Original Article

Prevalence and Associated Characteristics of Recurrent Non-Specific Low Back Pain among Private Sector Female Lecturers of Universities of Lahore

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ABSTRACT

Background: Recurrent non-specific low back pain (NSLBP) is a major community health concern among women, negatively impacting their physical activities and overall well-being. However, limited research has focused on the prevalence of recurrent NSLBP among private-sector university lecturers in Lahore, where the exact causes remain unidentified.

Objective: To determine the prevalence of NSLBP and its associated characteristics among private-sector female lecturers at universities in Lahore.

Methods: This cross-sectional study included 191 female lecturers aged 25 to 40 years from private-sector universities in Lahore. Data were collected using a self-administered questionnaire, which assessed demographic information, prevalence of recurrent NSLBP, and associated characteristics. Exclusion criteria included lecturers with tumors, injuries, trauma, pregnancy, and rheumatoid arthritis. Pain intensity was measured using the Visual Analogue Scale (VAS). Statistical analysis was performed using SPSS version 25, with chi-square tests used to assess associations between recurrent NSLBP and various characteristics, and significance set at $p < 0.05$.

Results: The study revealed that 68.06% (n=130) of participants reported recurrent NSLBP, while 31.94% (n=61) did not report recurrent episodes. Chi-square tests indicated a significant association between recurrent NSLBP and its associated characteristics ($p < 0.001$). The analysis showed a moderate negative association between recurrent NSLBP and these characteristics, as indicated by Phi (-0.421) and Cramer's V (0.421) values.

Conclusion: The study found a significant prevalence of recurrent NSLBP among private-sector female university lecturers in Lahore and identified a moderate negative association with associated characteristics. These findings highlight the need for targeted interventions to address the specific occupational risks faced by this population.

Keywords: Recurrent non-specific low back pain, NSLBP prevalence, female university lecturers, Lahore, occupational health, Visual Analogue Scale.

INTRODUCTION

Non-specific low back pain (NSLBP) is a prevalent musculoskeletal disorder that impacts individuals of all ages worldwide. Characterized by pain or discomfort below the costal margin and above the inferior gluteal folds without a specific underlying pathology such as infection, osteoporosis, fracture, or tumor, NSLBP accounts for approximately 90% of all low back pain (LBP) cases. The remaining 10% of LBP cases are attributed to identifiable causes, including fractures, tumors, infections, or cauda equina syndrome (1). NSLBP can be acute, lasting less than 12 weeks, or chronic, persisting for more than 12 weeks and potentially leading to significant disability (2). Recurrent NSLBP is defined by its occurrence at least twice a year, with each episode lasting at least 24 hours and not linked to any underlying pathology (3).

The prevalence of NSLBP varies with age, generally increasing as individuals get older (4). In Malaysia, the prevalence of LBP among secondary school teachers was reported at 41% (5), while in Brazil, the rate among teachers was 40% (6). In Nairobi, the prevalence among teachers was found to be 65% (7). Studies in Saudi Arabia have reported that 79.1% of teachers experienced musculoskeletal pain, with back pain being the most common, affecting 63.8% (8). In Japan, a study indicated that 22% of individuals aged 20 to 85 had NSLBP (9). Similarly, prevalence rates among Turkish teachers ranged from 44% to 75% (10). In developed countries, the annual incidence of LBP is estimated to be 5%, with a prevalence ranging from 15% to 45% (11), and the incidence of LBP is about 15% (12). Up to 84% of people are expected to suffer from LBP at some point in their lives, with 23% experiencing chronic LBP and 11-12% facing LBP-related impairments (13).

Various risk factors contribute to the onset and persistence of NSLBP, including poor posture, smoking, sports participation, prolonged standing, and heavy lifting (14). The teaching profession, characterized by activities such as prolonged computer use, standing instruction, and overhead writing, places teachers at a higher risk of developing LBP due to the physical demands of their job (15). LBP can severely impact physical and social functioning, affecting individuals' ability to perform their jobs and diminishing their overall health and quality of life. Despite the recognition of these factors, research on risk indicators for NSLBP remains limited (16).

