

Chronic Non-Specific Low Back Pain in Adult Women with Lifestyle and Sociodemographic Factors: A cross-sectional study

Imamur Rashid¹ , Obaidul Alam² , A B M Mehedi³ , Mohammad Golam Nobil⁴ , Nadia Rahman⁵ ,
 Mohammadullah^{6*} , M A Shakoor⁷ 

ARTICLE INFO

Received: 18 May 2026

Accepted: 23 May 2026

Published Online: 26 May 2026

DOI: 10.5281/zenodo.20387733

Volume: 9, Number: 3, Page: 259-263

e-ISSN: 2789-5912

ISSN: 2617-0817

*Corresponding author



ABSTRACT

Background: Chronic non-specific low back pain (CNSLBP) is a common musculoskeletal condition among adult women that significantly affects daily functioning and quality of life. Various socio-demographic and lifestyle factors are believed to contribute to its development and severity. The aim of the study was to evaluate the socio-demographic, lifestyle, and anthropometric characteristics of chronic non-specific low back pain in adult women and their association with pain severity. **Methods & Materials:** A cross-sectional study conducted at Bangladesh Medical University in Dhaka involved 150 women (aged 18–60 years) suffering from CNSLBP. Information regarding socio-demographics, lifestyle, BMI, and pain intensity was gathered through a questionnaire and examined using SPSS 25 with the Chi-square test ($p < 0.05$). **Results:** The mean age of participants was 35.8 ± 11.3 years. Most were from middle-income families (60.0%), had low to moderate education, and were housewives (62.0%). Family history of low back pain was reported by 27.3%, while 95.3% were non-smokers. Physical inactivity was common (76.0%), with 80.6% reporting poor posture, and 57.3% were overweight or obese. Pain severity showed significant associations with age ($p=0.031$), occupation ($p=0.017$), physical activity ($p=0.008$), posture ($p<0.001$), and BMI ($p=0.003$). **Conclusion:** Chronic non-specific low back pain in adult women is significantly associated with modifiable lifestyle factors such as physical inactivity, poor posture, and increased BMI, along with certain socio-demographic characteristics. Targeted preventive and behavioral interventions focusing on these modifiable risk factors may help reduce the burden and severity of CNSLBP.

Keywords: Adult women, Chronic pain, Lifestyle factors, Low back pain, Physical activity.

1. Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Bangladesh (ORCID: 0009-0008-6452-4619)
2. Assistant Professor, Department of Physical Medicine and Rehabilitation, Rangpur Medical College, Rangpur, Bangladesh (ORCID: 0009-0001-8382-5037)
3. Medical Officer, Directorate General of Health Services (DGHS), Dhaka, Bangladesh (ORCID: 0009-0004-1129-1293)
4. Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Bangladesh (ORCID: 0009-0007-5305-0895)
5. Associate Professor, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Dhaka, Bangladesh (ORCID: 0009-0007-5305-0895)
6. Associate Professor, Department of Prosthodontics, Bangladesh Medical University (BMU), Dhaka, Bangladesh (ORCID: 0009-0005-1920-5895)
7. Professor and Chairman, Department of Physical Medicine and Rehabilitation, Bangladesh Medical University (BMU), Dhaka, Bangladesh (ORCID: 0000-0001-6801-9179)

INTRODUCTION

Low back pain (LBP) is a major public health issue in developing countries, with a clear pathological cause identified in only about 15% of cases [1]. Despite numerous potential causes, the exact etiology remains unknown in most cases [2]. Current treatments often fall short in providing sufficient relief for chronic LBP. Although LBP is a prevalent health concern, the risk factors are not yet fully understood [3]. Consistent physical activity and sports (such as swimming and soccer) lower the likelihood of low back pain, whereas inactivity and extended periods of sitting raise its frequency; strength training is associated with a marginally reduced risk of lumbar disc disease [4]. Genetic elements could play a role in the degeneration and herniation of intervertebral discs by affecting the rate of progression, but the link between spinal posture and low back pain (LBP) is still ambiguous. Nevertheless, seated posture lowers lumbar lordosis and

raises disc pressure and muscle activity, which are linked to work-related lower back pain (LBP) [5,6].

