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Original Article

Efficacy of Physiotherapy on Changes in Pain Value Based on Economic Status of Low Back Pain

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Abstract

Background: Low back pain is the third most common musculoskeletal disorder after osteoarthritis and rheumatism. Low back pain is a disease that is often found in the community. Low back pain is often the cause of a person feeling a decrease in ability in daily functional activities. Physiotherapy is one of the rehabilitation programs for low back pain.

Aim: The efficacy of physiotherapy can be influenced by several factors, namely age, economic status and education level. This study aims to determine the effect of physiotherapy on changes in pain values based on the economic status of patients with low back pain.

Method: This study assessed the effect of economic status on changes in pain scores in 52 subjects. The study design was a retrospective cohort without a control group for three months. Data were obtained from medical records and questionnaires and analyzed by regression test with dummy variables.

Results: Regression test analysis with dummy variables showed a significance value between economic status and changes in pain scores after three months of physiotherapy of $P=0.035$ ($R^2=0.125$, $p<0.05$). This means that economic status has an effect of 12.5% on the average change in pain value after physiotherapy.

Conclusion: There is an effect of economic status on the average value of changes in the pain value of low back pain sufferers. Changes in pain values are better in patients with low back pain with low economic status compared to high and middle economic status.

INTRODUCTION

According to the World Health Organization (WHO), about 33% of the population in developing countries experience persistent pain in the lower back. In America, about 26% of adults reported experiencing low back pain at least one day in the past three months. In Japan, the prevalence rate of chronic low back pain is 9.3%, while non-chronic low back pain is 15.4%. In Thailand, the prevalence of low back pain reached 30%, similar to the global prevalence rate. Meanwhile, in Indonesia, the prevalence of low back pain sufferers in the productive age group is almost 40%. (Aditama et al., 2021). In the general public, lower back pain problems generally occur in young adults, with the highest number of cases occurring at the age of 45-60 years. In East Java, about 25.5% of the population reported experiencing symptoms of back pain, and they mentioned that these complaints were increasing every year (Putri et al., 2020). Some people who experience low back pain consume painkillers, which are only temporary without reducing lumbar musculoskeletal complaints. Thus causing lumbar muscles to spasm, if not treated properly it will cause lumbar contracture and other neuromusculoskeletal disorders (Lee et al., 2016).

Physiotherapy is a form of non-surgical medical treatment that aims to restore, maintain and improve body function and the general well-being of patients. Physiotherapy professionals, called physiotherapists, work with patients to address a variety of physical health problems that can be caused by injury, illness or other



medical conditions (Milenia et al., 2021). The techniques and methods used in physiotherapy vary depending on the specific condition of the patient. This can involve therapeutic exercise, joint manipulation, massage, hot or cold therapy and other modalities. Physiotherapy is often involved in the wider healthcare team to provide holistic care to patients (Wibisono et al., 2022).

There are several things that affect physiotherapy efficacy, namely age, financial status, and education level. Management of chronic low back pain is important and the treatment must be tailored to the condition of each individual. The desired result is to be able to return to normal activities as soon as possible, pain management and the incidence of low back pain is not repeated. Poor management can lead to negative effects such as limited social activities, inability to work due to pain, loss of money for treatment, stress, and in some cases despair and loss of spirit (Traeger et al., 2014). The lower, middle, and upper class economic status of low back pain patients affects the efficacy of physiotherapy such as the high costs incurred for the treatment of low back pain and decreased productivity due to low back pain. Low back pain is a health problem in both developed and developing countries. The United States is estimated to have paid \$100 billion to compensate monetary losses for its citizens suffering from low back pain. Low back pain can cause direct losses, such as medical expenses, and indirect losses, such as economic costs for individuals, families, communities, companies, and governments (Rizki et al., 2020).

METHOD

The design of this study was a retrospective observational cohort without a control group. This research was conducted at the Medical Rehabilitation Poly RST Soepraen Malang in March and April 2024. The sample of this study were 52 respondents with inclusion criteria, namely non-specific respondents with chronic low back pain, respondents willing to take part in this study, filling out inform concent. And the exclusion criteria are respondents with low back pain due to lumbar fractures, open wounds to the lumbar, sensory disturbances. The independent variables in this study are physiotherapy and the economic status of low back pain sufferers. The dependent variable in this study is the change in pain assessed by Numeric Rating Scale (NRS). Secondary data of the research subjects were collected from the subject's medical records, which were taken several times to meet the ideal target. The medical records included the subject's personal data, pain values before physiotherapy measured by a doctor or physiotherapist (pain values before intervention), and records of the development of pain values for some time after physiotherapy was completed. Primary data was also obtained from direct interviews with respondents according to the questionnaire. Direct observations were made after three months of physiotherapy, known as pain scores after intervention. Data were analyzed descriptively and analytically. Descriptive was used to see the normality of data distribution. After the descriptive data was observed, analytical tests were determined, namely the Wilcoxon test to determine the value of pain changes before and after physiotherapy and regression tests with dummy variables to determine the effect and how much influence is given by high, middle and low economic status on changes in pain in low back pain patients.

