THE RELATIONSHIP OF PAIN LEVEL AND THE QUALITY OF PHYSICAL ACTIVITY IN PATIENTS OF KNEE OSTEOARTHRITIS

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ABSTRACT

Background: Osteoarthritis is the most common disease of arthritis that often occurs in the hands, hips, and knees. OA results in degeneration of the joints and causes pain. OA accounts for 7% or approximately 500 million people worldwide in the global population. The prevalence of OA in Indonesia is relatively high, namely 15.5% in men and 12.7% in women. Complaints that are very often complained of by OA patients are pain when doing various daily activities. Pain felt by OA sufferers can affect the quality of physical activity in OA patients.
Objective: This study aims to determine the relationship between pain level and the quality of physical activity in patients with osteoarthritis of the knee joint at PHC Surabaya Hospital.
Methods: This study used an observational analytic study carried out with a cross-sectional approach. The sampling technique used was non-probability sampling, purposive sampling with respondents who met the inclusion and exclusion criteria. The population used in osteoarthritis sufferers at PHC Surabaya Hospital with 76 respondents. The measuring instrument used to measure pain is the Numerical Rating Scale (NRS), and the questionnaire used to assess the quality of physical activity is the WOMAC questionnaire.
Results: The results of this study obtained a p-value 0.000 ($p<0.005$) and $r = 0.922$, which indicates that there is a significant relationship between the level of pain and the quality of physical activity in patients with osteoarthritis.
Conclusion: there is a relationship between the level of pain and the quality of physical activity in patients with osteoarthritis.

Keywords: Osteoarthritis, knee osteoarthritis, pain, NRS, WOMAC

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INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis that often occurs in the hands, hips and knees. The cartilage in the joints will change and begin to break down. These changes grow slowly and worsen over time causing pain, swelling, and stiffness. In other words, OA is the most common degenerative joint disease and causes pain. OA affects 7% of the global population, > 500 million people worldwide. OA sufferers globally increased by 48% from 1990 to 2019 and OA is the 15th leading cause of living with disabilities (YLDs) worldwide. The prevalence of knee OA in Indonesia is quite high, which can reach up to 15.5% in men and up to 12.7% in women. The fairly large prevalence and chronic-progressive nature of OA has a high socio-economic impact, both in developed and developing countries.(1)

OA patients often complain of feeling pain when doing activities or when there is a load on the joints. In the chronic state of more severe OA, the patient's ability to move is hampered. In general, OA sufferers will experience symptoms such as joint pain, crepitus, stiffness in the morning, feeling of movement resistance, joint enlargement, inflammation, and changes in gait. Pain is the main complaint told to the doctor by the patient when visiting the doctor. (2)

According to the International Association for the Study of Pain, pain is an unpleasant sensory and emotional experience which is associated with, or is similar to, actual or potential tissue damage. Based on research that has been carried out, it can be summarized that there is a correlation between the degree of pain and physical activity in patients with knee osteoarthritis. The pain felt by the patient will worsen the quality of physical activity. The purpose of this study was to identify whether there is a correlation between the level of pain and the quality of physical activity in patients with knee osteoarthritis.(3)

METHOD

This study used an observational analytic research design which was carried out with a cross sectional approach. Data collection for respondents will be carried out once during the research. The population used in this study were patients with knee osteoarthritis at PHC Surabaya Hospital. The sample used in this study were patients with knee osteoarthritis who checked themselves at the PHC Surabaya Hospital with a minimum number of 76 samples. The sampling technique used in this research is non-probability sampling, namely purposive sampling with respondents who have met the inclusion and exclusion criteria will be sampled until the required sample size is met. The inclusion criteria set in this study were: osteoarthritis patients who had been diagnosed by a doctor, osteoarthritis patients who already had radiological examination results, patients with grade III and grade IV osteoarthritis, patients aged between 30-80 years, patients who had received injection therapy for more than 6 months, cooperative and willing to become research respondents. In addition to the inclusion criteria, there are also exclusion criteria established in this study, namely: Patients who have had injections and/or surgery, patients who have received injection therapy for more than 2 weeks and less than 6 months, patients who are not willing to be respondents.

