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Literature Review: The Effectiveness of Kinesiotaping and Hydrotherapy in Improving The Quality of Life of The Elderly with Osteoarthritis

Abdullah Alba Nur Ihza[1], Destina Anggun Melania[2], Arum Sari Nurul Lailatul Qodriyah[3], Riyani Wulandari[4]
[1]*Aisyiyah University Students Surakarta*
[2] *Aisyiyah University Students Surakarta*
[3] *Aisyiyah University Students Surakarta*
[4] *Aisyiyah University Surakarta*
E-mail: abdullah.alba74@gmail.com

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ABSTRACT

The number of elderly people in Indonesia continues to increase every year. The high rate of aging is a concern of all circles, because the elderly tend to be susceptible to disease. Osteoarthritis is the most common disease in the world with a prevalence of 15.5% in men and 12.7% in women in Central Java. Handling that can be given to the elderly with osteoarthritis is by giving kinesio taping and hydrotherapy. The purpose of this literature review is to determine the effectiveness of kinesio taping and hydrotherapy in improving the quality of life of the elderly with osteoarthritis. This research is a literature study. Literature search used 2 databases, namely Pubmed and Google Shcolar. Keywords used in the literature search included: "Kinesio taping", "hydrotherapy", "osteoarthritis" and "quality of life". The results showed that the addition of kinesiotaping and hydrotherapy exercises can affect the quality of life of the elderly with osteoarthritis, so it can be concluded that the addition of kinesio taping to conventional exercises and the provision of hydrotherapy exercises can improve the quality of life of the elderly with osteoarthritis which can be measured by a quality of life measuring instrument in the form of WOMAC.

INTRODUCTION

The rate of development of the world's population, including Indonesia, is currently moving towards the aging process, which is marked by the increasing number and proportion of the elderly population. Data shows that there are 901 million people aged 60 years or over, which comprise 12% of the world's population (Saraisang *et al*., 2018). In line with this, the percentage of the elderly in Indonesia has also increased from year to year. According to data from the Ministry of Health of the Republic of Indonesia in 2017, there were 23.66 million elderly people in 2017, it is predicted that the number of elderly people in 2020 will be 27.08 million, in 2025 it will be 33.69 million, in 2030 it will be 40.95 million. and in 2035 as many as 48.19 million people (Kementrian Kesehatan Republik Indonesia, 2017).

With age, the body will also experience various decreases in the body's physiological functions, one of which is a decrease in the musculoskeletal system. Changes in the musculoskeletal system in the elderly include connective tissue (collagen and elastin), cartilage, bones, muscles and joints (Sunaryo, 2016).

These changes can lead to problems such as osteoarthritis. Osteoarthritis (OA) is the most common disease in the world, affecting more than 250 million people or 4% of the world's population and reaching 24 million people in Southeast Asia. The prevalence of Osteoarthritis also continues to increase dramatically following the age of the patient. Based on radiological findings, it was found that 70% of patients older than 65 years had osteoarthritis (Arismunandar, 2015).

Osteoarthritis (OA) is a chronic progressive and generative musculoskeletal disease caused by thinning of cartilage in joints due to bones rubbing against each other, causing clinical symptoms in the form of pain, joint stiffness, joint swelling, crepitus, and changes in gait (Permatasari dan Amran, 2019). The aging process makes it difficult for the elderly to carry out Activity Daily Life (ADL) independently (needs the help of others) and becomes dependent on others so that it affects their quality of life. The elderly are expected to have a good quality of life so that they can enjoy old age happily and prosperously, to achieve this goal it is expected to be able to overcome the changes caused by the aging process by doing physical activity and some exercise therapy (Jamini *et al*., 2019).

Osteoarthritis (OA) is a joint disease with the most common cases globally. Osteoarthritis affects 151 million people worldwide and reaches 24 million people in Southeast Asia. The prevalence of osteoarthritis also continues to increase dramatically following the age of

the patient. Based on radiological findings, it was found that 70% of patients over 65 years had osteoarthritis. The prevalence of knee osteoarthritis in female patients aged 75 years and over can reach 35% of the number of cases (Mambodiyanto and Susiyadi, 2016). Currently, the goals of treatment in OA patients are to reduce symptoms, prevent further disease progression, and improve the patient's quality of life (Bartels, 2016).

