

Association of Physical Activity with Musculoskeletal Discomfort among Final Year DPT Students in Peshawar

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Author's Contribution

^{1,2} Conception and design, Collection and assembly of data, ²⁻³ Analysis and interpretation of the data, ³⁻⁴ Critical revision of the article for important intellectual content, ²⁻⁵ Final approval and guarantor of the article

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Introduction

Musculoskeletal disorders emerge as symptoms that are revealed and may have economic burden on an individual.¹ Physical inactivity has an incidental negative effect on job satisfaction.² Among working class, musculoskeletal discomforts lead to irritating symptoms and pain.³ It has been accepted that socio economic factors like lifestyle, genetic factors and individual perceptions influence musculoskeletal pain.^{4,5}

According to study conducted in Saudi Arabia, 64.8% undergraduate students were having musculoskeletal pain. Among undergraduate students, 48.4% participants were medical students. The most frequently effected area among

A B S T R A C T

Objective: Association of musculoskeletal discomfort with physical activity among final year DPT students in Peshawar

Methodology: A cross-sectional study was conducted on total of 167 final year DPT students in Peshawar was carried out from 1st April to 1st August, 2020 after ethical approval from the institutional review board (IRB) of Khyber Medical University, Peshawar. After informed consent, two standard questionnaires were used i.e. international physical Activity Questionnaire-short form to assess the level of physical activity and standard Nordic questionnaire to find musculoskeletal discomforts.

Frequencies and percentages were calculated for categorical variables while mean and standard deviations were calculated for continues variables. Association of Physical activity with musculoskeletal discomfort was found through Chi square test.

Results: Our study results showed high prevalence of musculoskeletal disorders in final year DPT students that is 82.3%. Most commonly affected region was low back (43.3%). 48.9% students were in moderate level of physical activity. Through chi-square test, there were no association between physical activity and musculoskeletal pain.

Conclusion: In association of physical activity level with musculoskeletal discomfort none of the areas have P-value less than 0.05 so it means there was no association of physical activity with any of musculoskeletal discomfort during 12 months.

Key Words: Lack of Physical Activity, Musculoskeletal Pain, Physical Activity, Physical Inactivity.

these students was low back (33.4%) and the students influenced with musculoskeletal pain were having moderate level of physical activity (42.9%).⁶ According to WHO, physical activity is any body movement that expand the resting energy dissipation of an individual.^{7,8} Physical activity in ICF has been described as the capacity of an individual to finish a task.⁹ A study was supervised in Eastern Croatia in which 80.9% undergraduate students reported that female physiotherapy students among medical students mostly suffering from MSK pain. They also found weak connection between MSK pain and level of physical activity.⁷ Physical activity is the segment of everyday life and involve leisure, occupational and household

activities which are moderate to high in intensity.¹ In a study by Mahanaz et al, it was found that physical activities are fundamental part of life and include both work and leisure activities. A study has shown higher prevalence of MSK disorders among handicraft workers.³ Lack of physical activity has been shown to be affiliated with musculoskeletal complaints in some cross sectional studies.^{11, 12} There is high prevalence of vertebral column pain that is 74.9% among musculoskeletal pain and among all the variables, the most common were physically inactive individuals, obese females and frequent mobile users, people age group between 18 and 20.⁸ The connection of chronic pain with physical activity and sedentary behaviour in school teachers are ambiguous but chronic pain is observe to be the public health problem which have harmful consequences socially as well as individually.¹⁰

While another study conducted that work-related physical activity has reduced the occurrence of shoulder, neck and general pain.¹³ Baadjou et al studied Musculoskeletal grumble among musicians and established that 67% of them tolerated MSDs in past seven days.¹⁴ Tone Morken et al describe the effect of physical activity on prevalence of musculoskeletal disorders among Norwegian army and found that 32% of the workers reported MSDs in more than one parts of the body in last one year.¹ Murata et al found in his study that higher number of pain sites are connected with moderate to vigorous physical activities among community accommodated individuals.¹⁵ A study by Helen et proofed the results that individuals performing exercise less than 3 times a day are more susceptible to MSK complaints compared to individuals performing exercise 3 times a day.¹² One of the former studies showed that in physically active people, the occurrence of muscle inflammation was significantly lower as compared to inactive people.¹¹ While another study supervised in Australia on teachers shows a higher prevalence of MSDs in neck, neck and upper limb.¹⁶ One of the meta-analysis of 36 prospective cohort studies shows that the risk of chronic and frequent low back pain can be significantly reduced with leisure physical activities but have no or very less effect on LBP with history of one or less than a day in the past month or 6-12 month.¹⁷

