

# To See the Work Related Musculoskeletal Disorders among College Teachers

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## ABSTRACT

**Objective:** To determine the prevalence of work related musculoskeletal disorders among college teachers of Karachi and Hyderabad.

**Study Design:** Observational / descriptive / Cross sectional study

**Place and Duration of Study:** This study was conducted at the Department of Physiotherapy & Orthopaedic, Liaquat University Hospital Hyderabad from January 2013 to June 2013.

**Materials and Methods:** We selected college teachers from both gender by convenient sampling. Those selected, were subjected had a work experience of about one year in teaching. Nordic questionnaire was used to determine the work related musculoskeletal disorders. The questionnaires were sent to 400 intermediate teachers and 342 completely filled questionnaires were returned back. Analysis was done through SPSS.

**Results:** The highest prevalence of work related pain was found neck, shoulder, lower back, and knees and pain starts when they perform their work. 50% participants responded that they keep their neck in bending position and shoulders elevated while using black board.

**Conclusion:** The results concluded that neck, shoulder, lower back, and knees are mostly affected regions. The use of ergonomically rules can help to alleviate the problem.

**Key Words:** Prevalence, Work related Musculoskeletal Disorders, Teachers, Postural training.

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## INTRODUCTION

Musculoskeletal Disorders due to work (WMSD) [also known as Repetitive Strain Injury (RSI) or Cumulative Trauma Disorder (CTD)] are the musculoskeletal disorders that have been developed due to 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.<sup>1</sup> According to WHO musculoskeletal disorders are major cause or reason of absenteeism from the job or work. Also a considerable amount of money is spent because of these disorders. These disorders may involve different body regions. The severity of their symptoms varies from ache to severe pain.<sup>2</sup> WHO defined WMSDs as follows WMSD results from a number of causes and issues. In these issues, the environment of work and performance both contribute, but the amount of influence on the cause may vary.<sup>3</sup>

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• WMSDs are the conditions that involve musculoskeletal structures like tendons, muscles, ligaments etc. and the cause of these conditions are not of acute nature. They develop when the physical demands of the working place or occupation causes damage to any & body part. WMSD may be develops by frequent acquiring of bad postures or forceful or again and again repeating the movements which exert pressure or demand more energy. The risk of developing WMSD increases with frequent exposure to such conditions.<sup>4</sup> According to Occupational Health & Safety Centre of Canada, WMSDs 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. As upper limb is involved in almost all the works so upper extremity is mostly involved in WMSDs, whereas lower extremity & back can also be involved where they are utilized during the work. WMSDs do not develop due to a single trauma. They result from repetitive episodes of trauma. They gradually & slowly come into existence.<sup>5</sup> WMSDs are among the leading reasons of work related disabilities and being absent from work.<sup>6</sup> According to a paper by Hogg-Johnson 50% to 80% of the population in developed countries have had back pain during their whole life span. Also 30% of all the lost time claims are due to back disorders.<sup>7</sup> WMSDs are very common among many occupations as well as teachers. Its incidence is quite high among the

school teachers. A study shows that teachers are prone to develop the WMSDs because of the awkward postures they acquire during their job.<sup>8</sup> Other study says that teachers in physical education are more prone to acute or chronic injuries due to their work and this leads to retirement before time and age.<sup>9</sup> There are some ergonomically issues also associated with the causation of WMSD among the teachers. In China a study showed that WMSD prevalence is very high among teachers. It may develop in neck, shoulder, low back, wrist/hand, elbow & knees.<sup>10</sup>

If we talk about the causing factors of WMSDs among the teachers the causes may include age, gender and BMI. Also working under pressure situations may also contribute in causing WMSDs.<sup>11</sup> If we talk about teachers dealing nurseries the cause may be lifting kids & carry them.<sup>12</sup> The studies also show that the cause of premature retirement among teachers is WMSDs.<sup>3</sup> Beside this studies show that back was the region mostly affected by WMSDs among the teachers of Malaysia and China.<sup>7</sup> The study also shows that the older i.e. experienced teachers are more prone to develop WMSDs. Also female teachers show high prevalence of WMSDs than male teachers.<sup>8</sup> The study also shows that psychosocial issues can also contribute in the causation of WMSDs among the teachers.<sup>13</sup> Ergonomically issues like furniture selection for classes and laboratories can also play important role.<sup>14</sup>

WMSDs can be prevented if good ergonomically procedures are employed. It includes maintain the work surface according to height, adjusting the chair and use of appropriate furniture.<sup>15</sup> The objective of this study was to determine the prevalence of work related musculoskeletal disorders among the college teachers. By knowing this, helpful strategies would become easy to make as when we know the issue we can solve it better. They can make strategies to cope up with these problems and in turn this will help to enhance their skills. (No disorder no absenteeism).

