

RESEARCH REPORT

PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG THE CARE GIVERS OF PHYSICALLY DISABLED CHILDREN

ABSTRACT

BACKGROUND AND AIMS

It has been estimated that 14-17% of the cases referred to primary care consultations are related to musculoskeletal disorders. The study was aimed to determine prevalence of Work Related Musculoskeletal disorder among care givers of physically handicapped children.

METHOD

The study includes a sample size of 187 caregivers of physically handicapped children. Two differently self-designed questionnaires were used to gather information from the clinician and the parents separately. The data was collected only once from the participants. It was assured that the data would be used only for research purpose, prior consent was taken before administering the questionnaire.

RESULTS

The result showed that n=187 participants that were involved in the process of care giving to the physically handicapped children. Prevalence of musculoskeletal disorder was found equally high among clinicians and parents. However, no association $p>0.05$ between the age and the type of WMSDs was observed.

CONCLUSIONS

The study concluded that Work Related Musculoskeletal disorders were prevalent among the care givers of physical handicapped children and was found to be equally affecting the parents and the clinicians.

KEYWORDS

Musculoskeletal Disease, Physical Therapist, Occupational Therapist, Low back pain, Thoracic Outlet Syndrome.

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INTRODUCTION

Globally the prevalence of musculoskeletal diseases has steadily been growing during the course of last decade leading to an approximately 20% increase from the year 2006 to 2016¹. It has also been estimated that 14-17% of the cases referred to primary care consultations are related to Musculoskeletal disorders²⁻³. Many of these conditions are self-managed but other required treatments while some may develop into a chronic condition that greatly impede the quality of life and reduces activity of daily living in the long run⁴. According to the data provided by labor bureau of United States in 2013 work related musculoskeletal disorders in health care setting alone is costing more than 2 million loss of workdays every year while figuring approximately a liability \$1 billion annually in terms of worker compensation cost⁵. Work Related Musculoskeletal Disorders (WRMDs) are listed as non-contagious disease and disorders undergo in the worker on the musculoskeletal, peripheral nerves, and neurovascular systems due to continuous revelation to workplace threats WRMDs are known to be a leading occupational problem among Physical Therapist and Occupational Therapist but the same also affects the life of all those care givers that performs strenuous physical activities and repetitive performance of the task in the management of the physically handicapped patient⁶. According to the study conducted by Islam MS et al in 2015 it was observed that low back pain is among the most common Work related musculoskeletal disorder with the prevalence of around 84% followed by pain in the upper back and neck that is found to be prevalent in 70% and 65% of the cases respectively⁷. A study conducted in the year 2015 mainly involving the mothers of physically handicapped children the most reported health care problems that was highlighted involved musculoskeletal pain at the level of lower back and neck followed by reduced functional ability recorded on Gross Motor Functional Classification Scale (GMFCS)⁸. Moreover it was also highlighted in the another study that the most common clinical setups where the incidences of having the work related musculoskeletal disorders are high mainly involved three specialized health care department that are musculoskeletal out-patients physical therapy setups where the estimated incidence of having the WMSDs is 31% followed by Neurological Rehabilitation department 14% and elderly care department 12%⁹. An interesting finding were observed in a study conducted by Liao JC et al in 2016 in which the researchers had compared the risk of developing the incidence of the new onset of work related musculoskeletal spinal disorders among three health care professionals that are Physical therapist, Occupational therapist and Pharmacist and it was observed that the probability of having Spine related musculoskeletal disease during the period of 12

years are high among physical therapy professional 0.5 followed by Occupational therapist 0.4 and pharmacist 0.25¹⁰. Hence the present study is aimed to identify the prevalence of Work related Musculoskeletal Disorders (WMSDs) among the care givers of physically disabled children's of Karachi, Pakistan population.

METHODOLOGY

Study Design

A Cross-Sectional Study was conducted

Sampling Technique

Convenient Sampling Technique was used for the recruitment of participant.

Study Setting

The study was conducted in the clinical settings of different health care institutions of Karachi that were involved in the management of physically disabled children like cerebral palsy, Down syndrome etc.

DATA COLLECTION PROCEDURE

The study included a sample size of 184 caregivers of physically handicapped children; including both the parents and the clinicians. Two differently self-designed questionnaires were used to gather information from the clinician and the parents separately. The questionnaires that were filled by the parents mainly involved question related to the location and the mechanism of pain like low back, muscular, shoulder, neck and mid thoracic pain. Whereas the questions related to the diagnosed musculoskeletal conditions like Thoracic Outlet Syndrome, Myofascial pain Syndrome, Fibromyalgia, Tendonitis, Carpal Tunnel Syndrome and others that participants' wants to highlight were the part of the questionnaire that were administered by the clinicians along with the questions that were asked from the parents. Besides that the questions related to the demographic information such as age, gender, clinical experience, were also the part of the questionnaire. The data was collected only once from the participants and all measures had been taken to maintain the ethical consideration of confidentiality and non-partiality. Besides that all the participants were informed that the data would be used only for research purpose and the prior consent was taken before administering the questionnaire.