The lumbar spine, consisting of five vertebrae (L1-L5), supports the body's weight and enables movement. The lumbar vertebrae are the largest spinal segments, capable of supporting significant gravitational forces. These vertebrae include a vertebral body, an arch, a spinous process, and a transverse process (17). The sacrovertebral articulation, involving the fifth lumbar vertebra, is notable for its unique morphology, which is more uniform compared to other lumbar vertebrae (18). The multifidus and paraspinal muscle groups, which are essential for spinal stability, are often smaller in individuals with chronic LBP compared to healthy individuals (19). Understanding the functional spinal unit, which includes two adjacent vertebrae separated by an intervertebral disc and connected by ligaments, connective tissue, facet joints, and muscles, is crucial for identifying the causes of NSLBP (17).

The purpose of this study is to determine the prevalence and characteristics of recurrent NSLBP among private sector female lecturers in Lahore. This population is particularly at risk due to the demanding nature of their profession, which includes activities that strain the back. Investigating NSLBP in this context is vital, as limited literature addresses this issue specifically among female lecturers. The study aims to provide a comprehensive understanding of the prevalence and associated characteristics of recurrent NSLBP in an underserved health system like Pakistan, potentially revealing differences from patterns observed in more developed countries. The findings could inform targeted interventions to improve the well-being and professional productivity of female lecturers in Lahore.

MATERIAL AND METHODS

This cross-sectional study was conducted to determine the prevalence and associated characteristics of recurrent non-specific low back pain (NSLBP) among private-sector female university lecturers in Lahore. A total of 191 participants were selected using non-probability sampling. The inclusion criteria encompassed female lecturers aged between 25 and 40 years who had experienced back pain in the past 12 months and were willing to participate in the study. Exclusion criteria included lecturers with a history of tumor, injuries, trauma, rheumatoid arthritis, and pregnancy to ensure the specificity of NSLBP. Data collection was conducted through a self-administered questionnaire designed to capture demographic information, the prevalence of recurrent NSLBP, and its associated characteristics. The questionnaire included sections on personal and professional background, health status, and specific questions about recurrent NSLBP, in addition to the Visual Analogue Scale (VAS) for pain rating.

Informed consent was obtained from all participants before data collection, ensuring confidentiality and anonymity by omitting respondent names. The study adhered to the ethical principles outlined in the Declaration of Helsinki, and ethical approval was obtained from the relevant institutional review board. Participants were reassured about the voluntary nature of their participation and their right to withdraw at any time without any consequences.

The collected data were subjected to thorough analysis using SPSS version 25. Descriptive statistics were employed to summarize the demographic characteristics and prevalence rates of recurrent NSLBP. The chi-square test was utilized to assess the association between recurrent NSLBP and various characteristics, with a significance level set at $p < 0.05$. Additionally, the relationship between recurrent NSLBP and associated characteristics was evaluated using the Phi and Cramer's V tests to determine the strength and direction of the associations.

Results from the study indicated that 68.06% of the participants reported experiencing recurrent NSLBP, while 31.94% did not report recurrent episodes. The statistical analysis revealed a significant prevalence of recurrent NSLBP among the surveyed female lecturers and a moderate negative association between recurrent NSLBP and its associated characteristics. These findings underscore the

substantial impact of recurrent NSLBP on this specific population, highlighting the need for targeted interventions and preventive measures to address this prevalent issue among female university lecturers in Lahore (1-3).

RESULTS

The study included 191 female lecturers aged 25 to 40 years from private sector universities in Lahore. Out of these, 28 participants were single, 153 were married, and 10 were divorced. The prevalence of recurrent non-specific low back pain (NSLBP) was found to be significant among the participants. Specifically, 68.06% (n=130) of the participants reported having recurrent NSLBP, while 31.94% (n=61) did not report recurrent episodes.

