.6
Upper back	18	17.0
Lower back	72	67.9
Hip/thigh	7	6.6
Knee	57	53.8
Ankle/foot	6	5.7
Therapist with WMSDs	90	84.9

Table 2: Frequency of injury in participating therapists

Parameters	Frequency	Percentage
No injury	16	15.1
One area affected	2	1.9
Two areas affected	11	10.4
Three areas affected	16	15.1
Four areas affected	33	31.4
Five areas affected	17	16.0
Six areas affected	9	8.5
Total	106	100.0

Table 3: Distribution of WRMDs by demographic variables and working sittings

	WRMDs for the past one year				
	Yes		No		
Variables	N	%	N	%	p-value
Gender					
Male	33	31.1	14	13.2	0.000
Female	57	53.8	2	1.9	
Age category					
20-30	63	59.4	12	11.3	0.897
31-40	24	22.6	4	3.8	
41-50	1	0.9	0		
51-60	2	1.9	0		
Body mass index					
Normal wt.	27	25.5	9	8.5	0.045
Over wt.	44	41.5	7	6.6	
Obesity	17	17.9	0		
Exercising regularly					
No	65	61.3	0		0.000
Yes	25	23.6	16	15.1	
Work experience (year)					
<10	73	68.9	15	14.2	0.457
11-20	16	15.1	1	0.9	
21-30	1	0.9	0		
Working sittings					
General hospital	34	32.1	2	1.9	0.003
Private clinic	29	27.4	13	12.3	
Rehabilitation hospital	16	15.1	1	0.9	
Specialized hospital	11	10.4	0		
Working (hours/week)					
<20	24	22.6	5	4.7	0.050
20-<30	32	30.2	3	2.8	
30-<40	18	17.0	1	0.9	
40-<50	9	8.5	2	1.9	
>50	7	6.6	5	4.7	

Prevalence and association of work-related musculoskeletal disorders among pediatric physical therapists to demographic and work conditions: Table 3 displays the occurrence of WRMDs according to the subgroups of gender, age, BMI, exercising regularly, work experience,

Table 4: Impact of work-related musculoskeletal disorders on Egyptian pediatric physical therapists

Consequences of injury	Frequency (n = 69)	Percentage
Modified your physiotherapy techniques	62	89.9
Sought physiotherapy treatment	52	75.4
Taken prescribed medication	41	59.4
Consulted a doctor	26	37.7
Changed work setting	30	43.5
Decreased patient contact hours	50	72.5
Changed spatiality area	27	42.0
Time off on sick leave	20	29.0
Sought alternative treatments	16	23.2
Used braces, splints or other orthoses	18	26.1
Exercise or posture program	17	24.6
Had surgery	4	5.8
Left the physiotherapy profession	0	0.0
Retired early	0	0.0

working sitting and working hour per week. The prevalence of WRMDs was 53.8% among female therapists and 31.1% among male therapists with high significant value of p = 0.000. Therapists within the age category 20-30 years old are the most affected subjects with percentage of 59.4%. Significant differences were found between the proportion of therapists who had WRMDs and those who did not have WRMDs for both over weight and obese subjects. Also those who were not exercising regularly were more suitable to WRMDs with 61.3% and high significant p-value = 0.000.

Consequences of injury: Respondents indicated which consequences had occurred as a result of their injury. Table 4 lists the consequences and the percentage of respondents who experienced that consequence as a result of their work related injury. Of the 69 therapists who responds to the follow-up questionnaire, 89.9% modified their physical therapy techniques, 75.4% therapists sought physical therapy treatment, 59.4% taken prescribed medications, 37.7% consulted a doctor, 43.5% changed working sitting, 72.5% decreased patient contact hours, 42% changed the spatiality area, 29% took time of/on sick leave, 23.2% sought alternative treatments, 26.1% used braces, splints, 24.6% do exercise or posture program while 5.8% had surgery.

DISCUSSION

The present study was conducted to determine the work-related musculoskeletal disorders among Egyptian pediatric physical therapists and identifying the impact of WRMDs on therapists longitivity of work.

Prevalence WMSDs among pediatric physical therapists in Egypt remain unknown. Therefore, the objective of this study was to determine the prevalence, characteristics and impacts of WMSDs in all anatomical areas of the body among pediatric physical therapists in. The findings from the study could help identify overall WMSDs among pediatric physical therapists and eventually contribute to the development of prevention and intervention strategies.

