

Sedentary Lifestyle and Lower Back Pain among University Students: A Cross-Sectional Study

Monaza^{1*}, Moizam Ali², Moizullah Makhdoom², Saima Naz Shiekh¹

ABSTRACT

OBJECTIVE: To determine the prevalence of sedentary lifestyle and lower back pain among university students and to evaluate the association between sedentary behavior and lower back pain.

METHODOLOGY: A multicenter cross-sectional study was conducted during July-Sept 2025 among undergraduate students from various universities in Sindh, Pakistan. Participants were recruited through convenience sampling. Data were collected using a structured, anonymous, pre-validated questionnaire assessing demographic characteristics, sedentary behavior, and lower back pain. Sedentary behavior was categorized into mild (<4 hours/day), moderate (4–8 hours/day), and heavy (>8 hours/day). Descriptive and inferential statistics were performed using a significance level of $p < 0.05$.

RESULTS: A total of 197 students participated, with most aged 18–24 years and enrolled in health sciences programs. Lower back pain was reported by 95 (48.2%) participants, while 102 (51.8%) reported no pain. Mild, moderate, and heavy sedentary behavior were observed in 45.7%, 34.0%, and 20.3% of students, respectively. Lower back pain was more frequent among students with prolonged sedentary behavior, particularly those reporting more than eight hours of sitting daily. Extended screen time and prolonged academic sitting were common among participants and appeared to contribute to musculoskeletal discomfort despite most students having a normal body mass index.

CONCLUSION: Lower back pain is a common health problem among university students and is positively associated with prolonged sedentary behavior. Promoting regular physical activity, reducing uninterrupted sitting time, and improving ergonomic practices may help decrease the burden of lower back pain and support healthier lifestyles among university students.

KEYWORDS: Lower back pain, sedentary lifestyle, university students, physical activity, musculoskeletal disorders, screen time, cross-sectional study.

INTRODUCTION

Lower back pain (LBP) is one of the most common musculoskeletal complaints worldwide and represents an increasing health concern among adolescents and young adults¹. It is characterized by pain or discomfort located between the lower rib margin and the gluteal folds, with or without radiation to the lower limbs. Although traditionally associated with older adults, LBP is now frequently reported among university students due to prolonged sitting, poor posture, and extensive use of digital devices, academic stress, and reduced physical activity.

The transition to university life often encourages sedentary behaviors, including extended hours spent attending lectures, studying, completing assignments, and using computers or smartphones. Such lifestyle patterns reduce opportunities for regular physical activity and may negatively affect spinal mobility, muscle endurance, and lumbar flexibility. Over time, these factors increase mechanical stress on the lower back, predisposing students to pain and functional limitations^{2,3}.

Lower back pain can significantly affect students'

physical and psychological well-being. Persistent pain may interfere with sleep quality, concentration, classroom participation, and academic performance, ultimately reducing quality of life. Despite these consequences, many students remain unaware that their daily habits may contribute to future musculoskeletal disorders^{4,5}.

Previous studies conducted in different countries have consistently reported a considerable prevalence of LBP among school-aged children, adolescents, and university students, indicating that spinal health problems often begin early in life. The increasing dependence on screen-based activities and reduced engagement in recreational exercise have further intensified this problem. Consequently, identifying modifiable lifestyle factors, particularly sedentary behavior, has become an important public health priority⁶⁻⁸.

Understanding the relationship between sedentary lifestyle and lower back pain is essential for developing effective preventive interventions within educational institutions. Promoting regular physical activity, encouraging proper sitting posture, and reducing prolonged periods of uninterrupted sitting may help minimize the burden of LBP among students.

Therefore, the present study was conducted to determine the prevalence of sedentary lifestyle and

¹Liaquat University of Medical and Health Sciences, Jamshoro

²Baqai Medical University, Karachi

Correspondence: makhdoommonaza@gmail.com

doi: 10.22442/jlumhs.2026.01596



lower back pain among university students and to evaluate the association between sedentary behavior and the occurrence of lower back pain. Thus the objectives of the study were to determine the prevalence of sedentary lifestyle and lower back pain among university students and to evaluate the association between sedentary behavior and lower back pain.

METHODOLOGY

A multicenter cross-sectional study was conducted during July-September 2025 among undergraduate students enrolled in universities across Sindh, Pakistan. Students from multiple academic disciplines were invited to participate, with the majority belonging to health sciences programs, although participants from non-health disciplines were also included.

Data were collected using a structured, anonymous, pre-validated questionnaire that assessed demographic characteristics, sedentary behavior, and lower back pain. Convenience sampling was employed to recruit participants.