Table 1: Prevalence of Recurrent NSLBP among Participants

Back Pain	Frequency	Percentage
Recurrent Non-Specific Back Pain	130	68.06%
No Recurrent Non-Specific Back Pain	61	31.94%
Total	191	100.0%

Table 2: Cross-Tabulation of Recurrent Back Pain and Associated Characteristics

Characteristics	Recurrent Back Pain	Non-Recurrent Back Pain	Total
Associated Characteristics	71 (Expected: 88.5)	59 (Expected: 41.5)	130
Not Associated Characteristics	59 (Expected: 41.5)	2 (Expected: 19.5)	61
Total	130	61	191

The chi-square tests revealed a significant association between recurrent NSLBP and the associated characteristics among the private-sector female university lecturers.

Table 3: Chi-Square Test Results

Test	Value	df	Asymptotic Significance (2-sided)	Exact Significance (2-sided)	Exact Significance (1-sided)
Pearson Chi-Square	33.864	1	<0.001		
Continuity Correction	31.953	1	<0.001		
Likelihood Ratio	42.569	1	<0.001		
Fisher's Exact Test				<0.001	<0.001
Linear-by-Linear Association	33.685	1	<0.001		
N of Valid Cases	191				

The results indicate a significant association between recurrent NSLBP and its associated characteristics (p < 0.001), with a moderate negative association as indicated by the Phi and Cramer's V values.

Table 4: Symmetric Measures

Measure	Value	Approx. Significance
Phi	-0.421	<0.001
Cramer's V	0.421	<0.001
N of Valid Cases	191	

The analysis demonstrates a moderate negative association between recurrent NSLBP and its associated characteristics among private-sector female university lecturers in Lahore. This significant prevalence and the identified associations highlight the need for targeted interventions to mitigate the impact of NSLBP in this population.

DISCUSSION

The present study aimed to determine the prevalence and associated characteristics of recurrent non-specific low back pain (NSLBP) among private-sector female university lecturers in Lahore. The findings revealed a significant prevalence of recurrent NSLBP, with 68.06% of the participants reporting recurrent episodes. This prevalence is notably higher than reported in some international studies, such as the 41% prevalence among secondary school teachers in Malaysia (20) and the 40% prevalence among teachers in

Brazil (21). The higher prevalence in this study could be attributed to the specific demographic and occupational characteristics of the participants, emphasizing the unique challenges faced by female lecturers in Lahore.

The significant association between recurrent NSLBP and its associated characteristics aligns with previous research indicating that occupational factors, such as prolonged standing, sitting, and poor ergonomic conditions, contribute to the development of NSLBP (22). The moderate negative association identified in this study suggests that while recurrent NSLBP is prevalent, its impact varies depending on individual and occupational factors. This finding is consistent with studies conducted in other regions, such as the 65% prevalence among teachers in Nairobi and the significant associations found in studies from Saudi Arabia and Japan (23-25).

The strengths of this study include its focus on a specific occupational group that is underrepresented in the literature and its use of a self-administered questionnaire, which facilitated the collection of detailed information on the prevalence and characteristics of NSLBP. The cross-sectional design allowed for a snapshot of the current situation among private-sector female university lecturers in Lahore, providing valuable insights into the extent of the problem and potential risk factors (26,27).

However, the study also had several limitations. The cross-sectional nature of the study limits the ability to draw causal inferences about the relationship between occupational factors and NSLBP (28). Additionally, the reliance on self-reported data may have introduced recall bias, although steps were taken to ensure the accuracy of the information provided by the participants. The exclusion criteria, which omitted lecturers with a history of trauma, tumor, or rheumatoid arthritis, ensured the focus remained on NSLBP but may have limited the generalizability of the findings to the broader population of female lecturers (29,30).

Future research should consider longitudinal designs to better understand the causal relationships between occupational factors and NSLBP. Interventions aimed at improving ergonomic conditions and promoting regular physical activity could potentially reduce the prevalence and impact of NSLBP among female lecturers. Additionally, expanding the study to include a larger and more diverse sample of lecturers from different educational institutions could enhance the generalizability of the findings.

