Original Article

Musculoskeletal pain and discomfort among medical students of University of Lahore, Pakistan

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Objective: To determine the frequency and associated factors of musculoskeletal pain among medical students of University of Lahore.

Methodology: This cross sectional survey was carried out among medical students exposed to clinical setting during five years and 173 students from 3rd and 4th year participated in the study. Study duration was December 2016-March 2017. Data were collected by means of questionnaire survey using modified Standardized Nordic Questionnaire.

Results: Out of 173 students, 141(81.5%) reported musculoskeletal pain and among them 119(68.8%) had lower back pain in the last 12 months. About 99(57.2%) suffered from lower back pain in the last 7 days. Shoulder pain was noted by 86(49.7%) students in the last 12 months and by 63(36%) students in last 7 days. Furthermore, 100(42.2%) students in the last 12 months and 76(43.9%) students in the last 7 days had neck pain. 46 (26.6%) students had increase in musculoskeletal pain due to stress and work, 34(19.7%) due to prolonged standing or sitting; 28(16.2%) students noted increase in pain due to stress caused by exams.

Conclusion: Frequency of musculoskeletal pain was high among medical students, with lower back pain being most common. Besides this, neck and shoulder were commonly affected areas. Stress, exams, work, long sitting and standing came to be the most common aggravating factors. (Rawal Med J 201;43:252-256).

Keywords: Shoulder pain, low back pain, medical students, Standardized Nordic questionnaire.

INTRODUCTION

Students struggle regarding their health as they are moving forward in their academic years. In the last years of their study, their health deteriorates and they usually have diminished quality of life as a result of growing mental pressure, educational strain and increasing indications of depression in contrast to students in their early academic years.[1] Students during their clinical years face stress, learning related difficulties, hectic, demanding and extensive training hours in the hospital wards and clinics.[2,3]

Musculoskeletal pain (MSP) becomes the main cause of prolonged discomfort, injury and ailment and decreases the attendance from university lessons.[4] Different ergonomic, psychological, social and occupational factors can cause musculoskeletal disorders.[5] Major cause of low back pain among students was poor posture and weight of the bag while sitting, standing, walking and bending.[6] Shan et al found neck and shoulder pain among 40.8% students and lower back pain in 33.1% students.[7] In most of the cases, shoulder was affected due to working postures and forces on the muscles in a static position.[8,9] Depressive symptoms and stress were associated with neck, shoulder, lower back and arm pain among adolescents,[10] increased caffeine intake resulted in low back pain.[11] Purpose of this study was two dimensional; first, to explore the frequency of MSP in medical students and secondly, to analyze how it affected students in their clinical years and what factors were responsible for causing pain.

METHODOLOGY

Using non-probability convenient sampling, this cross sectional study was conducted among medical

students of University of Lahore in their clinical years from December 2016 to March 2017. Students aged 18-30 years who had been exposed to clinical setting during the five years of their study were included in the study. Hence, 173 students from 3rd and 4th year participated in the study. Students who had not been exposed to clinical setting, had history of hospitalization and who were absent or unavailable on the day of survey distribution were excluded from the study. An informed consent was taken from all participants.

Modified Standardized Nordic Questionnaire was used, as described in Smith et al[12],[13] containing three sections; First included questions about demographic details, second contained questions related to factors that may have an impact on the frequency of MSP and third section included questions related to frequency of MSP in shoulders, upper back, neck, upper back, elbows, wrists/hands, hips/thighs, lower back, knees, and ankles/feet in the previous year and in the last 7 days. It also contains questions relevant to affected activities of daily living and checkup due to pain in these areas of the body. Data were analyzed by SPSS version 24.0.

RESULTS

A total of 173 students participated in the study; mean age of females was 21.38±1.08 and males was 22.39±1.46 years (Table 1). Students whose ADLS were affected due to pain in the low back were 38.2%, in the neck were 27.2% and shoulders were 19.7%. Students who went for checkup due to pain in the lower back were 43.4%, in the neck were 30.1% and shoulders were 16.2%. Students whose musculoskeletal pain increased due to stress, work were 26.6% (46); long sitting, standing were 19.7% (34); due to stress and exams were 16.2% (28). Students whose musculoskeletal pain relieved by rest were 45.7% (79); by rest and medicines were 26% (45); by rest and balanced diet were 2.3% (4). The frequency of students who had lower back pain was highest in last 12 months (68.8%) and in last 7 days (57.2%) (Table 2).

Table 1. Demographic characteristics of participants.

Variable		Number	%
Gender	Male	59	34.1
	Female	114	65.8
Academic year	3rd year	145	83.8
	4th year	28	16.1
History of any traumatic injury/accident	Yes	70	40.4
	No	103	59.5
Any other systemic disease	Yes	52	30
	No	121	69.9
Family history of MSD	Yes	98	56.6
	No	75	43.3
Exercise	Not at all	33	19
	Regular	7	4
	Sometimes	133	76.8
Coffee /tea	Less than 3 cups/day	83	48
	Less than 3 cups/week	26	15
	More than 3 cups/day	11	6.4
	More than 3 cups/week	44	25
	Not at all	9	5.2
Smoking	Yes	25	14.5
	No	148	85.5
Depression	Yes	57	32.9
	No	116	67
Musculoskeletal pain present	Yes	141	81.5
	No	32	18.5
Days affected /month due to MSK pain	3 times/month	20	11.5
	4-5 times/month	32	18.4
	Almost always	2	1.1
	At least 2 times/month	32	18.4
	Often	55	31.7
	None	32	18.4
		Mean (SD)	
BMI		23.10 (2.77)	
Hours of study/day		4.1 (2.7)	
Hours of computer use/day		4.3 (2.6)	

Table 2. Frequency of musculoskeletal pain in different regions of body.

