

Original Article

Prevalence of Low Back Pain in Medical Students due to Prolonged Sitting

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ABSTRACT

Background: Low back pain (LBP) is a prevalent condition among medical students, attributed to their sedentary lifestyle and prolonged periods of sitting due to the demanding nature of medical education. This health concern not only affects their academic performance and quality of life but also has implications for their future professional practice in healthcare.

Objective: This study aims to determine the prevalence and severity of low back pain among medical students at Akhtar Saeed Medical and Dental College, Lahore, and to assess its impact on their daily functioning and academic activities.

Methods: A cross-sectional study was conducted over six months, involving 169 medical students aged 18-25 years from various programs (DPT, MBBS, BDS, Pharm-D). Participants were selected through stratified random sampling. The study utilized the Oswestry Disability Index and the Visual Analog Scale to measure the severity of LBP and its impact on daily activities. Data were analyzed using SPSS version 25 for descriptive and inferential statistics.

Results: Out of 169 participants, 56.8% reported experiencing LBP. Among those with LBP, 69.8% described their pain as mild, 27.1% as moderate, and 3.1% as severe. Regarding disability, 63.5% of the affected students reported minimal disability, 25% moderate disability, 7.3% severe disability, and 4% were crippled. The study highlighted a significant correlation between prolonged sitting and the incidence of LBP among medical students.

Conclusion: The high prevalence of low back pain among medical students at Akhtar Saeed Medical and Dental College indicates a need for targeted interventions. These include ergonomic adjustments, promotion of physical activity, and incorporation of musculoskeletal health education into medical curricula. Addressing these factors is essential for improving the health and academic performance of medical students and preparing them for healthier professional practices.

Keywords: Low Back Pain, Medical Students, Prevalence, Oswestry Disability Index, Visual Analog Scale, Ergonomic Interventions, Sedentary Lifestyle, Musculoskeletal Health.

INTRODUCTION

Low back pain (LBP) represents a prevalent health issue globally, recognized by the World Health Organization as a distressing experience associated with actual or potential tissue damage. This condition, often a manifestation of musculoskeletal pain (MSP), arises from repetitive strain, overuse, and ergonomic-related musculoskeletal disorders, affecting bones, joints, and soft tissues. It is particularly linked to prolonged periods of incorrect posture, such as excessive sitting or standing (1). Recent studies have highlighted that various discomforts, including tension, soreness, fatigue, and tremors, are indicative of low back pain, a symptom prevalent during periods of inactivity and extended sitting (2). The universality of low back pain at some juncture across the lifespan underscores its significant impact on both mental and physical wellbeing. However, the heterogeneity of low back pain presentations complicates the comparison and collection of epidemiological data, with global research indicating an increasing prevalence of LBP across all age groups, thereby affecting social and economic health sectors significantly (3).

Risk factors for low back pain encompass a range of elements, including gender, psychological factors such as stress, anxiety, and depression, occupational hazards, reduced flexibility, decreased muscular strength, sporting activities, and the manner and type of

weight lifting. Lifestyle and behavioral factors such as excessive television viewing or computer use also play a critical role (4). A substantial body of research supports the correlation between prolonged sitting and low back pain, although the exact nature of this relationship remains less clearly defined in the general population (6). In the modern era, sedentary lifestyles have become increasingly common, with a significant portion of the population spending extensive periods in seated positions for both work and leisure activities. This sedentary behavior has been linked to adverse health outcomes across the lifespan, affecting children, working-aged adults, and the elderly alike (7,8).

Medical students, in particular, are at a heightened risk for developing sedentary habits due to their rigorous academic schedules and long hours spent in study and clinical practice. This subgroup is prone to low back pain, exacerbated by the mental stress associated with examinations, prolonged sitting in lectures, fatigue, incorrect postures, and a lack of physical activity. It is noteworthy that low back pain is more prevalent among female medical students (12). The extensive curricula of medical education and the significant amount of time spent in clinical settings as students approach graduation have been identified as contributing factors to the high incidence of LBP among this group (13,14,15).

Given the prevalent nature of low back pain among medical students, it is imperative to address this issue through lifestyle modifications. Enhancing aerobic fitness, incorporating short breaks during study periods, and engaging in stretching exercises during prolonged sitting can mitigate the risks associated with low back pain, resulting from sedentary behaviors and poor physical conditioning (17). This research aims to evaluate the prevalence of low back pain among medical students at Akhtar Saeed Medical and Dental College, Lahore, specifically focusing on the impact of prolonged sitting for extended hours (6-7 hours) on the occurrence of LBP. The rationale behind this study is to understand the extent of low back discomfort among medical students due to their sedentary lifestyles and to inform strategies for its prevention and management.

