

Assessment of determinants of musculoskeletal pain (MSP) among medical students of government medical college, Rajnandgaon, Chhattisgarh

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Abstract

Background: “Musculoskeletal disorders” include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves, and supporting blood vessels. Pain is the most common symptom of most musculoskeletal disorders. Areas commonly involved in musculoskeletal pain are low back, neck, shoulder, forearm, hand and lower extremity. **Materials and Methods:** The present cross sectional study was conducted among Medical College students of Rajnandgaon (Chhattisgarh) during the period September 2017 to October 2017. Universal sample of all the medical students currently studying in the college was considered for the study. Informed consent was implied if students voluntarily completed and returned the questionnaires. Data was recorded in MS EXCEL and checked for its completeness and correctness then it was analysed by suitable statistical software and P value < 0.05 was considered as a statistically significant. **Observation:** There were (51.5%) female and (48.4%) male medical students in the current study. (63.6%) subjects followed irregular pattern of physical activity where as some (25%) subjects followed regular pattern. Prevalence of the musculoskeletal pains among study subjects was found to be 12.9%. Most cases of musculoskeletal pains were reported in neck region (48.8%), followed by involvement of lower back (33.3%) shoulder (26.6%) upper back (20%) region. **Conclusion:** Prevalence of MSP among students was 19.2% and neck was the most common site involved. Students should be advised to maintain proper ergonomic positions while sitting in the class rooms, studying at home or in hostel, while using laptops or Smartphone and should undertake regular physical activity.

Key Words: Musculoskeletal pain (MSP), risk factors, medical students.

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INTRODUCTION

“Musculoskeletal disorders” include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves, and

supporting blood vessels¹. Pain is the most common symptom of most musculoskeletal disorders. Pain ranges from mild to severe and from acute and short lived to chronic, may be local or wide spread. Literature review shows that prevalence of musculoskeletal disorders among various health care professional students is significantly higher (26 – 93 %). MSP is a major cause of chronic pain, injury, illness, reduced educational attainment that may affect the quality of productivity, and absenteeism from university lessons², reduces academic performance which will affect students’ future careers. Areas commonly involved in musculoskeletal pain are low back, neck, shoulder, forearm, hand and lower extremity. The goal of any medical college is to produce competent, professional doctors and promote health of the society. Therefore, it is important for medical colleges to

identify possible modifiable MSP risk factors and plan early supportive and preventive measures for a better quality of life. During the period of medical training, students are exposed to stress, study problems, long training hours in hospital wards and clinics^{2,5}; in addition to the increasing use of computers and smart phones in teaching and learning⁶. These events are considered modifiable musculoskeletal pain (MSP) risk factors that may increase the prevalence of MSP among medical students. Therefore it was thought to explore the magnitude of the problem in our college and make the students aware about the risk factors causing MSP and hence this study.

MATERIALS AND METHODS

The present cross sectional study was conducted among Medical College students of Rajnandgaon (Chhattisgarh) during the period September 2017 to October 2017. Universal sample of all the medical students currently studying in the college (396) was considered for the study. Out of these 347 medical students were available to participate in the study. Questionnaires were distributed at the end of a prearranged lecture, following a short introduction about the purpose of the study by the researchers. There were no penalties or rewards for participation. Informed consent was implied if students voluntarily completed and returned the questionnaires. The semi structured questionnaire consisted of information regarding age, sex, semester, residence, weight (in kg), height (in cm), body mass index, waist circumference, sitting hours, physical activity, type and frequency of addiction including tobacco and alcohol, smart phone and laptop use and finally the prevalence of musculoskeletal pain with the type of complains, affecting the activities of daily life and the type of treatment they are seeking. Student's identity was kept confidential.

Study instruments

- Tailor's Measuring tape
- Weighing machine (Dr. Morepen: MS02)

Data was recorded in MS EXCEL and checked for its completeness and correctness then it was analysed by suitable statistical software and P value < 0.05 was considered as a statistically significant.

