Journal of Prevention, Diagnosis and Management of Human Diseases
Vol: 04, No. 01, Jan - June 2024
ISSN: 2799-1202, DOI: 10.55529/jpdmhd.41.31.39

Research Paper

Prevalence of musculoskeletal pain and related factors among foreign medical students of bishkek, kyrgyzstan: a cross-sectional study

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Article Info

Article History:
Received: 16 June 2023
Revised: 29 September 2023
Accepted: 18 December 2023
Published: 31 January 2024

Keywords:
Musculoskeletal Pain
Medical Students
Prevalence
Related Factors
Neck and back pain

ABSTRACT

Musculoskeletal pain impacts our daily lives in numerous ways. So, it is very important to investigate this problem to find out its prevalence and factors related to it. Methods: A descriptive cross-sectional study was carried out among 360 randomly selected medical students from different medical colleges in Bishkek, Kyrgyzstan. With consent, data was collected by the principal investigator by pretested interview schedule through face-to-face interviews. Participants had the freedom to withdraw from the study at any point without the obligation to provide a reason, and measures were taken to maintain data confidentiality. The procedure posed no physical, mental, or social risks. Data were analysed by SPSS version 25.0 and presented through tables and diagrams for clarity. Results: Of the respondents, 213(59.2%) had musculoskeletal pain. But the majority 314(87.2%) had no history of trauma and 221(61.4%) had a family history of musculoskeletal pain. Of them, only 116(32.2%) respondents performed physical exercise while nearly two-thirds 224(62.2%) had normal BMI. Near cent per cent of respondents had prolonged sitting history, which is more than 2 hours. Most 273(75.8%) of them use chairs for study purposes. Near three-fourths, 259(71.9%) had travel time of more than one hour per day and a significant 328(91.1%) number of them use backpacks. Of 213 sufferers, more than two-fifths 128(60.1%) had musculoskeletal pain often. Almost half (47.4%) of medical students were suffering from back pain and 69(32.4%) from neck pain. Conclusion: Medical students were suffering from musculoskeletal pain with no history of trauma and positive family history. Students do not perform physical exercise regularly with normal BMI. During travel, they use

backpacks to carry educational materials. Smartphones, computers or laptops are used by them during their leisure time. Students were mainly suffering from back, neck and shoulder pain.

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1. INTRODUCTION

Musculoskeletal pain is one of the common problems among people of all ages and group. This has a significant impact on the individual's performance, over pressure on the health system and also economic burden on the nation [1]. From the report of Global Burden of Disease 2017 it was found that musculoskeletal conditions are responsible for the second highest reason for global disability. Neck pain is commonly observed among students, responsible for disability, discomfort and impaired quality of life [2]. Pain in the musculoskeletal system is influenced by many factors like age, sex, type of work and individual's way of living. Numerous studies observed that sitting on a flexed neck, strains on ligaments, trunk in a twisted position and also a kyphotic position [3]. Students of different disciplines use different electronic devices like laptops, computer notebooks and smartphones for their academic purposes and leisure time. While using those, often they have improper posture which causes pain [4]. Due to academic purposes, medical students need to sit for a prolonged duration during a lecture class. They also need to stand in uncomfortable positions while having practical lessons from medical facilities [5]. Students of university level usually lead a sedentary lifestyle and sometimes the duration is around 10 hours per day or more. This type of sedentary lifestyle is also an important underlying cause of musculoskeletal pain among medical students. Many students also have a lack of sleep duration which is also a predisposing factor for such pain. From various studies, it was found that there is a relationship between sleep duration and back pain [6]. Due to musculoskeletal Pain, students need to have sick leave frequently causing disability and reduced functional outcome. This results in declining productivity and imposes an extra economic burden on their family [7].

However, there is plenty of information regarding musculoskeletal problems and their associated factors but there is not that much evidence in the context of medical students. This study was designed to collect more information regarding this problem.

2. RELATED WORK

Our medical system usually puts their concern among the health of the patients but we usually overlook the health of the health care providers [8]. From the previous studies, it was observed that the students might present with unique reasons for the development of musculoskeletal pain. Factors including long duration of sitting, prolonged screen time and academic stress act as catalysts for such pain [9]. A study conducted in the UK found that 54% of their participants were suffering from low back pain. Another research from Europe opined that 92% of respondents complain about neck, hip, shoulder, wrist and elbow pain. A cross-sectional study conducted by, and a team in Saudi Arabia revealed that around 77.9% had

musculoskeletal pain [10]. It is also well-established that musculoskeletal pain is among the leading reasons for different types of disability across the world. Also responsible for impaired quality of life, individual productivity and as well as their mental health [11]. Like normal human beings, medical students also suffer from several negative consequences due to pain. Musculoskeletal pain results in poor academic outcomes, decreased career prosperity, more study-related stress and increased mental pressure [12]. Despite having numerous negative effects of musculoskeletal pain and a significant number of sufferers, the factors for such pain among medical students were still under-explored. This requires a more details study to reduce its negative impacts and increase individual productivity.

