

The word file is under formatting and final pdf will be change

Prevalence Of Non-Specific Chronic Low Back Pain In Young Adults And Its Association With Pain Severity And Disability

*Bishakha Shyam ¹, Ankur Jyoti Bora ², Ankita Kalita ³

¹ Research Scholar, Department of Physiotherapy, Jorhat Medical College, Jorhat, Assam, India.

² Senior Physiotherapist cum course coordinator, Department of Physiotherapy, Jorhat Medical College and Hospital, Jorhat, Assam, India.

³ Lecturer, Department of Physiotherapy, Jorhat Medical College, Jorhat, Assam, India.

***Author of Correspondence:** *Bishakha Shyam / Email: bishakhashyam@gmail.com

International Journal of Nursing Critical Care

Volume: 11 / Issue: 1 / Year: 2025

Research Article

Received date: December 29, 2024

Accepted date: February 08, 2025

Published date: February 28, 2025

ABSTRACT

Aim: The aim of this study was to investigate the prevalence of non-specific chronic low back pain (NSCLBP) among young adult patients in Jorhat, Assam. **Purpose:** This study focuses on identifying the prevalence of NSCLBP in young adults and determining the association between pain severity and disability to facilitate early and appropriate interventions. **Methodology:** A cross-sectional study was conducted at the Physical Medicine & Rehabilitation Department and Orthopedic Outpatient Department of Jorhat Medical College and Hospital. The sample included 42 young adult patients (both male and female) diagnosed with NSCLBP. Participants were evaluated using the Numerical Pain Rating Scale (NPRS) and the Oswestry Disability Index Questionnaire (ODIQ). Demographic data, pain intensity, and disability levels were gathered and analyzed using the Statistical Package for Social Sciences (SPSS). Chi-square tests and Spearman's rank correlation were employed to evaluate associations. **Results:** The findings revealed a strong and statistically significant correlation between the NPRS and ODIQ Category ($r = 0.858, p < 0.01$). However, no significant correlations were observed between age and sex ($p = 0.597$), or between age and NPRS ($p = 0.770$), indicating that factors beyond age and sex may play a role in determining pain severity and its effect on disability. **Conclusion:** The study concluded that there is no significant prevalence of non-specific chronic low back pain among young adult patients in Jorhat, Assam; suggesting that higher pain levels are linked to greater disability. These findings imply that the presence of NSCLBP among young adults in this specific population may not be as widespread as previously thought, suggesting a need for further studies with larger sample sizes and broader demographic coverage.

Keywords: low back pain, Numerical Pain Rating Scale (NPRS), the Oswestry Disability Index Questionnaire (ODIQ), demographic coverage, adult patients.

INTRODUCTION

Low back pain (LBP) is a significant public health issue. It refers to pain in the lower region of the vertebral spine, specifically the lumbar area, and is one of the most common reasons individuals seek medical attention in hospitals [1-3]. Low back pain is the most leading and important cause of activity limitation and work absence in the world [4]. Low back pain is classified as specific or non-specific type of LBP [5]. Specific low back pain is linked to identifiable conditions like radiculopathy, disc herniation, spondylolisthesis, lumbar spinal stenosis, osteoporosis, and scoliosis. In contrast, non-specific low back pain does not have an identifiable underlying pathology [6,7]. Low back pain without any known cause for at least 12-weeks is termed non-specific chronic low back pain (NSCLBP) [8,9].

The global prevalence of low back pain in the general population ranges from 15% to 45%. In India, the annual prevalence of LBP is reported to be 51%. The annual prevalence rates of LBP in the Indian population is higher compared to global populations and affecting especially among women, rural population and in elementary workers [10]. Young adults who experienced lower back pain (LBP) at the age of 14 were found to have a higher likelihood of developing LBP 25 years later compared to those who did not experience it at that age. This suggests that preventing and managing LBP during early adolescence can help reduce its progression and decrease the related health complications [11].

METHODOLOGY:

This research employed a cross-sectional design and used convenient sampling. A total of 42 participants diagnosed with non-specific chronic low back pain were included in the study. The inclusion criteria were: a) Patients with NSCLBP, b) Both male and female patients, c) Age between 18 to 39 years, and d) Patients who gave consent. Exclusion criteria were: a) Patients with history of spinal surgery and fracture b) Sciatica, c) Pregnancy with low back pain, d) Localized wounds, e) Intellectual disability patients. Each participant underwent a comprehensive assessment on the day of evaluation, which took approximately 15 to 20 minutes to complete (Fig 1).