Excess weight is strongly connected to lumbosacral radicular pain, and elevated BMI has been associated in case-control studies with a greater risk of lumbar disc herniation and disc narrowing in males and females alike [7]. Research indicates that lumbar supports could aid in the prevention of low back pain (LBP), whereas occupational hazards are closely linked to frequent bending or twisting, as well as repetitive lifting of heavy items with outstretched arms and straight legs, which greatly heightens the likelihood of disc herniation [8].

Increased education levels are linked to a decreased risk of LBP and improved exercise routines, encompassing recreational activities such as biking, running, and swimming. Smoking presents inconsistent evidence but frequently correlates with low back pain and

lumbosacral radicular discomfort, whereas elevated socioeconomic status seems to offer protection against chronic low back pain. Lower income correlates with a greater risk of smoking, while higher income is also associated with an increased BMI [9,10]. Worldwide, the incidence of chronic low back pain (CLBP) has more than doubled over time, impacting all genders, ages, and racial/ethnic groups, with non-specific mechanical low back pain identified as the second most prevalent cause of self-limiting symptoms and disability following the common cold [11]. Chronic back pain influences nearly 20% of the Bangladeshi population each year, especially those between 30 and 60 years old, greatly affecting health, job performance, and everyday activities. Research conducted in Bangladesh has indicated a greater prevalence among females, with Shakoor et al. noting that most patients with chronic low back pain (CLBP) were women [12,13]. There has been limited

research on factors related to chronic non-specific low back pain (CNSLBP) in the Bangladeshi population, highlighting the need for further investigation. This study was conducted to evaluate the socio-demographic characteristics associated with CNSLBP in adult women.

METHODS & MATERIALS

Study Design and Setting

This cross-sectional study was conducted in the Department of Physical Medicine and Rehabilitation at Bangladesh Medical University, Dhaka, from January to December 2025.

Study Population and Sample Size

The study population included adult female patients aged 18–60 years diagnosed with chronic non-specific low back pain (CNSLBP). A total of 150 participants were selected and included in the study using a purposive sampling technique.

Data Collection Procedure

Data were collected using a pre-tested structured questionnaire. The questionnaire included information on socio-demographic

characteristics (age, income, education, occupation, and marital status), lifestyle factors (physical activity, postural habits, and smoking status), family history of low back pain, and anthropometric measurement (BMI). Body mass index (BMI) was calculated using standard formula (weight in kg/height in m²) and categorized according to standard classification. Pain severity was assessed and categorized as mild, moderate, and severe based on patient-reported symptoms.

Statistical Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. Association between categorical variables and pain severity was analyzed using Chi-square test. A p-value of <0.05 was considered statistically significant.

Ethical Consideration

Ethical approval was obtained from the appropriate institutional review board. Informed written consent was taken from all

participants prior to data collection, and confidentiality of respondents was strictly maintained throughout the study.

RESULTS

Socio-demographic Characteristics

Table I shows total of 150 adult women with chronic non-specific low back pain (CNSLBP) were included in this cross-sectional study. The mean age of the participants was 35.8 ± 11.3 years. The largest proportion belonged to the 26–35 years age group (38.0%), followed by 36–45 years (26.7%), ≤25 years (20.0%), and ≥46 years (15.3%). Most participants were from middle-income families (60.0%), while 32.0% were from high-income and 8.0% from low-income groups. Regarding education, 40.0% were illiterate, 35.3% had primary education, and 24.7% had secondary or higher education. The majority were housewives (62.0%), followed by service holders (20.7%) and manual workers (17.3%). Most participants were married (82.7%).

Table I
Socio-demographic characteristics of participants (n=150).

Variables	Frequency (n)	Percentage (%)
Age (years)		
Mean ± SD	35.8 ± 11.3	
≤25	30	20.0
26–35	57	38.0
36–45	40	26.7
≥46	23	15.3
Income level		
Low	12	8.0
Medium	90	60.0
High	48	32.0
Education level		
Illiterate	60	40.0
Primary	53	35.3
Secondary & above	37	24.7
Occupation		
Housewife	93	62.0
Service holder	31	20.7
Manual worker	26	17.3
Marital status		
Married	124	82.7
Unmarried	26	17.3

Lifestyle and Anthropometric Characteristics

Table II presents, family history of low back pain was reported by 27.3%, while the majority (72.7%) had no such history. Smoking was uncommon, with 95.3% never

smokers and only 4.7% reporting past smoking. Physical activity levels were generally low, as 76.0% of participants reported rare exercise, while only 19.3% engaged in regular exercise. Poor postural habits were highly prevalent, with 80.6%

reporting regular bad posture. Regarding anthropometric status, the majority of participants were either overweight (43.3%) or obese (14.0%), while 36.0% had normal BMI and 6.7% were underweight.