Inclusion and Exclusion Criteria

Inclusion criteria includes clinician and parents that were involves in the process of care giving to children diagnosed with the conditions like down syndrome¹¹, cerebral palsy¹², Klinefelter syndrome, Autism Spectrum Disorder¹³ and any other disorder that made the independent movement of the children difficult without their support. Moreover the

age of the parents as care givers were in between 20 to 40 years and as clinician they were either a Physical therapist or an occupational therapist of the same age group as was fixed for the parents, whereas all those care givers that had already diagnosed systemic diseases like COPD, heart disease¹⁴, fracture¹⁵ or any other disability that made them difficult to involve in the process of care giving were excluded from the study.

Data Collection Tool
Self-Designed Questionnaire

Self-designed questionnaire was used in this study as a data collection tool consisting 33 items. Demographic data of caregiver included name, age, gender (male and female), marital status (unmarried, married, separate, divorced, widow/widower), number of children, number of handicap children, height and weight of the caregiver, BMI of the caregiver and age of handicap children. Other components of questionnaire included, frequency of exercise performed, type of disability of child (CP, lower extremity deformity, spina bifida, polio, juvenile idiopathic arthritis, down syndrome, rickets) level of co-operation of child (non-cooperative, full or partial co-operative), type of disability in mother (LBP, TOS, MPS, FMS, tendinitis, CTS or any other), relapse of WMSD, most affected region due to pain, pain severity, duration since onset, duration of symptoms and frequency of occurrence in neck, shoulder, upper back, lower back, elbow, hands and wrist, thigh, knee, feet and ankle. Other questions were, affecting work performance (mild, moderate, severe affected or unable to work), seeking treatment for musculoskeletal pains and use of any supportive device while working. All of above questions were asked from the caregiver to gather information about musculoskeletal pains

Ethical Consideration

Ethical approval has been taken from the institutional review board of the concerned hospital settings before conducting the research. Moreover, an informed consent was given to the participants before enrolling them in the study.

RESULTS

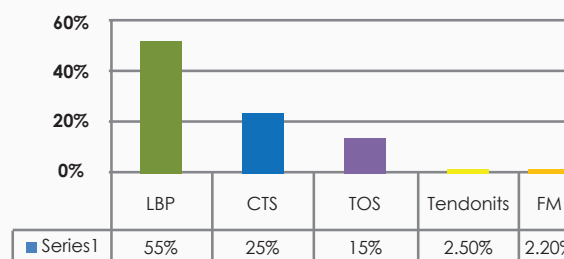
The result shows that out of n=187 participants that were involves in the process of care giving to the physically handicapped children n=95 were clinicians out of which n=47 were Physical Therapist (PT) and n=48 were Occupational Therapist (OT) and n=92 were parents that includes both male and female n=46 were male and n=46 were female. Further out of n= 47 physical therapist n=30 were female and n= 17 were male whereas in occupational therapist as clinician all were females participants (Table 1)

Table 1. Frequency of male and female participants in clinical group

Caregivers	n	Frequency	Male	Female	
Clinicians	95	PT	47	17 (36.1%)	30 (63.8%)
		OT	48	-	48 (100%)

The cross tab analysis of the data had revealed that Work related Musculoskeletal Diseases (WMSDs) were found to be prevalent among both the clinicians and the parents involved in the care giving of physically handicapped children where 55% of the clinicians included in the study complained for low back pain, 25% were had a diagnosed carpal tunnel syndrome, 15% complained for thoracic outlet syndrome and whereas 2.5% were diagnosed with tendonitis and fibromyalgia (figure 1).

Figure 1. Illustration of Cross Tab Analysis



Further analysis had revealed that the most prevalent type of WMSDs that was prevalent among the PTs were Low back pain followed by TOS and Tendonitis (table 2)

Table 2. Common MSDs among PTs

Variables	LBP	TOSQ	Tendonitis
N	23	15	9
%age	48.9%	31.91%	19.1%

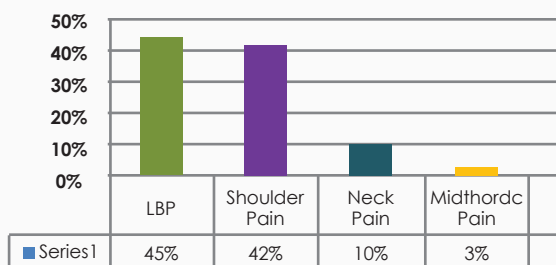
Whereas among Occupational therapist the most prevalent WMSDs was found to be Carpal Tunnel followed by low back pain and Fibromyalgia Pain Syndrome (table 3)

Table 3. Common MSDs among OTs

Variables	CTS	LBP	FMS
N	25	20	3
%age	52.08%	41.66%	2.74%

The analysis of the prevalence of WMSDs among the parent caregiver revealed that most of the parents were suffering from Low back and Shoulder pain followed by neck and mid thoracic pain (Figure 2)

Figure 2. Illustration of Cross Tab Analysis among parents



Chi-square analysis test was further applied to determine the association between the age and the type of WMSDs that showed no association $p > 0.05$ that suggested work related musculoskeletal disorder was independent to the age of the participants (table 4).