The problem of decreasing the quality of life of the elderly with osteoarthritis, can be overcome with a therapeutic method in the elderly to improve the quality of life by reducing pain, increasing muscle strength, increasing joint range of motion and joint flexibility. Therapies that can be given to osteoarthritis are pharmacological and non-pharmacological therapies. The recommended non-pharmacological therapy for patients with osteoarthritis is the provision of kinesio taping and hydrotherapy exercises (Nayanti *et al*., 2020).

Kinesio taping is a treatment modality based on the body's natural healing. The kinesiotaping method is a healing method that also plays a role in the activation of the nervous and circulatory systems. This method is basically derived from the science of kinesiology, understanding the importance of body and muscle movement in daily life. The application of kinesio taping uses an elastic bandage to provide stimulation to muscles that have decreased strength. Kinesio taping can increase muscle flexibility, muscle strength, and increase proprioception in musculoskeletal conditions (Pramita and Wahyudi, 2020).

Hydrotherapy is the use of external or internal water in any form (water, ice, steam) for the promotion of health or the treatment of various diseases with varying temperatures, pressures, durations, and locations (Ajet, 2017). The results of this literature review can be used as suggestions for health workers, especially physiotherapists, for reference in providing exercise for patients with osteoarthritis.

METHODS AND MATERIALS

The reseach is a literature study that summarizes some relevant literature with the appropriate theme. Literatur search using 2 databases, namely PubMed and Google Schoolar. The keywords used in the literature search were: "kinesio taping", "hydrotherapy", "quality of life", "ostheoarthritis".

The literature used is literature published from 2015 to 2020. All literature is then re-selected using inclusion criteria and exclusion criteria. The following are the inclusion and exclusion criteria for the literature search:

A. Inclusion criteria

1. The year of publishing the article from 2015 to 2020
2. English-language articles published in the "PubMed" and "Google Scholar" databases
3. The articles used are scientific research articles artikel
4. Research respondents are elderly with osteoarthritis
5. The article discusses improving the quality of life with the WOMAC measuring tool

B. Exclusion criteria

1. Articles which are literature studies
2. Fill the article with the addition of drugs or injections to reduce pain
3. Research respondents are elderly with other comorbiditie

