

The relationship between age, length of service, and work attitude with low back pain complaints among employees of company X

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Abstract

Background: Low back pain (LBP) is one of the musculoskeletal complaints commonly experienced by workers in various industrial sectors. This condition can reduce work productivity, increase absenteeism, and impact the quality of life of employees. Several factors contribute to the emergence of LBP complaints, including age, length of service, and work posture.

Method: This study is a quantitative study using a cross-sectional approach. The sample in this study consisted of 39 employees obtained using total sampling. Data in this study were obtained using interviews and observations with a questionnaire as the research instrument, then analyzed using the Chi-Square test.

Results: The results of this study indicate that there is a relationship between age, length of service, and work attitude with complaints of low back pain among employees. The results of the analysis of length of service and low back pain complaints showed a p-value of 0.011, while the results of the analysis of length of service and low back pain complaints showed a p-value of 0.000. The results of the analysis of work attitude and low back pain complaints showed a p-value of 0.000.

Conclusion: There is a significant relationship between age, length of service, and work attitude with the incidence of low back pain among employees.

Keywords: Low Back Pain; age; length of service; work attitude.

INTRODUCTION

Low back pain (LBP) is one of the musculoskeletal disorders caused by poor ergonomics. Low back pain is defined as pain localized between the costal margin and the inferior gluteal fold that lasts for more than 1 day. It may be accompanied by leg pain or numbness but does not include pain associated with menstruation and pregnancy (1). Pain attacks often occur acutely, radiating to the buttocks and one thigh. When an attack occurs, the lower back area may also feel stiff and painful. This is often caused by overuse of muscles and repetitive strain or sustained injury over a period of time (2).

Ministry of Manpower Regulation No. 5 of 2018 concerning Occupational Safety and Health (OSH) in the Workplace, Article 2 states that employers and/or managers are required to implement OSH requirements in the workplace. One of the OSH requirements in the workplace is the control of ergonomic factors to meet standards (3). The issue of low back pain is very important to address, especially for workers, because low back pain complaints can cause an inability to work and lost work time, which will increase worker absenteeism and cause work to be neglected, which will ultimately lead to a decline in productivity in the workplace (4). Lower back pain is a musculoskeletal

disorder caused by incorrect working positions. Lower back pain is a major cause of disability that affects work and general well-being. Lower back pain can affect anyone, regardless of gender, age, or profession (5). According to the WHO, in 2020 there were 619 million cases of LBP globally, and it is estimated that the number of cases will increase to 843 million by 2050. The prevalence increases with age up to 80 years, while the highest number of LBP cases occurs at the age of 50. According to the Indonesian Ministry of Health, LBP affects 34.4 million people. Individual factors such as age, length of employment, and work habits also play a role in the onset of LBP. As people age, the ability of muscle and joint tissue to regenerate declines, making them more susceptible to injury due to repetitive strain (6)(7)(8).

LBP is defined as pain felt in the area below the ribs to the gluteal fold, with or without radiation to the legs. Most cases (more than 85%) are non-specific, meaning they cannot be attributed to a specific anatomical structure. LBP occurs due to a combination of mechanical, biological, psychological, and social factors (9). The causes of LBP are not only due to damage to the spinal structure, but are a combination of various interacting factors. Improper work postures such as sitting or bending over for long periods of time can exacerbate pressure on the spine and muscle tissue. Several studies have shown that the application of ergonomics in the workplace plays an important role in reducing the incidence of LBP (10).

The International Labor Organization (ILO) estimates that worldwide, 2 million people die each year from occupational diseases and accidents. In addition, every day more than 160 million people suffer from occupational diseases and work-related illnesses. One type of occupational disease caused by non-ergonomic conditions is musculoskeletal disorders (MSDs) (11)(12). LBP is a very common

musculoskeletal disorder in the MENA population, defined as pain between the 12th rib and the gluteal fold (buttocks) lasting at least 1 day (13). The duration of LBP is crucial in determining management and prognosis. Acute LBP generally resolves, but if it progresses to subacute and chronic LBP, the risk of disability, decreased work function, and economic impact increases significantly (9).

Article 86 of Law No. 13 of 2003 concerning labor regulates that every worker/laborer has the right to obtain protection for occupational safety and health, and Minister of Health Regulation No. 66 of 2016 regulates the obligation of hospital health care facilities to implement occupational safety and health to protect hospital workers (14)(15).