MATERIAL AND METHODS

A cross-sectional study design was utilized to assess the prevalence of low back pain among medical students at Akhtar Saeed Medical College, Lahore. Conducted over a six-month period, the research meticulously selected a sample size of 169 participants. This figure was determined based on a calculation formula that ensured a 95% confidence level for the study's findings. The cohort comprised medical students from various programs including DPT, MBBS, BDS, and Pharm-D, aged 18-25 years, and across all professional years from first to fifth. Both male and female students were included, specifically those who reported engaging in 6-7 hours of daily sitting activities. The study's exclusion criteria were designed to omit students who were above the age of 25, those with disabilities, and individuals suffering from pre-existing pain conditions attributable to trauma.

For the purpose of data collection, two primary instruments were employed: the Oswestry Disability Index questionnaire and the Visual Analog Scale. These tools were chosen for their established reliability and validity in assessing the intensity of pain and the degree of disability related to low back pain. Prior to participation, all eligible students were provided with comprehensive information about the study's objectives and procedures. Following this, informed written consent was obtained from each participant, ensuring voluntary participation and adherence to ethical considerations. This process underscored the commitment to uphold the ethical principles outlined in the Declaration of Helsinki, emphasizing respect for individuals, beneficence, and justice.

Upon the collection of data, the gathered information was analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. This analytical approach facilitated a comprehensive examination of the prevalence, patterns, and correlates of low back pain among the study population. Statistical methods employed included descriptive statistics to summarize the demographic characteristics of the participants and inferential statistics to explore the association between low back pain and various risk factors identified in the study. The utilization of SPSS version 25 ensured that the data analysis was conducted with high precision, allowing for accurate interpretation and reliable conclusions.

Throughout the study, ethical considerations were meticulously adhered to, not only in terms of securing informed consent but also in guaranteeing the confidentiality and anonymity of the participants' responses. The study's design, methodology, and ethical considerations were reviewed and approved by the Institutional Review Board (IRB) of Akhtar Saeed Medical College, ensuring that the research was conducted in accordance with the highest ethical standards and contributed valuable insights into the prevalence and determinants of low back pain among medical students.

RESULTS

In the conducted study at Akhtar Saeed Medical College, Lahore, a total of 169 medical students were assessed to investigate the prevalence and severity of low back pain (LBP) and its impact on their daily activities. The age distribution of the participants, as outlined in Table 1, ranged from 18 to 25 years, with an average age of 21.6 years. This demographic profile (Standard Deviation =

1.797) suggests a relatively young study population, which is significant considering the lifestyle and academic pressures characteristic of this age group in a medical educational setting.

The prevalence of low back pain among the participants was notably high, with 96 out of the 169 students (56.8%) reporting experiencing LBP (Table 2). This majority indicates that more than half of the studied population suffers from some form of low back discomfort, underscoring the health concern within this specific demographic. Conversely, 73 participants (43.2%) did not report any symptoms of LBP, highlighting a significant portion of the population potentially engaged in preventive behaviors or possessing inherent resilience against developing such conditions.

Regarding the severity of low back pain as measured by the Visual Analog Scale, the majority of affected students reported mild pain (67 out of 96 respondents, or 69.8%) (Table 3). This suggests that while LBP is prevalent, for most sufferers, it remains at a manageable level of discomfort. However, a not insignificant proportion of students experienced moderate to severe pain levels, with 26 respondents (27.1%) reporting moderate pain and 3 respondents (3.1%) experiencing severe pain, indicating a spectrum of pain intensity within the study group.

Table 1: Age Distribution of Participants

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Age	169	18	25	21.6	1.797

Table 2: Prevalence of Low Back Pain Among Participants

Response	Frequency	Percent
Yes	96	56.8%
No	73	43.2%
Total	169	100%

Table 3: Severity of Low Back Pain Using the Visual Analog Scale

Severity	Frequency	Percent
Mild	67	69.8%
Moderate	26	27.1%
Severe	3	3.1%
Total	96	100%

Table 4: Categorization of Disability on the Oswestry Disability Index (ODI) with Pain

Disability Level	Frequency	Percent
Minimal Disability	61	63.5%
Moderate Disability	24	25.0%
Severe Disability	7	7.3%
Crippled	4	4.2%
Total	96	100%

The impact of low back pain on the students’ functionality was further explored through the Oswestry Disability Index (ODI), which categorizes the level of disability associated with pain. The findings revealed that the majority of those affected by LBP reported minimal disability (61 out of 96, or 63.5%) (Table 4). This suggests that, despite the prevalence of pain, most students were able to maintain a high level of function in their daily activities. Nevertheless, a considerable number of students reported greater levels of disability: 24 respondents (25%) experienced moderate disability, 7 respondents (7.3%) faced severe disability, and 4 respondents (4.2%) were categorized as crippled by their condition. These findings highlight the varying degrees of impact LBP can have on individuals, from minimal interference with daily activities to significant disability.

