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THE PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG MADRASSA TEACHERS AND STUDENTS- A CROSS SECTIONAL STUDY

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ABSTRACT

Introduction: Musculoskeletal Disorders (MSD) are the disorders that have been developed due to disadvantageous work settings and work related issues. It may involve different regions of body like upper extremity, lower extremity, cervical, back regions etc. The onset of these problems need to be known where as it is a common belief that it is caused by overuse. Madrassa simply means the school does in the English language where students gathered to learn and acquire knowledge whether Muslim, non-Muslim, or secular. Usually teachers in madrassa adopted to sit in some positions in which musculoskeletal system is placed under load. The objective of the study is to determine “The Prevalence of Musculoskeletal Disorders among Madrassa Teachers.”

Methods: It was a cross sectional study. 109 madrassa teachers participated in the study; the study was conducted in Karachi. Self-assessment questionnaire was use to collect data. Data was analyzed using SPSS version 20.

Results: A total of 109 madrassa teachers taken part in this research study almost all participants were male. There were two types of madrassa teachers; one is full time teachers (73.4%) and part time (26.6%). (58.7%) madrassa teachers were suffering from discomfort during teaching and 41.3 didn't feel any discomfort, coming to pain regions 37 said they had back pain (33.9%), 35 said they had shoulder pain (35%), 37 said they had knee pain (24.8%) and four said they had heel pain (3.7%).

Conclusion: The result showed that the madrassa teachers have high prevalence of Musculoskeletal Disorders. This comprises different regions of body like shoulder, back, knee and heel. This leads to the conclusion that these teachers are not at all aware of the consequences of MSD nor they are aware of the causes of these disorders. Also this was found that the facilities provided to these teachers were not up to the mark. When it comes to the working environment the technology of ergonomics has proved a lot, in minimizing the development of MSD. There is a need to provide education on ergonomics for madrassa teachers.

Keywords: Madrassa teachers, musculoskeletal disorders, Ergonomics.

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INTRODUCTION

Teachers are prone to develop the musculoskeletal disorders because of the awkward postures they acquire during their job [1]. According to Luttmann et al (2004) musculoskeletal disorders are one of the main causes of absenteeism from work or job [2]. Along with this it is the disorder on which considerable amount of public is yearly wasted. These disorders are associated with the nature of work and it may involve any region of body like back, upper limb or lower limb.

The causes may be repetitive trauma. According to Occupational Health & Safety Centre of Canada, musculoskeletal disorders are disorders that are painful and they involve muscles, nerve & tendons. The causes may include frequency of repetition, acquiring bad postures. These disorders are painful at rest as well as at work place. Musculoskeletal disorders do not develop due to a single trauma. They result from repetitive episodes of trauma. They gradually & slowly come into existence. (Canadian Centre for Occupational Health & Safety. www.ccohs.ca/oshanswers/diseases/rmirsi.html assessed on 25 Oct. 2013).

Musculoskeletal disorders are among the leading reasons of work related disabilities and being absent from work [3]. According Hogg-Johnson 50% to 80% of the population in developed countries has had back pain during their whole life span [4]. Also 30% of all the last time claims are due to back disorders. Authors have paid particular attention to analyzing the strength of the association between musculoskeletal disorders and work factors. Because the development of a musculoskeletal disorder may be modified by psychosocial factors, the authors have also reviewed the literature on the relationship of these factors to the presence of musculoskeletal symptoms or disorders [5,6]. Understanding these associations and relating them to disease etiology is critical to identifying workplace exposures that can be reduced or prevented [7]. The symptoms may vary from discomfort and pain to decreased body function and invalidity. Although it is not clear to what extent musculoskeletal disorders are caused by work, their impact on working life is huge. Musculoskeletal disorders can interfere with activities at work and can lead to reduced productivity, sickness absence and chronic occupational disability [8].

