

The Impact of Comorbidities On Pain Severity in Patients With Low Back Pain: A Cross-Sectional Study

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Article History

Received: 02 October 2024

Revised: 31 October 2024

Accepted: 30 November 2024

Abstract

The quality of life for people who suffer from low back pain (LBP) is significantly reduced, making it a major worldwide health concern. Patients with LBP frequently have comorbid diseases like hypertension and hyperlipidemia, which can exacerbate pain and make therapy more difficult. The purpose of this study is to examine the connection between comorbidities and the incidence of LBP in patients who visit the RSUDZA Banda Aceh Neurology Outpatient Clinic. In this study, 237 LBP patients from the Neurology Outpatient Clinic at RSUDZA were selected using a cross-sectional methodology between 12 April to May 2023. A sociodemographic questionnaire and the Modified Self-Administered Comorbidity Questionnaire (MSACQ) were used to gather data. The association between comorbidities and the incidence of LBP was examined using the chi-square test. The most prevalent comorbid conditions among the 237 responders were hypertension and hyperlipidemia, with 161 people (67.9%) having comorbidities. Mild pain was experienced by 87.8% of patients. Comorbid conditions had a substantial impact on the severity of pain in patients with LBP, according to the chi-square test, which revealed a strong correlation between comorbidities and the occurrence of LBP (p -value = 0.000). This study suggests a strong correlation between comorbidities and LBP incidence. In relation to LBP, hypertension and hyperlipidemia are the most prevalent comorbidities. To enhance treatment results and patients' quality of life, a comprehensive strategy to managing LBP is required, taking into account both the pain and any concomitant conditions.

Keywords: low back pain; comorbidities; hypertension; hyperlipidemia

Abstrak

Pasien yang menderita Low Back Pain (LBP) akan mengalami penurunan kualitas hidup yang signifikan, sehingga menjadi masalah kesehatan utama di seluruh dunia. Pasien dengan LBP sering kali memiliki penyakit penyerta seperti hipertensi dan hiperlipidemia yang dapat memperburuk nyeri dan membuat terapi menjadi lebih sulit. Tujuan dari penelitian ini adalah untuk menguji hubungan antara penyakit komorbid dengan kejadian LBP pada pasien di ruang Rawat Jalan Neurologi RSUDZA Banda Aceh. Dalam penelitian ini, sebanyak 237 pasien LBP dipilih menggunakan metodologi cross-sectional selama 12 April hingga Mei 2023. Kuesioner sosiodemografi dan Modified Self-Administered Comorbidity Questionnaire (MSACQ) digunakan untuk mengumpulkan data. Hubungan antara penyakit komorbid dan kejadian LBP diuji menggunakan uji chi-square. Kondisi komorbiditas yang paling umum di antara 237 responden adalah hipertensi dan hiperlipidemia, dengan 161 orang (67,9%) memiliki penyakit penyerta. Nyeri ringan dirasakan oleh 87,8% pasien. Kondisi komorbiditas memiliki dampak substansial terhadap tingkat keparahan nyeri pada pasien dengan LBP, hasil

penelitian ini mengungkapkan korelasi kuat antara komorbiditas dan kejadian LBP (nilai-p = 0,000). Studi ini menunjukkan korelasi kuat antara komorbiditas dan kejadian LBP. Terkait dengan LBP, hipertensi dan hiperlipidemia merupakan komorbiditas yang paling umum. Untuk meningkatkan hasil pengobatan dan kualitas hidup pasien, diperlukan strategi komprehensif untuk mengelola LBP, dengan mempertimbangkan nyeri dan kondisi penyerta lainnya.

Kata kunci: Nyeri punggung bawah; komorbiditas; hipertensi; hiperlipidemia

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Introduction

As the world's population ages and injuries and their effects become more common, the burden of non-communicable illnesses continues to increase globally (Cieza et al., 2020). LBP is one of these ailments that most significantly adds to the burden of musculoskeletal disorders. An estimated 570 million people worldwide suffer from LBP, making it a serious health concern. LBP, which can happen with or without sciatica, is characterized by discomfort, stiffness, or tightness in the region between the lower gluteal fold and the costal edge. LBP is a serious global health concern because of its acute or chronic forms, which severely hinder everyday activities and lower quality of life (Xing et al., 2024).