3. METHODOLOGY

A descriptive cross-sectional study was conducted at selected medical institutes in Bishkek, Kyrgyzstan. Before data collection, ethical clearance was obtained from the relevant authority. A total of 360 medical students were chosen using a simple random sampling technique. Verbal consent was obtained from each participant before proceeding with data collection. The principal investigator collected data through face-to-face interviews using a pretested interview schedule, ensuring privacy during the process. Completed questionnaires were meticulously reviewed for completeness, consistency, correctness, and any discrepancies. Confidentiality of the collected data was maintained throughout the study, and participants were assured of their right to withdraw at any point without providing a reason. The appropriate authorities approved the study protocol, and no physical, social, or psychological risks were associated with the procedure. Data analysis was performed by Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed to describe the nature of the data, while inferential statistics, such as the Chi-Square test, were utilized for analysis. Results were presented through tables and diagrams for clarity.

4. RESULTS AND DISCUSSION

The age range of the respondents was 18 to 27 years, while a majority of 282(78.3%) of the students were in the age group 20 to 22 years with a mean age of 21.6±1.1 years. In terms of gender distribution, 199(55.3%) were male, while 161(44.7%) were female. Religious affiliation revealed that 213(59.2%) identified with Islam, 138(38.3%) with Hinduism, and only 9(2.5%) with Buddhism among the 360 students. Marital status indicated that a significant 296(82.2%) were single, while 64(17.8%) were married.

It was revealed that of 360 respondents, around three-fifths of students 213(59.2%) had musculoskeletal pain within last week but 147(40.8%) had not such events. The majority 314(87.2%) of medical students had no history of trauma or injury and 46(12.8%) had a history of trauma. A significant number of respondents in the current study, 221(61.4%) had a family history of muscle pain while 139(38.6%) had no such history. Around one-third 116(32.2%) medical students had regular exercise but most of them 244(67.8%) did not have it. Of 360 medical students, 155(43.1%) respondents use a laptop or computer for equal to or less than three hours daily but most of them 205(56.9%) use it for more than 3 hours per day. Of medical students, 224(62.2%) had normal BMI while more than one-fourths 95(26.4%) were overweight, 19(5.3%) were obese and only 22(6.1%) were underweight Table 1.

Table 1. Respondents by Body Mass Index (BMI)

Body Mass Index (BMI)	Frequency	Percentage
Underweight	22	6.1
Normal	224	62.2
Overweight	95	26.4
Obese	19	5.3
Total	360	100.00

The majority of students 223(61.9%) sleep for more than 6 hours and around two-fifths 137 (38.1%) respondents sleep for less than or equal to 6 hours daily. More than half, of 196(54.4%) of them are non-smokers and 164(45.6%) medical students are smokers. All 348(96.7%) respondents had more than 2 hours of sitting history per day and just 12(3.3%) had no such history. More than three-fourths 273(75.8%) students use chairs for study, while 38(10.5%) sit on the ground during study, 32(8.9%) use a bed or sofa during study and only 17(4.8%) had more than one position for study Table 2.

Table 2. Respondents by Preferred Study Position

Body Mass Index (BMI)	Frequency	Percentage
Use chair	273	75.8
Sitting on ground	38	10.5
Use a bed or sofa	32	8.9
More than one position	17	4.8
Total	360	100.00

Of medical students suffering from musculoskeletal pain, more than two-fifths 45(21.1%) had it occasionally, the majority 128(60.1%) had the pain often and only 40(18.8%) had pain very often. Near three-fourths 259(71.9%) of respondents had a travel time of more than one hour per day and around one-third 101(28.1%) had a travel time of less than one hour daily. A significant 328(91.1%) of respondents use backpacks for daily use but 32(8.9%) use different. Near three-fourths 256(71.1%) depend upon smartphones during their leisure, while 58(16.1%) use computers or laptops and only 46(12.8%) like sports during leisure time. Near half 101(47.4%) of the respondents were suffering from back pain, around one-third 69(32.4%) from neck pain while 27(12.7%) had shoulder pain and 16(7.5%) from pain in other locations Figure 1.