The load on teaching is stressful; this affects the performance of school teachers often involve significant use of neck flexion position in the work tasks of school teaching, such as marking of assignment and frequent reading.

The work of the school teachers does not only involve teaching to students but also assessing students 'work, preparing lessons and participating in different school committees. These may cause teachers to suffer physical and mental health issues due to the variety of jobs functions.

A study shows that teachers are prone to develop the musculoskeletal disorders because of the awkward postures they acquire during their job. There are some ergonomic issues also associated with the causation of musculoskel-

etal disorders among the teachers [9]. In madrassas one must kneel on the floor, then folds the knees so as the legs come just beneath the thighs and the hips rest on the heel of feet. Ankles are turned outward. The back should be straight. The madrassa teachers' sitting styles are weird as they can result into the causation of musculoskeletal disorders. Most of the madrassa teachers acquire forward kneeling posture and they sit in this awkward posture for hours.



Figure1: Forward flexion position



Figure 2: Sitting position of madrassa students / teachers

Usually teachers in madrassa adopted to sit in some positions in which musculoskeletal system is placed under load. This study will help the madrassa teachers in a sense that it will identify their musculoskeletal related disorders. If there is a relationship between their sitting position and musculoskeletal problems, they can make strategies to cope up with these problems and in turn this will help to enhance their skills.

METHODOLOGY

This cross sectional survey study was done on a sample of 109 madrassa teachers from different madrassas of Karachi. Selection of sample was on convenient sampling. The duration of the study was 6 months. Teachers, students and administrative staff at madrassa who are having at least one year of experience in madrassa were selected. Data was collected through self-assessment questionnaire. This questionnaire was given to 109 madrassa teachers and students. The questionnaires were completed on the basis of answers obtained from the participants.

The analysis to calculate the Prevalence of different musculoskeletal disorders among madrassa teachers was done by SPSS version 20 software. The questionnaire used is a modified form and is based on self-assessment questionnaire. The questionnaire was printed on a white A4 size paper with font size 12 and times new roman format. The ques-

tionnaire used had two sections. First section contained questions related to age, gender, weight, height, BMI working hours etc. Second section contained questions regarding musculoskeletal disorders in different regions of body. The ethical review committee of Isra University had gone through the research proposal of this study and had given the permission to conduct the study.

DATA ANALYSIS AND RESULTS

The response rate was 100%. A total of 109 madrassas teachers taken part in this research study almost all participants were male. There were two types of madrassa teachers; one is full time teachers (73.4%) and part time (26.6%). (58.7%) madrassa teachers were suffering from discomfort during teaching and 41.3% didn't feel any discomfort

The participants were divided into eight groups starting from age 21 year to 60 years. Maximum number of participants was found in age group thirty six to forty years that is 26.6%. The weight category was divided into six categories maximum responses were found in the category of seventy to seventy nine kilogram (36.7%). Maximum responses of found in the group six to 10 year experience. The calculated percentage of the group was found to be 56%.

The category of BMI was divided into three groups first below twenty second was between 20 and 25 and third was above 25. The maximum responses were found in the third group (69.2%). Almost all the participants (100%) teaching style was found in sitting position.

When we asked the question about pain region of pain 37 said they had back pain (33.9%), 35 said they had shoulder pain (35%), twenty seven said they had knee pain (24.8%) and 4 said they had heel pain (3.7%).

Almost 79 percent of participant had pain during teaching and 21 percent had pain before teaching. 89 teachers are having slow nature of pain (81.7%) and 20 having sudden nature of pain (18.3%). The results of visual analog scale used for pain scaling shows that maximum of the participant had medium category of pain that is between two to seven on the VAS this comprises of 73.4%. participant categorized the pain at eight to ten on VAS are 8.3% and zero to one on VAS are 18.3%. Maximum of participant were found to be in the third category of BMI that is above 25.