Undergraduate students are susceptible to spread many musculoskeletal discomforts and many studies have reported high connection of MSK discomforts with physical activity among undergraduate students. However no such studies were recognized in Peshawar, KPK related to association of physical activity with musculoskeletal discomforts in undergraduate students.

Methodology

Analytical cross sectional study was done after ethical approval from institutional review board (IRB) Institute of physical and medicine rehabilitation (IPMR) Khyber Medical University, Peshawar. Data were collected from the constitute and affiliated institutes (IPMR, Rahman college of rehabilitation sciences, Mehboob school of physiotherapy, National collage of sciences and Northwest institute of health sciences) of Khyber medical University. The data was collected from April 2020 till august 2020. Total students of DPT final year of KMU affiliated institutes was 167. Census sampling technique was used among final year DPT students of KMU and affiliated institutes Peshawar. Inclusion criteria for the study was all the final year DPT students of the above mentioned institutes, while students suffering from disability, orthopedic trauma, systematic illness, don't have internet facility to fill questionnaire and that are not willing to fill questionnaire were excluded from the study.

This study was carried out using standard questionnaires consist of three parts. The first part was of consent and demographics, second part was of international physical activity questionnaire (IPAQ) short form and the third part was of standard Nordic questionnaire for neck, shoulder, elbow, wrist, upper back, lower back, hip, knee and ankle discomforts. As the study was conducted during corona pandemic so for data collection the web link was developed through Google form and forwarded to the groups of target population through Gmail and social media i.e. WhatsApp and Facebook.

Data was analyzed through SPSS 22. Frequencies and percentages were calculated for categorical variables while mean and standard deviations were calculated for continues variables. Association of Physical activity with musculoskeletal discomfort was found through Chi square test. Data was shown in tables and graphs

Results

Total population were 167 but due to corona pandemic we can't get data from all the students as we were collecting data through email and some students at the time don't have access to internet, that's why we got total response of 146. Among 146 participants, 4 participants were marked with disability and 1 participant didn't gave his consent to be part of study. The final number of participants were 141. Minimum age was 22 with frequency of 8(5.7%) and maximum age was 27 with frequency of 5(3.5%). Maximum students were of age 24 with frequency of 50(35.5%). 62 males and 79 females students participated in the study. Maximum response was from IPMR having frequency 47(33.3%). Maximum

students were in level of moderate physical activity with frequency of 69(48.9%), while only 26(18.4%) were involved in vigorous activity. (Table I)

During last week pain maximum students reported pain in lower back having frequency of 47(33.3%) followed by neck with frequency of 36(25.5%) while least affected area of pain was elbow and knee with equal frequency 12(8.5%). (Table I) Maximum students reported that they were affected of low back pain with frequency of 61 (43.3%) followed by shoulder with frequency of 39 (27.7%) during past year while the least affected area was elbow with frequency 13(9.2%) and neck with frequency of 8 (5.7%). Low back pain with frequency 15(10.6%) followed by neck with frequency of 8(5.7%) commonly interferes with work and restrict students from doing activity while hip pain restricted activity of only 3 (2.1%) students. (Table I)

Table I: Prevalence of Musculoskeletal Disorders.			
Area of Pain	Characteristic	N	Percentage
Neck	Yes	36	25.5%
	No	105	74.5%
Shoulder	Yes	28	19.9%
	No	113	80.1%
Elbow	Yes	12	8.5%
	No	129	91.5%
Wrist	Yes	13	9.2%
	No	128	90.8%
Upper back	Yes	28	19.9%
	No	113	80.1%
Lower Back	Yes	47	33.3%
	No	94	66.7%
Hip	Yes	15	10.6%
	No	126	89.5%
Knee	Yes	12	8.5%
	No	129	91.5%
Ankle	Yes	14	9.9%
	No	127	90.1%

Females were associated with high prevalence of musculoskeletal discomfort (57.8%) as compared to male. But P-value was above 0.05.

