e-ISSN : 2443-0218
p-ISSN : 2339-1006

The Differences in VAS Values Before and After Physiotherapy in *Low Back Pain* Patients at the Orthopedic Polyclinic, Santa Anna Hospital, Kendari

Wa Ode Nur Dian Al Janna[1], Asriati[2], Mario Polo Widjaya[3]

[1]Medical Study Program, Faculty of Medicine, Halu Oleo University, Kendari
[2]Faculty of Medicine, Halu Oleo University, Kendari
[3]Santa Anna Hospital, Kendari

Corresponding author e-mail :nurdianjanna54321@gmail.com

ABSTRACT

Background: *Low Back Pain (LBP) is an unpleasant condition accompanied by activity limitations caused by pain when moving. Physiotherapy conducted on LBP patients is intended to reduce pain and restore functional abilities. This study aims to determine the differences in VAS values before and after physiotherapy conducted on LBP patients at the Orthopedic Poly of Santa Anna Kendari Hospital.* ***Methods:*** *This observational analytical study used a cross-sectional approach. The study used secondary data in the form of medical records from 30 LBP patients who were undergoing physiotherapy. The observed dependent variable was the VAS value before physiotherapy and the independent variable observed was the VAS value after physiotherapy. The data analysis used the Wilcoxon statistical test. If the value was p≤0.05*. ***Results:*** *The Wilcoxon analysis test showed that there was a significant difference in VAS values (p≤0.05) before and after physiotherapy conducted on LBP patients at the Orthopedic Poly of Santa Anna Kendari Hospital*. ***Conclusion****: There is a difference between the VAS values before and after physiotherapy conducted on LBP patients at the Orthopedic Poly of Santa Anna Kendari Hospital.*

Keywords: *LBP; physiotherapy; VAS Value*

INTRODUCTION

Low Back Pain (LBP) is a musculoskeletal disorder that often occurs not only in Indonesia but has become a common problem in the world (WHO, 2013). Based on the Global Burden of Disease Study (2017), the prevalence of LBP increased from 377.5 million in 1990 and increased to 577 million in 2017 (Williamson, 2021).

In Indonesia, the prevalence of *Low Back Pain* (LBP) according to the Association of Indonesian Neurologists (PERDOSSI) in 2016 was 35.86% (Nurfajri Tito, 2021). Based on research conducted by the Community Oriented Program for Control of Rheumatic Disease (COPCORD) in Malang (East Java), out of 2067 participants who took part, around 12.67% (262 participants) experienced symptoms of LBP (Andarini et al., 2019).

Many factors can exacerbate the occurrence of LBP. Overall, most cases of LBP leave no significant impact on patients' quality of life or function (Casiano et al., 2021). The presence of red flags requires further investigation to rule out serious etiologies of LBP such as cauda equina syndrome, fractures, infections and malignancies (See et al., 2021).

Risk factors that can cause LBP are age, gender, BMI, ergonomics, static work position, load, workload, exercise (Wahyuni, 2019).

Patients with symptoms of LBP have a major complaint, namely pain. Pain is a sensory and emotional experience of tissue damage or that has the potential to cause

e-ISSN : 2443-0218
p-ISSN : 2339-1006

tissue damage (Bahrudin, 2017). In measuring pain, various methods can be used, one of which is using the Visual Analog Scale, which is a measurement consisting of a 10 cm line where the further to the right indicates how severe the pain is felt (Setiyohadi, 2017).

One of the treatments that can be done to reduce LBP pain is physiotherapy. According to the Decree of the Minister of Health of the Republic of Indonesia No.778 of 2008 concerning Guidelines for Physiotherapy Services in Health Facilities, Physiotherapy is a health service aimed at individuals and or groups in an effort to develop, maintain, restore movement and function throughout the life cycle using physical modalities, agents physical, mechanical, motion, and communication.

Research conducted by Fitria Ayu in 2022, it is proven that physiotherapy performed on LBP patients can increase muscle strength and reduce pain. The research conducted by Rizal in 2022 proved that giving physiotherapy can reduce pain, increase joint range of motion, and increase muscle strength.

