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Original Research Article

Prevalence of Low Back Pain among Medical Students: A Cross-Sectional Study of Eastern India

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Abstract:

Introduction: Low back pain (LBP) is a common musculoskeletal disorder that affects people across various age groups and professions. Medical students are especially susceptible to LBP due to the rigorous demands of their academic program. This study aims to assess the prevalence of LBP and identify its associated risk factors among medical students at a Tertiary Institute in Eastern India.

Methodology: A cross-sectional study was conducted among MBBS students of a tertiary care Institute of Eastern India for one month period of November 2024. Sample was collected from 200 MBBS students by convenient sampling technique. Data was collected using an online questionnaire, collecting information regarding demographic profile, prevalence of back pain and its characteristics, potential risk factors. Data was analyzed using JAMOVI open statistical software.

Result: Among the 200 study participants, 62% participants experienced back pain occasionally and 29 % experienced rarely. Regarding awareness of risk factor, 90%) were aware about the prolong sitting, (83%) for prolong standing posture and (83%) for obesity as a risk factors. Large no. of participants 45.5% don't know the that lack of sleep and 31.54% don't know that use of public transport are also the risk factors for back pain experiencing during the life. 13% were doing regular yoga, 30 % were doing regular exercise and 33% were performing outdoor games which are beneficial to prevent the back pain.

Conclusion: Educational institutions should establish comprehensive wellness programs that emphasize physical activity and ergonomic practices. Promoting healthier lifestyle choices, such as regular exercise and yoga, can be instrumental in preventing low back pain and improving overall well-being among students.

Keywords: Low back Pain, musculoskeletal disorder, ergonomics, physical activity.

Introduction

Low back pain (LBP) is a widespread musculoskeletal condition affecting individuals of all ages and professions.[1] It is estimated that approximately 80% of adults will experience LBP at some point in their lives, making it a leading cause of disability and a substantial economic burden worldwide.[2] Medical students are particularly vulnerable to developing LBP due to the demanding nature of their curriculum.[3] The long hours spent studying, attending lectures, and participating in clinical rotations often involve prolonged sitting or standing, repetitive motions, and awkward body positions.[4] Studies indicate a high prevalence of LBP among medical students, ranging from 30% to 75%, with rates increasing as students' progress through their academic years. [5] The consequences of LBP can significantly impact medical students' academic performance, career prospects, and overall well-being. LBP can lead to reduced concentration, poor sleep quality, and limited physical activity, potentially decreasing academic performance and increasing stress levels.[6] Moreover, LBP may cause students to miss classes, rotations, and exams, which can compromise their academic and professional goals. Therefore, it is crucial to identify the risk factors and implement effective interventions to prevent and manage LBP among medical students.[7] Understanding the factors associated with LBP can aid in developing targeted interventions that address modifiable risk factors such as poor posture and sedentary behavior. [7] Additionally, identifying effective management strategies can improve the quality of life and academic performance of medical students while reducing the burden of LBP on healthcare resources. [8] The primary aim of this study is to determine

the prevalence and risk factors associated with LBP among medical students of a Tertiary Institute of Eastern India. The findings will provide valuable insights for developing targeted interventions to promote physical activity, reduce prolonged sitting, manage stress, and encourage good posture, ultimately alleviating the burden of LBP and improving the quality of life for medical students.

Methodology

Study Design and Setting: This study adopted a cross-sectional survey design to assess the prevalence and risk factors associated with LBP among medical students. The study will be conducted at Tertiary Institute of Eastern India.

Study Population: The study population will include all medical students enrolled at a Tertiary Institute of Eastern India. A convenience sampling technique will be used to recruit participants.

Study duration: One month (November 2024)

Sample Size: To determine the required sample size, we will use the following formula: n=Z2∗p∗(1−p)E2n=E2Z2∗p∗(1−p)
Where:

1. n = required sample size
2. ZZ = Z-score corresponding to the desired confidence level i.e. 1.96 for 95% confidence level
3. pp = estimated prevalence of LBP among medical students i.e. 50%
4. EE = desired margin of error i.e. 8%

Taking into account these inputs and 10% non-response rate, the calculated sample size was 167. However, data from 200 medical students was collected and analyzed in the study.

Data Collection: Data was collected using an online questionnaire distributed via social media applications and email. The questionnaire consisted of three parts:

1. **Demographic Information:** This section will collect data on age, sex, body weight, height, academic year, and other relevant personal information.
2. **Prevalence and Characteristics of LBP:** This section will assess the presence and characteristics of LBP, including pain intensity (using a numerical rating scale), duration, location, and associated symptoms. Participants will be asked whether their pain was related to any trauma.
3. **Risk Factors and Awareness:** This section will explore potential risk factors for LBP, such as prolonged sitting, physical inactivity, stress, wrong sleeping position, and anxiety. Additionally, this section will assess students' awareness of LBP risk factors through a series of true/false statements. Questions regarding ergonomic features of chairs, such as back support and adjustability, will also be included.