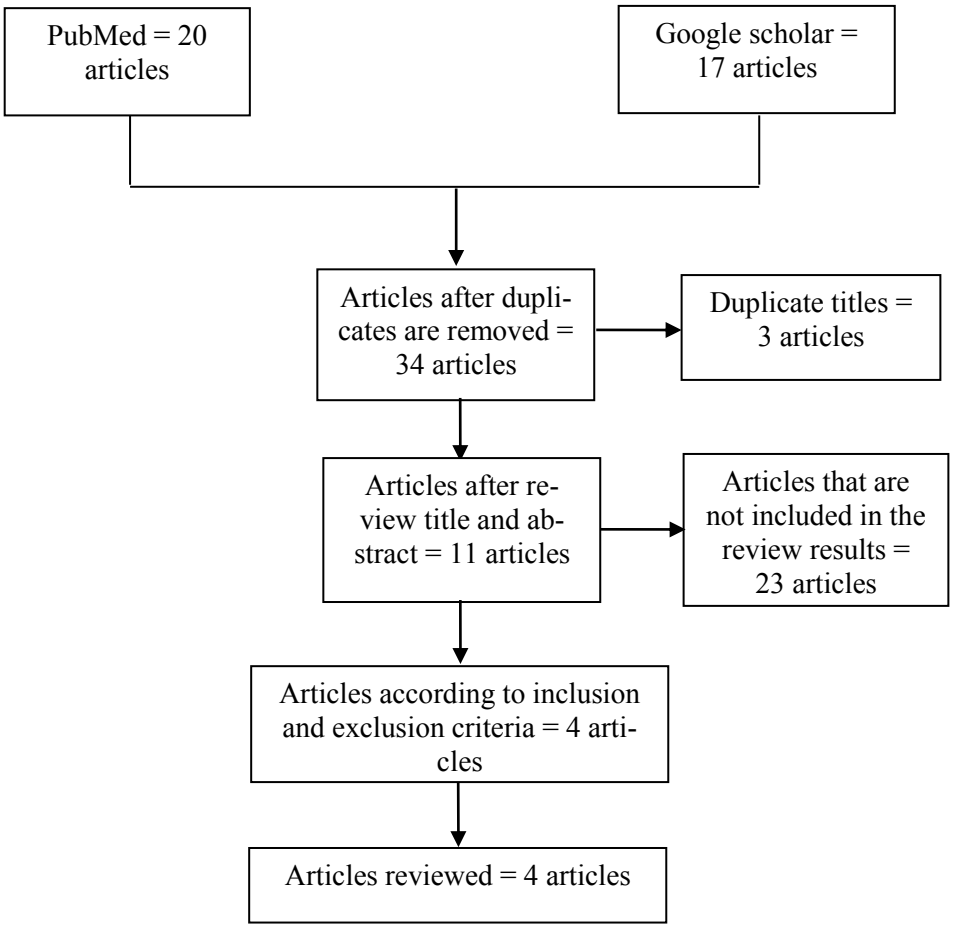

Figure 1. Literature Search Scheme

RESULTS AND DISCUSSION

This study uses a qualitative method with a literature review approach. The literature search process was obtained from 2 databases, namely PubMed and Google Scholar. Literature search using keywords"kinesio taping", "hydrotherapy", "quality of life", "ostheoarthritis". Initial search results found 37 articles which were then continued by eliminating duplicate articles and leaving 34 articles. The next process is the screening of titles and abstracts in accordance with the inclusion and exclusion criteria of the study. The results of the title and abstract screening were 11 articles. The process is continued by screening articles that are in accordance with the research objectives and producing 4 articles that will be reviewed. The articles reviewed are articles from research from (Sekome and Maddocks, 2019), (Taglietti *et al*., 2018), (Sangam *et al*., 2015) and (Nwe *et al*., 2019).

The data from the review results are displayed in a table with descriptions of the author's name, year of research, type/ type of exercise, exercise dose, respondents and results of exercise. The table of data processing results is as follows:

Table 1. Results of article review of kinesio taping and hydrotherapy

Author and year of research	Respondent	Exercise Type	Dose	Results
(Sekome and Maddocks, 2019)	18 seniors	Warm up, lower leg exercises, cool down	2 times a week (4 weeks)	Pain reduction improving quality of life in the elderly with osteoarthritis
(Taglietti *et al*., 2018)	60 seniors Hydrotherapy group = 31 Control group = 29	Warm up, aerobic exercise, balance exercise, cool down	2 times a week (8 weeks) 60 minutes per session 1 time a week (8 weeks)	Improving the quality of life of the elderly with osteoarthritis

Author and year of research	Respondent	Exercise Type	Dose	Results
(Sangam *et al*., 2015)	30 seniors Experimental group = 15	Conventional exercises (stretching and strengthening the quadriceps and hamstring muscles)	1x a week (3 weeks)	Pain reduction ROM Upgrade Increased muscle strength Improved quality of life.
	Control group = 15	Added kinesio taping	3x a week (3 weeks)	
(Nwe *et al*., 2019)	60 seniors Intervention group = 30 Control group = 30	Conventional exercises (bilateral toes touching exercise, mini squat exercise, full range knee extension) Added kinesio taping	2x a week (3 weeks)	Reduction of pain Improved quality of life.

Sekome and Maddocks (2019) conducted a study using 18 samples of elderly people with osteoarthritis. Hydrotherapy exercises were given in the form of warming up, lower leg exercises (double leg squats, double leg raises, single leg stance, contralateral knee flexion-extension) and cooling down twice a week for 4 weeks. 60 minutes per session. The results of the hydrotherapy exercise for 4 weeks were a significant reduction in pain and an increase in the quality of life of the elderly with osteoarthritis. The results showed a statistically significant decrease in the VAS score of 3.72 (±2.45), $p \leq 0.05$ with a 95% confidence interval ranging from 2.506 to 4.938 and a significant decrease in the WOMAC score of 29.5(±15,51), $p \leq 0.05$ with 95% confidence intervals ranging from 21.788 to 37.212. This is in line with research conducted by Dias (2017) where osteoarthritis sufferers who did hydrotherapy showed a significant increase in knee muscle performance such as knee flexor and extensor muscle strength.