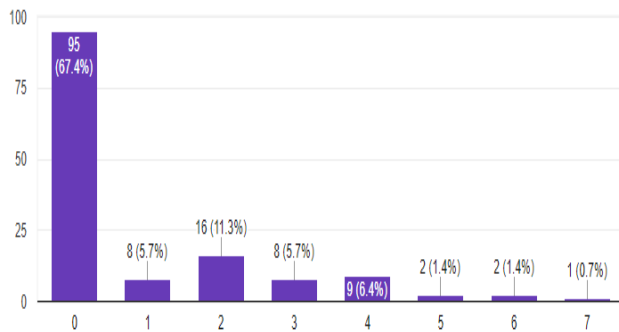
Moderate level of activity is associated with more prevalence of MSDs in at least one joint with frequency of 56 (48.3%) followed by low level of activity with frequency of 42 (36.2%). P-value was found to be greater than 0.05 so the association was statistically insignificant.

In association between physical activity and musculoskeletal discomfort for 7 days, Neck, wrist and upper back were maximum affected in low physical activity with 52.8%, 46.2% and 57.1% respectively. Shoulder pain was maximum in moderate physical activity with 39.3%. Elbow, lower back and ankle were commonly affected in moderate physical activity with 41.7%, 57.4% and 57.1% respectively. Knee was affected equally by moderate and vigorous activity with 41.7% while Hip was only affected by vigorous activity with 40%. There was correlation of physical activity with neck and upper back because there P value was 0.005 and 0.008 less than 0.05. Rest of areas have no correlation with physical activity as their P-values were greater than 0.05. During 12 months musculoskeletal pain neck, elbow, wrist, low back, hip, knee and ankle were mostly affected in moderate level of activity with percentage of 47.3%, 46.2%, 45.5%, 50.8%, 44.4%, 46.2% and 50% respectively while shoulder(46.2%) and upper back(43.2%) were commonly affected by low level of physical activity. None of the areas have P-value less than 0.05 so it means there will be no association of physical activity with any of musculoskeletal discomfort in 12 months. (Table II)

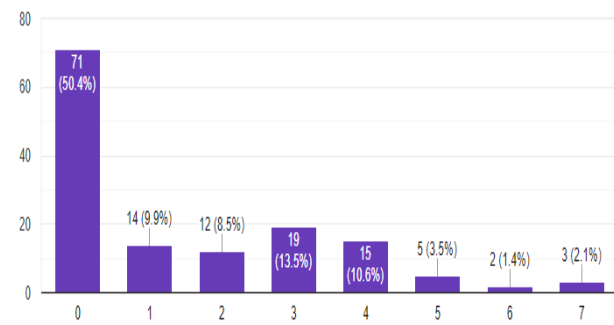
Mostly students were not involved in vigorous activity. It may be because of corona pandemic lockdown and habitual hostel sedentary life. While those who were involved in vigorous

Table II: Associations between level of physical activity and musculoskeletal disorders							
Area of Pain	Low PA 46)	Count (%age)	Moderate PA (69)	Count(%age)	Vigorous PA (26)	Count (%age)	P value
Neck	Yes	22(40.0%)	Yes	26(47.3)	Yes	7(12.7%)	0.207
	No	24(27.9%)	No	43(50.0)	No	19(22.1%)	
Shoulder	Yes	18(46.2%)	Yes	16(41.0)	Yes	5(12.8%)	0.098
	No	28(27.5%)	No	53(52.0)	No	21(20.6%)	
Elbow	Yes	4(30.8%)	Yes	6(46.2)	Yes	3(23.1%)	0.903
	No	42(32.8)	No	63(49.2)	No	23(18.0)	
Wrist	Yes	8(36.4%)	Yes	10(45.5)	Yes	4(18.2%)	0.927
	No	38(32.2)	No	59(49.2)	No	22(18.6)	
Upper back	Yes	16(43.2)	Yes	12(32.4)	Yes	9(24.3%)	0.065
	No	30(28.8)	No	57(54.8)	No	17(16.3)	
Lower back	Yes	23(37.7)	Yes	31(50.8)	Yes	7(11.5%)	0.153
	No	23(28.8)	No	38(47.5)	No	19(23.5)	
Hip	Yes	6(33.3%)	Yes	8(44.4)	Yes	4(22.2%)	0.883
	No	40(32.5)	No	61(49.6)	No	22(17.9)	
Knee	Yes	10(38.5)	Yes	12(46.2)	Yes	4(15.4%)	0.762
	No	36(31.3)	No	57(49.6)	No	22(19.1)	
Ankle	Yes	4(25.0%)	Yes	8(50.0)	Yes	4(25.0%)	0.688
	No	42(33.6)	No	61(48.8)	No	22(17.6)	

