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## WORK RELATED MUSCULOSKELETAL DISORDERS AMONG EGYPTAIN PHYSICAL THERAPISTS AND YEARS OF EXPERIENCE

By

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### Abstract

**Objective:** To survey the relationship between works related musculoskeletal disorders and physical therapists years of work in Egypt.

**Methods:** The study was conducted on 835 physical therapists. They were assigned into four groups; according to their duration of work, their mean age  $\pm$  SD was  $28.57 \pm 5.31$  years ranged between 21 and 51 years. They were working in educational, general, private, rehabilitation hospitals and private clinics in Egypt, to assess musculoskeletal disorders due to work in the last 12 months. The participants were asked to answer Modified Nordic questionnaire.

**Results:** The form sent to 1000 physical therapists the response rate for the questionnaire was 83.5%. The twelve-month prevalence of back compliant due to work of the study groups was 97.6% with 95% confidence interval (CI) of 96.32- 98.44%. Life time prevalence of upper back pain was 27.18% with 95% CI of 24.27-30.3%.; and that of low back pain was 89.82% with 95% CI of 87.85-91.69%. There was a significant association between back disorders and duration of work ( $p = 0.0001$ ).The highest low back pain life time prevalence of 95.74% was among physiotherapists with 7-10 years of work. The twelve-month prevalence of back compliant was 100% among physiotherapists with 4-6 and 7-10 of work.

**Conclusion:** There was a high prevalence of work related back pain among Egyptian physiotherapists. Physiotherapists more than one year of working are at high risk of developing back disorders. Work modification and preventive measures should be considered to minimize the risk of injury.

**Key words:** musculoskeletal disorder, physiotherapy, Modified Nordic questionnaire.

## Introduction:

Work related musculoskeletal disorders (WMSDs) are characterized as multifactorial, with physical, psychosocial organizational, individual and occupational components. Physical therapy practitioners are at a high risk of developing (WMSDs) because they are often involved in physically demanding and intense, repetitive tasks in their practices with age and sex of the therapists as a factor<sup>(1)</sup>.

Work related musculoskeletal disorders (WMSDs) cover a broad range of health problems associated with repetitive and strenuous work. These health problems range from discomfort, minor aches and pains, to more serious medical conditions which can lead to permanent disability. The most well-known (WMSDs) are low back pain and work related upper limb disorders<sup>(2)</sup>.

Middlesworth (2015)<sup>(3)</sup> defines musculoskeletal disorders (MSDs) as injuries and disorders that affect the human body's movement or musculoskeletal system such as the muscles, tendons, ligaments, nerves, discs, blood vessels and are preventable.

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<sup>(4)</sup>.

Thus, this study was conducted to survey the relationship between work related musculoskeletal disorders and physical therapists years of work in Egypt.

## Materials and methods:

Eight hundred and thirty-five physical therapists, 178 (21%) males and 657(79%) females, participated in the study. They were selected by using convenience sampling technique from educational, general hospitals, private hospitals, rehabilitation hospitals and private clinics in Egypt. All data were collected by E-mailed Modified Nordic questionnaire which a valid, reliable and multiple parts questionnaire<sup>(5)</sup>

### *Design of the study:*

The cross - sectional study design was used to study the prevalence of work related musculoskeletal disorders among Egyptian physical therapists and to explore the work related musculoskeletal disorders among Egyptian physical therapists and the association with years of work.

### **Methods**

Modified Nordic questionnaire which is a valid, reliable, multiple parts and self-administered questionnaire<sup>13,18</sup> was used in this study. The questionnaire had four parts. Part one collected the participant's personal characteristics that include age, gender, family history, and physical activity habits. Part two collected information on the participant's education and current work history. Part three collected information on physical risk factors associated with physiotherapy work. Part four assisted occurrence of musculoskeletal complaints. The questionnaire divided back regions into cervical, upper back and lower back. It also includes a diagrams with the anatomical regions clearly marked<sup>18,28</sup>.

### *Procedure:*

All data were collected by E-mailed questionnaire to 835 working

physiotherapists, in educational, general hospitals, private hospitals, rehabilitation hospitals, and private clinics who were participated in this study. They were asked to answer the questionnaire honestly. Participants were asked whether they have or have had troubles in the indicated areas during the preceding 12 months.

