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## **Are physiotherapy students at risk of Musculoskeletal Pain? A Study on Physiotherapy students of Government Physiotherapy College, New Civil Hospital, Surat**

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### **Abstract**

Musculoskeletal disorders are common in physiotherapists and are continually growing. Many physiotherapists report the onset of musculoskeletal pain during undergraduate course. In fact, physiotherapy students are potentially exposed to the same risks as graduates. So this study is done to find out whether the physiotherapy students are having same musculoskeletal problems as graduate physiotherapists. The objective of the study was 1.) To study the prevalence and distribution of musculoskeletal pain among physiotherapy students at Government Physiotherapy College, New Civil Hospital Surat. 2.) To find out factors related with musculoskeletal symptoms among physiotherapy students. A cross-sectional study was carried out at Physiotherapy College, Surat. A pre designed semi structured questionnaire was given to physiotherapy students of all four years (114 students). After signing the consent they completed the questionnaire which took approximately 20-25 min. Following Variables were collected: age, sex, height and weight, year of study, pain and related factors. It was found that around 52% of the students had a musculoskeletal pain in last 12 months. Most common site of pain was lower back 22(37.29%), neck 15(25.42%) and upper back 11(18.64%). Dull aching was the most common pain among 39(66.10%) students. Prolonged standing was the most aggravating factor. As duration of study increased, number of students having musculoskeletal pain also increased. These findings suggest that physiotherapy students are having Musculoskeletal problems during their under graduate course itself. Some preventive measures and educational activities should be done during undergraduate course itself to minimize the problem in future.

**Key Words:** Musculoskeletal Pain, Physiotherapy, students, Prevalence, related factors

### **Introduction**

There is increasing evidence that unique working conditions of physiotherapists can significantly affect their health. Various Studies have demonstrated high prevalence of musculoskeletal pain and discomfort among physiotherapists.<sup>1-5</sup> The activities of these professionals are related to the development of pain.<sup>1, 2, 5</sup> About 60% of musculoskeletal problems in physiotherapists occur as a consequence of work-related injuries.<sup>1-5</sup> Many Physiotherapists report the onset of pain during their undergraduate course.<sup>5</sup> Physiotherapy students are exposed to the same risks as graduate Physiotherapists, such as poor working postures and patient handling during clinical training, undertaken in difficult environments and with variable training regarding personal safety. So we carried out the study to evaluate prevalence and distribution of musculoskeletal Pain and factors related with musculoskeletal pain among Physiotherapy students.

## Material & Methods

The study was conducted in January 2013 among students of Physiotherapy College, New Civil Hospital, Surat. All 114 students were included in study. The study participants were given Self administered, pre designed and semi structured questionnaire. Data on variables like age, sex, weight, height, year of physiotherapy, musculoskeletal pain and related factors were taken and analyzed in MS Excel 2007 and Epi Info 7 Software. Statistical significance was considered when p value is < 0.05 at 95% confidence interval.

### Case Definition of musculoskeletal Pain (NIOSH) used in study:

(i) Those who felt musculoskeletal Pain during the past 12 months in any body part. (Neck, Shoulder, Upper Back, Lower Back, Upper and Lower Extremities)

AND

(ii) The Pain lasted over a week or the symptom was observed more than once a month during the past year.

Severity of pain was assessed by Visual Analogue Scale.

- ☛ Inclusion Criterion: Those who were willing to participate.
- ☛ Exclusion Criterion: Any other current illness causing pain.

## Results

Total 114 students participated in the study. Mean age of students was  $19.23 \pm 1.33$  years. Mean BMI of students was  $19.72 \pm 3.34$  kg/m<sup>2</sup>. Current study revealed that more than half (51.8%) of the students had at least one kind of musculoskeletal pain either at one or more sites of the body. (Table 1)

Nearly two third (62.7%) of the students had pain at 1 site of body and nearly one third (30.5%) of students had pain at 2 sites of body. Rest had pain at 3 sites of body (Table 2). Lower Back, Neck, Upper Back and Lower Leg were most common sites of pain reported by 37.3%, 25.4%, 22.0% and 16.9% students respectively (Figure 1). On asking to describe duration of pain, 40.7% of the students classified their pain as sub acute, 28.8% classified as chronic and rest as acute pain. Around 63% had moderate pain and 7% had severe pain (Table 2).

57 (96.61%) students out of 59 had got pain after entering in physiotherapy study. Two third (66.1%) of the students had dull aching type of pain, 39% had throbbing, 17% had stabbing and 14% had tingling type of pain (Figure 2).

Handling Patients for exercise (Clinical Training) was the most common pain aggravating factor found in 40(67.8%) students, followed by Prolonged Sitting Posture (>2 Hours) in 34(57.6%) and Prolonged Standing Posture (>2 Hours) in 26(44.1%) students respectively. Common pain relieving factors were muscle relaxing exercise (55.9%), pause in working in (27.1%) and Lying Down Posture with Knee Bend (16.9%), etc (Table 3).