Data Analysis: The collected data will be analyzed using Jamovi open statistical software. Descriptive statistics, including means, standard deviations, frequencies, and percentages, will be used to summarize the characteristics of the study population and the prevalence of LBP.

Ethical Considerations:

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Informed consent was obtained from all participants before their inclusion in the study. Participants were informed that their participation is voluntary and that they can withdraw from the study at any time.

Results:

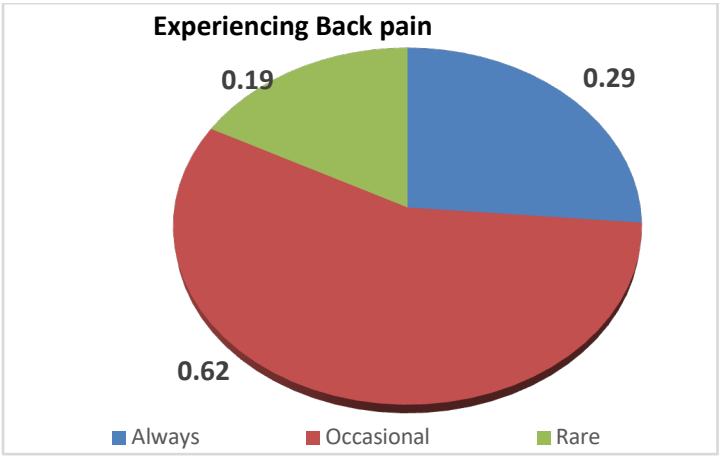

Figure 1: Distribution of study participants as per experiencing Back pain in past 6 months (N=200).

Among the study participants, maximum number of participants (62%) were experiencing the back pain occasionally, around 29% experience the back pain always and only 19% participants having back pain rarely.

Table 1: Distribution of study participants as per awareness regarding risk factors of back pain (N=200).

Sr. No.	Risk factors of low back pain	Yes n (%)	No n (%)
1	Prolong standing posture	166 (83)	34 (17)
2	Prolong sitting	180 (90)	20 (10)
3	Obesity	166 (83)	34 (17)
4	Lack of sleep	109 (54.5)	91 (45.5)
5	Use of Public transport	137 (68.5)	63 (31.5)
6	Sports activities	144 (72)	56 (28)

On enquiring about awareness regarding risk factors of back pain we found that, large number of participants (90%) were aware about the prolong sitting, (83%) for prolong standing posture and (83%) for obesity as a risk factors, whereas 10% participants were not aware about the prolong sitting and 17% were not aware about the prolong standing posture & obesity respectively as a risk factors. Furthermore, sports activities are also a risk factors for back pain, 72% participants were aware and least awareness belonged to the use of public transport (68.5%) & lack of sleep (54.5%). Large no. of participants 45.5% don't know the that lack of sleep and 31.54% don't know that use of public transport are also the risk factors for back pain experiencing during the life.

Table 2: Distribution of study participants as per activities performed (N=200)

Activities	Percentage (%)		
	Often	Occasional	Rare
Incorrect body posture while sitting and standing	54	23	23
Wearing footwear with heels	10	35	55
Prolong screentime (watching television)	48	41	11
Prolong Working on PC or laptop	41	55	4
Weightlifting	27	30	43
Driving	50	26	24
Travelling by public transport	64	30	6

As further we studied the participants according to their activities performed in day-to-day life, we came to found that, most of the participants (64%) who are travelling by public transport were experiencing the back pain often and 54% having the back pain most of the time belong to those participants who have incorrect body posture while sitting and standing. Furthermore, 48% participants have the often-back pain with activities like prolong screentime (watching television), 41% for person having activities like prolong Working on PC or laptop. Most of the participants (55%) feeling of back pain occasionally belong to those have activities like prolong Working on PC or laptop, 41% for person with prolong screening time (watching television). Maximum participants who were using the footwear with heels (55%) were experiencing the back pain rarely, weightlifting (43%), driving (24%) and incorrect body posture while sitting and standing (23%) respectively.

Table 3: Distribution of study participants as per activities performed to help prevent back pain

Activities	Percentage (%)		
	Often	Occasional	Rare
Regular Yoga	13	38	49
Regular exercise	30	55	15
Performing Outdoor games	33	52	15

Table 3 Shows the activity performed to help prevent back pain. 13% were doing regular yoga, 30 % were doing regular exercise and 33% were performing outdoor games.

Discussion:

Low back pain (LBP) is a common issue among medical students in India. Studies show a high prevalence of LBP in this population, with contributing factors including decreased physical activity, poor posture, and stress. [9,10]

In the current study, 29% student's always experienced low back pain followed by 62% experiencing occasionally and 9 % of the students rarely had back pain in the last 6 months.

