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Research Paper

Prevalence of Low Back Pain Among College-Going Students in Kota, Rajasthan: A Cross-Sectional Study

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ABSTRACT
Background: *Low back pain (LBP) is a leading cause of disability worldwide and is increasingly reported among college students, who spend prolonged hours sitting, studying, and using digital devices. Region-specific data among Indian college students remain limited.*
Objective: *To assess the prevalence of low back pain, associated movement difficulty, and its perceived impact on daily and academic activities among college-going students in Kota, Rajasthan.*
Methods: *A cross-sectional survey was conducted among 104 college students (aged 18–25 years) in Kota, recruited by random sampling, using a Google Forms-based questionnaire adapted from the JOA Back Pain Evaluation Questionnaire. Data were collected from February to April 2025 and analysed descriptively (frequencies, percentages, mean, median, mode).*
Results: *Thirty-seven students (35.58%) reported low back pain within the past six months. On a movement-difficulty item (bending, kneeling, or stooping), 15 students (14.42%) reported great difficulty and 36 (34.62%) some difficulty, while 53 (50.96%) reported no difficulty. Regarding perceived hindrance to work routine from back pain, 9 students (8.65%) reported being greatly hindered, 18 (17.31%) moderately, 23 (22.12%) slightly, 24 (23.08%) a little, and 30 (28.85%) not at all.*
Conclusion: *Low back pain and related movement difficulty are common among college students in Kota, affecting roughly one in three to one in two students depending on the measure used, and are associated with sedentary study habits, poor posture, and prolonged sitting. Posture education, ergonomic furniture, and structured physical activity are recommended preventive strategies for this population.*
Keywords: *Low back pain; College students; Prevalence; Musculoskeletal disorders; Ergonomics; Cross-sectional study; India*

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I. INTRODUCTION

Low back pain (LBP) is defined as pain or discomfort localised between the costal margins and the inferior gluteal folds, with or without leg pain, and may arise from a single traumatic event or develop gradually through repetitive microtrauma [1]. It is among the most frequently reported symptoms in primary care worldwide, and its functional impact often drives patients to seek medical attention because of the limitations it imposes on daily life and occupational performance [1].

LBP can affect people of all ages, including children, adolescents, and older adults. Recognised risk factors include age, gender, obesity, psychosocial factors such as stress and anxiety, educational level, occupational demands, reduced muscle flexibility, competitive sport participation, load-carrying habits, postural habits, physical activity level, and prolonged device use [2]. Anatomically, LBP may originate from the ligaments, facet joints, vertebral periosteum, paravertebral musculature and fascia, the annulus fibrosus, or spinal nerve roots, with musculoligamentous injury and age-related intervertebral disc degeneration among the most common contributors [1,3,4].

LBP is a major cause of morbidity and disability globally, with substantial costs to individuals, employers, and health systems [2]. Evidence indicates consistent gender differences in prevalence, disability, and comorbidity, generally higher in women, with some studies suggesting men more often adopt maladaptive coping strategies such as catastrophising while women cope more flexibly [5]. Population estimates suggest that 20–30% of people experience LBP at any given time, and lifetime prevalence has been estimated at 60–80% [2,6].

University and college settings, which provide primary healthcare to large student populations, are an important context for identifying modifiable determinants of LBP, given the substantial time students spend studying and preparing for recurrent examinations [7]. Muscle tension in the lumbar region is one plausible mechanism, and reduced quality of life from LBP can compound the academic stress and extended study hours that many students, including those in health-science programmes, already experience — factors increasingly recognised as modifiable contributors to musculoskeletal pain in this population [8]. Prevalence estimates in the literature are heterogeneous, reflecting differences in sample age, case definition (point, period, or lifetime prevalence), and data-collection strategy [9,10].

Consistent with global health-policy attention to this issue, the World Health Organization identifies LBP as a leading cause of activity limitation and a source of substantial economic burden, noting that the resulting physical limitation can itself provoke psychological distress that further amplifies pain and reduces concentration [9]. Everyday behaviours specific to student life — long lecture hours, hunching over laptops, and prolonged looking-down at handheld devices — have each been implicated in postural strain on the neck and back, with computer use identified as a particularly common contributor [7,10].

Despite this substantial international literature, prevalence data specific to college-going students in Kota, Rajasthan — a city characterised by intensive, examination-focused academic schedules — remain limited. This study therefore aimed to assess the prevalence of low back pain, associated movement difficulty, and its perceived impact on the daily and academic activities of college-going students in Kota.