The data collected and analyzed in this study shed light on the significant prevalence of low back pain among medical students at Akhtar Saeed Medical College and its varying impact on their quality of life and functionality. These findings underscore the need for targeted interventions to address this common health issue, emphasizing the importance of preventive measures and effective pain management strategies within this population.

DISCUSSION

In this study conducted at Akhtar Saeed Medical and Dental College, Lahore, the prevalence of low back pain (LBP) among medical students was scrutinized. Out of 169 participants, 56.8% reported experiencing LBP, of which 69.8% classified their pain as mild, 27.1% as moderate, and a small fraction of 3.1% as severe. Regarding the impact on daily functioning, 63.5% of those affected reported minimal disability, 25% experienced moderate disability, 7.3% faced severe disability, and 4% were deemed crippled by their condition. These findings underscore the notable presence of LBP within this demographic, echoing the concerns raised by previous research that has predominantly focused on musculoskeletal pain without distinct emphasis on LBP among students.

The literature reveals varied prevalence rates and risk factors associated with LBP among medical students globally. For instance, a Delhi-based study employing the Standardized Nordic Questionnaire reported LBP in a substantial portion of medical students, while Tavares C et al. documented a lifetime prevalence of 75.8% among Brazilian medical students, with 12.4% suffering from chronic LBP (Tavares C et al.). The higher prevalence in our study (56.8%) compared to global figures may be attributed to the students' continued engagement in activities exacerbating their pain. This highlights a gap in the literature, where specific studies addressing LBP prevalence exclusively among medical students are scarce (18).

Research by Yucel and Torun indicated that medical students exhibit the highest prevalence of LBP compared to their peers in dentistry, medicine, and other health sciences, with lifetime prevalence rates ranging from 40.1% to 57.9%. Such figures suggest that the demanding nature of medical curricula, which often encourages sedentary lifestyles, may contribute significantly to this trend (19). Similarly, studies from Karachi, Pakistan, and Bangladesh reported high rates of LBP among medical students, linked to factors like poor postural habits and inadequate ergonomic conditions (Haroon H et al., Sany SA et al.) (20,21).

The methodology of our study, while robust in employing validated instruments for assessing LBP and its impact, relies heavily on self-reported data, which may introduce bias. Additionally, the study's geographical limitation to Lahore potentially restricts the generalizability of the findings. Future research could benefit from incorporating objective measures of physical activity, ergonomic assessment, and psychological stress to provide a more comprehensive understanding of LBP in medical students.

Given the high prevalence of LBP and its significant impact on functionality and quality of life, there is a pressing need for interventions targeting ergonomic improvements, lifestyle modifications, and preventive education. These measures should aim to mitigate the risk factors identified, such as prolonged sitting and stress, through promoting physical activity, improving study and work environments, and incorporating musculoskeletal health education into medical curricula (17).

The findings from this study highlight a substantial health concern among medical students at Akhtar Saeed Medical and Dental College, with a significant portion of the population experiencing LBP and related disabilities. The correlation between prolonged sitting and LBP underscores the need for comprehensive strategies to address this issue. By integrating ergonomic, lifestyle, and educational interventions, there is potential to significantly reduce the prevalence and impact of LBP among medical students, thereby improving their overall health and academic performance.

CONCLUSION

The study at Akhtar Saeed Medical and Dental College, Lahore, underscores a significant prevalence of low back pain (LBP) among medical students, attributing substantial implications for human healthcare. The findings reveal a clear association between sedentary academic lifestyles and the risk of developing LBP, impacting students' functionality and potentially their future professional practice. Addressing this issue necessitates a multidimensional approach that includes ergonomic interventions, lifestyle modifications, and the integration of musculoskeletal health education within medical curricula. Implementing such strategies is crucial for mitigating LBP among medical students, fostering a healthier next generation of healthcare professionals, and by extension, enhancing patient care practices influenced by practitioners' own health experiences and understandings.

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