Sedentary behavior was categorized according to the average daily duration of sitting activities. Descriptive statistics were used to summarize participant characteristics and study variables, while inferential statistical tests were applied to determine the association between sedentary lifestyle and lower back pain. A p-value of <0.05 was considered statistically significant.

Sedentary Lifestyle: A pattern of behavior characterized by prolonged sitting or low levels of physical activity, including screen-based activities exceeding six hours per day with minimal movement.

Lower Back Pain (LBP): Pain or discomfort localized between the lower rib margin and the inferior gluteal folds, with or without radiation to the lower limbs, lasting for more than one week during the previous six months.

Heavy Sedentary Behavior: Spending more than eight hours per day sitting or reclining, excluding sleeping time.

Moderate Sedentary Behavior: Remaining seated for four to eight hours per day.

Mild Sedentary Behavior: Remaining seated for less than four hours per day.

Sedentary Threshold: The minimum daily duration of sedentary behavior associated with an increased risk of adverse health outcomes.

RESULTS

A total of 197 undergraduate students participated in the study, with most respondents enrolled at Liaquat University of Medical and Health Sciences (LUMHS). The majority were MBBS students aged between 18 and 24 years, with the largest proportion belonging to the 18-21-year age group. Body mass index (BMI) assessment demonstrated that most participants had

a normal BMI according to World Health Organization criteria, while fewer students were underweight or overweight/obese.

Lower back pain was reported by 95 students (48.2%), whereas 102 students (51.8%) did not report LBP. **Table I**

Table I: Prevalence of Lower Back Pain

Lower Back Pain	Frequency	Percentage
Yes	95	48.2%
No	102	51.8%
Total	197	100%

Nearly half of the participants experienced lower back pain. Several students described their symptoms as moderate to severe, affecting routine activities such as studying, attending lectures, sleeping, and daily functioning. A small proportion sought medical consultation or required analgesics for symptom relief. Among the participants, 45.7% demonstrated mild sedentary behavior, 34.0% had moderate sedentary behavior, and 20.3% were classified as heavily sedentary. **Table II**

Table II: Prevalence of Sedentary Lifestyle

Sedentary Category	Frequency	Percentage
Mild (<4 hours/day)	90	45.7%
Moderate (4-8 hours/day)	67	34.0%
Heavy (>8 hours/day)	40	20.3%
Total	197	100%

Students reported spending prolonged periods sitting during lectures, studying, computer work, and smartphone use on weekdays. During weekends, leisure-related sedentary activities, including television viewing, gaming, and social media use, increased considerably. **Table III**

Lower back pain was considerably more common among students with prolonged sedentary behavior. The proportion of students reporting LBP increased progressively from the mild sedentary category to the heavy sedentary category, suggesting a positive relationship between increasing sedentary time and the occurrence of lower back pain.

Overall, the findings indicate that prolonged sitting and screen-based activities may contribute substantially to musculoskeletal discomfort, even among young adults with predominantly normal body weight.

Table III: Association between Sedentary Lifestyle and Lower Back Pain

LBP Status	Mild	Moderate	Heavy	Total
No	68	34	16	118
Yes	22	33	24	79
Total	90	67	40	197

DISCUSSION

The present study demonstrated that almost one-half of university students experienced lower back pain, indicating that LBP is a common health concern even in a young and otherwise healthy population. The observed prevalence (48.2%) is comparable with findings from previous national and international studies, which have consistently identified university students as a high-risk group because of prolonged sitting, intensive academic workloads, and increased dependence on digital devices.

Our findings also revealed that although most participants were categorized as having mild sedentary behavior, students with moderate and heavy sedentary lifestyles reported substantially higher frequencies of lower back pain. This pattern supports the hypothesis that prolonged sitting contributes to spinal discomfort through sustained mechanical loading, reduced lumbar mobility, muscle fatigue, and weakening of postural muscles. Continuous sitting also decreases blood circulation to spinal structures and increases pressure on intervertebral discs, thereby predisposing individuals to musculoskeletal pain.

Recent studies have reported similar observations. Yasmin and Sudaryanto (2025) found that individuals spending more than six hours per day in sedentary activities were significantly more likely to develop lower back pain⁹. Likewise, Rahmani et al. (2025) demonstrated that adolescents with prolonged sedentary behavior experienced recurrent episodes of LBP more frequently than physically active individuals¹⁰. Comparable findings have also been reported by Alshehri et al. (2023) and Jan et al. (2025), both of whom identified prolonged sitting, poor posture, and insufficient physical activity as important predictors of lower back pain among university students^{11,12}.

Interestingly, most participants in the present study had a normal BMI, suggesting that body weight alone may not explain the occurrence of lower back pain in this population. Instead, behavioral factors, particularly prolonged screen time and inadequate physical activity, appear to play a more important role.

