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A Study on Neck Pain and low Back Pain among the Undergraduate Students of a Medical College in Bhopal, India

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ABSTRACT

Introduction: Development of musculoskeletal disorders at a younger age is a potential risk of developing chronic low back pain in adulthood. The present study was planned with the purpose to know the extent of the less studied musculoskeletal disorders as a health problem among Indian medical students. The study was conducted to assess the prevalence of low back and neck pain among medical students and, to find the associations of low back and neck pain with quality-of-life issues, self-perceived stress and lifestyle.
Methods: A cross-sectional study was conducted at Bhopal, India from May to July 2019. A total of 220 medical students were randomly selected. A questionnaire including the pre-validated instruments viz. Oswestry Disability Index, Visual Analog Scale and Perceived Stress Scale-10 were used to collect the data. Frequency (percentage), mean (SD), Chi square test, One way ANOVA, Pearson correlation coefficient were used to statistical inference. Microsoft Excel software 2016 and SPSS version 23 were used for data analysis. Significant level were considered 5 %

Results: The overall prevalence of Low Back and Neck Pain were 49.1% and 56.4% respectively. A significant association of female gender was found with Neck and Low Back Pain. Low Back and Neck Pain were related to BMI and Stress ($p<0.05$).
Conclusion: There was a high prevalence of low back pain and neck pain in medical students at Bhopal. Females were affected more than males. Complaint of lower back pain was more than neck pain. Playing outdoor sports and weightlifting was found to be having protective effect on low back pain and neck pain.

Key Word: Low Back Pain, Medical Students, Neck Pain, Prevalence

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Introduction

Musculoskeletal disorders (MSDs) are one of the major causes of disability worldwide. MSDs include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, etc. (1). MSDs can range from pain in the upper limbs, such as the forearm and wrist, to postural muscles such as the upper and lower back, neck and shoulders as well as lower extremities such as hips, thighs, knees and ankles. Left untreated, MSDs can evolve in to more severe degenerative and inflammatory conditions (2).

According to Global Burden of Disease (2016), low back pain (LBP) and neck pain (NP) are the two largest causes of musculoskeletal disability in general population and LBP is the single largest contributor to years lived with disability (3). It is not only associated with old age but affects people of all ages. About 80% of adults experience low back pain at some point in their lifetimes, and 20-30%people across the world are suffering from LBP at any given time (3, 4). It is often seen in individuals during their peak income-earning years. It represents huge burden on the economic growth of many countries by increasing load to the health care system and contributing to missed workdays (5).

Work related musculoskeletal disorders (WMSDs) are a subset of musculoskeletal disorders that arise from occupational exposures (6). Musculoskeletal conditions significantly limit mobility and dexterity, leading to reduce productivity and social responsibility of individual (5). High task repetition, forceful exertions, repetitive or sustained awkward postures are the common causes of WMSDs (7,8). Various studies on WMSDs have identified many factors like poor work practices, poor overall health habits etc. as related risk factors (7,8,9). In addition, physical inactivity and high BMI have also been identified as the risk factors for musculoskeletal pain in the general adult population (10).

Musculoskeletal pain is one of the most prevalent complaints among medical students. Time-consuming curricula at medical schools, lot of psychological stress, and sedentary lifestyle has led to a high prevalence of LBP and NP among the medical students worldwide (4,11-14). Their total course of five and a half years requires long hours sitting to cover theory part and even longer hours for hospital wards and clinics. Apart from academics, they have to deal with psychological stress due to ethical and financial pressures which has high prevalence of psychological morbidity, including burn-out and depression (11,14-15).

A study was conducted by Hendi OM et al. (2019) (16) among various health specialty students in Saudi Arabia in which highest prevalence of MSDs was among medical students (48.4%) which was significantly higher than among pharmacy and health science students. There are many studies done on LBP among working groups and general population in India, however there is scarcity of such studies on medical students of India. Moreover, Indian studies regarding NP are negligible.

Aggarwal N et al (2013) found the overall prevalence of LBP among the medical students in Delhi, India to be 47.5%. Prevalence among males and females was 45.3% and 50%, respectively (4).

Development of musculoskeletal disorders at a younger age is a potential risk of developing chronic low back pain in adulthood (17). This fact should be taken seriously as it will not only affect the general quality of life but also decrease the productivity of the individual in early stages of his/her career.