II. AIM, OBJECTIVES, AND HYPOTHESES

Need for the study: Understanding how common low back pain is among college-going students, and identifying its key modifiable risk factors, can inform preventive strategies and healthier academic environments.

Aim: To investigate the prevalence of low back pain among college-going students in Kota, Rajasthan, and to characterise its associated movement difficulty and functional impact.

Null hypothesis (H^0): There is no significant prevalence of low back pain among college-going students. Alternate hypothesis (H^1): There is a significant prevalence of low back pain among college-going students.

III. REVIEW OF RELATED LITERATURE

Almansour et al. found that LBP and associated disability were positively correlated with female sex, older age, perceived stress, and a greater number of weekly classes among secondary school teachers, with no significant association observed for smoking or elevated BMI [11].

Abdulrahman et al. reported a relatively high prevalence of LBP among university students in a public Saudi university, identifying uncomfortable, poorly designed classroom seating, prolonged sitting, and heavy lifting as key contributing factors [12].

Bento et al. examined gender differences in LBP and associated factors, noting that increasing age was linked to LBP in men in a pattern consistent with some, though not all, prior studies, plausibly reflecting age-related postural change, reduced flexibility, and musculoskeletal degeneration [13].

Lotfi et al. demonstrated that severe vitamin D deficiency (hypovitaminosis D) is a well-documented cause of LBP through osteomalacia, while noting a research gap regarding the contribution of milder vitamin D insufficiency to back pain [14].

Julian and Manabat, studying freshman students at a tertiary institution, examined the prevalence and risk factors of LBP specifically among first-year students, highlighting this transition period as one of particular vulnerability [15].

Wáng et al. synthesised evidence showing a higher prevalence of LBP in women after menopause compared with men, plausibly linked to declining oestrogen and consequent changes in bone density, muscle strength, and spinal health [16].

Noormohammadpour et al. examined LBP among female university students in relation to different sport activities, finding that the type, intensity, and duration of physical activity influenced both the prevalence and severity of LBP in this population [17].

De la Corte-Rodriguez et al., in a narrative review, emphasised that physical inactivity and sedentary behaviour are associated with, and can aggravate, chronic musculoskeletal pain, while structured physical exercise — an inexpensive, low-risk intervention — can improve pain, sleep quality, daily function, and quality of life [18].

Collectively, this literature identifies female sex, psychosocial stress, prolonged sitting, poor ergonomic seating, low physical activity, and (in some populations) vitamin D status as recurring correlates of LBP, while consistently supporting structured exercise and posture-focused intervention as protective strategies relevant to student populations such as the one examined here.

IV. MATERIALS AND METHODS

Study Design, Setting, and Duration

A cross-sectional survey was conducted among college-going students in Kota, Rajasthan, India, from February to April 2025.

Participants and Sampling

A total of 104 students aged 18–25 years, enrolled in undergraduate or postgraduate courses, were recruited using random sampling and completed the survey after providing informed consent. Both male and female students were included. Inclusion criteria: enrolled students aged 18–25 years, of either sex, willing to provide informed consent. Exclusion criteria: known medical conditions or injuries capable of independently causing back pain, a history of chronic back conditions or spinal surgery, or diagnosed musculoskeletal disorders unrelated to the study's scope.

Instrumentation and Data Collection

Data were collected via a Google Forms questionnaire adapted from the JOA (Japanese Orthopaedic Association) Back Pain Evaluation Questionnaire, capturing pain severity, frequency, duration, and impact on daily activities over the preceding week, together with items on potential risk factors including hours spent sitting, physical activity levels, backpack weight, and study posture.

Ethical Considerations

Participation was voluntary and confidential, and informed consent was obtained from all respondents prior to data collection. The study protocol was reviewed and approved by the Department of Physiotherapy, Career Point University, Kota, as part of the requirements for the degree of Bachelor of Physiotherapy.

Statistical Analysis

Data were coded and entered into Microsoft Excel. Descriptive statistics — frequencies, percentages, mean, median, and mode — were calculated for each outcome measure (six-month pain history, movement difficulty, and perceived functional hindrance) and are presented separately, reflecting their origin as distinct items within the JOA-based questionnaire rather than a single composite prevalence measure.

V. RESULTS

A total of 104 college-going students aged 18–25 years completed the questionnaire. Results are reported for three distinct outcome measures captured by the survey: six-month pain history, movement-related difficulty, and perceived functional hindrance.

Six-Month History of Low Back Pain

Thirty-seven students (35.58%) reported having experienced low back pain at least once within the preceding six months, while 67 (64.42%) reported no such history (Table 1, Figure 1).