LBP substantially impairs people's functional ability and contributes to significant financial and social expenses, making it one of the primary causes of activity limits globally. In addition to being a health issue, the illness poses a serious financial burden on both people and society as a whole because it leads to higher healthcare costs, lost productivity, and long-term impairment (Ryu et al., 2024; Schmidt & Pilat, 2023). Effectively managing LBP is essential for both enhancing patients' quality of life and reducing the financial burden on healthcare systems.

The clinical complexity of chronic low back pain (CLBP) is significantly influenced by both physical and psychological comorbidities. Psychiatric comorbidities that affect how pain is perceived and how severe it is are frequently present in CLBP patients (Prasad et al., 2021). Additionally, comorbid problems that worsen pain symptoms and make management more difficult, such as diabetes mellitus, rheumatic disorders, cardiovascular diseases, cancers, renal and urinary tract disorders, and spinal diseases, result in worse outcomes (Farley et al., 2024). Comorbidities also make it more likely that an opioid prescription will be written, which drives up healthcare expenses and puts strain on both patients and doctors (Moses-Hampton et al., 2023).

In people with LBP, sociodemographic factors also affect functional results, these difficulties are exacerbated in the presence of comorbidities. These interactions highlight how crucial it is to manage LBP by addressing both psychological and physical variables in order to enhance physical performance and recovery (Barreto et al., 2025).

Although non-specific CLBP is common in older persons, little is known about the variables that contribute to its high prevalence (Wong et al., 2022). There is still a lack of knowledge on the correlation between comorbidities and the incidence of LBP. The symptoms of LBP are considerably worsened by comorbidities (Fu et al., 2023). In order to gain a better knowledge of how comorbid conditions impact the development of LBP, this study intends to investigate the relationship between comorbidities and the occurrence of this condition.

Method

Study design

The cross-sectional design of this study makes it possible to analyze these correlations in detail within a particular population by effectively examining the relationship between comorbidities and the incidence of low back pain at a single moment in time.

Population, sample and sampling techniques

LBP patients who visited the outpatient neurology clinics at Zainoel Abidin General Hospital (RSUDZA) in Banda Aceh made up the study's population. From April 12 to May 2023, a specific time frame was used to recruit 237 LBP patients. Convenience sampling was used to choose the participants. Respondents had to be at least eighteen years old, have a verified diagnosis of low back pain, and be receiving outpatient therapy at RSUDZA in order to meet the inclusion criteria. To guarantee the validity and focus of the results, patients who were in excruciating acute pain at the time of data collection were not allowed to participate in the study.

Instrument and data analysis

The *Modified Self-Administered Comorbidity Questionnaire* (MSACQ), which comprises 13 comorbid conditions frequently seen in patients with LBP, and a sociodemographic questionnaire were the two tools used in this investigation. The MSACQ's validity coefficient of 0.94 indicated that it was very valid. The study received ethical approval under protocol number 23-02-040 and permission number 040/ETIK-RSUDZA/2023 from the Ethics Committee of RSUDZA. The chi-square test was used to ascertain the relationship between comorbidities and the existence of LBP, whereas univariate analysis was used to characterize respondent characteristics.

Result and Discussion

Characteristics of Respondent

The characteristics of the respondents showed that 154 people (65.0%) were older adults (>40 years old). 134 respondents (56.5%) were female, and 164 respondents (69.2%) had a body mass index (BMI) classified as underweight/normal. In terms of smoking behavior, 106 respondents (78.5%) said they had never smoked, while 102 respondents (44.0%) said their greatest educational attainment was secondary school. A considerable number of respondents, 161 people in all (67.9%), had one or more comorbidities in addition to their low back pain situation. This research shows that people with LBP have a significant frequency of other medical disorders, which could make their general health status more complicated.