With the above background the present study was planned with the purpose to know the extent of the less studied LBP and NP as a health problem among Indian medical students. It aimed to find out the prevalence and severity of LBP and NP among the medical students, its associated risk factors and related disabilities. The other objectives of the study being to determine the association of NP and LBP with

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quality of life (QOL) issues, self-perceived stress and lifestyle in the study population.

Methods

Study design & Study participants:

It is a cross sectional study which was performed among the undergraduate medical students (Bachelor of Medicine and Bachelor of Surgery; MBBS) at Chirayu Medical College & Hospital, Bhopal, India .With the intake of 150 students per year; around 600 students of four batch years study in the college at a given time.

Sample size & Selection criteria

The sample size for this study is determined based on an estimated point prevalence rate of 32.5% of LBP found in an Indian study conducted in a medical college in Delhi (4). The required sample size is calculated to be 217 medical students to yield the prevalence estimate with 5% precision and 95% confidence level with a finite population correction. Students from all four academic batch years were selected by simple random sampling with lottery method(18). Each batch year students were enlisted and 55 students from each batch were selected thus a final sample size of 220 students. Students with any chronic illness, known musculoskeletal diseases (MSD) or pregnancy were excluded.

Study period

The data collection was done in the month of May-July 2019.

Variables

.We identified all possible subset of variable among study population and carried out pilot study to find the suitability of the selected variables. The variables identified were as follows

Age, gender ,height, weight, BMI, academic year, playing outdoor sports, doing physical exercise, practicing yoga, weightlifting, carrying back packs/college bags, watching television, working on laptop/personal computers (PC), driving, meeting friends/going to parties, wearing heels, smoking, alcohol intake, tea/coffee intake, travelling by public transport, time spent on studying, place of studying, time spent on clinical postings, use of any extra aids for studying, body posture while studying, family history of musculoskeletal disorders.

Definitions

LBP was defined for students as pain in the lumbar region and NP was defined for students as pain in the neck region.

LBP/NP was considered as "acute" if present for less than 4weeks and "chronic" if present for more than 12 weeks.

BMI was calculated as per the formula- Weight (kg)/ [Height $(m)^2$] (2).

Various variables especially to assess habituations, exercise and daily routine physical activity e.g. smoking, taking exercise, watching television, etc. were categorized into “regular” for daily, “occasional” for1-2 times a week and “never” (4).

Sitting with a straight back and shoulders is considered “Normal” body posture whereas postures like slouching or slumping are considered “Abnormal” (14).

Study tool

The study questionnaire is well validated and standardized tool used in a study done by Du et.al. (2017) (11) at one of the medical schools in the US. The original questionnaire consisted of three types of scales viz. Oswestry Disability Index (ODI) (4), Visual Analog Scale (VAS) and Perceived Stress Scale (PSS)-10 .

In the questionnaire there are multiple choice or open response questions regarding the demographic characteristics.

All the three tools are well validated and reliable as demonstrated by various investigators. The ODI questionnaire has good test and retest reliability with the Cronbach ά ranging from 0.71-0.87 (19); the VAS pain scale has the correlation coefficient between 0.60 -0.77 (20, 21); and the PSS -10 scale to assess the degree of perceived stress is

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reliable and valid with coefficient alpha ranging from 0.84 to 0.86 as found in different studies (22).

In addition to this the study questionnaire included the information on gender, height, weight and BMI of the participants and questions to assess habituations, exercise and daily routine physical activity.

Study procedure and ethical considerations

Survey was conducted among the students at suitable time and opportunity. A pilot testing of questionnaire was done for standardization and for further validation with 10 students before the actual survey in which they had no difficulty filling in the questionnaire; later their responses were included in the final data analysis. Each selected student was asked to fill out a structured questionnaire after obtaining an informed consent in English language. All the participants were informed about the purpose of the study. Forms were distributed manually among all the students. Students were given a time period of 20- 30 minutes to fill the form completely. Before filling up the questionnaire students were guided through questionnaire to fill it up. Forms were scrutinized before collection, to look for any left or improperly filled entries. Height and weight of each participant was measured at the same time using validated methods.

Study was conducted after the clearance from Institutional Ethical Committee (IEC) of Chirayu Medical College &Hospital, Bhopal. Confidentiality of the data of participants of the study was maintained.