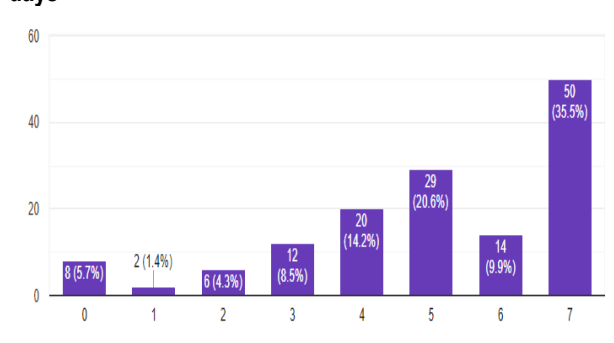
activity, maximum students did at for 2 days. It may be because of students have only leisure time for activity during weekends. (Graph 01). Maximum students were involved in moderate physical activity mostly for 3 days. Students were less involved in moderate activity while doing walking for more hours and when METs were calculated they were categorized in moderate level of activity. It may be because of prolong walking hours in maximum week days. (Graph 02). Many students were involved in low physical activity because of habitual hostel sedentary life and more studying hours. (Graph 03)



Graph 01. Vigorous activity during last seven days.



Graph 02. Moderate physical activity during last seven days



Graph 03. Low activity during last seven days.

Discussion

In our study, maximum students reported MSDs in at least one body region that is 82.3%, thus results showed a high prevalence of MSDs in final year DPT students. The most commonly affected area in MSDs, over the period of 12 months,

was low back (43.3%) followed by shoulder (27.7%) and upper back (26.2%). While in last 7 days most commonly reported area of pain was low back (33.3%) followed by neck (25.5%), upper back and shoulder with 19.9% each. A study on health specialty students shows agreement of results as their total prevalence of MSDs was 64.8% and most frequently affected area was low back with 33.4%.⁶ Study on dental students also reported high prevalence of MSDs that is 84.6% with most commonly affecting neck and lower back showed similar results.¹⁸ Another study on music students showed different results because of different postures and body positions during practice. In these students, neck pain was 64.6% followed by upper back (57.3%), shoulders (53.4%) and lower back (48.5%).¹⁹

In our study, female students most frequently reported MSDs in at least one body region as compared to male students which is significantly similar with many other studies.^{18, 19} However, there was no association of gender with MSDs as P-value for the association was 0.795 thus not statistically significant.

Low physical activity was being reported in many studies but our study showed moderate activity in 48.9%, low activity in 32.6% while only 18.4% reported vigorous physical activity. The unanticipated prevalence of MSDs reported higher in students with moderate physical activity that is 48.3% found less among those with low physical activity that is 36.2% while only 15.5% in individuals of high physical activity. Similar results were also shown by study in KSA.⁶ On basis of P-value only neck and upper back showed correlation with physical activity in last days pain while rest of pain areas in last 7 days and all areas of pain in last 12 months didn't show any correlation with physical activity because of P-value greater than 0.05. So the results showed that MSDs are not only effected by physical activity but other factors like psychosocial stress had also impact on prevalence of MSDs. Medical students showed high prevalence of psychosocial stress. Among medical students stress can be a risk factor and can trigger more severe forms of MSDs. Therefore we suggest that physical activity was less important for MSDs as compared to stress.

Conclusion

In association of physical activity level with musculoskeletal discomfort none of the areas have P-value less than 0.05 so it means there will be no association of physical activity with any of musculoskeletal discomfort during 12 months.

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