Table 4. Chi-square Analysis depicting association between age and WMSDs among Clinicians

Variables	Age in Years				P-value
	20-25	26-30	31-35	36-40	
WMSDs					
LBP	12	10	10	11	>0.05
CTS	10	5	5	5	
TOS	5	3	3	4	
Tendonitis	3	3	2	1	
FMS	1	2	0	0	

The chi-square association between the age of the parents and the frequency of the location of WMSDs pain had also shown the similar findings $p > 0.05$ that further confirmed that work related musculoskeletal diseases were found to be independent from the age of the participants (table 5)

Table 5. Chi-square Analysis depicting association between age and WMSDs among parents

Variables	Age in Years				P-value
	20-25	26-30	31-35	36-40	
WMSDs					
LBP	19	14	10	1	>0.05
Shoulder Pain	10	10	9	7	
Neck Pain	2	2	3	1	
Mid Thoracic Pain	1	0	2	1	

DISCUSSION

The results of the study had revealed that Work

related musculoskeletal disorders were the most prevalent form of occupational diseases that were prevalent among the subjects involved in the management of the physically disabled children. Among various types of WMSDs the most common that affects the clinician in the Physical Therapy setups was the low back pain that affects almost 48.9% of the Physical therapist involved in the clinical settings for the management of Physically disabled Children the same form of result was also revealed by Liao et al in a study conducted in the year 2016 in which it was concluded that Spine related Musculoskeletal disease were incidentally high among Physical Therapist professional in comparison to Occupational Therapist and Pharmacist¹⁰ whereas the age of the onset in the same study was estimated to be 24 years that was the case with our study as well in which it was observed that the age of the onset of Low back pain related to WMSDs was found to be in between 20-25 years in both the group that were parents and clinician. However, the study conducted by Tinubu et al and King et al it was concluded that the onset of WMSD were mostly found in the age group of ≤ 30 years¹⁶⁻¹⁷. The result of our study had also revealed that among parents involved in care giving the second most prevalent form of WMSDs was shoulder pain as the repetitive movement at the level of shoulder during lifting and shifting of the patient pulled shoulder muscle that may become a source of musculoskeletal pain if proper technique of lifting and ergonomic aids were not adequately applied the same was the finding of S.D. Choi and K. Brings⁵ review article in which they had suggested that proper utilization of Ergonomic intervention strategies as recommended by Occupational Safety and Health Administration (OSHA)¹⁸⁻¹⁹ reduces the incidences of work related injuries among the patients and improves the patient safety parameters. Multiple Studies also supported the findings that engineering based devices if administered by the health related professionals during the shifting and lifting of patient reduces the chances of new onsets of musculoskeletal pain and disabilities²⁰⁻²¹. A studies conducted on nurses revealed that ergonomically administered intervention strategies when applied by nurses in the management of bariatric patients reduces the risk of injury among nurses²². The present study had also revealed that among Occupational Therapist the most common type of musculoskeletal disorder was Carpal Tunnel Syndrome that was found to be prevalent in 52.08% of the cases the findings suggest that as the mechanism of occupational musculoskeletal disease depends on the nature of the performance of the task justifies the high prevalence of CTS among occupational therapist as the main task of OTs were highly based on improving the functional limitation of patients and managing

the fine dexterity among the handicapped children the repetitive strenuous activity at the level of wrist may cause high incidence and prevalence of CTS among Occupational therapist. Finally, the results of our study revealed no association between age and the prevalence and onset of work related occupational diseases the findings suggest that as the occupational MSDs were mainly associated with the level of strenuous repetitive activities that were performed by the individual and has no connection with the age the findings were similar to the findings of Alghadir A et al in which it was concluded that age of the respondent was not directly linked with the WMSDs²³ however gender and occupation had a direct link as female suffer more than the male population and occupational with greater strenuous activities had a greater likelihood of developing WMSDs²³⁻²⁵. The study had some limitations as the data was based from those institutions of Karachi, Pakistan that are primarily involves in the management of children's with disabilities and the Physical and Occupational therapist working in those institutions only thus may limits the generalizability of results on greater scale as the bigger tertiary care hospitals of Karachi were not the part of the data collection strategies further due to lack of funding and transportation facilities a sample of 187 only was taken that may increases the chances of statistical errors moreover due to lack of awareness among the local population of Karachi regarding the importance of research and evidence there were few questionnaires that were not properly filled that causes the loss of data at few intervals. However our study has some strengths as well as the study was first of its type in Karachi, Pakistan that had highlighted the prevalence of WMSDs among the parents and professionals of physically handicapped children. Further the study will open a new door for future researches that may indeed found to be helpful to get greater evidence on larger scale.

CONCLUSION

The study concluded that Work Related musculoskeletal disorders were prevalent among the care givers of physical handicapped children and was found to be equally affecting the parents and the clinicians. It was also observed from the data that age of the respondents had no association with the onset of WMSDs and the repetitive strenuous activities were the cause of developing the disorder among the care givers of physically handicapped children. The researcher recommended that more studies are required to be conducted in this regard on larger effects size so that the generalizability of the findings could be better interpreted on larger scale.

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