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The Relationship Between the Level of Knowledge of the Elderly About Risk Factors of Low Back Pain and the Incidence of Low Back Pain at Pusat Pelayanan Sosial Lanjut Usia Mandalika, Nusa Tenggara Barat, in 2025

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Abstract: Low Back Pain (LBP) is a musculoskeletal problem that is often experienced by the elderly and can reduce the quality of life. Knowledge of LBP risk factors plays an important role in efforts to prevent and treat it. This study aims to determine the relationship between the level of elderly knowledge about LBP risk factors and the incidence of LBP at the Mandalika Elderly Social Service Center, West Nusa Tenggara in 2025. This quantitative study used a cross-sectional design on 41 elderly people selected through total sampling. Data was collected using a questionnaire that had been tested for validity and reliability, then analyzed univariately and bivariously with Chi-square test. The results showed that most of the respondents had sufficient knowledge (46.3%), followed by low (34.1%) and good (19.5%) knowledge. The incidence of LBP was found in 26 respondents (63.4%), while 15 respondents (36.6%) did not experience LBP. The Chi-square test showed a significant relationship between the level of knowledge of the elderly and the incidence of LBP (p-value = 0.002). It was concluded that low knowledge was related to the high incidence of LBP. Continuous health education is needed to increase the understanding of the elderly in preventing LBP.

Keywords: Elderly, Knowledge Level, Low Back Pain

Introduction

Low Back Pain (LBP) is a musculoskeletal disorder characterized by pain in the lower back, located between the lower margin of the ribs (costae) and the inferior gluteal fold, which may be accompanied by stiffness, muscle spasm, limited lumbar mobility, and pain radiating to the buttocks or thigh (Aras et al., 2020). LBP is also classified predominantly as nonspecific LBP, in which symptoms cannot be attributed to a single structural abnormality, but instead arise from the interaction of biological, psychosocial, and behavioral factors. This multifactorial nature highlights the importance of understanding LBP as a complex clinical condition rather than a single pathological disorder (Chiarotto & Koes, 2022).

This musculoskeletal condition is one of the most commonly reported complaints worldwide. With increasing age, the risk of developing LBP tends to rise, particularly among older adults aged over 60 years, due to a decline in sensory function and motor muscle strength. This condition is consistent with data from the Central Statistics Agency, which show an increased risk of LBP among the elderly population during the period of 2019 to 2021 (Riset et al., 2024). In addition, LBP may also be triggered by improper body movements and posture, repetitive movements, excessive muscle use, and injuries that occur over a certain period of time (Rahmawati, 2021).

The World Health Organization (WHO) defines older adults as individuals aged 60 years and above. In older adults, there is a decline in bodily functions such as reduced flexibility, muscle weakness, and decreased collagen levels, which contribute to the development of pain. Among elderly individuals with LBP, approximately 40% experience difficulty performing daily activities, while 20% suffer from sleep disturbances due to pain. As age increases, various health problems become more

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apparent, including tissue degeneration that can trigger musculoskeletal disorders and cause significant pain, leading to limitations in activities such as moving, standing, sitting, and other daily functions (Panandita et al., 2024).

These degenerative processes are associated with decreased tissue elasticity, weakening of supporting muscles, and progressive structural changes in the spine, which increase vulnerability to recurrent episodes of LBP in the elderly (Hidayat, 2022). Degenerative changes in the lumbar spine are also characterized by progressive alterations in intervertebral disc height and segmental stability, which may predispose older adults to lumbar spondylolisthesis and subsequent mechanical LBP (Saremi et al., 2024). In addition, decreased bone density in older adults may increase the risk of vertebral compression fractures, which can further aggravate pain symptoms and functional limitations in individuals with LBP (Yonso, 2022). In several cases, LBP is also associated with neurological involvement, including pain radiation, reduced muscle strength, and sensory disturbances caused by lumbar nerve irritation or compression, which further contributes to functional decline in older adults (Tavee Jinny O., 2017).