Table 1: Age of participant

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21 to 25 years	17	15.6	15.6
	26 to 30 years	24	22.0	37.6
	31 to 35 years	21	19.3	56.9
	36 to 40 years	29	26.6	83.5
	41 to 45 years	6	5.5	89.0
	46 to 50 years	7	6.4	95.4
	51 to 55 years	2	1.8	97.2
	56 to 60 years	3	2.8	100.0
Total	109	100.0	100.0	

Graph 1: Age of participants

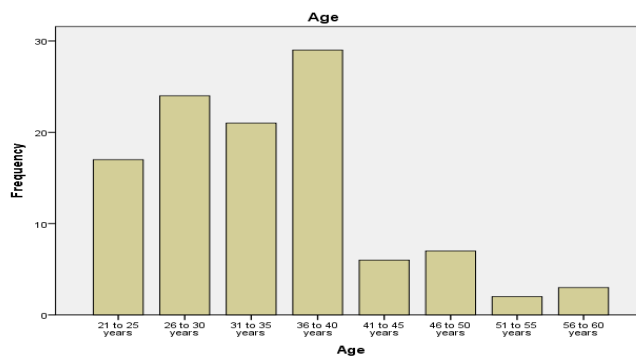


Table 2: Experience of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 5 years	17	15.6	15.6
	6 to 10 years	56	51.4	67.0
	11 to 15 years	16	14.7	81.7
	16 to 20 years	15	13.8	95.4
	21 to 25 years	3	2.8	98.2
	26 to 30 years	1	.9	99.1
	31 to 35 years	1	.9	100.0
Total	109	100.0	100.0	

Graph 2: Experience of respondent

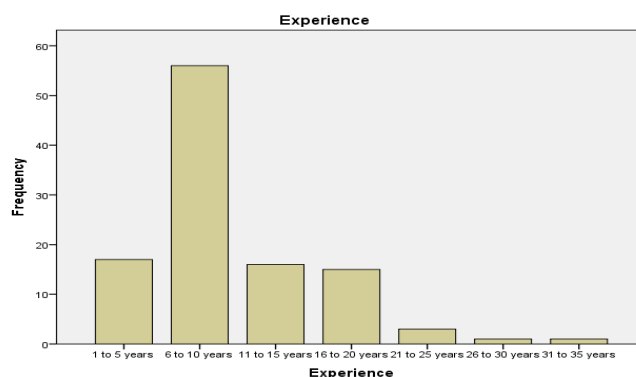


Table 3: BMI of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 20	10	9.2	9.3
	20 to 25	23	21.1	30.8
	Above 25	74	67.9	100.0
	Total	107	98.2	100.0
Missing	System	2	1.8	
Total	109	100.0		

Graph 3: BMI of respondents

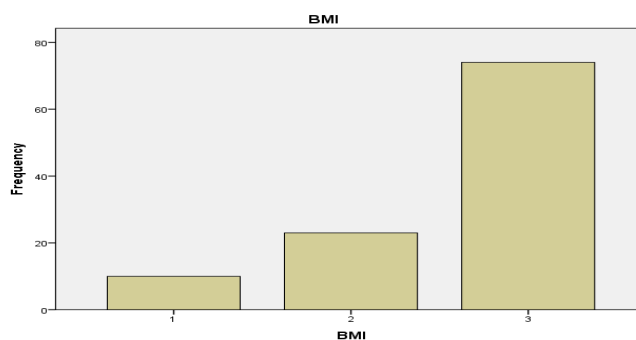


Table 4: The regions of pain among teachers.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No pain	6	5.5	5.5	5.5
	Back	37	33.9	33.9	39.4
	Shoulder	35	32.1	32.1	71.6
	Knee	27	24.8	24.8	96.3
	Heel	4	3.7	3.7	100.0
	Total	109	100.0	100.0	

Graph 4: The regions of pain among teachers.

