ABSTRACT

Aging is a natural process that can not be avoided and running continuously. The Elderly experience a decrease in the musculoskeletal system. Changes in the musculoskeletal system are characterized by pain and stiffness in one or more joints. Pain management does not always have to use drugs, but there are some nursing measures that can be given to relieve pain such as relaxation therapy, for example TROP (Progressive Muscle Relaxation Therapy) and can also provide cutaneous stimulation in the form of warm compress. The research design used was Pre Experiment pre-post test design. The study population was all elderly who experienced joint pain. The samples were 36 respondents, which were divided into two intervention groups. Sampling method used purposive sampling technique. Data collected by using Numerical Rating Scale (NRS). Data were analyzed using Wilcoxon signed ranks test with α = 0.05. The results of the Wilcoxon signed ranks test were performed in the warm compress intervention group and TROP p = 0.000, which shows that both interventions affected joint pain reduction. Statistical test results also show that the TROP intervention is more effective in reducing pain, this is evidenced from the TROP Z value < warm compresses Z value and 18 respondents in the warm compress intervention group experienced a decrease in pain scale on average 1.45 and in the TROP intervention group experienced decrease in pain scale on average 1.61. The conclusion of this study is TROP and warm compresses can be used to reduce joint pain scale in the elderly, although statistically shows that TROP intervention is more effective in reducing pain.

KEYWORDS:
Warm Compress; Progressive Muscle Relaxation Therapy; Joint Pain; Elderly

INTRODUCTION

Aging is a natural process that can not be avoided, running continuously and continuously [1]. Elderly people experience a decrease in the musculoskeletal system. Changes in the musculoskeletal system are characterized by pain and stiffness in one or more joints, usually on the hands, wrists, legs, knees, upper and lower spines, pelvis, and shoulders [2]. Joint pain in the elderly classified as chronic pain because it is permanent. Chronic pain in the elderly can cause the elderly to be very dependent on others, loss of self-confidence, and disturbed patterns of daily activities. Nowadays many elderly who experience joint pain do not know much about non-pharmacological management of pain. Actions to relieve joint pain are not only pharmacologically but also non-pharmacologically such as relaxation techniques, such as progressive muscle relaxation therapy. Progressive muscle...
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Relaxation technique is a relaxation therapy given to the client by tensing certain muscles and then relaxation. Progressive relaxation is one way of relaxation techniques combining deep breathing exercises and a series of series of contractions and certain muscle relaxation [3]. Progressive muscle relaxation techniques focus on muscle activity by identifying tense muscles and then reducing tension by using relaxation techniques to get a relaxed feeling [4]. Besides TROP, there are some nursing actions that can be given to relieve pain, for example by giving a Warm Compress. Warm compresses are very useful as a means of muscle relaxation. Warm water can flex the body, restore muscle stiffness and heat vapor resulting in enlarged blood vessels, open the pores of the skin and encourage perspiration and relax muscles and limbs so as to relieve joint and muscle pain [5].

Sufferers of joint pain worldwide have reached 355 million. It is estimated that this number continues to increase until 2025 with an indication of more than 25% will experience paralysis. The World Health Organization (WHO) reports that 20% of the world's population has joint pain. Where 5-10% are those aged 5-20 years and 20% those who are 55 years old (Wiyono, 2010). Lecturers and students of STIKES Kediri Baptist Hospital carried out community service at the Posyandu Elderly, when given inspection services at the Posyandu Elderly RW 04 Bangsal Village, Kediri City in 2017 found that the majority of the elderly complained of joint pain and did not know how to handle it.

The reduced function of various elderly organs becomes susceptible to diseases that are acute or chronic. There is a tendency for degenerative diseases, metabolic diseases, psychosocial disorders, and infectious diseases to increase [6]. Although there is no therapy that can stop the degenerative process, certain preventive measures can be taken to slow down the process if it is tried early enough. Here the role of nurses in overcoming joint pain in the elderly is very important, namely by providing health education to reduce joint pain and also teaching the elderly to do progressive muscle relaxation therapy independently by demonstration. Other efforts to overcome joint pain in the elderly can be done with non-pharmacological measures such as physical exercise and warm compresses. Progressive muscle relaxation is a relaxation therapy by tightening and relaxing the muscles in one part of the body at a time to provide a feeling of physical relaxation. The progressive tightening and relaxation of these muscle groups is performed successively [7]. In this relaxation exercise individual's attention is directed to distinguish the feelings experienced when muscle groups are relaxed and compared when muscles are tense. One of the goals of TROP is to reduce muscle tension, anxiety, neck and back pain. Warm compresses are very useful as a means of muscle relaxation. Warm water can flex the body, restore muscle stiffness and heat vapor resulting in enlarged blood vessels, open the pores of the skin and encourage perspiration and relax muscles and limbs so as to relieve joint and muscle pain [5].

