

# Improving self-efficacy and life activities of arthritis patients: A quasy-experiment study

*by* Wilhelmus Hary Susilo

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## Improving self-efficacy and life activities of arthritis patients: A quasy-experiment study<sup>☆</sup>



Cindi Teri Marni Oroh<sup>a,\*</sup>, Fitriana Suprapti<sup>b</sup>, Wilhelmus Hary Susilo<sup>c</sup>

<sup>a</sup> School of Nursing, U<sup>6</sup>iversity of Chatolic De La Salle, Manado, Indonesia

<sup>b</sup> Nursing Department, Sint Carolus School of Health Sciences, Jakarta, Indonesia

<sup>c</sup> School of Management, University of Persada Indonesia Y.A.I., Jakarta, Indonesia

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### KEYWORDS

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 4 Management  
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 Self-efficacy;  
 Activity Daily Living

### Abstract

*Introduction:* Arthritis can cause physical and 4 psychological complaints which affect patients' quality of life. This study aims to determine the effect of Arthritis Self-Care Management Education (ASCME) and Home-Based Exercise (HBE) to self-efficacy and Activities of Daily Living (ADL).

*Method:* This research utilized 14 quasy-experimental research design, using pre-test and post-test on non-randomized control group. The samples in this study were 198 arthritis patients divided into 3 groups.

*Result:* The findings of the research indicated that there were differences of self-efficacy as well as ADL before and after intervention with *p*-value of 0.000 on each intervention group respectively. The results of the analysis found that both the ASCME and HBE had a significant influence to self-efficacy and ADL with *p*-value of 0.000.

*Conclusions:* It is concluded that ASCME and HBE are significant to increase self-efficacy and also improve ADL. Nurses are suggested to function these interventions as part of independent 1 nursing intervention and also for improving arthritis self-care for patients and the family.

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### Introduction

Arthritis is a disease which attacks the joints and found in the elderly. 9 The World Health Organization (WHO)<sup>2</sup> estimates that there are 165 million people in the world with arthritis. Board of Health Research and Development Ministry of Health of the Republic of Indonesia<sup>3</sup> presented data on arthritis patients in Indonesia with 11.9% diagnosed while those identified with arthritis were 24.7%.

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\* Corresponding author.

E-mail address: [cindioroh.indonesia@gmail.com](mailto:cindioroh.indonesia@gmail.com) (C.T.M. Oroh).

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Furthermore, arthritis infiltrates the joints of the upper and lower extremities causing limitations in carrying out Activities Daily Living (ADL) and affect psychological aspects such as self-efficacy.<sup>4</sup> Fontaine<sup>5</sup> suggests that arthritis patients complain more about the presence of physical and social activities. Arthritis leads patients to experiencing difficulties in improving their desired life. If this condition worsens, arthritis sufferers incline to have insufficient quality of life. Complaints arising from arthritis impacts on a patient's confidence in managing situations associated to this illness as well as inducing physical limitation which affects one's ability to care for oneself. This is fully discussed with the theory of self-care deficits proposed by Orem which states the inability of individuals to look after themselves continuously.<sup>6</sup>

The National Institute of Arthritis and Musculoskeletal and Skin Disease<sup>7</sup> explains that professional nurses as educators are appropriate to apply treatment on arthritis patients, where nurses provide special assistance to patients who discuss the problems they encounter and plan their assistance. Thus, patients' quality of life is developed.

## Method

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This research is a qualitative study with a quasy-experiment design. The research design is non-equivalent control group pre-post test design.<sup>8</sup> This research was conducted in April-June 2018 in the Community Health Center Paniki Bawah and Wawonasa, Manado. This study employed three groups, namely the group of Arthritis Self-Care Management Education (ASCME) intervention groups, Home-Based Exercise (HBE) intervention groups and the control group.

The population in this study were all arthritis patients in the Community Health Center Paniki Bawah (255 participants) and Wawonasa (238 participants). The sampling technique used was simple random sampling technique, 189 obtained samples were divided into 80 respondents for the ASCME intervention group, 79 respondents for the HBE intervention group and 30 respondents for the control group. The inclusion criteria for respondents, who were diagnosed with arthritis by doctor (rheumatoid arthritis or osteoarthritis or gout arthritis), aged  $\geq 45$  years, were willing to become respondents. The exclusion criteria for respondents were musculoskeletal disorders, contraindications to physical activity, active physiotherapy programs, history of knee replacement surgery, and cognitive impairment. This research was conducted in the Community Health Center Paniki Bawah and Wawonasa, Manado.

The data collection tool employed was a demographic data questionnaire covering age, sex, current education level and duration of arthritis. The self-efficacy questionnaire consists of two items which are pain scale items (5 questions) and other symptom scale items (6 questions). This questionnaire is to determine the level of respondents' ability to control pain and other symptoms. Barthel index is used to measure ADL by means of interviews. These questionnaires have been tested for validity and reliability on 30 respondents who met the inclusion criteria, declared valid with  $r$  results  $> r$  table. The pain self-efficacy questionnaire has a Cronbach alpha value of 0.945. Another symptom

self-efficacy questionnaire has a Cronbach alpha value of 0.896. Barthel index with Cronbach alpha value 0.879. Thus the three questionnaires have met the validity and reliability requirements.