## MATERIALS AND METHODS

400 participants were randomly selected in different colleges of Karachi and Hyderabad. The duration of the study was six months from January 2013 to June 2013. The participants were randomly selected, who were teaching in different colleges of Karachi and Hyderabad and Nordic questionnaire with consent form were distributed to all participants. Participants were asked to complete the questionnaire and returned to the researcher or the person who gave it to them after one week of time. The targeted population of this study was both gender and had a work experience of about one year as college teacher were included in this study. Lab assistants and administrative staff were excluded from this study. Those teachers who had a history of severe trauma, such as a fracture, neurological injury involving the spine, shoulders or head, or a recent

whiplash injury (i.e. less than two years ago) were also excluded from the study. Nordic questionnaire was used as a data collection tool as it is useful method of covering a large population in a relatively short time and economically it is a cheap method rather than any other type of methods. This method is useful for straight forward questions and Nordic provide more ease to the participants as participants can answer the questionnaire in their free time which may also helpful for them to consider each question carefully. First section of the questionnaire contained questions related to age, gender, weight, height, BMI working hours and sleeping hours. Second section contained questions regarding WMSDs in different regions of body. The questionnaire was based on close ended questions as close ended type of questions are easy to answer and this format of questions is more easy to understand for the researcher as well as for the respondents as there is no language problem in close ended type of questions as they require very little or no explanation. All the data was entered SPSS (version 20.0)

## RESULTS

342 teachers were selected from different colleges of Karachi with a mean value of age (mean33), and having a standard deviation of (S.D ± 11.57). Ratios of female respondents were greater (61.4%) as compared to males (38.6%). Table 1:

**Table 1: Demographic Details (N=342)**

Variables	Frequency	Percent
<b>Age</b>		
25-34years	114	33.3
35-44years	78	22.8
45-54 years	96	28.1
55 & above	54	15.8
<b>Gender</b>		
Male	132	38.6
Female	210	61.4
<b>Years of experience</b>		
1-5 years	60	17.5
5-10 years	90	26.3
10-15 years	48	14.0
more than 15 years	144	42.1
<b>Daily work hours</b>		
1-5 hours	30	8.8
6-10 hours	312	91.2
<b>BMI</b>		
b/w18 and 23	162	47.4
above 23	180	52.6

Those participants who were working from 1-5 years were 17.5% participants, 26.3% participants were working from 5-10 years, 14% from 10-15 years whereas 42.1% participants were working from more than 15 years. 52.6% participants were lying in the BMI category of overweight. Table 1:

Prevalence rate of musculoskeletal disorders in different body parts during 12 months, most of the participants had problem in neck, Rt. Shoulder, lower back, upper back & knees statistically 57.9%, 43.9%, 29.8%, 22.8% respectively. Figure: 1:

The results prevalence of musculoskeletal disorders in different body regions during last 7 days showed that most of the participants complaint of trouble in neck, rt. Shoulder, lower Figure: 2:

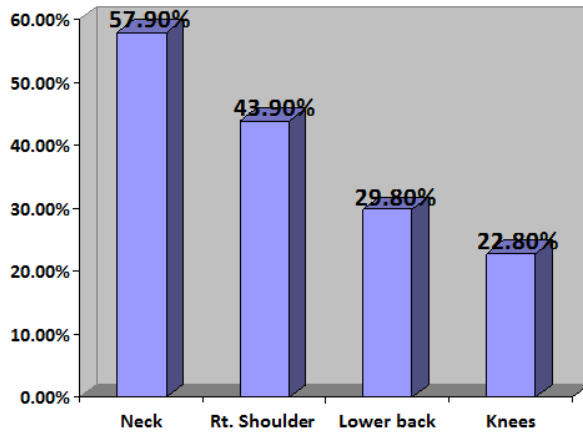


Figure No.1: Pain during last 12 months (N=342)

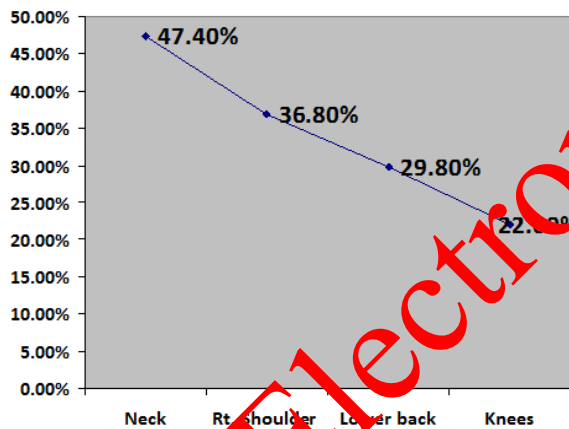


Figure No.2: Trouble during Past 7 days (N=342)