Table 4 depicts that years of physiotherapy study was significantly associated with presence of musculoskeletal pain. ( $X^2 = 75.08$ ,  $P < 0.01$ ) As duration of study increased, number of students having musculoskeletal pain also increased and it was also following trend. ( $X^2$  for trend\* = 70.69,  $P < 0.01$ ) As compared with students who were studying in 1<sup>st</sup> year, risk of musculoskeletal pain was 1.46; 7.98 and 113.40 times more in students who were studying in 2<sup>nd</sup> year; 3<sup>rd</sup> year and 4<sup>th</sup> year respectively (Table 4).

## Discussion

There are many reports in the literature regarding work-related musculoskeletal injuries in physiotherapists<sup>1-5</sup>. This study was an attempt to investigate the prevalence of musculoskeletal pain and its associated risk factors among

physiotherapy students. The study showed a high prevalence of musculoskeletal pain (51.8%) which was comparable to major prevalence rates reported in various studies, which varies from 33% to 79%.<sup>6-13</sup> Wide variance in the reported prevalence of work-related musculoskeletal disorders may be due to the absence of a universally accepted definition, the use of different diagnostic criteria (e.g. self reported or medically examined), and studies conducted on different populations. West and Gardner<sup>5</sup> reported that 16% of physiotherapists first experienced their injury as students, whereas 56% reported their worst injury to have occurred within the first 5 years of working as a physiotherapist. The most common region of injury is the low back<sup>1,2,4,5</sup> which is consistent with the finding of this study. From the observation of the existing posture of the physiotherapy students, it was found that they have to work for prolonged period with awkward back posture. These lead to development of musculoskeletal discomfort in back. Marklin et al<sup>14</sup> in his study on dentists also found that increased time spent on forward bent postures was associated with lower back pain.

Studies done by Das B et al<sup>7</sup> on VDT workers, Pinto B et al<sup>15</sup> on IT professionals, Ghosh T et al<sup>16</sup> on goldsmiths, Gangopadhyay S et al<sup>17</sup> on tailors and typists, Buddhadev N et al<sup>11</sup> on physiotherapists, Ghosh T et al<sup>9</sup> on surgical blacksmiths, Murtezani A et al<sup>18</sup> on power plant workers also found lower back as most common site of MSDs. These occupations are associated with awkward working posture for long hours which leads to development of lower back pain. In this study around 63% students had moderate pain and 7% had severe pain, while in study by Moradia S et al<sup>19</sup> on dentists he found that 45% had moderate and 12% had severe pain.

This study found Handling Patients for exercise (Clinical Training) as most common pain aggravating factor (67.8%) and muscle relaxing exercise (55.9%) as most common pain relieving factor, while Moradia S et al<sup>19</sup> found prolonged sitting posture as most common pain aggravating factor (95.9%) and correct posture (46.9%) as most common pain relieving factor.

This study also revealed that musculoskeletal problems were significantly associated with duration of work. As duration of work increases, number of workers having musculoskeletal problems also increases. (Table 7) Similar finding were also observed by Chhaya J et al<sup>8</sup>, Talwar R et al<sup>20</sup>, Choobineh et al<sup>21</sup>, Saha TK et al<sup>6</sup>, Bodhare T et al<sup>10</sup>, Lemasters GK<sup>22</sup> and Tiwari R et al<sup>23</sup> in their studies on various occupation that as duration of work increases prevalence of MSDs also increases.

More research is needed to understand the causes and prevention of Musculoskeletal Pain in physiotherapy Students. Elimination of all the risk factors associated with the development of Musculoskeletal Pain in physiotherapy Students may not be possible due to the nature of the course, but it is possible to reduce the Musculoskeletal Pain by some prevention techniques.

## **Conclusion**

Musculoskeletal pain was common among physiotherapy students. Lower back, neck and Upper Back were affected most. Most common aggravating factor was handling patients for exercise and most common relieving factor was muscle relaxing exercises. The Length of course exposure had significant association with Pain.

Education of correct posture should be part of under graduate Physiotherapy education. Physiotherapy students should avoid working in bent Position as Straight posture helps to maintain the normal “s” shape of spinal cord and reduces stress on inter-vertebral discs. Physiotherapy students should be encouraged for alteration of postures during clinical training. Physiotherapy students should do regular exercise especially muscle relaxation exercise. More emphasis should be given on education regarding straight posture during clinical training. Physiotherapy students should be encouraged for

alteration of postures during clinical training. Physiotherapy students should do regular exercise especially muscle strengthening exercise.