With the various reviews above, the authors are interested in conducting further research regarding the differences in VAS values before and after physiotherapy in LBP patients at the Orthopedic Polyclinic, Santa Anna Kendari Hospital. The purpose of this study was to assess the effect of physiotherapy on VAS values in LBP patients at the Orthopedic Polyclinic at Santa Anna Kendari Hospital.

METHODS

The research method used in this research is descriptive analytic research method with a cross sectional approach. A cross-sectional study is characterized by the characteristics that the measurement of independent variables and dependent variables is carried out simultaneously or at the same time (Irmawartini and Nurhaedah, 2017). This research was carried out in November 2022. This research will be carried out at the Orthopedic Polyclinic at Santa Anna Kendari Hospital.

The total sample in this study was 42 people, using total sampling. Statistical tests were carried out, namely using the Paired T Test and if the data were not normally distributed, an alternative test would be carried out, namely using the Wilcoxon test.

RESULTS

The distribution of the number of LBP patients who underwent physiotherapy was male as many as 11 people (36.7%) and LBP patients who underwent physiotherapy were female as many as 19 people (63.3%).

Meanwhile, the distribution of pain intensity based on the VAS value felt in LBP patients before doing physiotherapy with 4 people (13.3%) mild pain intensity, 24 people (80%) moderate pain intensity and 2 people (6, 80%) severe pain intensity 7%).

Distribution of pain intensity based on VAS values felt in LBP patients after physiotherapy with mild pain intensity of 25 people (83.3%), moderate pain intensity of 5 people (16.7%) and severe pain intensity of 0 people (0%).

Of the 30 patients with LBP, there were 4 patients (13.3%) who experienced mild pain before physiotherapy, increasing to 25 patients (83.3%) who experienced mild pain after physiotherapy. There were 24 patients (80%) who experienced moderate pain which decreased to 5 patients (16.7%) after physiotherapy. While

e-ISSN : 2443-0218
p-ISSN : 2339-1006

severe pain, there were 2 patients (6.7%) decreased to 0 (0%) after physiotherapy.

From the Wilcoxon test results, a P value of 0.000 was obtained. If a p value <0.05 is obtained, then there is a significant difference between the VAS value before physiotherapy and the VAS value after physiotherapy. Based on the Ranks value obtained from the Wilcoxon test, the Mean Rank of the Negative Ranks is -15.50 while the Positive Ranks is 0.00. From these values it is known that the average VAS value decreases after physiotherapy is performed on LBP patients at the Orthopedic Polyclinic, Santa Anna Kendari Hospital.

DISCUSSION

Low Back Pain(LBP) is a condition that is unpleasant or chronic pain for at least 3 months accompanied by activity limitations caused by pain when moving or mobilizing (Noor, 2015).

In line with increasing age there will be degeneration of the bones and this condition begins to occur when someone is 30 years old. At the age of 30 years, degeneration occurs in the form of tissue damage, tissue replacement with scar tissue and fluid reduction (Wulandari, 2020). This causes stability in the bones and muscles to decrease. The older a person is, the higher the risk of that person experiencing a decrease in elasticity in the bones which triggers LBP symptoms (Rahmawati, 2021). From medical record data taken from the Orthopedic Polyclinic at Santa Anna Kendari Hospital, it is known that the modalities that are often used in performing physiotherapy are Infrared Rays and Exercise Therapy.

Physiotherapy therapy using Infrared Rays is a type of therapy that uses infrared electromagnetic waves with the aim of heating the musculoskeletal structure (Soemarjono, 2015).

Infrared Rays therapy provides superficial heating to the treated skin area, causing several physiological effects needed for healing. These physiological effects are in the form of activating superficial heat receptors in the skin which will change the transmission or conduction of sensory nerves in delivering pain so that the pain you feel will decrease (Soemarjono, 2015).

Heating on Infrared Rays will also cause vasodilation and increase blood flow in the area so as to provide sufficient oxygen to the treated area which in turn will help speed up the tissue healing process.