The specific purpose of this study was to analyze the differences in the effectiveness of warm compresses and progressive muscle relaxation therapy in Reducing Joint Pain in the Elderly at Posyandu Lansia RW 04, Bangsal Village, Kediri City.

MATERIALS AND METHODS

The study was conducted at Posyandu Lansia RW 04, Bangsal Village, Kediri City. Pre experimental research design through two group pretest and posttest design approaches. The study population was all elderly in Posyandu Lansia RW 04 Kelurahan Bangsal Kota Kediri who experienced joint pain. The sampling technique uses purposive sampling with a total of 36 respondents, then divided into 2 groups who will get warm compress therapy or progressive muscle relaxation therapy. This research through a research ethics test before data collection. After the ethical test, the researcher submits a research permit to the research location and waits for the permit answer. The researcher conducted apperception
with the research members in the process of collecting data. Furthermore, researchers carry out the process of data retrieval. Data collection process, the researcher introduces himself to prospective respondents and conducts an assessment of respondents to measure the scale of joint pain experienced by respondents. The researcher provides an explanation to the respondent regarding the research carried out including: Definition, objectives, procedures / implementation, time, benefits, and rights of the respondent and provides an explanation that the respondent may resign if the respondent feels uncomfortable. The researcher asks the respondent's approval to become a research respondent as evidenced by the signing of the informed consent.

RESULT AND DISCUSSION

Results of Measurement of Elderly Joint Pain Scale

| Table 1. Scale of Elderly Joint Pain in the Warm Compress Treatment Group at the Posyandu Elderly RW 04 Bangsal Village, Kediri City in June-July 2019 (n = 18) |
| Scale of Joint Pain | Before | Amount | Percentage (%) | After | Amount | Percentage (%) |
|---------------------|--------|--------|-----------------|-------|--------|-----------------|
|                     |        |        |                 |       |        |                 |
| 3                   | 0      | 0      | 0               | 5     | 27.8   |
| 4                   | 3      | 16.7   | 7               | 38.9  |
| 5                   | 6      | 33.3   | 6               | 33.3  |
| 6                   | 6      | 33.3   | 0               | 0     |
| 7                   | 3      | 16.7   | 0               | 0     |
| Total               | 18     | 100    | 18              | 100   |

| Table 2. Scale of Elderly Joint Pain in the TROP Treatment Group in Posyandu Elderly RW 04 Bangsal Village, Kediri City in June-July 2019 (n = 18) |
| Scale of Joint Pain | Before | Amount | Percentage (%) | After | Amount | Percentage (%) |
|---------------------|--------|--------|-----------------|-------|--------|-----------------|
|                     |        |        |                 |       |        |                 |
| 2                   | 0      | 0      | 0               | 1     | 5.6   |
| 3                   | 0      | 0      | 6               | 33.3  |
| 4                   | 2      | 11.1   | 6               | 33.3  |
| 5                   | 8      | 44.4   | 4               | 22.2  |
| 6                   | 5      | 27.8   | 1               | 5.6   |
| 7                   | 3      | 16.7   | 0               | 0     |
| Total               | 18     | 100    | 18              | 100   |

This research was conducted by measuring the joint pain scale in the elderly by using the Numerical Rating Scale (NRS) before and after therapy. The researcher carries out the process of stabilizing data and providing interventions according to the procedure of action. Before giving an intervention, the respondent measured the joint pain scale first. Group 1 with researchers 1 and group 2 with researchers 2. Data collection was carried out for 2 weeks and the time required for each intervention for 20 minutes in the warm compress intervention group and twice a week for 2 weeks for the TROP intervention group. Furthermore, after therapy is completed, the elderly joint pain scale is measured again.
Tables 1 and 2 show that before warm compress therapy or progressive muscle relaxation therapy 100% of the elderly experience joint pain ranging from pain scale 4 to 7 and after therapy there is a decrease in joint pain scale, on a scale of 2 to 6.

The cause of joint pain is unknown. But there are several factors that influence namely: genetic, environmental, hormonal, and immunological. The impact of this situation can threaten the lives of sufferers or just cause a disturbance of comfort. Problems caused by joint pain are not only in the form of obvious limitations on mobility and activities of daily living as well as unclear systemic effects, but can cause organ failure and death or cause problems such as pain, fatigue, changes in self-image, as well as sleep disorders [8].