Areas of body	Symptoms in the last 12 months			ADLs affected due to pain			Check up for pain since 12 months			Pain since last 7 days		
		N	%		N	%		N	%		N	%
Neck	Yes	100	42.2	Yes	47	27.2	Yes	52	30.1	Yes	76	43.9
	No	73	57.8	No	126	72.8	No	121	69.9	No	97	56.1
Shoulders	Yes	86	49.7	Yes	34	19.7	Yes	28	16.2	Yes	63	36
	No	87	50.3	No	139	80.3	No	145	83.8	No	110	63.6
Upper back	Yes	39	22.5	Yes	18	10.4	Yes	14	8.1	Yes	22	12.7
	No	134	77.5	No	155	89.6	No	159	91.9	No	151	87.3
Elbows	Yes	6	3.5	Yes	5	2.9	Yes	5	2.9	Yes	4	2.3
	No	167	96.5	No	168	97.1	No	168	97.1	No	169	97.7
Wrists/hands	Yes	17	9.8	Yes	11	6.4	Yes	4	2.3	Yes	7	4.0
	No	156	90.2	No	162	93.6	No	169	97.7	No	166	96.0
Lower back	Yes	119	68.8	Yes	66	38.2	Yes	75	43.4	Yes	99	57.2
	No	54	31.2	No	107	61.8	No	98	56.6	No	74	42.8
Hips/thighs	Yes	23	13.3	Yes	8	4.6	Yes	6	3.5	Yes	11	6.4
	No	150	86.7	No	165	95.4	No	167	96.5	No	162	93.6
Knees	Yes	17	9.8	Yes	4	2.3	Yes	9	5.2	Yes	13	7.5
	No	156	90.2	No	169	97.7	No	164	94.8	No	160	92.5
Ankles/feet	Yes	35	20.2	Yes	17	9.8	Yes	15	8.7	Yes	23	13.3
	No	138	79.8	No	156	90.2	No	158	91.3	No	150	86.7

Table 3. Association of factors with MSK pain in last 12 months.

		MSK pain in last 12 months				OR (CI 95%)	P-value
		No	%	Yes	%		
Gender	Male	13	7.5	46	26.5	0.8 (0.39-1.83)	0.67
	Female	22	12.7	92	53.1		
Academic year	3rd year	29	16.7	116	67	1.09 (0.37-2.68)	0.84
	4th year	6	3.4	22	12.7		
History of any traumatic Injury/accident	Yes	9	5.2	61	35.2	2.82 (1.01-5.47)	0.04
	No	26	15	77	44.5		
Any other systemic disease	Yes	5	2.8	47	27.1	3.08 (1.17-9.4)	0.02
	No	30	17.3	91	52.6		
Exercise	Not at all	11	6.35	22	12.7		
	Regular	2	1.1	5	2.8	1.25 (0.20-7.5)	0.99
(Crude value)	Sometimes	22	12.7	111	64.1	2.5 (1.07-5.94)	0.05
		24		116		2.4 (1.22-4.75)	0.01
Depression	Yes	5	2.8	52	30	3.6 (1.32-9.93)	0.007
	No	30	17.3	86	49.7		

Table 4. Association of factors with MSK pain in last 7 days.

		MSK pain in last 7 days				OR (CI 95%)	P-value
		No	%	Yes	%		
Gender	Male	12	6.9	47	27.1	1.8 (0.86-3.92)	0.12
	Female	36	20.8	78	45		
Academic year	3rd year	34	19.6	111	64.1	3.23 (1.38-7.57)	0.006
	4th year	14	8	14	8		
History of trauma	Yes	16	9.2	54	31.2	1.52 (0.76-3.10)	0.24
	No	32	18.4	71	41		
Any other illness	Yes	9	5.2	43	24.8	2.26 (1.02-5.36)	0.04
	No	39	22.5	82	47.3		
Exercise	Not at all	14	8	19	10.9		
	Regular	2	1.1	5	2.8	1.8 (0.31-10.91)	0.81
(Crude value)	Sometimes	32	18.4	101	58.3	2.3 (1.05-5.15)	0.05
		34	19.6	106	61.2	2.28 (1.22-4.28)	0.8
Depression	Yes	10	5.7	47	27.1	0.44 (0.19-0.94)	0.03
	No	38	.9	78	45		

Using Pearson's Chi-square test and Fisher's exact test it was found that MSP in last 12 months was high among the students who had other systemic disease compared to those who had no illness (OR=3.08, 95% C.I 1.17-9.4, p=0.02), those who had history of injury/accident compared to those who had no trauma (OR=2.82, 95% C.I 1.01-5.47, p=0.04) and among students who had depression compared to those who didn't report depression (OR=3.6, 95% C.I 1.32-9.93, p=0.007) (Table 3).