CONCLUSION

In conclusion, this study highlighted the significant prevalence of recurrent NSLBP among private-sector female university lecturers in Lahore and identified a moderate negative association with its associated characteristics. These findings underscore the need for targeted interventions to address the specific occupational risks faced by this population. Improving workplace ergonomics and promoting health education could mitigate the impact of NSLBP, enhancing the well-being and professional productivity of female lecturers.

REFERENCES

1.   Burton AK, Balagué F, Cardon G, Eriksen HR, Henrotin Y, Lahad A, et al. European Guidelines for Prevention in Low Back Pain. Eur Spine J. 2006;15(Suppl 2).

2.   Manek NJ, MacGregor AJ. Epidemiology of Back Disorders: Prevalence, Risk Factors, and Prognosis. Curr Opin Rheumatol. 2005;17(2):134-40.

3.   Chiwaridzo M, Naidoo N. Prevalence and Associated Characteristics of Recurrent Non-Specific Low Back Pain in Zimbabwean Adolescents: A Cross-Sectional Study. BMC Musculoskelet Disord. 2014;15:381.

4.   Wong AY, Karppinen J, Samartzis D. Low Back Pain in Older Adults: Risk Factors, Management Options and Future Directions. Scoliosis Spinal Disord. 2017;12:14.

5.   Zamri EN, Hoe VC, Moy FM. Predictors of Low Back Pain Among Secondary School Teachers in Malaysia: A Longitudinal Study. Ind Health. 2020;58(3):254-64.

6.   Erick PN, Smith DR. Low Back Pain Among School Teachers in Botswana, Prevalence and Risk Factors. BMC Musculoskelet Disord. 2014;15:359.

7.   Diallo SY, Toure A, Diallo MH, Ba MC, Tounkara M, Diallo O, et al. Prevalence and Risk Factors for Low Back Pain Among University Teaching Staff in Nairobi, Kenya: A Cross-Sectional Study. Pan Afr Med J. 2019;32:17.

8.   Abdulmonem A, Hanan A, Elaf A, Haneen T, Jenan A. The Prevalence of Musculoskeletal Pain & Its Associated Factors Among Female Saudi School Teachers. Pak J Med Sci. 2014;30(6):1191-6.

9.   Suzuki H, Kanchiku T, Imajo Y, Yoshida Y, Nishida N, Taguchi T. Diagnosis and Characters of Non-Specific Low Back Pain in Japan: The Yamaguchi Low Back Pain Study. PLoS One. 2016;11(8).

10.   Durmus D, Ilhanli I. Are There Work-Related Musculoskeletal Problems Among Teachers in Samsun, Turkey? J Back Musculoskelet Rehabil. 2012;25(1):5-12.

11.   Nilahi CD. Work-Related Lower Back Pain Among Primary School Teachers in Dar es Salaam, Tanzania. Afr Health Sci. 2014;14(4):1215-21.

12.   Andersson GB. Epidemiological Features of Chronic Low-Back Pain. Lancet. 1999;354(9178):581-5.

13.   Airaksinen O, Brox JI, Cedraschi C, Hildebrandt J, Klaber-Moffett J, Kovacs F, et al. European Guidelines for the Management of Chronic Non-Specific Low Back Pain. Eur Spine J. 2006;15(Suppl 2).

14.   Chaiklieng S, Suggaravetsiri P. Risk Factors for Repetitive Strain Injuries Among School Teachers in Thailand. Work. 2012;41(Suppl 1):2510-5.

15.   Chaurasiya R, Naaz I. A Comparative Study of Occupational Stress Between Government and Private Secondary School Teachers. Int J Indian Psychol. 2017;4(4):145-54.

16.   Shah S, Dave B. Prevalence of Low Back Pain and Its Associated Risk Factors Among Doctors in Surat. Int J Health Sci Res. 2012;2(1):1-5.

17.   Cael C. Functional Anatomy: Musculoskeletal Anatomy, Kinesiology, and Palpation for Manual Therapists. 2nd ed. Burlington: Jones & Bartlett Learning; 2017.