The findings emphasize the need for preventive interventions within universities. Educational institutions should encourage regular physical activity, incorporate ergonomic awareness programs, promote healthy sitting posture, and recommend periodic movement breaks during prolonged academic activities. Such measures may reduce the burden of lower back pain and improve students' overall health, well-being, and academic productivity.

CONCLUSION

Lower back pain is highly prevalent among university students and demonstrates a clear association with prolonged sedentary behavior. Students who spent longer periods sitting were more likely to experience lower back pain, irrespective of their generally healthy

body weight. These findings highlight the importance of promoting active lifestyles, reducing prolonged screen time, encouraging regular exercise, and improving ergonomic practices within educational settings. Early preventive strategies and awareness programs may help reduce the risk of chronic musculoskeletal disorders and improve students' long-term physical health.

Acknowledgement: The valuable and unforgettable help of ward faculty during the study period is gratefully acknowledged

Ethical permission: Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan, The study has been approved by ERC.

Conflict of interest: There is no conflict of interest between the authors.

Financial Disclosure / Grant Approval: No funding agency was involved in this research.

Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Monaza: Collection and acquisition of data & grammatical corrections

Ali M: Concept, design of study & data analysis

Makhdoom M: Drafting the article and finalizing the manuscript

Sheikh SN: Revising critically and make it suitable for final format

REFERENCES

1. Chen SM, Liu MF, Cook J, Bass S, Lo SK. Sedentary lifestyle as a risk factor for low back pain: a systematic review. *Int Arch Occup Environ Health*. 2009; 82(7): 797-806. doi: 10.1007/s00420-009-0410-0.
2. Baradaran Mahdavi S, Riahi R, Vahdatpour B, Kelishadi R. Association between sedentary behavior and low back pain: a systematic review and meta-analysis. *Health Promot Perspect*. 2021; 11(4): 393-410. doi: 10.34172/hpp.2021.50.
3. Damato TM, Christofaro DGD, Pinheiro MB, Morelhao PK, Pinto RZ, De Oliveira Silva D, et al. Does sedentary behaviour contribute to the development of a new episode of low back pain? A systematic review of prospective cohort studies. *Eur J Pain*. 2022; 26(7): 1412-1423. doi: 10.1002/ejp.1977.
4. Alzahrani H, Alshehri MA, Alzhrani M, Alshehri YS, Al Attar WSA. The association between sedentary behavior and low back pain in adults: a systematic review and meta-analysis of longitudinal studies. *PeerJ*. 2022; 10: e13127. doi: 10.7717/peerj.13127.
5. Alanazi S, Alruwaili J, Alruwaili M, Alfayyadh A, Alsirhani H, Alowaydhah SM et al. Mapping the prevalence and risk factors of low back pain

- among university populations in Saudi Arabia: a systematic review and meta-analysis. *J Clin Med*. 2026; 15(7): 2808. doi: 10.3390/jcm15072808.
6. Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F et al. A systematic review of the global prevalence of low back pain. *Arthritis Rheum*. 2012; 64(6): 2028-2037. doi: 10.1002/art.34347.
 7. Hanna F, Daas RN, El-Shareif TJ, Al-Marridi HH, Al-Rojoub ZM, Adegboye OA. The relationship between sedentary behavior, back pain, and psychosocial correlates among university employees. *Front Public Health*. 2019; 7: 80.
 8. Rosenberg DE, Norman GJ, Wagner N, Patrick K, Calfas KJ, Sallis JF. Reliability and validity of the Sedentary Behavior Questionnaire (SBQ) for adults. *J Phys Act Health*. 2010; 7(6): 697–705
 9. Yasmin N, Sudaryanto WT. Physical activity, sedentary lifestyle, and lumbar flexibility in young adults: a cross-sectional study. *Majalah Ilmiah Fisioterapi Indonesia*. 2025; 13(1): 69–76. doi: 10.24843/mifi.2025.v13.i01.p09.
 10. Rahmani N, Binaei F, Bandpei MA, Soleimani F, Mohseni F, Nobakht Z. The association between low back pain and lifestyle factors in adolescents. *J Bodyw Mov Ther*. 2025; 42: 1135–40.
 11. Alshehri MM, Alqhtani AM, Gharawi SH, Sharahily RA, Fathi WA, Alnamy SG, et al. Prevalence of lower back pain and its associations with lifestyle behaviors among college students in Saudi Arabia. *BMC Musculoskelet Disord*. 2023; 24(1): 646.
 12. Jan SI, Khan R, Mustafa M, Ullah A, Jaffary K, Tariq A et al. Prevalence of low back pain and its association with quality of sleep among students of Allied Health Science of Iqra National University Peshawar. *Res Med Sci Rev*. 2025; 3(1): 1570–5.