According to WHO data (2022), LBP is one of the major musculoskeletal problems, affecting approximately 17.3 million people globally. In the United States, more than 80% of the population has experienced LBP at some point in their lives. Based on the National Health Interview Survey (NHIS) 2019, the prevalence of LBP among adults reached 39%, with the highest prevalence found in individuals aged 65 years and older at 45.6%. In Indonesia, studies indicate that the incidence of LBP increases among individuals aged 60–65 years. Furthermore, data from RISKESDAS (2021) reported that the prevalence of LBP in Indonesia was 3.71%. LBP is considered one of the leading causes of global disability requiring further rehabilitation. In some cases, LBP may also be associated with chronic musculoskeletal conditions such as ankylosing spondylitis, which contributes to progressive spinal stiffness and exacerbates functional decline in older adults (Skalski, 2015).

LBP not only affects physical functioning but may also progress into a chronic musculoskeletal condition that interferes with mobility, independence, and long-term functional capacity among older adults. Comorbid degenerative joint disorders may further increase biomechanical loading on the lumbar spine and intensify musculoskeletal pain experienced by elderly individuals with LBP (Sarmalkar, 2023). This condition contributes to decreased quality of life and functional performance, particularly in activities requiring prolonged standing, bending, lifting, or repetitive movements (Delisa et al., 2010). This finding is in line with global evidence showing that LBP is one of the leading causes of disability worldwide and contributes substantially to the global burden of disease across all age groups, particularly among older adults (Hartvigsen et al., 2018). condition is commonly characterized by discomfort and pain in the lower back region and is often caused by improper performance of daily activities, such as incorrect posture during routine tasks (Pambudi et al., 2023).

LBP is closely associated with work productivity and Activities of Daily Living (ADL). The pain caused by LBP can significantly reduce work efficiency, as it affects the ability to move, stand, and sit, thereby hindering daily and occupational activities. This condition not only disrupts daily functioning but may also lead to disability and a decline in quality of life, particularly among older adults. LBP is frequently caused by poor posture and improper movements performed over long periods, which subsequently trigger pain and limit work-related activities. Several risk factors that contribute to the development of LBP include non-ergonomic working postures, repetitive physical loading, prolonged activity duration, and inadequate body mechanics during daily activities (Krishna et al., 2021; Sivia et al., 2024). These conditions may increase mechanical stress on spinal structures and trigger musculoskeletal strain, especially in individuals with limited knowledge regarding proper posture and safe movement patterns (Mulianti, 2023). In addition, LBP can result in both short-term and long-term effects, causing substantial discomfort in the lower back area

The level of knowledge is strongly associated with the incidence of LBP. Knowledge plays a crucial role, particularly in the prevention of LBP. Older adults often have a low level of knowledge, including knowledge related to LBP. A study conducted at the Medical

Rehabilitation Polyclinic of Rumah Sakit Islam Jakarta Pondok Kopi showed that the majority of elderly patients had low knowledge regarding LBP (48.3%), followed by moderate knowledge (35.0%), and good knowledge (16.7%). This low level of knowledge may be influenced by several factors, including barriers to accessing information, limited education during productive years, and resistance to new information among older adults. This condition negatively impacts older adults by limiting their understanding of risk factors, prevention strategies, and management of LBP (Wahyu et al., 2024). Evidence also shows that health education and adequate knowledge play a key role in supporting self-management behaviors, maintaining safe physical activity, and preventing the recurrence of LBP in older adults (Oliveira, 2018). Therefore, this study aims to explore the level of knowledge among older adults regarding LBP and its relationship with the incidence of LBP, in order to provide a scientific basis for the development of more effective educational interventions.

Material and Metods

This study was conducted in 2025 at the Mandalika Elderly Social Service Center, West Nusa Tenggara, Indonesia. The research employed a quantitative approach with a cross-sectional design aimed at analyzing the relationship between the level of knowledge of older adults regarding risk factors for LBP and the incidence of LBP. The study population consisted of all older adults residing at the Mandalika Elderly Social Service Center, and the sampling technique applied was total sampling, such that all members of the population who met the inclusion criteria were included as respondents. A total of 41 respondents participated in this study. The independent variable was the level of knowledge of older adults regarding LBP risk factors, measured using a structured questionnaire that had previously undergone validity and reliability testing, while the dependent variable was the incidence of LBP, determined based on complaints of lower back pain in accordance with predefined assessment criteria. The level of knowledge was categorized on an ordinal scale (good, moderate, low), whereas the incidence of LBP was classified on a nominal scale (yes/no). Data collection was carried out through direct administration of the questionnaire to respondents.