**Statistical analysis:**

Descriptive statistics of mean, standard deviation, frequencies, percentages and confidence interval (CI) were utilized in presenting the subjects demographic and musculoskeletal disorders data. Pearson’s chi-square statistics was utilized to examine associations between musculoskeletal disorders prevalence and duration of work years. The level of significance for all statistical tests was set at  $p < 0.05$ . All statistical measures were performed through the statistical package for social studies (SPSS) version 22 for windows.

**Results:**

- Prevalence of work-related musculoskeletal disorders based on duration work:

**1-3 years**

- The prevalence of back compliant, upper back pain and lower back pain due to work of physiotherapists with 1-3 years’ of work was 93.33, 32.22, and 82.96% respectively.

**4-6 years**

- The prevalence of back compliant, upper back pain and lower back pain due to work of physiotherapists with 4-6 years’ of work was 100, 13.55, and 91.52% respectively.

**7-10 years**

- The prevalence of back compliant, upper back pain and lower back pain due to work of physiotherapists with 4-6 years’ of work was 100, 25.53, and 95.74% respectively. More than 10 years:

- The prevalence of back compliant, upper back pain and lower back pain due to work of physiotherapists with more than 10 years’ work was 98.86, 43.18, and 94.31% respectively.

There was a statistically significant association between back complain, Upper back pain, lower back and duration of work ( $p = 0.0001$ ). (Table 1, figure 1).

**1-3 years**

Table 1. Prevalence of work-related musculoskeletal disorders due to work based on duration of work

	Back compliant	upper back pain	Lower back pain
	Frequency N (%) 95% CI	Frequency N (%) 95% CI	Frequency N (%) 95% CI
1-3 years	252 (93.33%) 95% CI: 89.7- 95.74%	87 (32.22%) 95% CI: 26.93- 38.01%	224 (82.96%) 95% CI: 78.02- 86.97%
4-6 years	295 (100%) 95% CI: 98.71-100%	40 (13.55%) 95% CI: 10.11-17.93%	270 (91.52%) 95% CI: 87.78-94.19%
7-10 years	94 (100%) 95% CI: 96.07-100%	24 (25.53%) 95% CI: 17.79-35.18%	90 (95.74%) 95% CI: 89.56-98.33%
More than 10 years	174 (98.86%) 95% CI: 95.95-99.68%	76 (43.18%) 95% CI: 36.08-50.56%	166 (94.31%) 95% CI: 89.85-96.88%
$\chi^2$ value	31.81	54.01	22.32
p -value	0.0001*	0.0001*	0.0001*