In 2020, approximately 619 million people worldwide suffered from low back pain; the number of cases is projected to increase to 843 million by 2050 (most of the increase due to aging and population growth) (16). The WHO/ILO reports that every year around 2.0 million people die from work-related diseases, while there are hundreds of millions of non-fatal cases (around 160 million non-fatal occupational diseases annually, and hundreds of thousands of fatal accidents each year. This report also emphasizes the significant contribution of MSDs to the burden of occupational diseases (17)

According to Occupational Health Ergonomics theory, LBP complaints occur when physical workloads exceed the body's physiological capabilities, particularly those of the muscles, ligaments, and spine. An imbalance between work capacity and job demands causes fatigue in the lower back muscles, which over time leads to pain (18). In addition, the theory of Human Body Biomechanics explains that non-neutral body postures, such as excessive bending or sitting for long periods without proper back support, increase pressure on the intervertebral discs and increase the risk of LBP (19).

METHOD

This study is a quantitative study using a cross-sectional approach. The independent variables studied are age, length of service, and work attitude, while the dependent variable is low back pain complaints observed simultaneously. The purpose of this study is to determine the relationship between age, length of service, and work attitude with low back pain complaints. The population in this study consists of employees in Divisions A and B. The sample in this study consists of 39 people using total sampling. The data in this study were obtained using interviews and observations with a questionnaire as the research instrument, which were then analyzed using the Chi-Square test.

RESULTS

Table 1. Frequency Distribution of LBP Complaints and Respondent Characteristics (n=39)

Respondent Characteristics	n	(%)
LBP complaints		
Nothing there is	12	30.8
	27	69.2
Umur		
≤ 35	5	12.8
≥ 35	34	87.2
Employment Period		
≤ 3 year	9	23.1
≥ 3 year	30	76.9
Work Attitude		
Risk-free	8	20.5
At risk	31	79.5

Table 1 shows the frequency distribution of low back pain (LBP) and the characteristics of 39 company employees who participated in the study. Based on the results, it was found that most respondents experienced LBP, namely 27 people (69.2%), while 12 people (30.8%) did not experience any complaints. These results indicate that low back pain or LBP is a fairly dominant health problem among company employees. When viewed by age, the majority of respondents were over 35 years old (87.2%), while only 12.8% of respondents were under 35 years old. This indicates that older employees tend to have a higher risk of experiencing LBP complaints, possibly due to declining physical condition and prolonged exposure to workloads in the workplace. Based on length of service, most respondents had worked for more than 3 years (76.9%), while those who had worked for less than 3 years accounted for 23.1%. These findings illustrate that the longer a person works as a company employee, the greater the likelihood of experiencing musculoskeletal complaints due to the accumulation of physical workloads and non-ergonomic body postures. Meanwhile, in terms of work attitude, the majority of respondents had a risky work attitude (79.5%), while those with a non-risky attitude accounted for 20.5%.

Work habits that pose a risk, such as bending over for long periods of time, lifting heavy loads without proper technique, or working in uncomfortable positions in the workplace, can be major factors causing LBP in company employees.

Table 2. Results of Correlation Test Analysis

Variable	Low Back Pain Complaints		p-Value	OR
	There is	Nothing		
Age				
≥ 35 Year	26 (76.5%)	8 (23.5%)	0.011	8.00
≤ 35 Year	1 (20.0%)	4 (80.0%)		
Masa Kerja				
≥ 3 Year	1 (11.1%)	8 (88.9%)	0.000	10.00
≤ 3 Year	26 (86.2%)	4 (13.3%)		
Work Attitude				
Risk-free	0 (0.0%)	8 (100%)	0.000	7.750
At risk	27 (87.5%)	4 (12.9%)		

Based on the results of data analysis on the age variable, there is a significant relationship between age and complaints of low back pain ($p < 0.05$). Respondents aged ≥ 35 years have a 13 times greater risk of experiencing low back pain complaints compared to those aged ≤ 35 years. And for the variable of length of service, there is a very significant relationship between length of service and LBP complaints ($p < 0.05$). Respondents with ≥ 3 years of work experience have a 52 times greater risk of experiencing LBP compared to those with ≤ 3 years of work experience. The results of data analysis on the work attitude variable show that there is a significant relationship between work attitude and LBP complaints ($p < 0.05$). Respondents with a risky work attitude have a 7.75 times greater chance of experiencing LBP complaints compared to those with a non-risky work attitude.