The research procedures were implemented through several stages, namely obtaining ethical approval and institutional permission, coordinating with the management of the elderly care facility and identifying respondents according to the inclusion criteria, providing an explanation of the study objectives, procedures, benefits, and potential risks followed by obtaining written informed consent, administering the knowledge questionnaire and documenting LBP complaints based on established assessment criteria, and subsequently checking the completeness and consistency of the collected data prior to analysis. The data were analyzed using the Statistical Package for the Social Sciences (SPSS). Univariate analysis was performed to describe respondents' characteristics as well as the distribution of knowledge levels and the incidence of LBP, while bivariate analysis using the Chi-square test was applied to determine the relationship between the level of knowledge of older adults regarding LBP risk factors and the incidence of LBP, with the statistical significance level set at $p < 0.05$. This study received ethical approval from the Ethics Committee of the Faculty of Medicine and Health Sciences, University of Mataram, and all respondents were provided with an explanation of the study objectives and procedures and signed an informed consent form as an indication of voluntary participation.

Result and Discussion

Univariate Analyze

The level of knowledge is one of the important factors that influences an individual's behavior in the prevention and management of diseases. Adequate knowledge enables a person to recognize potential health risks, understand the preventive measures that need to be taken, and make appropriate decisions in maintaining their own health as well as the health of their surrounding environment. With sufficient understanding, an individual becomes more aware of early symptoms of disease and is able to seek appropriate treatment or actions more quickly and effectively (Wahyu et al., 2024).

Based on the results of the frequency distribution of knowledge levels, the findings are presented as follows.

Table 1. Knowledge Level Frequency Distribution

Knowledge Level	Frequency	Presentase (%)
Low	14	34,1
Moderate	19	46,3
Good	8	19,5
Total	**41**	**100,0**

Based on the results presented in Table 1, out of a total of 41 respondents, the majority had a moderate level of knowledge, with 19 individuals (46.3%), followed by a low level of knowledge in 14 individuals (34.1%), and a good level of knowledge in 8 individuals (19.5%). These findings indicate that although most respondents were categorized as having a moderate level of knowledge, a considerable proportion still exhibited a low level of knowledge.

Table 2. Frequency Distribution of LBP Occurrence

LBP	Frequency	Presentase (%)
No	15	36,6
Yes	26	63,4
Total	**41**	**100,0**

Based on the results presented in Table 2, out of a total of 41 respondents, 26 individuals (63.4%) experienced LBP, while 15 individuals (36.6%) did not report such complaints. These findings indicate that the majority of respondents in this study experienced LBP. The high proportion suggests that LBP is a relatively common problem within the studied population.

Bivariate Analyze

Table 3. Bivariate Results of the Relationship of Knowledge Level to the Incidence of LBP Based on the Overall Total Value

Knowledge Level	LBP				Total		P-Value
	No		Ya				
	N	%	N	%	N	%	
Low	2	4,9	12	29,3	14	34,1	0,002
Moderate	6	14,6	13	31,7	19	46,3	
Good	7	17,1	1	2,4	8	19,5	
Total	**15**	**36,6**	**26**	**63,4**	**41**	**100,0**	

Based on the results presented in Table 3, out of a total of 41 respondents, the distribution of knowledge level in relation to the incidence of LBP showed clear differences among groups. In the group with a low level of knowledge, consisting of 14 respondents (34.1%), 12 individuals (29.3%) experienced LBP, while 2 individuals (4.9%) did not. Among respondents with a moderate level of knowledge, totaling 19 individuals (46.3%), 13 respondents (31.7%) reported experiencing LBP and 6 respondents (14.6%) did not experience LBP. Meanwhile, in the group with a good level of knowledge, which included 8 respondents (19.5%), only 1 respondent (2.4%) experienced LBP, whereas 7 respondents (17.1%) did not report LBP.

Bivariate analysis of the relationship between the level of knowledge about LBP and the incidence of LBP

Bivariate analysis using the Chi-square test demonstrated a statistically significant association between the level of knowledge among older adults and the incidence of LBP, as indicated by a p-value of 0.002. The study data revealed that among respondents with a low level of knowledge, 12 individuals (29.3%) experienced LBP, while 13 respondents (31.7%) with a moderate level of knowledge reported similar complaints. In contrast, respondents with a good level of knowledge showed a markedly lower incidence, with only 1 individual (2.4%) experiencing LBP. This trend consistently supports the assertion of Notoatmodjo (2010) that improvements in cognitive understanding are directly associated with a reduction in disease occurrence in real-world settings.