The assessments conducted were as follows:



Fig 1: Subject filling questionnaire

Patients were included in the study by collecting demographic details such as name, age, gender, and occupation. Additionally, special tests, including the Straight Leg Raise (SLR) test, SLUMP test, and FABER test were performed. Diagnostic imaging methods, including X-rays and MRI, were utilized to evaluate the patients. Pain severity was measured using the Numerical Pain Rating Scale (NPRS). This questionnaire was performed by explaining the scale to the patients and ask the patients to rate their pain by selecting a number that best represents their pain level and noted the number the patient provides. Grading included mild, moderate and severe disability. Level of disability was similarly assessed by using Oswestry Disability Index Questionnaire (ODIQ). This questionnaire was performed by explaining the scale to patients and ask the patients to read each

10 sections and choose one statement that best describes their situation over past week. Add up the scores from each section to get a total score which is then converted to a level of disability. Grading included minimal, moderate, severe, or complete disability.

Ethical approval was granted by the institutional ethics committee, and informed consent was obtained from each participant after they were fully informed about the study. Following the evaluation, the data were analyzed statistically using SPSS software, with a significance level set at $p < 0.05$. Chi-square tests were performed to examine associations between different factors, while Spearman's rank correlation was applied to assess relationships between ordinal variables. All 42 subjects completed the study with no withdrawals, and the results were utilized to draw conclusions regarding non specific chronic low back pain in young adults.

RESULTS AND DISCUSSION

The average age of the patients was 31.1 years, as shown in Figure 2, which illustrates the mean age of the participants. Among the 42 patients 47.6% were male and 52.4% were female (Figure:3); the graph shows that the majority of participants reported experiencing "Moderate Pain" (Figure:4) and also "Moderate Disability" and "Severe Disability" are the most common categories, with nearly equal numbers of participants (Figure:5). Various statistical analyses were performed, beginning with chi-square tests to examine the relationships between variables. Specifically, a chi-square test was used to evaluate the association between age and sex. The p-value was 0.597, suggesting no significant association (Table 1). Similarly, the chi-square tests between age and NPRS with a p-value of 0.770 suggesting no significant association (Table:2). Spearman's rank correlation was used to investigate the relationship between the ordinal variables (NPRS and ODIQ categories), and the results were found to be significant at the 0.01 level (2-tailed). This suggests a significant correlation between the NPRS and ODIQ categories, as shown in Table 3. Further correlation analysis revealed (Table: 4) a correlation coefficient of 0.168 between age and NPRS, which indicates a weak positive correlation.