Statistical analysis

For categorical variables the frequency and percentages were calculated, while for continuous variables mean and standard deviation were calculated as a descriptive statistic. Chi-square test (x^2) was used as a test of significance to find association between NP/LBP and various study variables. Comparison of differences between means of various variables of four academic years was done by one way ANOVA. Pearson correlation coefficient was used to find linear relationship between demographics, stress and neck and back pain scales. Microsoft Excel software and Statistical Package for Social Sciences (SPSS) version 23 were used for data analysis. Significant level were considered 5 %

Results

Out of the 220 study subjects, 66 (30%) were males and154 (70%) were females. The mean age was 21.27±1.33 years. The mean height, weight, and body mass index (BMI) of the study group were 163±9cm 59.19±11.32kg and 22.17±3.86kg/m^2 respectively.

A total of 135 students reported either NP/LBP or both (61.4%). The prevalence of NP and LBP were 49.1% (108/220) and 56.4% (124/220) respectively. A total of 97 medical students reported both NP and LBP (44.1%).

A significant association of female gender was found with NP (p = 0 .006) and LBP (p < 0 .001) by x^2test. No significant association of academic batch year, family history of MSD, study place and use of private coaching was found with NP and LBP [Table-1].

The overall VAS NP score was 1.7 ± 2.1. In students who complained of NP (VAS neck >1), the average VAS score was to 2.6 ± 1. 8 out of 10 (range: 1-7). There were 71 students (32 %) who reported moderate to severe NP (VAS >3). The overall VAS LBP score was 2.2 ± 2.5. In students that complained of LBP (VAS back >1), the average VAS score increased to 3.2 ± 1.6 out of 10 (range: 1-8). There were 83 students (38%) who reported moderate to severe LBP (VAS >3).

Of the 135 medical students who reported NP or LBP, 47 (35%) medical students began experiencing NP or LBP before medical school (average 2.0 ± 0.9 years before medical school) and 88 (65 %) medical students began experiencing NP or LBP during medical school.

Frequency of NP and LBP episodes was "never" for 64 (29%) students, “almost never “for 30

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(14%) students, “sometimes” for 98 (45%) students, "often" for 25 (11%) students and "constant" for 3 (1%) students. Majority of the students reported occasional episodes of NP & LBP.

Of the 135 students with some degree of pain, 62 (46 %) students reported self-treatment of NP or LBP.

Table 1. Association of NP & LBP with socio-demographic variables among medical students

Variables	Categories	N (%)	NP+, (%)	P-value*	LBP+, (%)	P-value*
Gender	Males	66	23(34.8)	**0.00**	26(39.4)	**<0.001**
	Females	154	85(55.2)		98(63.6)	
Academic batch year	2015	55(25)	25(50)	0.42	28(50.9)	0.26
	2016	55(25)	32(58.2)		37(67.3)	
	2017	55(25)	27(49)		28(50.9)	
	2018	55(25)	24(43.6)		31(56.4)	
	Total	220(100)	108(49)		124(56.4)	
Family history of MSD	Yes	18	10(55.6)	0.56	14(77.8)	0.09
	No	202	98(48.5)		110(54.5)	
Study place	Study table	56	27(48.2)	0.34	30(53.6)	0.64
	Bed	*50*	29(58.0)		31(62)	
	Both	114	52(45.6)		63(55.3)	
Use of private Coaching	Yes (76.3±60.2hrs)	31	16(51.6)	0.76	18(58.1)	0.83
	No	189	92(48.7)		106(56.1)	

*Calculated by Chi-square test; p<=0.05 is taken as significant association; MSD: Musculoskeletal disorders

Table 2, a. Association of NP &LBP with various lifestyle activities among medical students