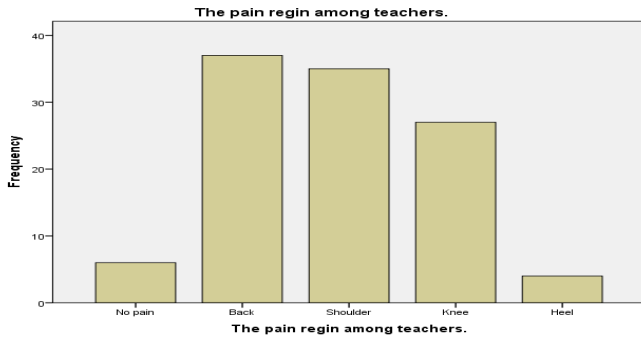


Table 5: Marking on visual analog scale

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Pain	20	18.3	18.3	18.3
	Medium Pain	80	73.4	73.4	91.7
	Strong Pain	9	8.3	8.3	100.0
	Total	109	100.0	100.0	

Graph 5: Marking on visual analog scale

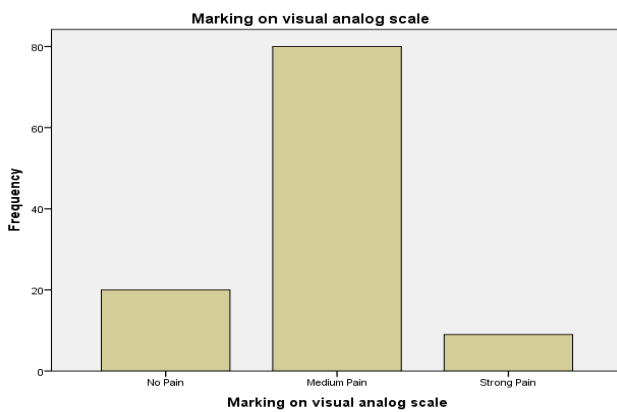
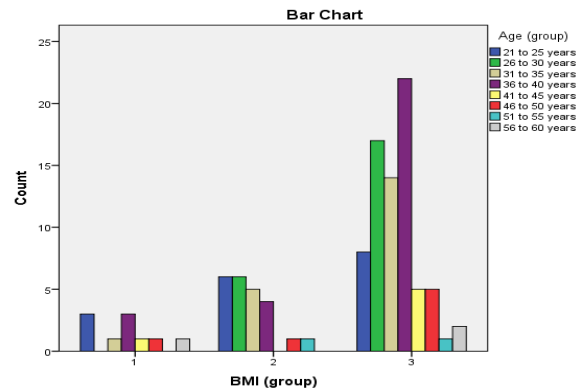


Table 6: BMI and age cross tabulation

		Age (group)							Total	
		26 to 30 years	31 to 35 years	36 to 40 years	41 to 45 years	46 to 50 years	51 to 55 years	56 to 60 years		
BMI (group)	<20	3	0	1	3	1	1	0	1	10
	20-25	6	6	5	4	0	1	1	0	23
	25<	8	17	14	22	5	5	1	2	74
Total		17	23	20	29	6	7	2	3	107

Graph 6: BMI and age of participants



DISCUSSION

All the musculoskeletal disorders that develop due to any sort of problem related to work or job that the affected person is doing is called Musculoskeletal Disorders or MSD. Different occupations have different risk factors to develop these MSDs. This study only targets problems about teachers as this is the main topic. Here authors included participants who are teaching students at different levels and each level has their own responsibility and liabilities.

The working procedures that the teachers may employ to convey the knowledge to their students they may have to stand or sit for long hours. Prolong sitting or standing it is known that prolonged acquiring of a certain posture may lead to increased pressure on intervertebral discs and when this pressure is increased, lead to disorders associated with intervertebral discs like neck or back pain [10].

The study done in 2006 by Adamson J. et al. had shown that high BMI is associated with hip, knees, ankle & feet pain [11]. High BMI is associated with high prevalence of knee pain, ankle pain or hip pain. The study done in 2009 by Rahman S et al had showed that obesity was associated with pain in different regions of body like back [12].