$\chi^2$  : Chi squared value

p value: Probability value

\*: Significant

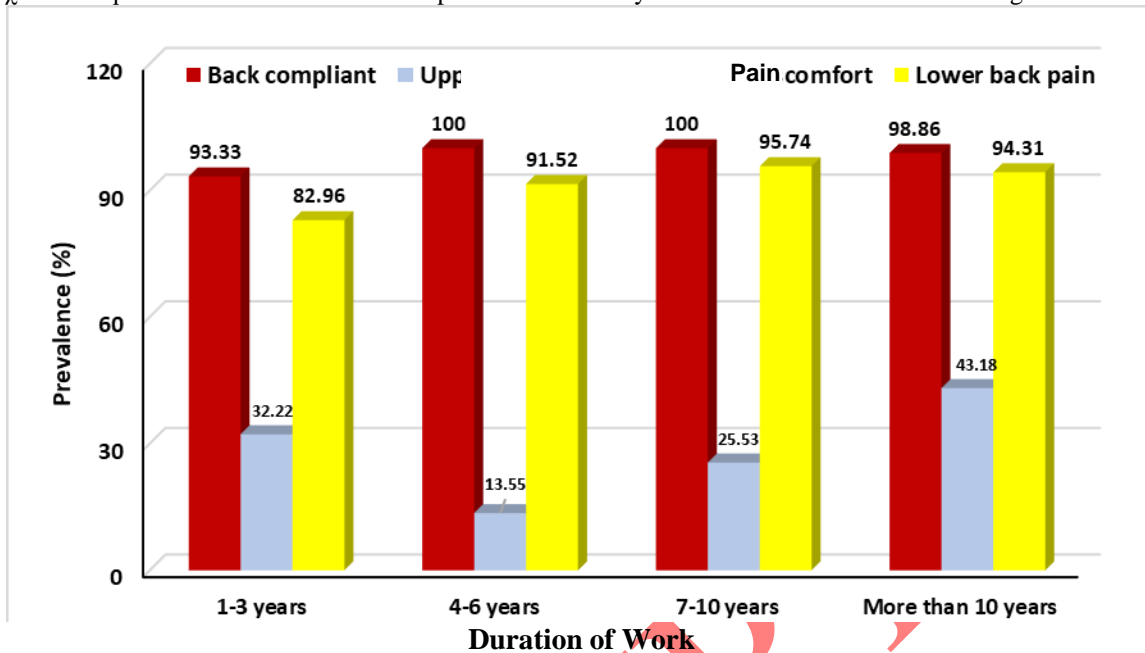


Figure (1).Prevalence of work- related musculoskeletal disorders in the study groups based on duration of work.

## Discussion:

This study was conducted to examine the relationship between duration of work and musculoskeletal disorders among Egyptian Physical Therapists in the previous 12 months by answering a Modified Nordic Questionnaire.

The study population was the working physiotherapists in educational, general hospitals, private hospitals, rehabilitation hospitals and private clinics in Egypt. 835 physiotherapists from 21 governorates participated in this study out of 1000 physiotherapists; that represent 83.5% from the physiotherapists who received the questionnaire, the physiotherapists in other governorates don't respond thus, they don't participate in this study.

This study found that about 83.5% of the participating physiotherapists complained of work related musculoskeletal disorders in

upper and lower back. The twelve-month prevalence of back compliant due to work of the study groups was 97.6%. Life time prevalence of upper back pain due to work of the study groups was 27.18%. Life time prevalence of low back pain due to work of the study groups was 89.82%.

From the result of this survey, it could be noticed higher prevalence of upper and/or lower back complaint among females 657(79%) than males 178(21%).

A Study done in Southeast Asian consistent with the result of our study reported that the overall prevalence of work-related injuries during the past 12 months was 71.6%. Female therapists reported a significantly higher prevalence of work-related musculoskeletal disorders than the male therapists 66.7%<sup>(4)</sup>.

Also there is a study done in Nigeria, reported that the prevalence of work related musculoskeletal disorders was 91.3%. Prevalence of musculoskeletal disorders was

significantly higher in female physiotherapists<sup>(6)</sup>.

Another study reported that the frequency of (WMSDs) was not gender related (except lower back, neck, and shoulder complaints)<sup>(5)</sup>.

Up to our knowledge there is a gap in the literature concerning the relationships between work related musculoskeletal disorders of physical therapists and their duration of work in Egypt.

#### *Area of disorders.*

The results of our study revealed that the twelve-month prevalence of back compliant due to work of the study groups were 97.6%. Life time prevalence of upper back pain was 27.18%, and that of low back pain was 89.82%. The highest lower back pain life time prevalence of 95.74% was among physiotherapists with 7-10 years of work. The twelve-month prevalence of back compliant was 100% among physiotherapists with 4-6 and 7-10 years of work

Alrowayeh et al., 2010<sup>(5)</sup> consistent with our study reported that the response rate to the questionnaire was 63% (222/350). Of the 222 responders included in the study, the one-year prevalence of (WMSDs) was 47.6%, with lower back complaints as the most common (32%). This was followed upper back (19%).

Also study done in North and central Queensland, on 346 responders, reported that, the low back injury (41%) was the injury that had the greatest impact on their career<sup>(14)</sup>.

Another study on Turkey, out of 205 physiotherapists working in Azmir and Turkey 120 were responded, reported that 85% of physiotherapists have had a musculoskeletal injury once or more in their life time. Injuries have been occurred mostly in low back 26% and neck 12%. The highest

risk factor in causing the injury was transferring the patient at 15%. 69% of physiotherapists visited a physician for their injury and 67% of the respondents indicated that they had not limited their patients contact time as a result to their injuries<sup>(7)</sup>.

According to Cromie et al., 2000<sup>(8)</sup> prevalence of back pain among 824 Australian physiotherapists was 62.5% in the low back and 41% in the upper back .

Holder et al., 1999<sup>(9)</sup> reported that 370 (62%) of physiotherapists and 253(56%) of assistants reported injuries to the low back. The type of injury sustained varied by practice setting, with 75% of therapists "practicing in a rehabilitation environment at the time of injury" reporting more low back injuries than "colleagues reporting injuries in outpatient settings (64%), hospitals (36%), or skilled nursing facilities (52%)". Physical therapy assistants injured in hospitals also reported having a higher level of low back injuries (65%) when compared with other practice settings such as rehabilitation (36%) .