ACTIVITY/HABIT	NP+ N=108 (%)	P value*	LBP+ N=124 (%)	P value*
Playing Out Door Sports				
Regular(N=27)	9 (33.3)	0.12	8(29.6)	0.01
Occasional(N=L18)	57(48.3)		70(59.3)	
Never(N=75)	42(56)		46(61.3)	
Doing Physical Exercise				
Regular(N=78)	37(47.4)	0.84	40(51.3)	0.18
Occasional(N=L18)	58(49.2)		73(61.9)	
Never(N=24)	13(54.2)		11(45.8)	
Practicing Yoga				
Regular(N=I0)	6(60)	0.39	8(80)	0.14
Occasional(N=72)	39(54.2)		44(61.l)	
Never(N=L38)	63(45.6)		72(52.2)	
Weightlifting				
Regular(N=28)	8(28.6)	0.001	9(32.I)	<0.001
Occasional(N=56)	23(41.l)		25(44.6)	
Never(N=L36)	105(77.2)		90(66.2)	
Carrying Backpacks/College Bags				
Regular(N=189)	92(48.7)	0.68	107(56.6)	0.94
Occasional(N=25)	12(48)		14(56)	
Never(N=6)	4(66.7)		3(50)	
Watching Television				
Regular(N=5l)	25(49)	0.95	28(54.9)	0.94
Occasional(N=L22)	59(48.4)		70(57.4)	
Never(N=47)	24(51.1)		26(55.3)	

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ACTIVITY/HABIT	NP+ N=108 (%)	P value*	LBP+ N=124 (%)	P value*
Working On Laptop/Personal Computers (Pc)				
Regular(N=33)	17(51.5)	0.64	19(57.6)	0.70
Occasional(N=L17)	54(46.2)		63(53.8)	
Never(N=70)	37(52.9)		42(60)	
Driving				
Regular(N=49)	21(42.9)	0.37	22(44.9)	0.08
Occasional(N=89)	42(47.2)		49(55)	
Never(N=82)	45(54.9)		53(64.6)	

*Calculated by Chi-square test; p<=0.05 is taken as significant

Table 2, b. Association of NP &LBP with various lifestyle activities among medical students

ACTIVITY/HABIT	NP+ N=108 (%)	P value*	LBP+ N=124(%)	P value*
Meeting Friends/Going To Parties				
Regular(N=4l)	12(29.3)	**0.001**	17(41.5)	**0.02**
Occasional(N=L77)	96(54.2)		107(60.4)	
Never(N=2)	0(0)		0(0)	
Wearing Heels				
Regular(N=6)	5(83.3)	0.10	5(83.3)	0.09
Occasional(N=L11)	58(52.2)		68(61.3)	
Never(N=L03)	45(43.7)		51(49.5)	
Smoking				
Regular(N=7)	3(42.9)	0.51	4(57.I)	0.99
Occasional(N=L6)	10(62.5)		9(56.2)	
Never(N=L97)	95(48.2)		111(56.4)	
Alcohol Intake				
Regular(N=3)	0(0)	0.20	1(33.3)	0.39
Occasional(N=39)	18(46.2)		19(48.7)	
Never(N=L78)	90(50.6)		104(58.4)	
Tea/Coffee Intake				
Regular(N=I09)	55(50.5)	0.58	64(58.7)	0.16
Occasional(N=90)	41(45.6)		45(50)	
Never(N=2l)	12(57.I)		15(71.4)	
Travelling By Public Transport				
Regular(N=49)	21(42.9)	0.18	31(63.3)	0.11
Occasional(N=L45)	72(49.7)		83(57.2)	
Never(N=26)	8(30.8)		10(38.5)	
History Of Trauma				
Yes(N=37)	23(62.2)	0.08	27(73)	**0.02**
No(N=L83)	85(46.4)		97(53)	
Clinical Posting				
<=3hrs/Day(N=204)	108(52.9)	0.82	117(57.4)	0.29
>3hrs/Day(N=16)	8(50)		7(43.8)	
Body Posture				
Normal(N=L19)	49(41.2)	0.26	60(50.4)	0.13
Abnormal(N=43)	23(53.5)		26(60.5)	
Do Not Know(N=58)	36(62.l)		38(65.5)	

*Calculated by Chi-square test; p<=0.05 is taken as significant

The level of students' daily activities (regular, occasional, never) including outdoor sports,

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physical exercise, yoga, weightlifting, carrying backpacks, watching television, working on the computer, driving, meeting friends, wearing heels, smoking, alcohol, drinking tea/coffee and travelling by public transport was assessed for association with NP & LBP [Table 2a & 2b]. Variables like history of trauma, time spent on clinical postings and body posture, were also assessed for association with NP &LBP [Table 2b].

Majority of the students with NP and LBP were not involved in lifting weight and the difference in categories was found to be significant- NP (p=0.001) & LBP (p=<0.001).

Complaint of LBP was more among the students who were never or occasionally involved in playing outdoor sports than those who were regularly involved, and the difference was statistically significant (p=0.01).