### Acknowledgement

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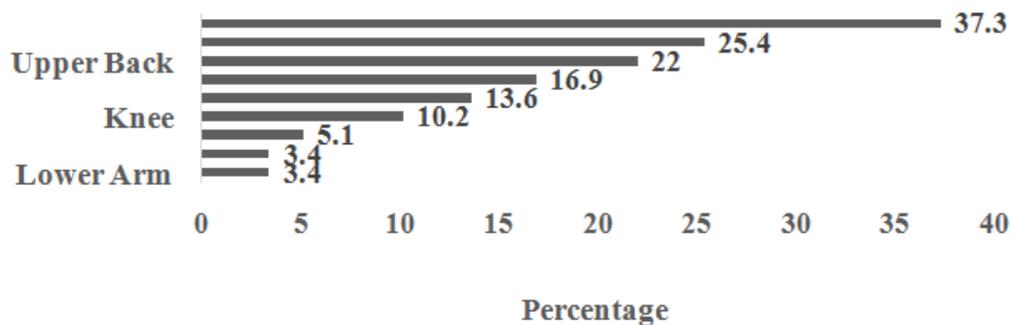
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**Table 1. Profile of Study Participants (n=114):**

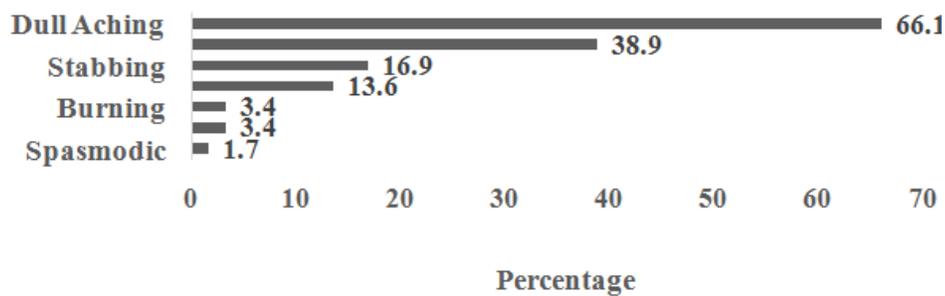
Characteristics	No. of students(n=114)
Mean Age:	19.23±1.33 years
Sex:	
Male	6(5.3%)
Female	108(94.7%)
Year of Physiotherapy:	
1 <sup>st</sup> Year	26(22.8%)
2 <sup>nd</sup> Year	31(27.2%)
3 <sup>rd</sup> Year	29(25.4%)
4 <sup>th</sup> Year	28(24.6%)
Mean BMI:	19.72±3.34 kg/m <sup>2</sup>
Musculoskeletal Pain:	
Yes	59(51.8%)
No	55(48.2%)



**Figure 1. Distribution of Students according to Site of Pain (n=59):**

**Table 2. Distribution of Students according to Characteristics of Pain(n=59):**

<b>No. of Sites involved in Pain</b>	<b>No. of students(n=59)</b>
1 site	37(62.7%)
2 sites	18(30.5%)
3 sites	4(6.8%)
<b>Duration of Pain</b>	<b>No. of students(n=59)</b>
Acute (<3 weeks)	18(30.5%)
Sub Acute (3 weeks – 3 months)	24(40.7%)
Chronic (> 3 months)	17(28.8%)
<b>Severity of Pain</b>	<b>No. of students(n=59)</b>
Mild (VAS $\leq$ 3)	18(30.5%)
Moderate (VAS 4 -7)	37(62.7%)
Severe (VAS >7)	4(6.8%)

**Figure 2. Distribution of Students according to Type of Pain (n=59):**

**Table 3. Responder's perception on activities that aggravated and relieved pain (n=59):**

<b>Aggravating Factors</b>	<b>N (%)</b>
Handling Patients for exercise (Clinical Training)	40(67.8%)
Prolonged Sitting Posture (>2 Hours)	34(57.6%)
Prolonged Standing Posture (>2 Hours)	26(44.1%)
Prolonged walking	3(5.1%)
Lying Down Posture without Knee Bend	2(3.4%)
Forward Neck Posture	2(3.4%)
<b>Relieving Factors</b>	
Muscle relaxing exercise	33(55.9%)
Pause in working	16(27.1%)
Lying Down Posture with Knee Bend	10(16.9%)
Complete rest for a day	8(13.6%)
Analgesic drug	7(11.9%)
Sitting with support	6(10.2%)

**Table 4. Relation of Musculoskeletal Pain with Year of Physiotherapy:**

<b>Year of Physiotherapy</b>	<b>Musculoskeletal Pain</b>		<b>Odds Ratio</b>	<b>X<sup>2</sup> value</b>	<b>X<sup>2</sup> for linear trend</b>
	<b>Yes (%)</b>	<b>No (%)</b>			
1 <sup>st</sup>	5(19.2%)	21(80.8%)	1	43.95 <b>P &lt; 0.01</b> (df =3)	39.75 <b>P &lt; 0.01</b>
2 <sup>nd</sup>	8(25.8%)	23(74.2%)	1.46		
3 <sup>rd</sup>	19(65.5%)	10(34.5%)	7.98		
4 <sup>th</sup>	27(96.4%)	1(3.6%)	113.40		