Ergonomics is a field which makes the environment individual friendly. If the correct use of ergonomics is employed in the working environments the injuries can be minimized. Also if the valuable rules of ergonomics are applied in the working environment of the teachers this can minimize the injuries and disorders caused by work related issues.

The response rate of this study was 100%. The total number of participants in this study was 109. The teacher teaching in madrasa have different category according to the work hours. They can be divided into full time workers and part time workers. The result shows that most of the teachers who participated in the study were full time workers that are they teach for as long as eight hours daily. The teachers most of the time suffer from pain during teaching. The reason may be their sitting posture that was quite awkward. And all the awkward postures may lead to some disorders.

The prolonged duration of work without rest can be a cause of developing MSD. Along with this prolonged duration awkward postures also play an important role in developing

MSD. The prolong duration of work or acquiring of a certain posture for long duration can cause pain leading to the development of MSD [13].

When the question about pain region was asked thirty seven said they had back pain (33.9%), these can be associated with previous study done by Beyen et al in Ethiopia. This study showed L.B.P. in 57.5% of participants [14]. Thirty five said they had shoulder pain (35%), this prevalence may be associated with previous study by Lawrence I [15]. This study's results showed 55% problem in shoulders, this study was done on nurses. Twenty seven said they had knee pain (24.8%) This can be associated with the results of previous study done in China in 2012. This study showed that 22.6% of the participating teachers had knee pain [16]. And four said they have heel pain (3.7%).

The reason for this prevalence may be severity of pain or repetitive awkward movements that the participants had to do. The awkward postures and movements may limit the activities of the suffering person [17]. The results of the study show that almost seventy nine percent of participants had pain during teaching and twenty one percent had pain before teaching again this can be associated directly or indirectly with the awkward postures of the madrasa teachers. The nature of pain found to be slow that is the pain is present all the time and it is continuously irritating the participants. This may cause a decline in the efficiency of the teacher. The teacher may not be able to participate as an active member of the teaching team this may lead to a drastic problem that may cause a hurdle in the teaching environment.

With time not only their experiences increases but also the habits of bad posture develops to an extent that it becomes a part of their life and they continue to sit in such postures for hours and hours. This causes them pain and discomfort that leads to the development of MSD. When the comparison of BMI to the region of pain was done a positive association was found. The reason behind this may be that high BMI causes load on the body joints lead them to deterioration [18, 19]. This deterioration results in the causation of disorder like MSD which is one of the leading problems among the working community.

High BMI itself is dangerous for health. Obesity is said to be a cause of many diseases so if a person is having high BMI that person may develop many diseases. If we talk about the musculoskeletal disorders they can also develop if a person has high BMI. High BMI means that a person is over weighted or obese and if a person has high BMI over all mass of that person would be increased. This means that a person with high BMI has to do more effort to do the same work which a normal BMI person can do with little effort. More effort means more energy consumption and more muscle work. If the musculature or skeletal system of this person having high BMI, is weak or incapable to perform the work this can lead to injury and resulting into musculoskeletal disorders.

Ergonomics is a field which makes the environment in-

dividual friendly. If the correct use of ergonomics is employed in the working environments the injuries can be minimized. Also if the valuable rules of ergonomics are applied in the working environment of the teachers this can minimize the injuries and disorders caused by work related issues.

CONCLUSION: The result showed that the madrasa teachers have high prevalence of Musculoskeletal Disorders. This comprises different regions of body like shoulder, back, knee and heel. This leads to the conclusion that these teachers are not at all aware of the consequences of MSD nor they are aware of the causes of these disorders. Also this was found that the facilities provided to these teachers were not up to the mark. When it comes to the working environment the technology of ergonomics has proved a lot, in minimizing the development of MSD. There is a need to provide education on ergonomics for madrasa teachers.

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