Majority of the students with NP and LBP were occasionally involved in activities like meeting friends/going to parties and the difference in categories was found to be significant-NP (p=0.006) & LBP (p=0.024). History of trauma was found significant associated with LBP (p=0.026) but not with NP (p=0.081) Other activities like doing physical exercise, practicing yoga, carrying backpacks, watching television, working on computers, driving, wearing heels, smoking, alcohol intake, tea/coffee intake, travelling by public transport, time spent on clinical postings and body posture were not found to be significantly associated with NP and LBP.

Table 3. The Quality-of-life issues related with neck and lower back pain severity by ODI scale among medical students

Quality of life issue	Associated area	No. (%)[a]	Average severity[b]
Pain intensity	Neck	71(32%)	1.02
	Back	77(35%)	0.97
Personal care	Neck	32(15%)	0.44
	Back	37(17%)	0.44
Lifting	Neck	52(24%)	1
	Back	58(26%)	0.96
Sleeping	Neck	44(20%)	0.68
	Back	49(22%)	0.64
Sitting	Back	90(41%)	0.69
Standing	Back	86(39%)	0.54
Walking	Back	38(17%)	0.27
Social life	Back	33(15%)	0.25
Traveling	Back	54(25%)	0.32
Reading	Neck	109(50%)	0.68
Headaches	Neck	112(51%)	0.82
Concentration	Neck	101(46%)	0.73
Work	Neck	65(30%)	0.39
Driving	Neck	40(18%)	0.3
Recreation	Neck	34(15%)	0.23
Average ODI	Overall	220(100%)	7.2±7.6
	With NP/LBP	135(61.4%)	10.3±7.9

[a]Number with some degree of disability (>0); [b]Degree of severity ranged from 0-5, with 5 being most severe.

Overall, the average ODI score was 7.2 ± 7.6. Among students who reported NP or LBP by VAS scores, the average ODI score was 10.3± 7.9 (range: 0-37).The most commonly reported QOL issue associated with NP was headache (n=112), followed by pain during reading (n=109) and difficulty in concentration (n=101).The most commonly reported QOL issue associated with LBP was pain exacerbated during sitting (n=90), followed by pain exacerbated during standing (n=86) [Table-3].

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Table 4. Correlation between demographics, perceived stress and VAS neck and back pain scales among medical students

		Pain scale			
		VAS neck		VAS back	
Variable	**No. of responses**	**Correlation[c]**	**P-value[c]**	**Correlation[c]**	**P-value[c]**
Demographics					
Age	220	0.009	0.89	0.06	0.32
BMI[a]	220	-0.134	**0.04**	-0.201	**<0.001**
Stress					
PSS-10[b]	220	0.171	**0.01**	0.26	**<0.001**

[a]BMI=Body Mass Index; PSS-10= Perceived Stress Scale-10, [c]calculated by Pearson product-moment correlation test.

A significant negative correlation was found between BMI and VAS neck (p=0.047) &VAS back (p=0.003). The average PSS score was 22.0 ± 5.3 (range: 11-34), with a significant positive correlation between a PSS score and VAS neck (p=0.011) and VAS back (p=0.001). No significant correlation was found between age and VAS neck and VAS back [Table-4].

In terms of demographics, there was a significant difference between batch 2015 and 2018, in BMI from 23.34 ± 4.67 to 21.16 ± 3.31 (p = 0.023). There was no significant difference in PSS score across the batches (p = 0.23). There was no significant difference in VAS neck (p = 0.26), VAS back (p = 0.54) or ODI (p = 0.70) across the batches.

Discussion

This self-administered questionnaire based cross-sectional study carried out in a medical college of Bhopal revealed a high prevalence (61.4%) of NP/LBP or both among the medical students. This finding is very close to the 65.1% rate of musculoskeletal pain at least one site reported by Al Shagga et. al. among Malaysian medical students (23).

The present study showed the higher prevalence of LBP among the medical students as compared to other regional studies both from Delhi reported by Aggarwal N et al (2013)(4) & Ganeshan et al (2017) (24) viz. 56.4% vs 45.3% & 42.4% respectively. On the contrary, a lower prevalence of NP was found in our study as compared to the study done among medical students in central India reported by Behra P (2020) (25) viz. 49.1% vs 58.3%. Such differences in prevalence of LBP/NP among the regional studies can partly be explained on the basis of actual rise in LBP/NP among the study population through years and partly with the differences in study patterns prevalent in the institutions among medical students i.e., academic load, long standing hours or long studying hours, etc.