## 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 Work Related Musculoskeletal Disorders or WMSD. Here we discussed about teachers. Teachers may be teaching students at different levels and each level has their own responsibility and liabilities. Teachers teaching at intermediate level the teachers not only have to teach their respective subjects but they also have to prepare different notes for their subject also at this level the students have many issues so the teachers also have to work to do counseling of these students to solve the issues. Beside this when it comes to teaching and dedicated teaching, the teachers have to search for best

known knowledge to convey to their students. For this purpose they may have to read a lot or sit on computer for long periods to search for accurate and appropriate information.

If we look at 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. When we study on the prolong sitting or standing it is known that prolong acquiring of a certain posture may lead to increased pressure on intervertebral discs and when this pressure is increased, this increased pressure may lead to disorders associated with intervertebral discs i.e. it may cause neck or back pain.<sup>15</sup>

This study showed that the activity level of teachers may be low due to which they gain weight and their BMI increases as their weight increases. Also we can associate this with the prolong durations of work that the teachers have to do. This shows that the activity level of teachers may be low because of their prolong work durations.

If we look at the 12 month prevalence of musculoskeletal disorders among teachers of intermediate level we found that neck has high prevalence i.e. 57.9%. This can be associated with a previous study done in China which showed 12 month prevalence for neck pain as 48.7% among teachers.<sup>9</sup>

The reason for this high prevalence may be head down posture for prolong durations,<sup>7</sup> as discussed earlier, teachers have to acquire certain postures for prolong durations. The responses to 12 months prevalence of shoulder joint was found to be 2<sup>nd</sup> highest i.e. 43.9% for right shoulder. This may be associated with neck pain or it may also be due to prolong use. This prevalence may be associated with previous study by Lawrence I. This study's results showed 55% problem in shoulders, this study was done on nurses.<sup>11</sup>

The responses to 7 days prevalence of neck pain were found to be 47.4% & that for shoulder was found to be 36.8%. The 3<sup>rd</sup> highest & 4<sup>th</sup> highest 12 month prevalence was found to be for lower back and upper back respectively. Again the cause may be repetitive movements or awkward postures. The results show that 42.1% & 29.8% of teachers reported pain at lower back & upper back respectively. These can be associated with previous study done by Beyen et al in Ethiopia.<sup>3</sup> This study showed L.B.P. in 57.5% of participants. If we look at the 7 days prevalence we found that 29.8% & 28.1% of participants showed problem in lower back and upper back respectively. If we discuss the reason of this prevalence, the reason may be awkward posture. As discussed earlier, teachers have to sit or stand for prolong duration, this may cause discomfort and if despite of discomfort the same posture remains the condition may get worst.<sup>3</sup>

The fifth highest 12 month prevalence was found to be for knees. The results showed that 22.8% of participants had knee problems. 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.<sup>9</sup> When we look at 7 days prevalence we found that knee problem was present among 22.8% of the participants.

The results showed that the teachers had high prevalence of musculoskeletal disorders. These disorders also had prevented many of the participants to perform their daily routine work. These postures and movements may limit the activities of the suffering person.<sup>16</sup> As we have seen that highest prevalence was found to be for neck and shoulder among the intermediate teachers so this prevention from activity may be associated with their high prevalence. Beside this we can say that if the persisting problem remains for long period it may lead to prevent the sufferer from performing his or her daily activities.

The study done in 2009 by Rahman S et al had showed that obesity was associated with low back pain.<sup>17</sup> In 12 month prevalence, those who had knee pain, 18 had normal BMI & 60 had high BMI. Same was the result found for 7 days prevalence. In 12 month prevalence for Ankle pain 12 had normal whereas 30 had high BMI. In 7 days prevalence 6 had high BMI. The study done in 2006 by Adamson J. et al. had shown that high BMI is associated with hip, knees, ankle & feet pain. So we can say that those participants who complaint of pain of knee, ankle or hip may be because of their high BMI.<sup>18</sup> 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 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.

## CONCLUSION

This study was conducted to evaluate the prevalence of WMSDs among intermediate teachers. The results concluded that neck, shoulder, lower back, and knees are mostly affected regions. The use of ergonomically rules can help to alleviate the problem. This study has

proved that there is high prevalence of WMSDs among intermediate teachers, looking at this I may recommend that awareness programs related to posture awareness and ergonomics should be conducted. Also it should be made essential that good ergonomically designed furnishers may be used to minimize this high prevalence.

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