Table II
Lifestyle and anthropometric characteristics of participants (n=150).

Variables	Frequency (n)	Percentage (%)
Family history of LBP		
Yes	41	27.3
No	109	72.7
Smoking status		
Never smoked	143	95.3
Past smoker	7	4.7
Exercise level		
Rare	114	76.0
Occasional	7	4.7
Regular	29	19.3
Bad posture		
Rare	19	12.7
Occasional	10	6.7
Regular	121	80.6
BMI (kg/m ²)		
Underweight (≤18.4)	10	6.7
Normal (18.5–22.9)	54	36.0
Overweight (23–27.4)	65	43.3
Obese (≥27.5)	21	14.0

Clinical Characteristics of Low Back Pain

Table III shows the mean duration of low back pain was 18.6 ± 9.4 months, with the

majority of participants (65.3%) experiencing symptoms for ≥12 months. In terms of pain severity, 56.7% of participants reported moderate pain, 28.0% had severe

pain, and 15.3% had mild pain. The mean pain intensity score measured by the Visual Analog Scale (VAS) was 5.9 ± 1.8.

Table III
Clinical characteristics of CNSLBP (n=150).

Variables	Frequency (n)	Percentage (%)
Duration of pain		
<12 months	52	34.7
≥12 months	98	65.3
Mean ± SD (months)	18.6 ± 9.4	
Pain severity		
Mild	23	15.3
Moderate	85	56.7
Severe	42	28.0
VAS score		
Mean ± SD	5.9 ± 1.8	

Association between Socio-demographic Characteristics and Pain Severity

Table IV presents a statistically significant association was observed between age group and pain severity (p=0.031), with the proportion of severe pain increasing with advancing age and the highest prevalence

noted among participants aged ≥46 years. Occupation was also significantly associated with pain severity (p=0.017), as housewives demonstrated a higher proportion of severe pain compared to service holders and manual workers. However, no statistically significant

associations were found between pain severity and income level (p=0.214), education level (p=0.082), or marital status (p=0.148), although a relatively higher proportion of severe pain was observed among illiterate participants.

Table IV
Association between socio-demographic characteristics and pain severity (n=150).

Variables	Mild n (%)	Moderate n (%)	Severe n (%)	p-value
Age group (years)				
≤25 (n=30)	8 (26.7)	16 (53.3)	6 (20.0)	0.031
26–35 (n=57)	10 (17.5)	32 (56.1)	15 (26.3)	
36–45 (n=40)	4 (10.0)	22 (55.0)	14 (35.0)	
≥46 (n=23)	1 (4.3)	15 (65.2)	7 (30.4)	
Income level				
Low (n=12)	2 (16.7)	6 (50.0)	4 (33.3)	0.214
Medium (n=90)	15 (16.7)	52 (57.8)	23 (25.6)	
High (n=48)	6 (12.5)	27 (56.3)	15 (31.3)	
Education level				
Illiterate (n=60)	6 (10.0)	34 (56.7)	20 (33.3)	0.082
Primary (n=53)	9 (17.0)	30 (56.6)	14 (26.4)	
Secondary & above (n=37)	8 (21.6)	21 (56.8)	8 (21.6)	
Occupation				
Housewife (n=93)	10 (10.8)	52 (55.9)	31 (33.3)	0.017
Service holder (n=31)	8 (25.8)	18 (58.1)	5 (16.1)	
Manual worker (n=26)	5 (19.2)	15 (57.7)	6 (23.1)	
Marital status				
Married (n=124)	18 (14.5)	70 (56.5)	36 (29.0)	0.148
Unmarried (n=26)	5 (19.2)	15 (57.7)	6 (23.1)	

Association between Lifestyle and Anthropometric Factors and Pain Severity

Table V shows significant relationship was observed between physical activity and pain severity (p=0.008), where participants reporting rare exercise had a higher proportion of severe pain, while those engaging in regular physical activity

demonstrated comparatively lower severity levels. Postural habits showed a strong association with pain severity (p<0.001), with regular poor posture associated with a markedly higher prevalence of severe pain compared to rare or occasional bad posture. Similarly, BMI was significantly associated with pain severity (p=0.003), with a progressive increase in severe pain from

underweight to obese categories, and the highest proportion observed among obese participants. In contrast, no statistically significant associations were found for family history of low back pain (p=0.068) or smoking status (p=0.472), although a relatively higher proportion of severe pain was noted among those with a positive family history.