Table 1. Six-month history of low back pain among college-going students (n = 104)

Response	No. of Students (n)	Percentage (%)
Reported LBP (past 6 months)	37	35.58
No LBP reported	67	64.42
Total	**104**	**100.00**

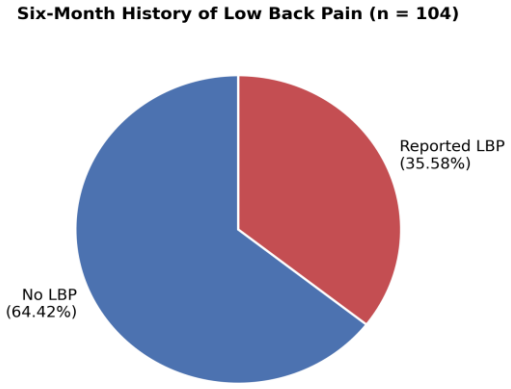

Figure 1. Proportion of students reporting low back pain within the past six months (n = 104).

Movement-Related Difficulty

On the movement-difficulty item (bending forward, kneeling, or stooping), 53 students (50.96%) reported no difficulty, 36 (34.62%) reported some difficulty, and 15 (14.42%) reported great difficulty (Table 2, Figure 2).

Table 2. Difficulty with bending, kneeling, or stooping among college-going students (n = 104)

Movement Difficulty (bending/kneeling/stooping)	No. of Students (n)	Percentage (%)
No difficulty	53	50.96
Some difficulty	36	34.62
Great difficulty	15	14.42
Total	**104**	**100.00**

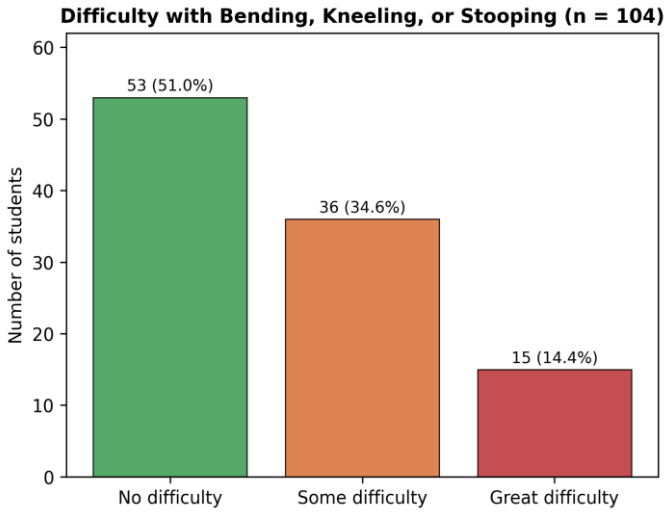

Figure 2. Distribution of movement-related difficulty (bending/kneeling/stooping) among students (n = 104).

Perceived Hindrance to Work Routine

Regarding the extent to which back pain hindered participants' work routine, 30 students (28.85%) reported no hindrance at all, 24 (23.08%) a little, 23 (22.12%) slight hindrance, 18 (17.31%) moderate hindrance, and 9 (8.65%) reported being greatly hindered (Table 3, Figure 3).

Table 3. Perceived hindrance of work routine due to back pain (n = 104)

Perceived Hindrance to Work Routine	No. of Students (n)	Percentage (%)
Not at all	30	28.85
Little	24	23.08
Slightly	23	22.12
Moderately	18	17.31
Greatly	9	8.65
Total	**104**	**100.00**

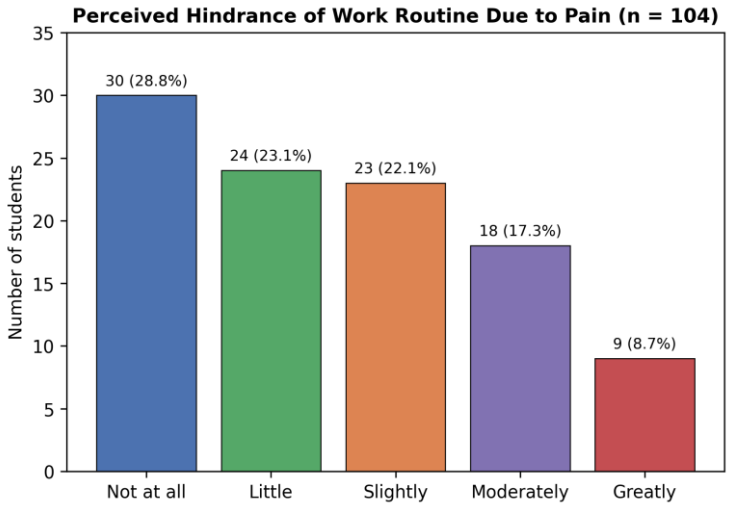

Figure 3. Perceived hindrance of work routine due to low back pain among students (n = 104).