In the present study, the prevalence of NP and LBP and their ODI scores were comparatively higher than that found in a study conducted Du et al in an American medical school (11). This difference may be due to variations in the socio-cultural and lifestyle factors, study pattern, BMI, physical activity in Indian students as compared to American medical students.

Prevalence of LBP was found more than NP in the present study which is similar to the findings of previous studies by Smith DR et al. (2015) (26) among Chinese medical students and Al Shagga MA et al. (2013) (23) among Malaysian medical students. There are no other studies from India addressing NP and LBP in a single study.

Hoy D et al (2010) (27) in their systematic review found mean and median prevalence of low back pain to be higher in women as compared with men. In the present study a significant association of NP and LBP was found with female gender, whereas, no such significant association was found in the study conducted by Aggarwal N et al (4) in Delhi though the prevalence of LBP was more in females as compared to males. This difference in findings

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to certain extent may be attributed to the higher proportion of females in present study as as compared to the study by Aggarwal N et al (4) i.e., 70% vs 46.2% respectively. Similarly, Haroon H et al (28) reported the combined prevalence of LBP , NP and shoulder pain among females to be more than males among the medical students of a medical college in Karachi but the difference was not statistically significant. According to a community-based study conducted during 2015-16 in northern India by Bansal D (2020) (29) the point prevalence of LBP was found to be 32% with significantly higher prevalence in females as compared to males. Differences in findings from all the above studies showing preponderance of LBP/NP with female gender can partly be explained with differences in physical activity related to socio-cultural aspects by gender and the status of female in the society in addition to the differences in age group of the study subjects in these studies.

In our study activities like involvement in - playing outdoor sports, weightlifting, meeting friends/going to parties; and presence of history of trauma, were found to be significant protective effect with LBP. This finding itself points towards a link between the sedentary lifestyle with that of NP or LBP in the present study. Behra P et al (2020) (25) also have reported protective effect of taking light exercise against NP among medical students.

According to Nilsen TI et al. (10) physical inactivity and high BMI are associated with an increased risk of chronic pain in the low back and neck/shoulders in the general adult population. A study conducted among university students by Meman SH et al (2017) (30) in southern India has reported a significant association between overweight and obese individuals with LBP. In the present study a negative but weak correlation of NP and LBP was found with BMI. This may be explained by the fact that the mean BMI in our study population was 22.17 kg/m^2 and more than 90% of the students were in the normal range of BMI. Moreover, for the correct measurement of association between LBP and BMI a larger sample size may be required.

In this study a positive correlation of NP and LBP was found with perceived stress whereas no such correlation was found in American study conducted by Du et.al. (2017) (11). In a study conducted in 2008 by Kennedy C et al. among college students in a major university in Colorado (31) showed association of stressful psychosocial variables of feeling very sad, being exhausted, and whelmed with LBP.

In present study, no significant differences were found in PSS score, VAS neck, VAS back and ODI among various academic batch years which is a finding similar with previous study conducted among American medical students (11). No other studies from India are available establishing any relationship between perceived stress and LBP/NP among student population.

This study is done with appropriate sampling procedure and used well validated and standardized questionnaire. This is the one of the few studies from India including both LBP and NP among medical students within a single study, probably the only study. No other study from the region has measured perceived stress by a scale in the given study population. There is a significant association between the scales assessing severity of LBP/NP and the perceived stress scale confirming to the valid conduction of the study.

The present study has few limitations also. First, this study was conducted in a medical college of Bhopal, so its results cannot be generalized for the medical students at all other colleges. Second, as it was a cross sectional study using self-administered questionnaire including various pain scales, there is a risk of response and recall bias in the study due to the subjective variation in the responses by the study

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participants.

Conclusions

There was a total of 135 students reported either NP/LBP or both (61.4%). The prevalence of NP and LBP were 49.1% (108/220) and 56.4% (124/220) respectively among medical students at Chirayu Medical College & Hospital, Bhopal. Females were affected more than males.