Warming therapy with Infrared Rays can also help provide a feeling of comfort and relaxation so that it can reduce pain due to muscle tension, increase the stretchability or extensibility of the soft tissue around the joints such as ligaments and the joint capsule so that it can increase the area of joint movement, especially joints that are located superficially such as joints of the hands and feet (Soemarjono, 2015).

Apart from using Infrared Rays therapy, Exercise Therapy (ET) is also performed. ET reduces pain in cases of LBP because this exercise provides an elastic effect and muscle contractility. ET can cause a reduction in muscle spasms such as the abdominal and lumbar muscles. As a result, there will be a reduction in the compression force or pressure on the joint so that it can reduce pain. Not only in reducing pain. ET can also train muscle strength so that the muscles become strong and flexible (Asya and Heri, 2019).

e-ISSN : 2443-0218
p-ISSN : 2339-1006

This is in line with research conducted at the Orthopedic Polyclinic at Santa Anna Kendari Hospital in knowing the differences in pain intensity values based on VAS in LBP patients before and after physiotherapy. From medical record data taken from the Orthopedic Polyclinic at Santa Anna Hospital, there were 30 patients with LBP where 4 patients (13.3%) experienced mild pain before physiotherapy increased to 25 patients (83.3%) who experienced mild pain after surgery. physiotherapy. There were 24 patients (80%) who experienced moderate pain which decreased to 5 patients (16.7%) after physiotherapy. While severe pain, there were 2 patients (6.7%) decreased to 0 (0%) after physiotherapy.

Research on the benefits of physiotherapy in reducing pain is in line with research conducted by Fujastawan in cases of myogenic LBP at Efarina Berastagi Hospital, Karo District. The results of this study indicate that the provision of physiotherapy with the Infrared Rays (IR) method will cause an increase in temperature in the treated area thereby causing anterior dilatation followed by an increase in capillary blood flow so that the disposal of metabolic waste products called substance P becomes smooth. Another research that was also conducted by Susanti (2022), the administration of physiotherapy can reduce pain, increase muscle strength and increase daily functional abilities

This results in relaxation of the muscles so that muscle spasms and pain are reduced. In addition, physiotherapy not only reduces pain but can also strengthen the muscles in the lumbosacral region including the abdominal muscles and gluteus muscles (Fujastawan, 2020). Provision of physiotherapy is primarily intended to treat pain caused by physiological disorders. Physiological aspects that often accompany pain are tissue damage, reduced range of motion, inflammation, anoxia/ischemia (impaired blood flow) and swelling (Hasanah, 2022). Therefore, the provision of physiotherapy provides many benefits not only reducing pain but also increasing range of motion, strength control, flexibility and muscle endurance (Sudarsini, 2017).

CONCLUSION

Based on the results of the research that has been done, from the Wilcoxon test results, a P value of 0.000 is obtained. If a p value <0.05 is obtained, then there is a significant difference between the VAS value before physiotherapy and the VAS value after physiotherapy. Based on the Ranks value obtained from the Wilcoxon test, the Mean Rank of the Negative Ranks is -15.50 while the Positive Ranks is 0.00. From these values it is known that the average VAS value decreases after physiotherapy is performed on LBP patients at the Orthopedic Polyclinic, Santa Anna Kendari Hospital.

REFERENCES

Andarini, S., Arif, AZ, Rasyid, HA, Wahono, CS, Kalim, H., Handono, K. 2019. Factors associated with health care seeking behavior for musculoskeletal pain in Indonesia : A cross-sectional study. International Journal of Rheumatic Disease 22(7): 1297-1304.

Asya, Z., Heri, P. 2019. Differences in Effectiveness Between William Flexion Exercise and Core Stability Exercise in Increasing Lumbar Flexibility and Reducing Disability

in Myogenic Low Back Pain Cases. Scientific Journal of Physiotherapy. 19(1): 1-9

Bahrudin, M. 2017. Pathophysiology of pain (pain). Journal of Health Sciences and Family Medicine 13(1): 7-13.

Casiano, VE, Sarwan, G., Dydyk, AM, Varacallo, M. 2020. Back Pain.*https://www.ncbi.nlm.nih.gov/books/NBK538173/*.October 8 (09:40).