Data collection is primary data which is measured using the NRS for the level of pain and the WOMAC questionnaire for the quality of physical activity. Questionnaires will be distributed to knee OA patients who are willing to become respondents. The WOMAC questionnaire consists of three aspects of measurement, namely pain, stiffness and functional activity. For this research will only use aspects of functional activities. The grid for questions from the functional activity aspect is going down stairs,

climbing stairs, getting up from sitting, standing, bending to the floor, walking on surfaces, getting in/out of cars, going shopping, wearing socks, lying in bed, taking off shirts. feet, getting out of bed, going in/out of the bathroom, sitting, going in and out of the toilet, heavy housework, light housework. Light activities are activities that are carried out without requiring a lot of energy, for example, such as reading, writing, sewing, wiping the dining table, cleaning dust, and so on. Strenuous activity is an activity that is continuously carried out for at least 10 minutes until the pulse and respiratory rate increase.(4)

For the statement of wearing and removing socks, if the respondent has never worn socks, it will be replaced with a similar movement. Such as using shoes in a sitting position or also being able to direct the respondent to sit and then bend his legs. The movement of putting on and taking off socks is a movement that is equivalent to the movement of bending the knee.

In this questionnaire, respondents can fill in their own answers to the statements that have been written on the questionnaire sheet. If the respondent finds it difficult to fill out, it can be assisted by interviewing the respondent and the questionnaire will be filled out by the researcher or respondent's companion. After the respondent has completed filling out the questionnaire, the scores of these 17 questions will be added up and then categorized to assess the quality of a person's physical activity. For each question has a score of 0-4, with meaning 0 (no), 1 (mild), 2 (moderate), 3 (very), and 4 (excellent). Interpretation of functional activity aspect scores on the WOMAC questionnaire, a score of 0-17 has a minimum/mild interpretation, a score of 18-34 has a moderate interpretation, a score of 35-51 has a severe interpretation, a score of 52-68 has a maximum/very severe interpretation.(5)

The data obtained will then be processed using the 25th version of the Statictical Product and Service Solution (SPSS) application with ordinal data categories for both variables. The data analysis technique in this study will be carried out using the Spearman correlation test to find the relationship between two variables.

RESULT

Based on the research that has been done, the following data are obtained.

Table 1 The Data of Sample Research

Variable	n(%)
Age	
30-40 years old	4 (5,2%)
41-50 years old	24 (31,5%)
51-60 years old	32 (42,1%)
61-70 years old	16 (21%)
71-80 years old	0 (0%)
Gender	
Male	27 (35,5%)
Female	49 (64,5%)

Table 2 The Distribution of Samples Based on Pain Levels

Pain Levels	n(%)
Mild (1-3)	12 (15,7%)
Moderate (4-6)	43 (56,5%)
Severe (7-10)	21 (27,6%)

Table 3 The Distribution of Samples Based on Aspects of Physical Activity

WOMAC Score (Physical Activity Limitations)	n(%)
Minimum (0-17)	4 (5,3%)
Moderate (18-34)	33(43,4%)
Severe (35-51)	35(46,1%)
Maximum (52-68)	4 (5,3%)

Table 4 Relationship between Pain Level and Quality of Physical Activity

Description: M/Mi : Minimum/Mild, Mi : Mild, Mo : Moderate, S : Severe, M/VS : Maximum/Very Severe.