OBSERVATION AND RESULTS

There were (51.5%) female and (48.4%) male medical students in the current study. The study subjects living on campus were significantly more (81.2%) than those living off campus (18.7%). Maximum (63.6%) subjects followed irregular pattern of physical activity where as

some (25%) subjects followed regular pattern. Only 11.2% students did not perform any type of physical activity. Most of the study subjects (91%) denied having consumed tobacco in any form while very few subjects (8.9%) agreed. Most of the study subjects (82.7%) refused having consumed alcohol on regular basis, while (17.2%) accepted that they consume alcohol frequently. There were very few subjects (0.8%) who had not used smart phones while (99.1%) used smart phones. Maximum subjects (80.6%) had not used laptop while some subjects (19.3%) used laptop. 87.1% of the students did not suffer from any type of musculoskeletal pains. Prevalence of the musculoskeletal pains among study subjects was found to be 12.9%. Most cases of musculoskeletal pains were reported in neck region (48.8%), followed by involvement of lower back (33.3%) shoulder (26.6%) upper back (20%) region. Only some cases (11.1%) were reported in wrist, knee and ankle region. Elbow and upper leg involvement were few (6.6%). [Table-1] We tried to find out the association between musculoskeletal pains and the variables such as physical activity, consumption of alcohol or tobacco, laptop and smartphone use, male and female sex of the students. Only the use of laptops was found to be associated significantly with MSPs in this study. [Table-2]

DISCUSSION

This is the first study on musculoskeletal pains in medical students of Chhattisgarh. The prevalence of the MSPs in the present study was (19.2%) was higher as compared to study done by Fedrick Gerr (10%).⁶ A slightly different study on playing related musculoskeletal disorders by Shinichi Furuya *et al*, found 77% prevalence of MSP.⁷ Prevalence of musculoskeletal pains was found to be 25.9 by Bihari, C.Kesavachandran among the residents of National Capital Region.⁵ In a study by Nyland L N on Physiotherapy students the prevalence of low back pain was 63%.⁴ In the current study, the most common region involved in musculoskeletal disorders was head/neck (48.8%), which is slightly lower than the study done by Christopher E (52.8%), Derek R Smith (67.4%). Derek R Smith, in his study found that computer usage was associated with musculoskeletal pains, which is similar to the finding of the current study where it was associated with use of the laptops, probably because the students do not maintain ergonomic posture while using laptops for long hours. In most of the studies, musculoskeletal pains are associated with people not adjusting to work environment and improper training in ergonomics principles.^{1,3,9,10,11}

Table 1: Background characteristics

Background characteristics	Number [n=347]	Percentage [100]
Sex		
Female	179	51.58
Male	168	48.41
Residence		
off campus	65	18.73
on campus	282	81.26
Physical activity		
Irregular	221	63.68
No	39	11.23
Regular	87	25.07
Tobacco intake		
Yes	31	8.93
No	316	91.06
Alcohol intake		
Yes	60	17.29
No	287	82.70
Smartphone use		
Yes	344	99.13
No	3	0.86
Laptop use		
Yes	67	19.30
No	280	80.69
Reporting Musculoskeletal Pain		
Yes	45	12.96
No	302	87.12
Sites of Musculo Skeletal Pains		
Neck	22	48.89
Shoulder	12	26.67
Upper back	9	20.00
Lower back	15	33.33
Elbow	3	6.67
Wrist	5	11.11
Knee	5	11.11
Upper leg	3	6.67
Ankle	5	11.11
Others	2	4.44

CONCLUSION

With the limitations of the present study based on self report questionnaires following conclusion appears to be justified. Considering the fact that medical students have to devote most of their time to studying to be competent doctors in future and they spare less time to do relaxation activities, following recommendations seem to be helpful for all of them whether they suffer from MSPs or not. This study suggests that the prevalence of MSP among students was 19.2% and neck was the most common site involved. Students should be advised to maintain proper ergonomic positions while sitting in the class rooms, studying at home or in hostel, while using laptops or Smartphone and should undertake regular physical

activity such as outdoor sports, yoga, and meditation. Students should also avoid tobacco and alcohol consumption. Students should not overlook the MSPs and seek consultation from the specialists whenever needed.

FUTURE RESEARCH

- Further investigations are required to elucidate the mechanisms and contributory factors for MSP in this unique student population.
- A longitudinal study of complete group of medical students would be very helpful.
- Development of internationally standardised MSD questionnaire for students in all fraternities.

Table 2: Association of variables with musculoskeletal pain

Risk factors	Musculoskeletal Pain		Chi square test, d.f, p-value
	No	Yes	
Sex			
Female	154	25	0.326,1,0.568
Male	148	20	
Residence			
Off campus	55	10	0.414,1,0.520
On campus	247	35	
Physical activity			
Regular	80	7	4.558,3,0.207
Irregular	186	35	
No	36	3	
Tobacco usage			
Yes	25	6	1.230,1,0.267
No	277	39	
Alcohol intake			
Yes	54	6	0.566,1,0.452
No	248	39	
Smartphone Usage			
Yes	299	45	0.541,1,0.502
No	3	0	
Laptop usage			
Yes	65	2	7.332,1,0.007 Significant
No	237	45	

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