With a high prevalence of NP & LBP among students, this study underscores a need for orthopedic screening for NP and LBP among medical students at the time of entry into the medical college with appropriate remedial measures. Additionally, as the association with sedentary lifestyle aspects with NP and LBP was evident from the study, daily exercise promotion is underscored. Students should be taught correct postures [14] to maintain the balance of the body and the benefit of various posture exercises that strengthen the muscles of the back, relieve tension and help to decrease the pain.

Complaint of lower back pain was more than neck pain. Headaches and pain exacerbated while sitting were the most frequently associated quality of life issues with NP and LBP respectively. These can limit the working ability and may affect the academic performance of the students.

In terms of demographics, there was a significant difference between batch 2015 and 2018, in BMI from 23.34 ± 4.67 to 21.16 ± 3.31 ($p = 0.023$).

Further studies may be initiated to look into the intricate relationship between habitual physical activities, BMI, socio-cultural aspects & nutrition with musculoskeletal disorders.

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Conflict of Interest

We certify that we have participated sufficiently in the research content, conception and design of this work or the analysis and interpretation of the data (when applicable), as well as the writing of the manuscript, to take public responsibility for it and have agreed to have our name listed as a contributor. No author has any conflicts of interest related to this research article.

Authors Contributions'

Aditi Sachdeva: has carried out responsibility of Selection of Topic, Planning of Study, Data Collection and Compilation, Manuscript Preparation.

Arvind Athavale: was involved in the selection of the topic, Planning of Study, Manuscript Preparation and Manuscript Reviewed.

Sachin Gupta: Reviewed Manuscript and submitted the manuscript. He has also done statistical analysis review.

Pradeep Kumar Tiwari: Done Data cleaning and analysis.

References

1. Apexa S. Raithatha and Daxa G. Mishra, "Musculoskeletal Disorders and Perceived Work Demands among Female Nurses at a Tertiary Care Hospital in India," International Journal of Chronic Diseases, vol. 2016, Article ID 5038381, 6 pages, 2016
2. Hasheminejad N, Dastaran S, Madadizadeh F, Feyzi V. Assessment of risk factors and prevalence of musculoskeletal disorders in barbers of Kerman city using REBA method. Occupational Hygine and Health Promotion Journal. 2017 Aug 10;1(1):10-8.
3. Vos T, Abajobir AA, Abbafati C, Abbas KM, Abate KH, Abd-Allah F, et al. (GBD 2016 Disease and Injury Incidence and Prevalence Collaborators). Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990- 2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet, 2017; 390: 1211- 59

[Downloaded from jhr.ssu.ac.ir on 2024-10-12]

[DOI: 10.18502/jchr.v11i2.9994]