These findings are consistent with the study by Wahyu et al., (2024), which emphasized that limited access to information places older

adults at a substantially higher risk of musculoskeletal disorders compared to those who receive adequate health education. Panandita et al., (2024) further explained that a deeper level of knowledge enables individuals to manage daily routines more effectively through the adoption of ergonomic behaviors, such as maintaining proper sitting and standing posture. The ability to regulate physical workload and perform regular muscle stretching illustrates how health knowledge functions as a critical protective factor against spinal degeneration. The synergy between theoretical understanding and simple preventive practices represents a key mechanism in minimizing the risk of chronic pain among older adults. These findings are consistent with the multifactorial model of LBP, which explains that musculoskeletal complaints in older adults are influenced not only by physical loading and posture, but also by behavioral and psychosocial factors that shape daily movement patterns (Balagué et al., 2022).

Comprehensive knowledge also assists older adults in recognizing the importance of maintaining mechanical load balance to prevent excessive stress on spinal structures, as proposed by Notoatmodjo (2012). This awareness encourages protective behaviors during heavy lifting and promotes active participation in light physical activities, such as elderly exercise programs, aimed at strengthening back muscles. Beyond primary prevention, cognitively informed older adults are more responsive in identifying early symptoms of neurological disturbances, allowing for timely medical intervention. This behavioral adaptation mechanism is supported by Sivia et al., (2024), who highlighted the effectiveness of health education in enhancing physical independence without exacerbating existing musculoskeletal damage.

Cognitive capacity also transforms attitudes and behavioral patterns among older adults, making them more receptive to medical instructions and more actively involved in community-based health education programs. Individuals with high health literacy tend to be more adaptable in adopting lifestyle changes that support long-term health compared to those with limited information. Conversely, neglect of ergonomic principles often stems from insufficient understanding, leading older adults to maintain harmful physical habits (Wahyu et al., 2024). Pambudi et al., (2023) reported that structured educational interventions were effective in improving knowledge levels while significantly reducing the prevalence of low back pain among vulnerable populations.

Knowledge serves as a fundamental foundation in shaping systematic health-related behaviors, as individual perceptions determine the direction of daily practices (Notoatmodjo, 2010). A thorough understanding of the importance of core muscle strengthening and posture maintenance creates an internal protective mechanism that prevents back pain resulting from excessive physical activity. Sivia et al., (2024) and Wahyu et al., (2024) emphasized that early recognition of physical discomfort enables preventive measures to be implemented before medical conditions worsen. Therefore, cognitive competence is not merely the acquisition of information but a crucial instrument in preserving structural integrity during the aging process.

Overall, the results of this study reinforce the notion that health literacy plays a central role in influencing the dynamics of LBP incidence within the community. Consistent adoption of preventive behaviors can only be achieved when individuals possess a strong knowledge base regarding spinal function and maintenance (Notoatmodjo, 2010). The implementation of sustainable health education programs is therefore an indispensable strategy for reducing morbidity rates while enhancing the quality of life among older adults. Collective efforts to disseminate ergonomic information in a targeted manner are expected to yield long-term benefits in reducing the healthcare burden associated with musculoskeletal disorders.

Conclusion

Based on the results of this study, it can be concluded that there is a significant relationship between the level of knowledge among older adults regarding risk factors for LBP and the incidence of LBP at the Mandalika Elderly Social Service Center, West Nusa Tenggara. These findings indicate that the level of knowledge contributes to the risk of LBP among older adults. In line with the statistical analysis, the research hypothesis was accepted, confirming

that knowledge level is associated with the occurrence of LBP. Older adults with better knowledge tend to have a lower risk of experiencing LBP. Nevertheless, factors beyond knowledge may also contribute to the incidence of LBP and should be considered in future research. The findings of this study may have been influenced by limitations such as the relatively small sample size and the exclusion of other potential variables. Therefore, further studies with larger sample sizes and the inclusion of additional factors such as body mass index, physical activity level, and ergonomic habits are recommended to obtain more comprehensive results and to serve as a stronger basis for developing more effective LBP prevention interventions.

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