VI. DISCUSSION

This study assessed low back pain and its functional correlates among 104 college-going students in Kota, using three related but distinct outcome measures drawn from a JOA-based questionnaire. Over a third of students (35.58%) reported LBP within the past six months, and just under half (49.04%) reported at least some movement-related difficulty with bending, kneeling, or stooping, while roughly a quarter (25.96%) reported that back pain moderately or greatly hindered their work routine. Together, these findings indicate that LBP is a common, functionally relevant concern in this population, though its apparent prevalence varies meaningfully depending on which specific dimension — pain history, movement limitation, or functional hindrance — is measured.

These findings are consistent with the broader literature on LBP among students and other high-sitting-load populations. Abdulrahman et al. similarly identified prolonged sitting and poorly designed classroom seating as key contributors to LBP among Saudi university students [12], a pattern directly relevant to the long lecture hours and study sessions typical of college life in Kota. Almansour et al.'s finding that stress and greater weekly class load were associated with LBP and disability among teachers [11] parallels the academic-stress pathway proposed here, while Julian and Manabat's focus on freshman students underscores that the transition into college life itself may represent a period of heightened vulnerability [15].

Gender- and hormone-related mechanisms identified elsewhere in the literature — including Bento et al.'s observation of age-related LBP patterns that differ by sex [13], and Wáng et al.'s synthesis of postmenopausal risk in women [16] — were not directly assessed in this predominantly young (18–25-year-old) sample, but may become more relevant as this cohort ages. Noormohammadpour et al.'s finding that sport type and activity level modulate LBP risk in female university students [17] is consistent with the present study's implicit assumption that physical activity level is a modifiable risk factor worth targeting in prevention programmes, a view reinforced by De la Corte-Rodriguez et al.'s review identifying structured exercise as an effective, low-risk intervention for chronic musculoskeletal pain [18].

The comparatively lower rate of vitamin D-related discussion in student LBP literature, despite Lotfi et al.'s well-established link between hypovitaminosis D and LBP through osteomalacia [14], suggests a potential underexplored contributor in populations with limited sun exposure due to indoor study habits — a plausible, though untested, factor in the present sample. Overall, sedentary study habits, prolonged sitting, poor postural habits, and inadequate physical activity remain the most consistently supported, and most directly modifiable, contributors to LBP in student populations, including the one studied here.

Implications for Practice

These findings support integrating posture education, ergonomic furniture design, structured breaks during long study sessions, and accessible physical activity programming into college and hostel settings in Kota. Because movement-related difficulty (49.04%) was more prevalent than either the six-month pain history (35.58%) or moderate-to-severe functional hindrance (25.96%), early, low-intensity interventions targeting flexibility and postural awareness may reach a substantial proportion of at-risk students before pain becomes more functionally limiting.

Limitations

- The sample (n = 104) was drawn from a single city using random sampling within a convenience-accessible population, which may limit generalisability to other regions or institution types.
- All outcome measures were self-reported via a JOA-adapted questionnaire without independent clinical examination or imaging confirmation of LBP or its structural cause.
- The three outcome measures (pain history, movement difficulty, functional hindrance) reflect different JOA questionnaire subdomains and are not directly additive; the original study design did not include a single validated composite LBP prevalence score, which should be incorporated in future work.
- The cross-sectional design precludes causal inference regarding the modifiable risk factors (sitting time, posture, backpack weight, physical activity) that were collected but not formally tested for statistical association with outcome measures in the available analysis.
- Data collection relied on Google Forms distribution, which may have introduced selection bias toward digitally engaged students.

VII. CONCLUSION

Low back pain and related movement difficulty are common among college-going students in Kota, Rajasthan, affecting between roughly one in three and one in two students depending on the specific outcome measured, and are consistent with sedentary study habits, poor posture, and prolonged sitting identified throughout the international literature on student LBP. These findings support the alternate hypothesis that LBP has significant prevalence in this population. Because the underlying risk factors — prolonged sitting, poor posture, low physical activity, and academic stress — are largely modifiable, posture education, ergonomic improvements to classroom and study furniture, and structured physical activity programmes are recommended to reduce the burden of LBP and support the academic performance and well-being of college students in Kota and comparable settings.