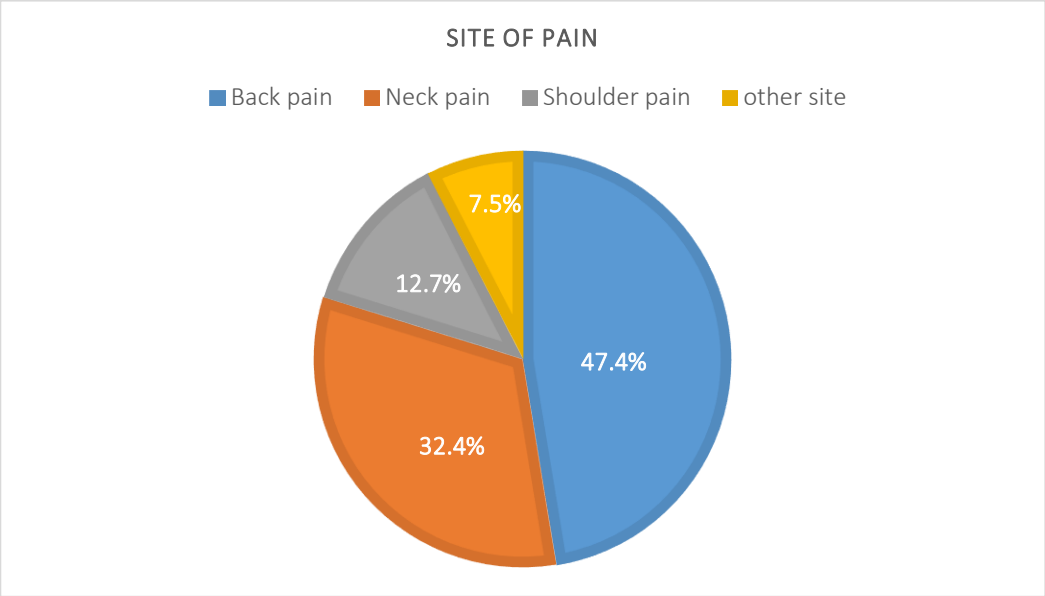

Figure 1. Respondents by Site of Pain

It was found that there is a statistically significant (p<0.005) association between Musculoskeletal pain and BMI Table 3.

Table 3. Association between Musculoskeletal Pain and BMI

Musculoskeletal Pain	BMI (Weight)				Total N (%)	P Value
	Underweight	Normal	Overweight	Obese		
Yes	3	119	73	18	213(100)	<0.005

No	19	105	22	1	147(100)	
Total	22(6.1%)	224(62.2%)	95(26.4%)	19(5.3%)	360(100)	

Discussion

Age of the respondents of the current study were between 18 to 27 years with a mean age of 21.6±1.1 years. This is supported by the findings of, where the average age of medical students was 21±1.7 years [13]. Most of the students in our study 199(55.3%) were male and 161(44.7%) were female. This is inconsistent with the current study findings, found that 53% of medical students were female and 47% were male, this might be due to variations in the study group of the population, study area, and difference in sample size [14]. The majority of the respondents of the current study 296(82.2%) were single. This is corroborated by the findings of, who found that 72% were single, 25.5% were married, 2.0% were divorced and 0.4% were widows [15]. Among respondents of the current study, 213(59.2%) had musculoskeletal pain within the last week. This is substantiated by findings of the study conducted by. And team where 54% of medical students were suffering from musculoskeletal pain in the previous week [14]. More than four-fifths of 314(87.2%) medical students had no history of trauma and only 46(12.8%) had a history of trauma. This is vindicated by the findings of, where only 15.9% had a history of injury or trauma while 84.1% had no history of such events [16]. Among medical students, 224(62.2%) had normal BMI while more than one-fourths 95(26.4%) were overweight, 19(5.3%) were obese and only 22(6.1%) were underweight. This is dissimilar to the findings of, where 15.3% were underweight while 80.2% had normal BMI and 4.5% were overweight. This difference might be attributed to variations in study area and sample size [17]. At least 116(32.2%) respondents perform regular exercise but most of them 244(67.8%) do not have regular exercise. This is more or less in line with the study finding of, where 26.9% had regular exercise while the majority 73.1% did not perform regular exercise [18]. Of 360 respondents' families, around two-thirds 221(61.4%) had a family history of muscle pain while 139(38.6%) had no such history in their family. This is substantiated by findings of a study conducted by and team where 37.9% of medical students had a family history of musculoskeletal pain while 31.9% had no such history and 30.2% were not sure about it [16]. More than two-fifths 155(43.1%) students use either laptop or computer for equal or less than three hours daily but most of them 205(56.9%) use it for more than 3 hours per day. This is close to the study findings of, where 73.6% of respondents use a computer or laptop for less than or equal to 3 hours per day while 26.4% use it for more than 3 hours per day [18].