From the data obtained by researchers in the elderly before given the intervention obtained results of 6 respondents (16.7%) elderly experiencing joint pain on a scale of 7 (severe pain category). Elderly people experience a decrease in the musculoskeletal system. Changes in the musculoskeletal system are characterized by pain and stiffness in one or more joints, usually in the hands, wrists, legs, knees, upper and lower spines, pelvis, and shoulders [22].

According to researchers, joint pain experienced by the most dominant respondents is moderate pain as many as 30 respondents, this is caused by more than 50% of elderly aged 60-74 years. Elderly aged 60-74 years the protective layer of the joint begins to thin out and bone fluid begins to thicken, causing the body to become stiff and sore when moved. Therefore, respondents who have lived long, especially over 60 years, have a higher risk of developing joint pain. In addition, it can also be caused by hereditary factors from parents, wrong eating patterns, activities that are too strenuous especially those that use a lot of support on the joints excessively.

**Analysis Test Results**

**a. Data Normality Test**

Aims to find out whether the sample from the population obtained is normally distributed or not. By looking at the number of samples in this study, 36 samples, the saphiro wilk test is used as a data normality test, because the test is more accurate for samples with less than 50. The results of the saphiro wilk test can be seen in the following table.

From Table 3 above shows that the distribution normality test results obtained data in the Warm Compress Treatment group before the intervention obtained $p = 0.043$ (p <0.05) which means that the data distribution is not normal and after the intervention obtained $p = 0.002$ (p <0.05) which means that the data is not normally distributed. In the TROP treatment group before the intervention $p = 0.024$ (p <0.05) which means the data is not normally distributed, after the intervention $p = 0.123$ (p >0.05) which means the data is normally distributed. From the results of the normality test, the research hypothesis test was established, among others (1) Hypothesis I test, which is the comparison before and after the intervention of the Warm Compress treatment group using the Wilcoxon sign rank test. (2) Hypothesis II test is a comparison before and after the intervention of the TROP treatment group using the Wilcoxon sign rank test.

**Table 3. Shapiro Wilk Normality Test Results in Posyandu Elderly RW 04 Kelurahan Bangsal Kota Kediri in June-July 2019 (n = 36)**

| Data Group                  | Shapiro-Wilk Test | Distribution Information |
|-----------------------------|-------------------|--------------------------|
| Before the Warm Compress Group Intervention | 0.043             | Abnormal                 |
| After the Warm Compress Group Intervention    | 0.002             | Abnormal                 |
| Before TROP Group Intervention            | 0.024             | Abnormal                 |
| After TROP Group Intervention             | 0.123             | Normal                   |
Based on table 4 the Wilcoxon Signed Rank Test statistic above the Z value of -3.601 with the significant level specified being $\alpha = 0.05$ and the value of $p = 0.000$, then the results of the data group value are $p <0.05$ which means H1 is accepted, then it can be concluded that there is an effect of warm compress action on joint pain in the elderly.

Warm compresses are actions that aim to meet the needs of comfort, reduce or relieve pain, prevent muscle spasms, and provide warmth to the parts of the body that need them [32]. Warm compresses are very useful as a means of muscle relaxation. Warm water can flex the body, restore muscle stiffness and heat vapor resulting in enlarged blood vessels, open the pores of the skin and encourage perspiration and relax muscles and limbs so as to relieve joint and muscle pain [33].

From the results of the study after being given a warm compress, the joint pain scale was measured again using the Numerical Rating Scale in the elderly in Posyandu Elderly RW 04 Bangsal Urban Village of Kediri found 16 respondents (88.9%) of the elderly experienced a decrease in the joint pain scale. This is in line with Peni’s theory [54] that one of the non-pharmacological therapies that can overcome insomnia is laughter therapy. Laughter stimulates the release of the endorphin hormone, also known as morphine, to facilitate blood circulation, making the body more comfortable, relaxed, and easier to sleep. Warm water can flex the body, restore muscle stiffness and heat vapor resulting in enlarged blood vessels, open the pores of the skin and encourage perspiration and relax muscles and limbs so as to relieve joint and muscle pain.

Based on research that has been done by researchers when giving warm compress treatment to the elderly in areas that experience joint pain makes the elderly feel relaxed and increase comfort.