In last 12 months, frequency of MSP was high among students who didn't do exercise at all as compared to students who did exercise sometimes and on regular basis shown by the crude value (OR=2.4,95% C.I 1.22-4.75, p=0.01) (Table 3). Also, in last 7 days, frequency of MSP was high among third year students when compared with the students of fourth year (OR=3.23, 95% C.I 1.38-7.57, p=0.006) (Table.4). The frequency of MSP in last 7 days was also high among the students who had other systemic disease compared to those who had no illness (OR=2.26, 95% C.I 1.02-5.36, p=0.04) and among the students who had depression compared to those who didn't report depression (OR=0.44, 95% C.I 0.19-0.94, p=0.03) (Table 4). Other than the above values no significant association was found between any other variable and MSP in last 12 months and last 7 days (Tables 3 and 4).

DISCUSSION

As this study was the first MSP investigation conducted among medical students in Lahore, there is very little data to directly compare with it. The study showed that most of the medical students had pain in the low back in the previous year (68.8%), similar to a study on Malaysian medical students.[11] Also, in the last 7 days, neck pain and then shoulder pain were common among medical students after lower back pain. Reporting MSP in the last 12 months and last 7 days doesn't necessarily mean they had continuous pain.

In the study on Malaysian medical students, MSP was found significantly associated with the students in their clinical years, who had history of trauma, high BMI and students with a family history of MSD.[11] However, our study showed that in the last 12 months MSP was significantly associated with those medical students who had other systemic diseases, history of any traumatic injury/accident and depression. Basic investigations showed that most demographic items did not differ significantly between students reporting MSP and those who did not.

Patients with increased caffeine intake complainted of low back pain and importance of reducing coffee/tea consumption in them has been emphasized.[12] However, in this study, no significant correlation was found between MSP and coffee/tea intake.

Frequency of MSP in the last 12 months was high among students who didn't do exercise at all compared with the students who did exercise sometimes and on regular basis shown by the crude value (Table 3). This is similar to a study on American university students, where physical activities protect body against MSP.[13]

A study by Diepenmaat et al reported that depressive symptoms and stress were associated with neck, shoulder, lower back and arm pain among adolescents.[10] Our study also showed the frequency of MSP in last 7 days was significantly associated with the students who had depression (Table 4).

CONCLUSION

Most medical students had musculoskeletal pain in the low back and then in the neck and shoulder. Proper measures taken can reduce the frequency of musculoskeletal pain among medical students as well as future working doctors. Balanced diet,

proper working posture and exercise can improve the quality of life among medical students.

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REFERENCES

1. Paro HB, Morales NM, Silva CH, Rezende CH, Pinto R, Morales RR, et al. Health-related quality of life of medical students. Med Educ 2010;44:227-35.
2. Jagsi R, Shapiro J, Weinstein DF. Perceived impact of resident work hour limitations on medical student clerkships: a survey study. Acad Med 2005;80:752-7.
3. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. Acad Med 2006;81:354-73.
4. Buckle P. Ergonomics and musculoskeletal disorders: overview. Occupat Med 2005;55:164-7.
5. Gatchel R, Kishino N. Pain, musculoskeletal injuries and return to work. Handbook of occupational health psychology, 2nd edition, Washington, DC: American Psychological Association. 2011.
6. Ayanniyi O, Mbada CE, Muolokwu CA. Prevalence and profile of back pain in Nigerian adolescents. Medical Principles Practice 2011;20:368-73.
7. Shan Z, Deng G, Li J, Li Y, Zhang Y, Zhao Q. How schooling and lifestyle factors effect neck and shoulder pain? A cross-sectional survey of adolescents in china. Spine 2014;39:E276-E83.
8. Smith DR, Leggat P. Prevalence and distribution of musculoskeletal pain among Australian medical students. J Musculoskeletal Pain 2007;15:39-46.
9. Dajpratham P, Ploypetch T, Kiattavorncharoen S, Boonsiriseth K. Prevalence and associated factors of musculoskeletal pain among the dental personnel in a dental school. J Med Assoc Thai 2010;93:714-21.
10. Diepenmaat A, Van der Wal M, De Vet H, Hirasing R. Neck/shoulder, low back, and arm pain in relation to computer use, physical activity, stress, and depression among Dutch adolescents. Pediatrics 2006;117(2):412-6.
11. Alshagga MA, Nimer AR, Yan LP, Ibrahim IAA, Al-Ghamdi SS, Al-Dubai SAR. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. BMC Res Notes 2013;6(1):244.
12. Smith DR, Wei N, Ishitake T, Wang RS. Musculoskeletal disorders among Chinese medical students. Kurume Med J 2005;52:139-46.
13. Katz JN, Amick BC, Carroll BB, Hollis C, Fossel AH, Coley CM. Prevalence of upper extremity musculoskeletal disorders in college students. Am J Med 2000;109:586-8.