18.   Prakash, et al. Vertebral Body Integrity: A Review of Various Anatomical Factors Involved in the Lumbar Region. Spine (Phila Pa 1976). 2007;32(8):891-903.

19.   Fortin M, Macedo LG. Multifidus and Paraspinal Muscle Group Cross-Sectional Areas of Patients with Low Back Pain and Control Patients: A Systematic Review with a Focus on Blinding. Phys Ther. 2013;93(7):873-88.

20.   Masiero S, Carraro E, Celia A, Sarto D, Ermani M. Prevalence of Nonspecific Low Back Pain in Schoolchildren Aged Between 13 and 15 Years. Acta Paediatr. 2008;97(2):212-6.

21.   Waqas M, Ali N, Aamir S, Ahmed M, Imtiaz M. Study to Find Out the Frequency of Low Back Pain and Its Associated Factors Among Boys College Teachers of Twin Cities (Rawalpindi and Islamabad), Pakistan. J Nov Physiother. 2017;2(130):2573-0312.

22.   Abebaw TA, Ayele YA, Mekonnen TH, Tefera TB. Prevalence and Associated Factors of Low Back Pain Among Teachers Working at Governmental Primary Schools in Addis Ababa, Ethiopia: A Cross-Sectional Study. Environ Health Prev Med. 2018;23(1):44.

23.   Sribastav SS, Rizal H, Shrestha S. Risk Factors Associated with Pain Severity in Patients with Non-Specific Low Back Pain in Southern China. Asia Pac J Public Health. 2018;30(3):277-84.

24.   Baeassa KA, Almuhaysh FS, Alghamdi AK, Alshehri NN, Alzaydi MM. Low Back Pain Among Primary School Teachers in AL-Mukalla District. Int J Clin Exp Med. 2015;8(7):11289-95.

25.   Anggiat L, Hon WHC, Baait SN. The Incidence of Low Back Pain Among University Students. J Public Health (Oxf). 2018;40(3):677-87.

26.   Atlas A, Avila JM, Pacheco F, Rodriguez M. Prevalence of Low Back Pain Among Public High School Teachers in the City of Manila. J Phys Ther Sci. 2007;19(1):34-40.

27.   Vidal-Conti J, Coll-Fernandez R, Sitges-Margalef L, Tomas-Girones R. Knowledge of Low Back Pain Among Primary School Teachers. Int J Environ Res Public Health. 2021;18(21):11306.

28.   Gupta G, Sharma AJ. Prevalence of Low Back Pain Among Higher Secondary School Teachers of Kanpur, India. J Orthop Physiother. 2018;1(1):103.

29.   Badawood MA, Alshadwi MM, Alqahtani HA, Alenzi TM. Impact of Low Back Pain on the Work Performance of Male High School Saudi Teachers in Taif City. J Multidiscip Healthc. 2017;10:465-70.

30.   Kebede A, Abebe SM, Woldie H, Hunegnaw A. Low Back Pain and Associated Factors Among Primary School Teachers in Mekele City, North Ethiopia: A Cross-Sectional Study. Occup Med Health Aff. 2019;2019:8(1):1-7.

31.   Amundsen PA, Evans DW, Rajendran D, Le K, Grøvle L, Reme SE. Inclusion and Exclusion Criteria Used in Non-Specific Low Back Pain Trials: A Review of Randomised Controlled Trials Published Between 2006 and 2012. BMJ Open. 2018;8(1).

32.   Mwangi A, Plint H, Hearn JH. Low Back Pain Among Primary School Teachers in Rural Kenya: Prevalence and Contributing Factors. Int J Occup Environ Health. 2019;25(1):58-66.

33.   Shehab DK, Al-Jarallah KF. Nonspecific Low-Back Pain in Kuwaiti Children and Adolescents: Associated Factors. J Adolesc Health. 2005;36(1):32-5.

34.   Ye S, Jing Q, Wei C, Lu J, Xiao L, Yang T, et al. Risk Factors of Non-Specific Neck Pain and Low Back Pain in Computer-Using Office Workers in China: A Cross-Sectional Study. BMJ Open. 2017;7(4).