Regarding sleep duration 137 (38.1%) respondents sleep for less than or equal to 6 hours and nearly two-thirds 223(61.9%) sleep for more than 6 hours. This is more or less similar to the findings of and team found that 30.3% had sleep duration less than or equal to 6 hours, while 57.3% slept for 7 to 8 hours and 12.4% of respondents slept for 9 hours or more [17]. Of the respondents nearly half 164(45.6%) were smokers and most 196(54.4%) of them are non-smokers. Found that 89% were non-smokers and only 11% were smokers. This is inconsistent with current study findings that might be attributed to small sample size, and purposive selection of sampling units as well as study area [13]. A significant number of 273(75.8%) sitting on a chair for the study, 38(10.5%) sitting on the ground, 32(8.9%) used a bed or sofa for study purposes and 17(4.8%) switched their position during the study. This is corroborated by the findings of and team, where 68.2% sat upwards on a chair, 7.6% sat on the ground, 7.3% stood up and walked around, 9.6% Lay on the back, 4.1% lay on the front, 2.2% sitting on a bed or a sofa and only 1.0% don't have a specific position [19]. Of 360 respondents, 259(71.9%) opined that they had a travel time of more than one hour per day and around one-third of 101(28.1%) had a travel time of less than one hour daily. This is opposed to the findings of the study carried out by, where the duration of daily travel is less than 1 hour for 65.5% of respondents while 34.5% had travel time of more than 1 hour [20]. Near cent per cent 348(96.7%) medical students had prolonged sitting history which is more than 2 hours while only 12(3.3%) had no such history. This is vindicated by findings of the study conducted by, where 87.4% of respondents had prolonged sitting which is more than 2 hours per day while 12.6% had no prolonged sitting history [17]. A significant number of respondents, 328(91.1%) use backpacks for daily use but 32(8.9%) do not. This is corroborated by the findings of, where 74.6% used a backpack while 25.4% did not use a backpack [20]. Of 360 respondents, 256(71.1%) mainly use smartphone, while 58(16.1%) use

computer or laptop and only 46(12.8%) like sports as leisure. This is vindicated by findings of the study conducted by and team where 62.1% of respondents use smartphones during their leisure, 13.9% use a computer, 7.2% use table or game player and 16.9% had other activities like sports, watching TV or reading books during leisure [21]. Of 213 respondents, who had musculoskeletal pain 45(21.1%) had occasional pain, 128(60.1%) had the pain often and 40(18.8%) had pain very often.

This is substantiated by findings of a study conducted by Lin, where 13.7% had musculoskeletal pain rarely, 76.9% had pain sometimes, 6.6% had it fairly often and only 2.7% had it very often [22]. Majority 101(47.4%) students were suffering from back pain, 69(32.4%) from neck pain while 27(12.7%) had shoulder pain and 16(7.5%). This is supported by the findings of and associates, their analysis revealed that 44.8% were suffering from neck pain, 33.4% from shoulder pain, 52.5% from low back pain and the overall prevalence was 53.5% among the medical students [23].

5. CONCLUSION

Most of the medical students were young single males. The majority of them were Muslims. Musculoskeletal pain is common among medical students, with positive family history. History of trauma is present among them and does not perform physical exercise daily with normal BMI. A significant number of respondents use a laptop or computer. The majority of them sleep for significant duration at night. Students were mostly non-smokers. They need to travel for a considerable duration of time with a backpack. They mostly use chairs for study and use smartphones during leisure. Back, neck and shoulder pain were common with often episodes of musculoskeletal pain.

Acknowledgments

The authors have no specific acknowledgments to make for this research.

Funding Information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author Contributions Statement

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Dr. Sumit Mishra		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki and approved by the relevant institutional authorities.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to Cite: Dr. Muhammad Imamuzzaman, Dr. Sulaimanov Baktyar Janyshovich, Dr. Kanij Ftaema Mukta, Dr. Sumit Mishra. (2024). Prevalence of musculoskeletal pain and related factors among foreign medical students of bishkek, kyrgyzstan: a cross-sectional study. Journal of Prevention, Diagnosis and Management of Human Diseases (JPDMHD), 4(1), 31-39. https://doi.org/10.55529/jpdmhd.41.31.39

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