DISCUSSION

The Relationship Between Age and Low Back Pain Complaints

Based on the statistical test results, a p-value of 0.011 and an Odds Ratio (OR) of 8.00 were obtained. A p-value < 0.05 indicates that there is a significant relationship between age and low back pain complaints. Respondents aged ≥ 35 years have a 13 times greater risk of experiencing low back pain complaints compared to respondents aged ≤ 35 years. There were 26 respondents (76.5%) aged ≥ 35 years who experienced LBP, while only 1 respondent (20%) aged ≤ 35 years experienced LBP. This shows that the prevalence of low back pain increases with

age. The World Health Organization also states that workers over 35 years of age are at greater risk of musculoskeletal disorders due to a decrease in the body's ability to adapt to workloads and non-ergonomic work postures. WHO explains that individuals over 35 years of age generally experience a decline in physical capacity and adaptation to workloads, thereby increasing the risk of musculoskeletal disorders, including LBP (20). Older age is also often accompanied by changes in body posture that can exacerbate pressure on the lower spine (21). This study is in line with research conducted by Nur Nadifatuzzahroh (2024) (22), there is a relationship between age and low back pain. As we age, a process of bone degeneration begins at around the age of 30. In a study conducted by Kumbea et al., it was explained that the older a person is, the higher their risk of experiencing Low Back Pain (23).

The Relationship Between Length of Service and Complaints of Low Back Pain

Based on the statistical test results, the p-value was 0.000 and the OR was 10.00. Since $p < 0.05$, there is a highly significant relationship between length of service and low back pain complaints. Respondents with ≥ 3 years of service had a 52 times greater risk of experiencing LBP complaints than respondents with ≤ 3 years of service. Twenty-six workers (86.7%) with ≥ 3 years of service experienced low back pain, while only one worker (11.1%) with ≤ 3 years of service experienced low back pain. This shows

that the longer a person works, the higher the likelihood of being exposed to ergonomic risks that trigger low back pain. Workers with ≥ 3 years of service are more prone to lower back pain due to the accumulation of physical strain and non-ergonomic work positions over the long term. This study is in line with research conducted by Prianggi et. al., (2021)(24), which found that in terms of length of service, 88.6% of respondents with long service experienced low back pain. Meanwhile, 40% of respondents with short service experienced low back pain. Long working hours for fishermen result in repeated exposure to fishing activities while sitting for long periods of time, causing excessive pressure on the lower back (25). Working hours can measure the length of time a person is exposed to factors in the work environment. The longer fishermen work, the greater their exposure to occupational hazards, which can cause low back pain. LBP complaints are related to fishing work because fishermen often lift, carry, and push heavy loads for long periods of time, causing a decrease in tissue elasticity and ultimately leading to increased muscle tension and low back pain complaints (26).

The Relationship Between Work Attitude and Low Back Pain Complaints

From the results of the analysis using the Chi Square Test, a p value of 0.000 was obtained, meaning that statistically at α 5% there is a significant relationship between work attitude and complaints of low back pain with an Odds Ratio (OR) = 7.750. This means that workers with a risky work attitude are 7.75 times more likely to experience LBP complaints than workers with a non-risky work attitude. It is known that 27 respondents (87.1%) with a risky work attitude experienced LBP complaints, while those with a non-risky work attitude did not experience any LBP complaints at all (0%). This study shows that non-ergonomic work postures or positions are a major factor causing lower back pain.

Risky work postures include bending over, sitting for long periods without back support, standing still for long periods, or suddenly twisting the body while working. These positions can increase pressure on the lower back muscles, narrow the space between the vertebrae, and disrupt blood flow to the muscle tissue (27). Repeated pressure on the lumbar region causes muscle fatigue and ultimately leads to lower back pain. This study is in line with research by Nuraini & Isnaeni (2024)(28), which found that workers with non-ergonomic work postures have a higher risk of experiencing musculoskeletal complaints, especially in the lower back. Incorrect work postures cause the back muscles to work excessively to maintain body balance, which in the long term causes pain and muscle tension. The World Health Organization report also confirms that non-ergonomic work posture is a major cause of the increasing number of musculoskeletal disorders among industrial and healthcare workers worldwide. The WHO recommends ergonomics-based interventions and raising worker awareness of the importance of correct work posture to reduce the incidence of low back pain globally (21).

Conclusion

Based on the results of this study, it can be concluded that there is a relationship between age, length of service, and work attitude with the incidence of low back pain (LBP) among employees at Company X in Divisions A and B. It is known that there is a relationship between age and low back pain complaints with a p-value of 0.011 ($p < 0.05$), there is a relationship between length of service and the incidence of low back pain with a p-value of 0.000 ($p < 0.05$), and there is a relationship between work attitude and low back pain complaints with a p-value of 0.000 ($p < 0.05$).

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