Table V
Association between lifestyle & anthropometric factors and pain severity (n=150).

Variables	Mild n (%)	Moderate n (%)	Severe n (%)	p-value
Family history				
Yes (n=41)	4 (9.8)	23 (56.1)	14 (34.1)	0.068
No (n=109)	19 (17.4)	62 (56.9)	28 (25.7)	
Smoking status				
Never (n=143)	22 (15.4)	81 (56.6)	40 (28.0)	0.472
Past smoker (n=7)	1 (14.3)	4 (57.1)	2 (28.6)	
Exercise level				
Rare (n=114)	12 (10.5)	65 (57.0)	37 (32.5)	0.008
Occasional (n=7)	2 (28.6)	4 (57.1)	1 (14.3)	
Regular (n=29)	9 (31.0)	16 (55.2)	4 (13.8)	
Bad posture				
Rare (n=19)	7 (36.8)	10 (52.6)	2 (10.5)	<0.001
Occasional (n=10)	3 (30.0)	5 (50.0)	2 (20.0)	
Regular (n=121)	13 (10.7)	70 (57.9)	38 (31.4)	
BMI (kg/m²)				
Underweight (n=10)	4 (40.0)	5 (50.0)	1 (10.0)	0.003
Normal (n=54)	12 (22.2)	30 (55.6)	12 (22.2)	
Overweight (n=65)	6 (9.2)	38 (58.5)	21 (32.3)	
Obese (n=21)	1 (4.8)	12 (57.1)	8 (38.1)	

DISCUSSION

This study indicates that CNSLBP in adult females correlates with age, education, occupation, and income, showing greater prevalence in middle-aged housewives from lower socio-economic and educational levels. In agreement with Schumann et al., lifestyle and socio-demographic factors significantly influence lumbar disc disease, suggesting that a reduced socio-economic status might elevate the risk of CNSLBP [14]. The majority of CNSLBP patients exhibited low levels of physical activity, poor posture, and elevated rates of overweight/obesity,

whereas smoking and a family history of the condition were rare. Herrero et al. additionally affirmed that lifestyle changes such as physical activity, posture improvement, and weight management significantly enhance chronic non-specific low back pain [15]. The majority of CNSLBP patients dealt with prolonged pain (≥12 months) that ranged from moderate to severe intensity, with an average VAS reflecting ongoing discomfort. In a similar vein, Sakai et al. found that non-specific chronic low back pain is generally enduring and linked with

moderate to severe discomfort, emphasizing its ongoing and debilitating characteristics [16]. The study revealed that pain intensity was notably linked to age and job, with greater intensity in older individuals and housewives, whereas income, education, and marital status displayed no significant connection. In a similar vein, Suzuki et al. noted that age and work-related factors significantly affect non-specific low back pain, corroborating their impact on pain intensity [17]. This current study demonstrated that lack of physical activity,

bad posture, and elevated BMI correlate with greater CNSLBP severity, whereas family history and smoking do not have significant effects. Stričević and Papež noted that non-specific low back pain is primarily influenced by lifestyle and work-related factors, emphasizing the impact of changeable habits on pain intensity^[18].

Overall, CNSLBP in adult females is linked to socio-demographic and adjustable lifestyle elements (inactive habits, incorrect posture, elevated BMI), resulting in extended moderate-to-severe discomfort and highlighting the importance of lifestyle and occupation in pain intensity.

CONCLUSION

This study indicates that modifiable factors have a significant impact on chronic non-specific low back pain in adult females. Older age and occupation were associated with greater pain intensity, whereas low physical activity, poor posture, and elevated BMI demonstrated consistent links to higher pain levels. While family history and smoking were not significant, certain trends were noted. In general, enhancing physical activity, posture, and body weight can aid in alleviating the impact of chronic low back pain.