Previous study done in Canada; on 311 physiotherapists found that 49% reported low back pain due to work. Patients handling was the single greatest factor contributing to work related low back injury, affecting 31% of respondents<sup>(10)</sup>. The researchers concluded that: "The physiotherapy profession clearly has an abundance of risk factors associated with the development of back pain<sup>(13)</sup> (El Sayyad, 2012).

According to Bork et al., (1996)<sup>(11)</sup>: Out of 1160 physical therapists 928 (80%) response rate. The highest prevalence of WMD among physical therapists was in the following anatomical areas: low back (45%), wrist/hand (29.6%), upper back (28.7%), and neck (24.7%). The job factor rated most likely to contribute to job-related



musculoskeletal disorders was "lifting or transferring dependent patients." The prevalence of WMD in physical therapists also was affected by work setting, practice specialty, age of patient, and gender of therapist.

#### *Duration of work*

The result of our study the duration of back complaints spells in the past 12 months of the study groups were days in 91 (11.16%), week in 435 (53.37%), around 3 weeks in 104 (12.76%), around 4 weeks in 78 (9.57%), around 12 weeks in 29 (3.55%) and more than 12 weeks in 78 (9.57%).

The duration of back complaints spells in the past 12 months of physiotherapists with 1-3 years' of work were days in 70 (27.77%), week in 66 (26.19%), around 3 weeks in 32 (12.69%), around 4 weeks in 38 (15.07%), around 12 weeks in 20 (7.93%) and more than 12 weeks in 26 (10.31%).

The duration of back complaints spells in the past 12 months of physiotherapists with 4-6 years' of work were days in 5 (1.69%), week in 205 (69.49%), around 3 weeks in 40 (13.59%), around 4 weeks in 20 (6.77%), around 12 weeks in 5 (1.69%) and more than 12 weeks in 20 (6.77%).

The duration of back complaints spells in the past 12 months of physiotherapists with 7-10 years' of work were days in 2 (2.12%), week in 64 (68.08%), around 3 weeks in 6 (6.38%), around 4 weeks in 12 (12.76%), around 12 weeks in 2 (2.12%) and more than 12 weeks in 8 (8.51%).

The duration of back complaints spells in the past 12 months of physiotherapists with more than 10 years' of work were days in 14 (8.04%), week in 100 (60.97%), around 3 weeks in 26 (15.85%), around 4 weeks in 8 (4.87%), around 12 weeks in 2 (1.21%) and more than 12 weeks in 24 (14.63%).

Pervious study on 39 (18%) male and 178 (82%) female reported that the onset of work related musculoskeletal disorders tends to occur early in a physiotherapy career, 16% first experienced their injury as a student and 56% of respondents initially experienced their worst work related injury within first five years of working as physiotherapists. Few injured physiotherapists in this study had taken time off on worker compensation 4%, whereas 24% had taken time off on sick leave. Many of the injured physiotherapists in study change their duties 41% or their work sitting 39%, reduce patient contact hours 31% or change the type of patient treated 29%<sup>(12)</sup>.

Another study done on 270 physiotherapists, 144 (58.1%) reported that 50% of the physiotherapists first experienced their work related musculoskeletal disorders within five years of graduation and the highest prevalence 61.7% was found among physiotherapists younger than 30 years. Treating large number of patients in a day was cited by most 83.5% of the respondents as the most important work factor for their musculoskeletal disorders. Majority of the respondents 87.0% did not leave the profession but 62.6% changed and or modified their treatment because of their musculoskeletal disorders<sup>(6)</sup>.

A Study done in Canada; on 311 physiotherapists found that 49% reported low back pain due to work. According to this study "the initial onset of work-related low back pain frequently occurred within the first five years of practice as a physiotherapists and before the age of 30" (60% experienced injury before the age of 30 and 35% sustained an injury between the ages of 20-25 years)<sup>(8)</sup>.

#### **Conclusion:**

Within the limitation of this study , it can be concluded that, the prevalence of work related musculoskeletal disorders among Egyptian physiotherapists is high, with the lower back disorders more than upper back disorders in all group of our study.

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