Figure 2 Age of patients

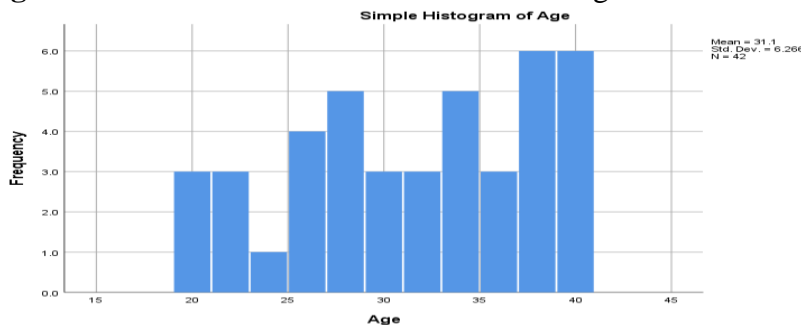


Figure 3 Sex of patients

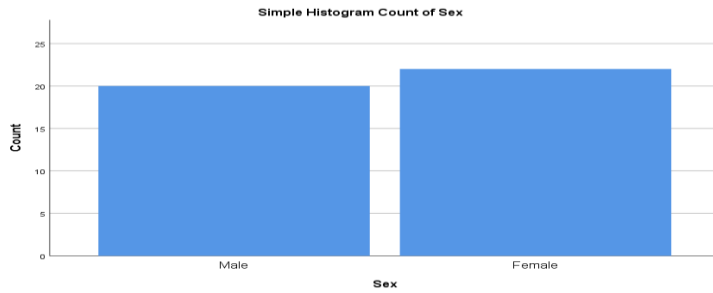


Fig 4: NPRS

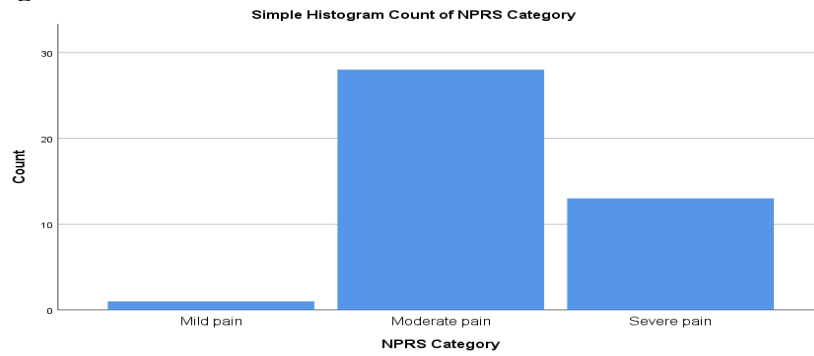


Fig 5: ODIQ

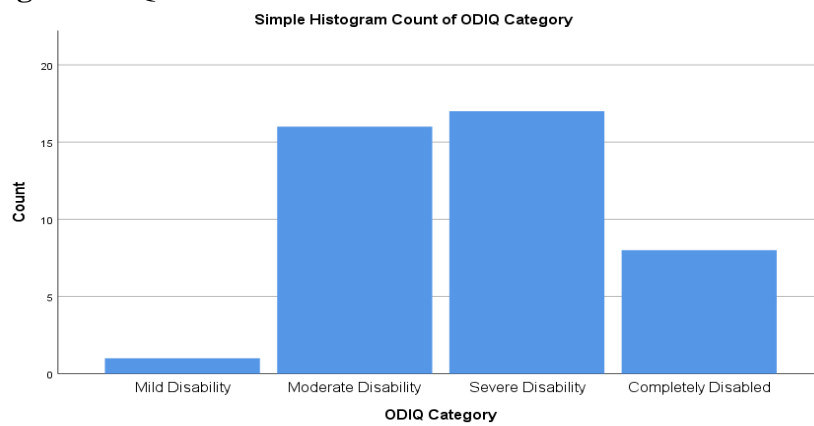


Table 1: Age and Sex

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.941 ^a	18	.597
Likelihood Ratio	21.719	18	.245
Linear-by-Linear Association	.540	1	.462
N of Valid Cases	42		

a. 38 cells (100.0%) have expected count less than 5. The minimum expected count is .48.

Table 2: Age and NPRS

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	96.882 ^a	108	.770
Likelihood Ratio	79.396	108	.982
Linear-by-Linear Association	1.161	1	.281
N of Valid Cases	42		

a. 133 cells (100.0%) have expected count less than 5. The minimum expected count is .02.

Table 3: Spearman's rank correlation to assess the relationship between the ordinal variables

Correlations

		Numerical Pain Rating Scale	ODIQ Category
Numerical Pain Rating Scale	Pearson Correlation	1	.858 ^{**}
	Sig. (2-tailed)		.000
	N	42	42
ODIQ Category	Pearson Correlation	.858 ^{**}	1
	Sig. (2-tailed)	.000	
	N	42	42

^{**}. Correlation is significant at the 0.01 level (2-tailed).

Table 4: Correlation between Age and Numerical Pain Rating Scale (NPRS)

Correlations

		Age	Numerical Pain Rating Scale
Age	Pearson Correlation	1	.168
	Sig. (2-tailed)		.287
	N	42	42
Numerical Pain Rating Scale	Pearson Correlation	.168	1
	Sig. (2-tailed)	.287	
	N	42	42

Here the correlation coefficient is 0.168, which indicates a weak positive correlation.

DISCUSSION

The main aim of this study was to determine the prevalence of non-specific chronic low back pain and determine the association between pain severity and disability among young adult patients in Jorhat, Assam. 42 young adult subjects with NSCLBP were included in this study, among which 20 were male and 22 were female. Demographic Data and all other essential data including consent forms were taken on the day of assessment. The outcome variables, pain severity and disability were assessed on the day of assessment. According to Childs et al. Numerical Pain Rating Scale is reliable in testing pain severity in low back pain patients [12]. Kilichan Bayar et al. stated that Oswestry Low Back Pain Disability Questionnaire (ODQ) shows a reliable and valid questionnaire for assessing the disability of patients with LBP [13].

The gender distribution were 47.6% male patient and 52.4% were female patients in this study and mean age is 31.1 with standard deviation of 6.266 years. A chi-square test was performed to examine the relationship between age and sex among the patients. Since the p-value was greater than 0.05, no significant association was found between age and sex. This indicates that the distribution of male and female patients did not vary significantly across different age groups. These findings align with those of Smith BH et al. (2004), who reported no gender predisposition for the occurrence of low back pain, a result that is consistent with several other studies. Our study demonstrated that the majority of participants reported experiencing "Moderate Pain" and also "Moderate Disability" and "Severe Disability" are the most common categories, with nearly equal numbers of participants [14].

The chi-square test again conducted to check the association between age and NPRS with a p-value of 0.770 suggesting no significant association. Similarly, a study by Mohammad Sidiq et al. (2021) found that participants in the 41–50 age group reported more severe disability due to back pain compared to those in younger age groups. To explore the relationship between NPRS and ODIQ, Spearman's rank correlation was performed and found to be significant at the 0.01 level (2-tailed), indicating that NPRS and ODIQ categories are significantly correlated. This implies that as the severity of pain increases, the level of disability also tends to increase [15].