REFERENCES

1. Airaksinen O, Brox JI, Cedraschi C, Hildebrandt J, Klaber-Moffett J, Kovacs F, Mannion AF, Reis SH, Staal JB, Ursin H, Zanolli G. Chapter 4 European guidelines for the management of chronic nonspecific low back pain. *European spine journal*. 2006 Mar;15(Suppl 2):s192-300.
2. Strong JA, Xie W, Bataille FJ, Zhang JM. Preclinical studies of low back pain. *Molecular pain*. 2013 Mar 28;9:1744-8069.
3. Tomita S, Arphorn S, Muto T, Koetkhilai K, Naing SS, Chaikittiporn C. Prevalence and risk factors of low back pain among Thai and Myanmar migrant seafood processing factory workers in Samut Sakorn Province, Thailand. *Industrial health*. 2010;48(3):283-91.
4. Kwon MA, Shim WS, Kim MH, Gwak MS, Hahm TS, Kim GS, Kim CS, Choi YH, Park JH, Cho HS, Kim TH. A correlation between low back pain and associated factors: a study involving 772 patients who had undergone general physical examination. *Journal of Korean medical science*. 2006 Dec 31;21(6):1086.
5. Zhang YG, Sun Z, Liu J, Guo X. Advances in susceptibility genetics of intervertebral degenerative disc disease. *International journal of biological sciences*. 2008 Sep 2;4(5):283.
6. Williams FM, Popham M, Sambrook PN, Jones AF, Spector TD, MacGregor AJ. Progression of lumbar disc degeneration over a decade: a heritability study. *Annals of the rheumatic diseases*. 2011 Jul 1;70(7):1203-7.
7. Jellema P, Van Tulder MW, Van Poppel MN, Nachemson AL, Bouter LM. Lumbar supports for prevention and treatment of low back pain: a systematic review within the framework of the Cochrane Back Review Group. *Spine*. 2001 Feb 15;26(4):377-86.
8. Borenstein, DG. Epidemiology, etiology, diagnostic evaluation and treatment of low back pain. *Curr Opin Rheumatol*. 2001; 13, p. 128–34.
9. Grzywacz JG, Marks NF. Social inequalities and exercise during adulthood: toward an ecological perspective. *Journal of Health and Social behavior*. 2001 Jun 1:202-20.
10. Freburger JK, Holmes GM, Agans RP, Jackman AM, Darter JD, Wallace AS, Castel LD, Kalsbeek WD, Carey TS. The rising prevalence of chronic low back pain. *Archives of internal medicine*. 2009 Feb 9;169(3):251-8.
11. Karunanayake AL, Pathmeswaran A, Kasturiratne A, Wijeyaratne LS. Risk factors for chronic low back pain in a sample of suburban Sri Lankan adult males. *International journal of rheumatic diseases*. 2013 Apr;16(2):203-10.
12. Shakoor MA, Azad MAK, Ahsan MM, Islam MN, Moynuzaman, M, Dev AK, The Journal of PMC, 2011; vol. 01, no. 01, pp.13-17.
13. Rashid MR, Rahman M, Rahman MA, Hoq M. Studies on the alternative of medicinal for chronic lower back pain. *Journal of Innovation & Development Strategy*. 2012;6(1):98-102.
14. Schumann B, Bolm-Audorff U, Bergmann A, Ellegast R, Elsner G, Grifka J, Haerting J, Jäger M, Michaelis M, Seidler A. Lifestyle factors and lumbar disc disease: results of a German multi-center case-control study (EPILIFT). *Arthritis Research & Therapy*. 2010 Oct 18;12(5):R193.
15. Herrero P, Val P, Lapuente-Hernandez D, Cuenca-Zaldivar JN, Calvo S, Gomez-Trullen EM. Effects of lifestyle interventions on the improvement of chronic non-specific low back pain: a systematic review and network meta-analysis. *InHealthcare* 2024 Feb 20 (Vol. 12, No. 5, p. 505). MDPI.
16. Sakai Y, Wakao N, Matsui H, Watanabe T, Iida H, Watanabe K. Clinical characteristics of geriatric patients with non-specific chronic low back pain. *Scientific reports*. 2022 Jan 25;12(1):1286.
17. 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 Aug 22;11(8):e0160454.
18. Stričević J, Papež BJ. Non-specific low back pain: occupational or lifestyle consequences?. *Wiener Klinische Wochenschrift*. 2015 Dec;127(Suppl 5):277-81.