As many as 16 respondents (100%) expressed the benefits of warm compresses and would do warm compresses at home if they felt joint pain. There is a decrease in the scale of joint pain in the elderly before and after the administration of warm compresses, because the administration of warm compresses gives a relaxed sensation to stiff muscles so that the joint pain scale decreases after warm compresses. Pain management does not always have to use drugs, by using warm compresses it can also reduce the scale of joint pain felt by the elderly.

Based on table 5 the Wilcoxon Signed Rank Test statistic above the Z value of -3.817 with the significant level specified being $\alpha = 0.05$ and the value of $p = 0.004$, the results of the data set are $p <0.05$ which means H1 is accepted, it can be concluded that there is an effect of progressive muscle relaxation therapy on joint pain in the elderly.

Progressive muscle relaxation technique is a relaxation therapy given to the client by tensing certain muscles and then relaxation. Progressive relaxation is a way of relaxation techniques combining deep breathing exercises and a series of contractions and certain muscle relaxation [33]. The results of this study indicate that there are significant differences between the scale of elderly joint pain before and after progressive muscle relaxation therapy. After
progressive muscle relaxation therapy, there was a decrease in joint pain scale in all respondents, namely 18 people experienced a decrease in joint pain scale (100%).

Table 5. Wilcoxon Statistical Test Results Signed Rank Test The Effect of Progressive Muscle Relaxation Therapy on Joint Pain in the Elderly in the Posyandu Elderly RW 04 Bangsal Village, Kediri City in June-July 2019 (n = 18)

| Post – Pre TROP Intervention | N   | Mean Rank | Sum of Ranks |
|-----------------------------|-----|-----------|--------------|
| Negative Ranks              | 18a | 9.50      | 171.00       |
| Positive Ranks              | 0b  | .00       | .00          |
| Ties                        | 0c  |           |              |
| Total                       | 18  |           |              |

| Z                            | -3.817a |
| Asymp. Sig. (2-tailed)       | .000    |

Pain is a problem for patients in all age groups, especially the elderly, one of which is caused by the aging process in the musculoskeletal system. In the elderly who experience pain, it is necessary to conduct an aggressive assessment, diagnosis and management. However, elderly individuals have a high risk of experiencing situations that make them feel pain [9]. Because older people have lived longer, they are more likely to experience pathological conditions that accompany pain. Once an elderly client suffers from pain, he can experience serious functional status disorders.

The results of research on the effect of progressive muscle relaxant therapy on changes in the joint pain scale in the elderly show that there is a significant decrease in joint pain before and after progressive muscle relaxation therapy is carried out for approximately 20 minutes, twice a week for two weeks. This is evident from the decrease in the scale of joint pain in the elderly, that is after being given the intervention of progressive muscle relaxation therapy exercises there is a decrease in the pain scale in all the elderly.

This decrease in the elderly joint pain scale occurs because of the effects of progressive muscle relaxation therapy. Progressive muscle relaxation is a relaxation therapy by tightening and relaxing the muscles in one part of the body at a time to provide a feeling of physical relaxation. The progressive tightening and relaxation of these muscle groups is performed successively [72]. In this relaxation exercise individual’s attention is directed to distinguish the feelings experienced when muscle groups are relaxed and compared when muscles are tense. One of the goals of TROP is to reduce muscle tension, anxiety, neck and back pain. Progressive muscle relaxation technique is a relaxation therapy given to the client by tensing certain muscles and then relaxation. Progressive relaxation is a way of relaxation techniques combining deep breathing exercises and a series of contractions and certain muscle relaxation [10]. Progressive muscle relaxation techniques focus on muscle activity by identifying tense muscles and then reducing tension by using relaxation techniques to get a relaxed feeling [42].

CONCLUSIONS

a. There is the effect of warm compresses on elderly joint pain in Posyandu Lansia RW 04 Kelurahan Bangsal Kota Kediri

b. There is an effect of progressive muscle relaxation therapy (TROP) on elderly joint pain in Posyandu Lansia RW 04 Kelurahan Bangsal Kota Kediri

c. There is a difference in the effect of warm compresses and progressive muscle relaxation therapy on elderly joint pain on elderly joint pain in Posyandu Lansia RW 04 Kelurahan Bangsal Kota Kediri. Statistical test results also showed that the TROP intervention was more effective in reducing pain, this was evidenced by 18 respondents.
in the warm compress intervention group having decreased the pain scale by an average of 1.45 and in the TROP intervention group having a pain scale decreasing by an average of 1.61. The conclusion of this study is TROP and warm compresses can be used to reduce joint pain scale in the elderly, although statistically shows that TROP intervention is more effective in reducing pain.

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