The results from studies on WRMDs in physiotherapists have generally been similar, though some have differed according to country. Such variations are linked to level of development, the status of the profession of physiotherapy in a given country, psychosocial and epidemiological factors (Cromie *et al*., 2002).

Very little data about WRMDs in pediatric physical therapists were available as the vast majority of studies do not evaluate specific specialty area in the physical therapy field thus comparison of this incidence rate with those of other studies in musculoskeletal epidemiology is not possible.

The 84.9% of the physiotherapists who responded to the survey had experienced a work-related musculoskeletal injury (pain lasting more than three days that they considered was caused by their work as a physiotherapist) during their career. Eighty three percent of them were injured in more than one area.

A substantial number of respondents reported WMSDs. The prevalence of work-related musculoskeletal complaints (84.9%) was higher than the prevalence reported by general physical therapists in Egypt (63.9%) and than the previously reported data from studies in other regions of the world (Al-Eisa *et al*., 2012; Da Costa and Vieria, 2010).

The lower back region was the most common site for WRMDs among Egyptian pediatric physical therapist (67.9%) followed by neck region (63.2%), shoulder (58.5%), hand/wrist (56.6%) and then knee region (53.8%).

This result is consistent with findings of Adegoke *et al*. (2008) and Clemes *et al*. (2010) who found that injuries to the lower back have been identified as the most prevalent type of WRMD among therapists and the significant link between the implementation of incorrect manual handling techniques and musculoskeletal disorders, predominantly the lower back and lumbar discs.

The prevalence rate of WRMDs among pediatric physical therapists was significantly associated with participant's gender ($p<0.05$) with more female than male reporting WRMDs.

This finding is in agreement with findings from several studies by King *et al*. (2009) and Adegoke *et al*. (2008). These studies recorded WRMD prevalence among female physiotherapists to be in the range of 73-100%.

The occurrence of injuries at work differs between junior and senior-level therapists. This was supported by previous studies by Holder *et al*. (1999) and Glover *et al*. (2005) who cited that the incidence of work injuries is the highest within the first 5 years of practice and it is common in junior physiotherapists and newly qualified graduates.

Based on Bork *et al*. (1996) of survivor bias older therapists are important population to consider, as 'more experienced' therapists are those who are likely to have developed strategies to enable them to cope with the physical demands of the work.

Obese pediatric physical therapists with BMI over 25 reported the highest prevalence of WRMDs. There was a significant difference found with $p<0.05$. The therapists who are obese may not be physically active, such that they may be more susceptible to WRMDs.

Holder *et al*. (1999) found a weak association between being overweight and WRMDs with the exception of carpal tunnel syndrome, also recent work by Da Costa and Vieira (2010) on WRMDs noted that a high BMI was one of the important risk factors for the development of WRMDs.

The consequences of injury for respondents gave some insight into attitudes to injury and favoured personal methods of risk control.

This was supported by Campo and Darragh (2010) who stated that the impact of work-related pain is not as easy to define. The participants made substantial changes in their work habits. They altered their schedules, avoided or adapted certain techniques and factored their symptoms into clinical decision making.

Modification of physiotherapy techniques was an option taken by most of the injured therapists. Of the 69 therapists who responds to the follow-up questionnaire, 89.9% modified their physical therapy techniques. This is also supported by Cromie *et al*. (2000) states that 73% of physiotherapists in her survey experiencing pain, changed or modified treatment at some time.

Many of the injured physiotherapists changed their work setting (43.5%), reduced patient contact hours (72.5%) or changed the type of patient treated (42%). No one had left the profession or retired early.

The results are very similar to previous studies by Cromie *et al*. (2000) but the survey carried out in Victoria and Australia reported that 3% had left the profession altogether as a result of work-related musculoskeletal disorders. This shows that flexibility within the physiotherapy profession in Egypt has helped many injured therapists to continue working because physiotherapists are able to work in various settings with different types of patients, they have a certain amount of freedom to steer their careers into areas where their injuries are not aggravated. Thus career path change within the profession (change of work setting and spatiality areas) is a consequence of injury.

CONCLUSION

Work related musculoskeletal disorders pose a significant threat to the career path and longevity of pediatric physical therapists and to maintenance of a viable workforce for them. Complete elimination of risks may not be possible due to the nature of clinical tasks, however, it is evident that more could be done to prevent injuries amongst health professionals working in physically demanding roles.

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