	Physical Activity Limitations				
Pain Levels	M/Mi	Mo	S	M/VS	Total
Mi	4	7	0	0	11
Mo	0	26	18	0	44
S	0	0	17	4	21
Total	4	33	35	4	76
	P-Value = 0.000		r = 0,922		

Based on table 4 about the relationship between pain level and the quality of physical activity of patients with osteoarthritis of the knee joint at PHC Surabaya Hospital, data on respondents who experienced mild pain with minimum/mild physical activity limitations were 4 people (5.3%), respondents who experienced mild pain with limited moderate physical activity as many as 7 people (9.2%), respondents who experienced mild pain with limitations on severe physical activity were 0 people (0%), respondents who experienced mild pain with maximum/very severe physical activity limitations were 0 people (0 %). Data on respondents who experienced moderate pain with minimum/mild physical activity limitations were 0 people (0%), respondents who experienced moderate pain with moderate physical activity limitations were 26 people (34.2%), respondents who experienced moderate pain with limited physical activity weight as many as 18 people (23.7%), respondents who experience moderate pain with limited physical activity maximum/very severe as many as 0 people (0%). Data on respondents who experience severe pain with minimum/mild physical activity limitations are 0 people (0%), respondents who experience severe pain with limited physical activity are 0 people (0%), respondents who experience severe pain with moderate physical activity limitations are 0 people (0%), respondents who experienced severe pain with severe physical activity limitations as many as 17 people (22.4%), respondents who experienced severe pain with maximum/very severe physical activity limitations as many as 4 people (5.3%).

The results of the bivariate analysis in this study using the Spearmen correlation test with data on the level of pain and physical activity limitations obtained significant results with a value of p = 0.000 (p <0.05) and a value of r = 0.922. Based on the results of the Spearman correlation test, it can be concluded that there is a significant positive relationship between the level of pain and the quality of physical activity in patients with osteoarthritis of the knee joint at PHC Surabaya Hospital. The degree of correlation between the two variables is very strong.

DISCUSSION

In this study, data was obtained that the age of the respondents was between 30 years to 80 years with the most respondents being between 51 years and 60 years. According to WHO, this age range is the age range of the early elderly to the late elderly. Age is one of the risk factors for osteoarthritis that cannot be modified. Where when a person's age gets older, the risk for osteoarthritis also increases.(6)

From the research data obtained, 49 female respondents and 27 male respondents. Thus, it is known for this study that there were far more female respondents than male respondents. This is supported by the theory that women over the age of 50 will experience osteoarthritis more than men. This is because women between the ages of 50 and 80 will experience a reduction in the hormone estrogen.(7)

Based on the results of the analysis of the relationship between pain level and physical quality of patients with osteoarthritis of the knee joint at PHC Surabaya Hospital, the value of p = 0.000 (p <0.05) and r = 0.922. The results obtained indicate that there is a significant positive relationship between the level of pain and the physical quality of patients with knee osteoarthritis at PHC Hospital, so it can be

concluded that the initial hypothesis of this study was accepted. The results of this study are in line with research conducted by Thiar Theria Amanda (2015) which states the results of the spearmen correlation test with p = <0.0001. Based on the results obtained, there is a significant relationship between the level of pain and the quality of physical activity in patients with osteoarthritis of the knee joint at PHC Surabaya Hospital. The level of correlation obtained is also very strong in this study.

In this study, it was found that when a person feels low pain, physical activity limitations are felt to be minimum/mild to moderate. When a person experiences moderate pain, the perceived limitations of physical activity also increase, namely moderate to severe. In line with the data of respondents who experience severe pain, will feel the limitations of heavy physical activity to the maximum / very heavy. So, it can be concluded that the heavier the pain felt by a person, the more severe the limitations of physical activity experienced by that person. Pain experienced by OA patients is caused by a pathological condition that affects the cartilage of the knee joint. The cartilage on the surface of the knee joint is rough due to the tiny layers of tissue between the joints. There is a risk that the surface of the bone will be eroded due to thinning of the tissue layer. As a result of this process, the body activates osteoclasts and osteoblasts to repair damaged cartilage. Decreased function of hormones that regulate the stability of osteoclast and oblast activity, which causes uneven bone healing and osteophytes, is the result of a degenerative process. Because the C afferent fibers and sensory nerves around the joint area are pinched by the osteophytes, they cause discomfort.(8)

CONCLUSION

Based on the results of the research that has been done, it can be concluded that there is a significant relationship between the level of pain and the quality of physical activity of patients with osteoarthritis at PHC Surabaya Hospital and the level of correlation between the two variables in this study is very strong.

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