4. Aggarwal N, Anand T, Kishore J, Ingle GK. Low back pain and associated risk factors among undergraduate students of a medical college in Delhi. Educ Health 2013; 26:103-8.
5. Musculoskeletal conditions,[Intemet] Geneva:France: World Health Organization;C 2019[cited and accessed on October 23,2019] Available from: www.who.int/news-roorn/ fact-sheets/detail/muscu loskeletal - conditions
6. Dastaran S, Hasheminejad N, Saeidi C, Madadizadeh F. Assessment of Risk Factors and Prevalence of Musculoskeletal Disorders in Coppersmiths of Kerman City by RULA Method. Occupational Hygine and Health Promotion Journal. 2017 Aug 10;1(1):72-8.
7. Hossain MD, Aftab A, Al Imam MH, et al. Prevalence of work related musculoskeletal disorders (WMSDs)and ergonomic risk assessment among readymade garment workers of Bangladesh: A cross sectional study. PLoS One. 2018;13(7): e0200122. Published 2018 Jul 6.
8. NIOSH [2012]. Research Compendium: The NIOSH Total Worker Health TM Program: Seminal Research Papers 2012. Washington, DC: U.S. Department of Health and Human Services, Public Health Se1vice, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2012-146, 2012 May:1-214.
9. MacDonald L, Karasek R, Punnett L, Scharf T. Covariation between workplace physical and psychosocial stressors: evidence and in1plications for occupational health research and prevention. Ergonomics 2001;44(7):696- 718.
10. Nilsen TI, Holtermann A, Mork PJ (2011) Physical exercise, body mass index, and risk of chronic pain in the low back and neck/shoulders: Longitudinal data from the Nord-Trondelag Health Study. Arn J Epidemiol174: 267-273.
11. Du et al. Neck Pain and Low Back Pain in Medical Students: A Cross-Sectional Study. Int Arch Public Health Community Med, 2017; 1:002
12. Moroder P, Runer A, Resch H, Tauber M. Low back pain among medical students. Acta O1thop. Belg., 2011; 77:88-92
13. Vujcic I, Stojilovic N, Dubljanin E, Ladjevic N, Ladjevic I, Sipetic-Grujicic S. Low Back Pain among Medical Students in Belgrade (Serbia): A Cross-Sectional Study," Pain Res Manag. ,2018; Volume 2018, Article ID 8317906, 6 pages.
14. Casas AS, Patino MS, Camargo DM. Association between the sitting posture and back pain in college students. Rev Univ Ind Santander Salud. 2016; 48(4): 446-454.
15. Cho CY, Hwang IS, Chen CC. The association between psychological distress and musculoskeletal symptoms experienced by Chinese high school students. J O1thop Spo1ts Phys Ther, 2003; 33: 344-353.
16. Hendi OM, Abdulaziz AA, Althaqafi AM, Hindi AM, Khan SA, Atalla AA. Prevalence of musculoskeletal disorders and its correlation to physical activity among health specialty students. Int J Prev Med 2019; 10:48
17. Elise P, Legault, Cantin V, Descarreaux M. Assessment of rnusculoskeletal symptoms and their in1pacts in the adolescent population: adaptation and validation of a questionnaire. BMC Pediatric: 2014; 14: 173.
18. Basti M, Madadizadeh F. A beginner's Guide to Sampling Methods in Medical Research. Critical Comments in Biomedicine. 2021 Sep 30;2(2).
19. Fairbank JC, Pynsent PB. The oswestiy disability index. Spine (Phila Pa 1976), 2000; 25: 2940-2952.1
20. Haefeli M, Elfering A. Pain assessment. Eur Spine, 2006; J 15: S 17-S24.
21. Boonstra AM, Schiphorst Preuper HR, Reneman MF, Posthumus JB, Stewart RE. Reliability and validity of the visual analogue scale for disability in patients with chronic musculoskeletal pain. Int J Rehabil Res. 2008 Jun;31(2):165-9. doi: 10.1097/MRR.0b013e3282fc0f93. PMID: 18467932.
22. Cohen S, Kamarck T, Me1melstein R. A global measure of perceived stress. J Health SocBehav, 1983; 24: 385-396.
23. Alshagga MA, Nuner AR, Yan LP, Ibrahim IA, Al-Ghamdi SS, et al. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. BMC Res Notes 2013; 6: 244.
24. Ganesan S, Acharya, AS, Chauhan R & Acharya S. Prevalence and Risk Factors for Low Back Pain in 1,355 Young Adults: A Cross-Sectional Study. Asian Spine Journal 2017; 11(4):610-17. *doi:10.4184/asj.2017.11.4.610*

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[DOI: 10.18502/jchr.v11i2.9994]

25. Behera P, Majumdar A, Revadi G, Santoshi JA, Nagar V, Mishra N. Neck pain among undergraduate medical students in a premier institute of central India: A cross-sectional study of prevalence and associated factors. J Family Med Prim Care 2020; 9:3574-81.
26. Smith D. R., Wei N., Ishitake T., Wang Rui-Sheng. Musculoskeletal disorders among Chinese medical students. The Kurnrne Medical Journal. 2005;52(4):139- 146.
27. Hoy D, Brooks P, Blyth F & Buchbinder R. The Epidemiology of low back pain. Best Practice & Research Clinical Rheumatology 2010, 24(6):769–781. *doi: 10.1016/j.berh.2010.10.002*
28. Haroon H, Mehmood S, Imtiaz F, Ali SA, Sarfraz M Musculoskeletal pain and its associated risk factors among medical students of a public sector University in Karachi, Pakistan. J Pak Med Assoc 2018; 68:682- 688.
29. Bansal D, Asrar MM, Ghai B & Pushpendra D. Prevalence and impact of low back pain in a community-based population in northern India. Pain Phys 2020; 23: E389-e398.
30. Meman SH, Pais V, Kalal BS. Physical risk factors for low back pain among young sedentary individuals - A prospective study. Indian J Pain 2017; 31:157-63.
31. Kennedy C, Kassab o, Gilkey D, Linnel S, Monis D. Psychosocial factors and low back pain among college students. J Am Coll Health 2008; 57:191-5.

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