The study had some limitations, and its limitations include a small, non-representative sample size and a focus on a single location, restricting the generalizability of the findings. The cross-sectional design limits the ability to determine causal relationships, and the use of self-reported data may introduce potential bias. Key factors like psychological influences, occupational habits, and lifestyle elements were not thoroughly explored, and there was no longitudinal data to assess pain

progression. Future research should address these gaps with larger, more diverse samples and a comprehensive approach to external and psychological factors.

CONCLUSION

This study highlights the need for early diagnosis and appropriate interventions to manage pain severity and disability among young adults with NSCLBP. Although the results suggest that NSCLBP may not be widespread among young adults in Jorhat, higher pain severity correlates strongly with increased disability. Further research with larger sample sizes and diverse demographics is necessary to better understand the prevalence and contributing factors of NSCLBP in young adults.

REFERENCES

1. Manniche C, Lundberg E, Christensen I, Bentzen L, Hesselsoe G. Intensive dynamic back exercises for chronic low back pain: a clinical trial. *Pain*. 1991 Oct;47(1):53-63. doi: 10.1016/0304-3959(91)90011-L. PMID: 1837606.
2. Ralston SH, Walker BR, Colledge NR. Davidson's Principle and Practice of Medicine (21st ed). London: Elsevier Health Sciences (2010) p. 1180–90.
3. Edwards J, Hayden J, Asbridge M, Gregoire B, Magee K. Prevalence of low back pain in emergency settings: a systematic review and meta-analysis. *BMC Musculoskelet Disord*. (2017) 18:143. doi: 10.1186/s12891-017-1511-7
4. Lidgren L. The bone and joint decade 2000-2010. *Bull World Health Organ*. 2003;81(9):629. Epub 2003 Nov 14. PMID: 14710501; PMCID: PMC2572548.
5. Suzuki H, Kanchiku T, Imajo Y, Yoshida Y, Nishida N. Diagnosis and characters of non-specific low back pain in Japan: The Yamaguchi low back pain study. *PLoS ONE*. (2016) 11:e0160454. doi: 10.1371/journal.pone.0160454
6. Balagué F, Mannion AF, Pellisé F, Cedraschi C. Non-specific low back pain. *Lancet*. (2012) 379:482–91. doi: 10.1016/S0140-6736(11)60610-7 .
7. Koes BW, Van Tulder MW. Clinical Review, Diagnosis and treatment of low back pain. *BMJ*. (2006) 332:1430. doi: 10.1136/bmj.332.7555.1430
8. Rozenberg S. 2008. Chronic low back pain: definition and treatment. *La Revue Du Praticien* 58(3):265–272.
9. Al-Arfaj AS, Al-Saleh SS, Alballa SR, Al-Dalaan AN, Bahabri SA, Al-Sekeit MA, Mousa MA. 2003. How common is back pain in Al-Qaseem region. *Saudi Medical Journal* 24(2):170–173.
10. Shetty, Gautam M. et al. 'Prevalence of Low Back Pain in India: A Systematic Review and Meta-analysis'. 1 Jan. 2022 : 429 – 452.
11. Harreby M, Neergaard K, Hesselsoe G, Kjer J. Are radiologic changes in the thoracic and lumbar spine of adolescents risk factors for low back pain in adults? A 25-year prospective cohort study of 640 school children. *Spine (Phila Pa 1976)* 1995;20:2298-302.
12. Childs, John D. PT, PhD, MBA*; Piva, Sara R. PT, MS†; Fritz, Julie M. PT, PhD‡. Responsiveness of the Numeric Pain Rating Scale in Patients with Low Back Pain. *Spine* 30(11):p 1331-1334, June 1, 2005. | DOI: 10.1097/01.brs.0000164099.92112.29
13. Kilichan Bayar, Banu Bayar, Edibe Yakut & Yavuz Yakut (2003) Reliability and construct validity of the Oswestry Low Back Pain Disability Questionnaire in the elderly with low back pain, *The Pain Clinic*, 15:1, 55-59, DOI: [10.1163/156856903321196500](https://doi.org/10.1163/156856903321196500)

- 14.** Smith BH, Elliott AM, Hannaford PC, Chambers WA, Smith WC. Factors related to the onset and persistence of chronic back pain in the community: results from a general population follow-up study. *Spine (Phila Pa 1976)* 2004;29:1032-40
- 15.** Sidiq M, Alenazi W, Kashoo FZ, Qasim M, Lopez MP, Ahmad M, Mani S, Shaphe MA, Khodairi O, Almutairi A, Mir SA. Prevalence of non-specific chronic low-back pain and risk factors among male soldiers in Saudi Arabia. *PeerJ*. 2021 Oct 12;9:e12249. doi: 10.7717/peerj.12249. PMID: 34721972; PMCID: PMC8519176.