Taglietti *et al* (2018) conducted a study using a sample of 60 elderly who were

divided into 2 groups. The hydrotherapy group was 31 elderly and the control group was 29 elderly. The hydrotherapy group received exercises in the form of 5 minutes of warm-up by walking, patellar mobilization, muscle stretching (quadriceps, gluteus, adductors abductors hip and hamstring), 15 minutes of isometric and dynamic exercises on the knees and hips with elastic bands, 20 minutes of aerobic exercise, 10 minutes proprioceptive exercise, 10 minute cooldown, while the control group only received health education. The results of this study showed that there was an increase in the quality of life of the elderly in the hydrotherapy group, with an average WOMAC score of 14.2 with a 95% confidence interval. The significant value shows 0.04 ≤ 0.05 which means that there is an effect of giving hydrotherapy exercises to improve the quality of life of the elderly with osteoarthritis. Hydrotherapy exercises have various advantages, namely improving blood circulation, facilitating soft tissue contractures, easing muscle spasms, increasing muscle strength and being able to float in water, which can reduce the possibility of injury and protect against joint loss (Dong, 2018).

Sangam *et al* (2015) conducted a study using a sample of 30 elderly who were divided into 2 groups. The experimental group was 15 and the control group was 15. The experimental group was given conventional exercise plus kinesio taping once a week for 3 weeks, while the control group was only given conventional exercise 3 times a week for 3 weeks. The results showed that the administration of kinesio taping and conventional exercise was more effective than only given conventional exercise, indicated by a significant decrease in WOMAC scores between the experimental group and the control group. The experimental group decreased from 58.68 ± 6.9 to 30.48 ± 6.68, the control group decreased from 55.45 ± 4.82 to 42.5 ± 4.7. Significant value obtained p 0.000 ≤ 0.005 which means that there is a significant effect on the addition of kinesio taping in conventional exercise to improve the quality of life of the elderly with osteoarthritis. The results of this study are in accordance with research conducted by Rahlf and Zech (2016), stated that giving kinesiotaping reduces pain, reduces joint stiffness and increases functional activity compared to those who do not get kinesio taping. Kinesio taping is hypothesized to activate increased circulation to the area recorded, a physiological change that may help increase AROM in the relevant muscle groups (Abolhasani *et al*., 2019).

Nwe *et al* (2019) conducted a study with 60 elderly subjects who were divided into 2 groups. The experimental group was 30 and

the control group was 30. The experimental group was given treatment with the addition of kinesio taping and conventional exercise 2 times a week for 3 weeks, while the control group was only given conventional exercise for 3 weeks. The results showed that the administration of kinesio taping and conventional exercise was more effective than only given conventional exercise, indicated by a significant decrease in WOMAC scores between the experimental group and the control group. The experimental group decreased from 64 ± 20.68 to 17.63 ± 10.14, the control group decreased from 64.03 ± 24.05 to 36.07 ± 17.47. A significant value of 0.001 ≤ 0.05 which indicates that there is an effect of giving kinesio taping to improve the quality of life of the elderly with osteoarthritis. The use of kinesiotaping can improve body alignment again because the pain when supporting the knee affected by osteoarthritis can be better, so that it can improve functional ability (Wibowo *et al*., 2017).

CONCLUSIONS AND SUGGESTIONS

The conclusion of this literature review is by summarizing some of the relevant literature, namely the administration of kinesio taping in conventional exercises for the elderly with osteoarthritis is more effective in reducing pain and improving the quality of life of the elderly, compared to conventional exercise alone. Hydrotherapy exercises for the elderly with osteoarthritis in the form of lower leg muscle strengthening exercises, aerobic exercise and balance exercises also showed significant results in reducing pain and improving the quality of life in the elderly with osteoarthritis, it can be concluded that the addition of kinesio taping to conventional exercise and the provision of hirotherapy exercises to the elderly with osteoarthritis are both effective in reducing complaints in osteoarthritis so as to improve quality of life in the elderly.

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