Chiodo, A.E., Bhat, SN, Harrison, RV, Shumer, GD, Wasserman, RA, Park P, et al. 2020. Low Back Pain.*https://www.ncbi.nlm.nih.gov/books/.* October 7, 2022 (22:47).

Fujastawan, INGV 2020. Physiotherapy Management in Cases of Myogenic LBP at Efarina Berastagi Hospital, Karo District in 2017. Health Research Shoots 10(2): 129-131.

Hasanah, TNU 2022. Physiotherapy in Low Back Pain Cases. Hermina Health Sciences Journal 2(1): 19-22.

Ministry of Health of the Republic of Indonesia. 2017. Research Methodology Teaching Materials. Mold I. Development and Empowerment Agency for Health Human Resources. Jakarta.

Nurfajri, T., Subakir, S., & Hapis, AA 2022. Factors Associated with Lower Back Pain Complaints in Brick Workers in Talang Belido Village in 2021. Research Innovation Journal 2(12): 3933-3938.

Rahmawati, A. 2021. Risk Factors of Low Back Pain. Journal of Medika Hutama 3 (01 October): 1601-1607.

See, QY, Tan, JNB, Kumar, DS 2021. Acute Low Back Pain: diagnosis and management. Singapore Medical Journal 62(6): 271-275.

Setiyohadi, B., Sumariyono, Yoga, I., Kasjmir, Isbagio, H., Kalim, H. 2017. Internal Medicine. Ed. 6. Internal Medicine Publishing Center. Jakarta.

Regulation of the Minister of Health of the Republic of Indonesia Number 778 of 2015 Guidelines for Physiotherapy Services in Health Facilities. 2008. Jakarta.

Sudarsini. 2017. Physiotherapy. Print I. Gunung Samudera Publishers. Poor.

Soemarjono, A. 2015. IR Heating Therapy. https://flexfreeclinic.com. December 28, 2022 (18.30).

Susanti, FA 2022. Physiotherapy Management of Non-Specific Low Back Pain (Lbp) Patients Using the Tens and William Flexion Exercise Method. Thesis. Ngudia Husada Sticks. Madura.

Wahyuni, E. 2019. Relationship between Weight and Lower Back Pain in Transport Workers at the Legi Surakarta Market. Integrated Journal of Health Sciences 8(2): 130-219.

Williamson, OD 2021. The Global Burden Of Low Back Pain International Association for the Study of Pain.*https://www.iasp-pain.org.* October 7, 2022 (21:34).

World Health Organization. 2013. Priority Medicines for Europe and the World 2013 Update. Methodology 2(7): 99-102.

Wulandari, A. 2020. Chiropractic Therapy (Spinal Manipulation) for Low Back Pain. Journal of Medika Hutama 2 (01 October): 369-375

e-ISSN : 2443-0218
p-ISSN : 2339-1006

e-ISSN : 2443-0218
p-ISSN : 2339-1006

Table 1. Gender Distribution in LBP Patients Undertaking Physiotherapy at Santa Anna Kendari Hospital

Gender	Frequency	Percentage (%)
Man	11	36,7
Woman	19	63,3
Total	30	100

Table 2. Distribution of Pain Intensity based on VAS Value in LBP Patients Before Undergoing Physiotherapy

VAS value	Frequency	Percentage (%)
Light	4	13,3
Currently	24	80
Heavy	2	6,7
Total	30	100

Table 3. Distribution of Pain Intensity based on VAS Value in LBP Patients After Undergoing Physiotherapy

VAS value	Frequency	Percentage (%)
Light	25	83.3
Currently	5	16,7
Heavy	0	0
Total	30	100

Table 4. Differences in VAS Values Before and After Physiotherapy in LBP Patients

Physiotherapy	VAS value								*MeanRanking*	*P-Value**
	Light		Currently		Heavy		Total			
	n	%	n	%	n	%	n	%		
Before	4	13.3	24	80	2	6.7	30	100	-15.50	0.000
After	25	83.3	5	16.7	0	0	30	100		

Description: *Wilcoxon test, significant if p<0.05