Table 1. Characteristic Respondents

No	Characteristics	F	%
Age (Years)			
1	18-40 (Early Adult)	83	65
	>40 (Late Adult)	154	35
Gender			
2	Male	103	43,5
	Female	134	56,5
BMI			
3	Thin/Normal	139	58,6
	Overweight/Obesity	98	41,4
Smoking history			
4	Smoker	186	78,5
	Non-smoker	51	21,5
Educational Background			
5	Primary	41	17,3

No	Characteristics	F	%
	Secondary	95	39,7
	Higher	102	43,0
Comorbid Condition			
6	Present	161	67,9
	Absent	76	32,1

Characteristics LBP from Respondent

Regarding the intensity of discomfort, most participants (208, or 87.8%) reported mild painful experiences. This highlights the intricate relationship between comorbidities and subjective pain levels by indicating that, despite the prevalence of comorbidities, the majority of patients' pain levels remained tolerable.

Table 2. Characteristic LBP from Respondents

No	Characteristics	F	%
Pain			
1	Mild	208	87,8
	Moderate	29	12,2

Relationship between Comorbid Condition and LBP

Comorbidities and pain intensity were shown to be significantly correlated in patients with low back pain (LBP) who were seen at the Neurology Outpatient Clinic at RSUDZA, according to the results of the chi-square test. A high statistical link is indicated by the p-value of 0.000, which implies that comorbid conditions have a significant impact on the pain that LBP patients experience. This result emphasizes the necessity of treating LBP holistically, accounting for the influence of comorbidities on the patient's overall health. Optimizing pain management techniques and enhancing patient outcomes may require addressing certain comorbid medical conditions.

Table 3. Relationship between Comorbid Condition and LBP

NO	Comorbid Condition	Pain in Patients with LBP						p-value
		Mild		Moderate		Total		
		f	%	f	%	f	%	
1	Present	157	97,5	4	2,5	161	100	0,000
2	Absent	51	67,1	25	32,9	76	100	

Patients with low back pain (LBP) often have hypertension as a concomitant disease. Systemic hypertension had the highest comorbid prevalence with musculoskeletal pain, accounting for 42.6% of cases, according to a study that examined the incidence and trends of musculoskeletal pain in conjunction with non-communicable diseases (Tushingam et al., 2024). In another study, Emorinken et al. (2023) discovered that hypertension was present in 29.8% of LBP patients, indicating a strong correlation between the two conditions. Furthermore, de Luca et al. (2023) found that the prevalence odds of spinal pain were 40% higher in those with hypertension, with low back pain in particular rising by 31%. These results highlight how crucial it is to take hypertension into account while managing and treating individuals with LBP.

The study's findings also indicated that the second most prevalent comorbid condition is hyperlipidemia. The relationship between LBP and hyperlipidemia has been investigated in recent research. After adjusting for confounding variables, Hanidu et al. (2023) revealed that people with hypercholesterolemia had a 34% higher risk of back pain. According to a different study by , after controlling for pertinent confounders, individuals with hypercholesterolemia had a 54% higher likelihood of experiencing neck pain. According to a different study by Ahorukomeye et al. (2023), after controlling for pertinent confounders, individuals with hypercholesterolemia had a 54% higher likelihood of experiencing neck pain. Furthermore,

Chen et al. (2021) found that sciatica, back pain, and/or disk herniation were linked to elevated levels of triglycerides, total cholesterol, and low-density lipoprotein cholesterol. The results of this study highlight how comorbid diseases have a substantial influence on the incidence and intensity of LBP. Particularly among LBP patients, hypertension and hyperlipidemia were shown to be common comorbidities that make managing and treating the illness even more difficult.

Conclusion

This study shows a strong correlation between the prevalence of LBP and concomitant diseases. The results show that LBP is more common in people with concomitant conditions such as hypertension and hyperlipidemia. This emphasizes how crucial it is to take comorbid illnesses into account while managing and treating LBP because they can make pain worse and make treatment more difficult. In order to improve patient outcomes, these findings highlight the necessity of a comprehensive strategy to patient care that integrates the management of LBP and associated comorbidities.

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