RESULTS

Descriptive results were organized by General characteristics. In Table 1. it appears that the respondents were more men 53.8%, while women 46.2%. Respondents with low back pain between 30-48 years old are 57.7% and between 49-60 years old are 42.3%. The type of work of respondents as well as the backbone in the family, the largest response was self-employed as much as 28.8% and the least was the driver 7.6%. Subjects in this study mostly lived in families with middle economic status (42.3%) and only 26.9% had low economic status.

Tabel 1. Demographic characteristics of low back pain patients

Characteristics	Frequency	%
Gender		
Male	28	53.8%
Women	24	46.2%
Age		
30-48	30	57.7%
49-60	22	42.3%



Occupation	7	13,4%
Civil Servant	15	28,8%
Self-employed	11	21,1%
Retired	9	17,3%
Laborer	6	11,5%
Housewife	4	7,6%
Driver		
Economic Status	16	30,7%
High	22	42,3%
Medium	14	26,9%
Low		

Table 2. Results of Pain Changes Three Months Post Therapy

	Pain Value Pre	Pain Value Post	p	Interpretation
Mean change	10,36	18,64	0,001	There was a significant difference in the mean pain scores at the beginning of the study and after three months of physiotherapy.

Table 3. Results of the Effect of Changes in Pain Value Based on Economic Status

	Economic Status			Interpretation
	High	Medium	Low	
Mean change	7,98	4,68	4,37	There is a difference in the average value of pain change at the beginning and after three months of physiotherapy, namely high, medium, and low.
P value		0,035		Economic status affects the mean value of pain change at baseline and after three months of physiotherapy.
F		4,887		
R²		0,125		Economic status has a 12.5% effect on changes in pain values.

DISCUSSION

It appears in Table 2. that there is a significant change in the average pain value at the beginning of the study before physiotherapy with after 3 months of physiotherapy. This is reflected in the value of $p=0.000$ or $p<0.05$. penelitian ini sejalan dengan penelitian Putri (2023) showed that exercise therapy has a small to moderate effect on the functional ability of patients with low back pain, especially if done intensively and early (Pradita et al, 2021). Exercise therapy is useful to reduce pain, improve functional, and increase core strength in patients with low back pain (Smrcina et al, 2022). The results of the above study indicate that exercise therapy has an effect in reducing pain values in patients with low back pain, especially if done intensively within the first 3 months. The more often exercise therapy is done, or the greater the intensity of exercise therapy time, the greater the change in pain in patients with low back pain.

It appears in Table 3. that there is an effect of economic status on changes in pain values by 12.5% after exercise therapy. This is reflected in the value of $R^2 = 0.125$, $p = 0.035$ or $p < 0.05$. The effect is significant, that is, the higher the economic status of the family, the lower the change in the value of pain in patients with low back pain. This increase in pain causes variations in pain tolerance between individuals seen from individual economic level factors, social, biological and psychological behavioral factors (Tracy, 2017). Research conducted by Julianti (2018) shows that socioeconomic status plays a role in reducing pain and functional recovery in patients with low back pain. Patients with low income are much less likely to recover as measured by the visual analog scale to determine the value of pain in patients with low back pain. In this case there is a possibility of differences in motivational aspects between socio-economic groups of patients, the study showed that differences in the use of health services, such as exercise therapy for post low back pain, were influenced by income. Patients with the lowest income have limited access to hospitals with neurologists and supporting examinations such as MRI, and little access to rehabilitation services during their low back pain experience. Socioeconomic status affects mortality and access to some health services after low back pain, even in countries with public health insurance programs. This study found that the higher the economic status, the better the pain reduction. This may be due to differences in motivation and utilization of public health insurance among socioeconomic groups of patients.

CONCLUSION

There is a difference in the average value of initial pain with three months after exercise therapy in patients with low back pain. There is a significant difference in the average value of changes in pain values between high, middle and low economic status of low back pain sufferers. Changes in pain values are better in patients with low back pain with high economic status compared to middle and low economic status.



Further research needs to be done that proves the factor of family / community support for the same thing.

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