DECLARATIONS

The authors declare no conflict of interest and received no specific funding for this research. The dataset generated during this study is available from the corresponding author on reasonable request.

REFERENCES

[1]. Deyo RA, Weinstein JN. Low back pain. N Engl J Med. 2001;344(5):363–370.
[2]. Andersson GB. Epidemiological features of chronic low-back pain. Lancet. 1999;354(9178):581–585.
[3]. Mense S. Nociception from skeletal muscle in relation to clinical muscle pain. Pain. 1993;54(3):241–289.
[4]. Spine-Health. Annulus fibrosus definition [Internet]. 2014 [cited 2025 Aug]. Available from: http://www.spine-health.com/glossary/annulus-fibrosus
[5]. Lindbeck L, Kjellberg K. Gender differences in lifting technique. Ergonomics. 2001;44(2):202–214.
[6]. O'Sullivan P. Diagnosis and classification of chronic low back pain disorders: maladaptive movement and motor control impairments as underlying mechanism. Man Ther. 2005;10(4):242–255.
[7]. Kebede A, Abebe SM, Woldie H, Yenit MK. Low back pain and associated factors among primary school teachers in Mekelle City, North Ethiopia: a cross-sectional study. Occup Ther Int. 2019;2019:3862946.
[8]. Muhtz C, Rodriguez-Raecke R, Hinkelmann K, Moeller-Bertram T, Kiefer F, Wiedemann K. Cortisol response to experimental pain in patients with chronic low back pain and patients with major depression. Pain Med. 2013;14(4):498–503.
[9]. World Health Organization. Low back pain [Internet]. 2023 [cited 2025 Aug]. Available from: https://www.who.int/news-room/fact-sheets/detail/low-back-pain
[10]. Erick PN, Smith DR. A systematic review of musculoskeletal disorders among school teachers. BMC Musculoskelet Disord. 2011;12:260.
[11]. Almansour AH, Almutairi DS, Alaskar TM, Kalkatawi MS, Aljubair MF, Alotaibi RS, AlHarkan KS, Alqahtani HA, AlOmar RS. Prevalence of low back pain and disability among secondary school teachers in the eastern province of the Kingdom of Saudi Arabia: a cross-sectional analytical study. Front Public Health. 2024;12:1307845.
[12]. Abdulrahman KA, Al Askar AT, Alhamidi AK, Al Sharani AH, Alanazi AA, Alkatheeri AN, Alhazmi MT, Alharbi AJ. Low back pain among college students in a public Saudi university: a cross-sectional study. J Family Med Prim Care. 2024;13(9):3798–3805.
[13]. Bento TP, Genebra CVDS, Maciel NM, Cornelio GP, Simeão SFAP, de Vitta A. Low back pain and some associated factors: is there any difference between genders? Braz J Phys Ther. 2020;24(1):79–87.
[14]. Lotfi A, Abdel-Nasser AM, Hamdy A, Omran AA, El-Rehany MA. Hypovitaminosis D in female patients with chronic low back pain. Clin Rheumatol. 2007;26(11):1895–1901.
[15]. Julian CU, Manabat RP, Moh'd Ali SB, Jesmi A, Quiambao VJ, Ruaya KR, et al. Low back pain among freshmen students of tertiary institution: prevalence and risk factors. Cent Luzon Doct Hosp Educ Inst Res J. 2020.
[16]. Wáng YX, Wáng JQ, Káplár Z. Increased low back pain prevalence in females than in males after menopause age: evidence based on synthetic literature review. Quant Imaging Med Surg. 2016;6(2):199–206.
[17]. Noormohammadpour P, Rostami M, Mansournia MA, Farahbakhsh F, Pourgharib Shahi MH, Kordi R. Low back pain status of female university students in relation to different sport activities. Eur Spine J. 2016;25(4):1196–1203.

[18]. De la Corte-Rodriguez H, Roman-Belmonte JM, Resino-Luis C, Madrid-Gonzalez J, Rodriguez-Merchan EC. The role of physical exercise in chronic musculoskeletal pain: best medicine — a narrative review. Healthcare (Basel). 2024;12(2):242.
[19]. Steffens D, Maher CG, Pereira LSM, Stevens ML, Oliveira VC, Chapple M, Teixeira-Salmela LF, Hancock MJ. Prevention of low back pain: a systematic review and meta-analysis. JAMA Intern Med. 2016;176(2):199–208.
[20]. Geneen LJ, Moore RA, Clarke C, Martin D, Colvin LA, Smith BH. Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews. Cochrane Database Syst Rev. 2017;4(4):CD011279.