Whereas a study by Kumar M et al. reported that 41.78% of undergraduate medical students experienced LBP within the 4 weeks prior to the

study.[9] Additionally, 76.03% reported having at least one episode of LBP in the past two years. [9]

54% students in this study adopted incorrect body posture like forward bending while standing and sitting, highlights a significant concern regarding posture among medical students. This prevalent posture can have various implications for their physical health, particularly concerning musculoskeletal disorders and overall well-being. Research indicates that such postures contribute to increased strain on the spine and surrounding musculature, potentially leading to chronic pain conditions, particularly in the lower back.[11]

Further, it was found in the study that 10% of students frequently wore high-heeled footwear, alongside the significant percentages of students engaging in prolonged screen time (48% for television and 41% for laptops/PCs), raises important concerns regarding the potential impact on musculoskeletal health, particularly low back pain. The combination of high-heeled footwear and extended periods of screen time may lead to a cumulative effect on spinal health, resulting in increased incidence or severity of low back pain among medical students.[12]

Yoga, in particular, has been shown to be beneficial for spinal health. It promotes flexibility, strength, and proper alignment of the body, which can help alleviate and prevent low back pain. The finding that only 13% of students practiced yoga suggests a missed opportunity for a holistic approach to managing stress and promoting physical well-being. Moreover, the data indicating that only 30% of students engaged in regular exercise and 33% participated in outdoor games further emphasizes the need for targeted interventions. Prolonged sedentary behavior is a well-documented risk factor for developing LBP.

Conclusion:

The findings of this study underscore the concerning prevalence of low back pain among medical students, highlighting several modifiable risk factors that contribute to this issue.

To address these challenges, it is essential for educational institutions to implement comprehensive wellness programs that prioritize physical activity and ergonomic practices. Encouraging students to adopt healthier lifestyle habits, such as incorporating regular exercise and yoga into their routines, can play a crucial role in preventing low back pain and enhancing overall well-being.

Furthermore, raising awareness about the importance of proper posture and the risks associated with prolonged sitting and inappropriate footwear can empower students to make informed choices regarding their health.

References:

1. Shokri P, Zahmatyar M, Falah Tafti M, Fathy M, Rezaei Tolzali M, Ghaffari Jolfayi A, Nejadghaderi SA, Sullman MJ, Kolahi AA, Safiri S. Non-spinal low back pain: Global epidemiology, trends, and risk factors. Health Science Reports. 2023 Sep; 6(9):e1533.
2. Chou L, Cicuttini FM, Urquhart DM, Anthony SN, Sullivan K, Seneviwickrama M, Briggs AM, Wluka AE. People with low back pain perceive needs for non-biomedical services in workplace, financial, social and household domains: a systematic review. Journal of Physiotherapy. 2018 Apr 1; 64(2):74-83.
3. Shashi P, Atul S. Non-Specific Lower Back Pain in Healthcare Professionals and Students: Diagnosis, Management, and Prevention Strategies. Nursing. 2024; 4(6):131-6.
4. Gandavadi A. Working postures in dental practitioners and dental students: relationships between posture, seating, and muscle activity (Doctoral dissertation, University of Birmingham).
5. Vijay S, Ide M. Musculoskeletal neck and back pain in undergraduate dental students at a UK dental school—a cross-sectional study. British dental journal. 2016 Sep 9; 221(5):241-5.
6. Aljohani AA, Alarawi SM, Alhusayni YM, Alanazi RA, Alkonani AA, Alatawi BE, Zayied IA, Alshammari MK, Alhawaiti AS, Sabir SA, Alatawi AA. Prevalence of Low Back Pain among University Attendants in Tabuk City during 2023: A Cross-Sectional Study in Saudi Arabia. Cureus. 2023 Dec; 15(12).
7. O'Sullivan P, Smith A, Beales D, Straker L. Understanding adolescent low back pain from a multidimensional perspective: implications for management. Journal of orthopaedic & sports physical therapy. 2017 Oct; 47(10):741-51.
8. Brennan G, Shafat A, Donncha CM, Vekins C. Lower back pain in physically demanding college academic programs: a questionnaire-based study. BMC Musculoskeletal Disorders. 2007 Dec; 8:1-8.
9. Kumar M., Sankhla A., & Vyas N. (2024). Prevalence of low back pain among undergraduate medical students in AIIMS Jodhpur. International Journal of Pharmaceutical and Clinical Research, 16(3), 274-278.
10. Taha YA, Al Swaidan HA, Alyami HS, Alwadany MM, Al-Swaidan MH, Alabbas YH, Dhaen HM, Faidhi AA. The prevalence of low back pain among medical students: a cross-sectional study from Saudi Arabia. Cureus. 2023 May; 15(5).
11. Lee J, Han D. Effect of the trunk forward bending angle in sitting position on slow vital capacity. Journal of Physical Therapy Science. 2017; 29(12):2220-3.

12. Atif MM, Afzal F, Rasul A, Islam A, Khan A. Association of high heeled shoes and low back pain among students who wear high heeled shoes. Rawal Medical Journal. 2021 Oct 14; 46(4):884-.