This study has passed the ethical test from the Ethics Committee of Nursing Research Institute of Health Science Sint Carolus. Moreover, this research acquired a recommendation from the Political National Unity Agency and the Public Protection of the Manado City Government to be carried out in the Community Health Center Paniki Bawah and Wawonasa.

Pre-test using pain and other symptom self-efficacy questionnaire and Barthel index were conducted on respondents who fulfilled the inclusion criteria and signed an informed consent. Later, these participants were given the intervention, and a post-test was executed using the similar questionnaire as during the pre test.

In the ASCME group, respondents were collected in small groups (15-20 people). Respondents were distributed with knowledge and skills related to arthritis self-care management (pain management, daily activity management, fatigue management and emotional management) for 6 weeks.

In the HBE group, respondents were visited in their homes. Respondents and families were given knowledge and skills related to home-based training consisting of joint flexibility exercises and muscle strengthening exercises. Leaflets and observation sheets were handed out. Subsequent respondents for 5 weeks are contacted by telephone to evaluate their progress.

In the control group, respondents were observed at home. Intervention was not conducted because participants mainly performed normal activities only. On the sixth week, a post test was measured using questionnaires, such as during the 10 test.

The data analysis used was paired *t*-test, Wilcoxon test, independent *t*-test, Mann-Whitney test, multiple linear regression and ordinal regression.

## Results

The univariate test results for variables age, sex, education and duration of arthritis discovered the following results of respondents in this study which are mostly 45-59 years old (56.6%) with female (63.7%) and high school diploma (34.4%). Most respondents suffered from arthritis for 1 year, and there were also respondents who suffered from arthritis for 28 years.

Distinctive test results of each independent variable (ASCME and HBE) on each of the dependent variables before and after change can be seen in Table 1.

Table 1 displays that there are significant differences, each in self-efficacy of pain, other symptoms and ADL after being given the ASCME and HBE intervention.

Dissimilar test results of each independent variable (ASCME and HBE) between the intervention group and the control group, can be observed in Table 2.

Table 2 gives information that there are significant disparateness, respectively in self-efficacy of pain, other symptoms and ADL in the ASCME intervention group and HBE intervention groups compared with the control group.

**Table 1** Different test results before and after intervention.

No	Difference test	Before and after intervention	
		ASCME	HBE
1	Pain self-efficacy	$p = .000$	$p = .000$
2	Other self-efficacy	$p = .000$	$p = .000$
3	Activities daily living	$p = .000$	$p = .000$

**Table 2** Different test results between the intervention and control groups.

No	Difference test	ASCME intervention group with control group	HBE intervention group with control group
1	Pain self-efficacy	$p = .000$	$p = .000$
2	Other self-efficacy	$p = .000$	$p = .000$
3	Activities daily living	$p = .000$	$p = .000$

The results of the influence test describe the partial and simultaneous influence of ASCME intervention group or HBE intervention groups, sex, education and duration of arthritis suffering from self-efficacy of pain, other symptoms and ADL.

In the ASCME intervention group, only the ASCME and duration of arthritis significantly affected the self-efficacy of pain and other symptoms. On the contrary, the factors of age, sex and education did not have a compelling influence on the self-efficacy of pain and other symptoms. Meanwhile in the ADL, the most influential is the educational background of the respondents.

In the HBE intervention group, HBE interventions generated a considerable effect on the self-efficacy of pain and other symptoms while the factors of age, sex, education and duration of arthritis did not. Meanwhile, the most influential activity of daily life is male.

The findings of the influence test describe the simultaneous impact of each interventions in ASCME as well as HBE interventions, sex, education and duration of arthritis suffering from self-efficacy of pain, other symptoms and ADL.

## Discussion

The study findings indicated that the age characteristics of arthritis patients with the highest percentage were 45-59 years old, more female compared to male, more high school graduates, and longer in suffering from arthritis (1 year).

The Arthritis Foundation<sup>9</sup> suggests that arthritis affects many elderly people. According WHO, elderly people are classified from 45 to 59 years of age. Lewis<sup>10</sup> addresses that although most arthritis patients are at the age of >65 actual cartilage destruction as one of the originators of arthritis begins to occur from the age of 20-30 and mostly occurs at the age of 40. Hence, it is possible that at the age of 50-60 can be diagnosed with arthritis. Besides being due to changes in cartilage because of the level, genetic factors also affect the incidence of arthritis. Ignatavicius and Workman<sup>11</sup> suggest that one of the triggering factors for osteoarthritis is genetic factor. The people of Manado have

long been diagnosed with arthritis, as evidence by 10.3% of the total arthritis sufferers in Indonesia in North Sulawesi, including Manado.

Ignatavicius and Workman<sup>11</sup> state that arthritis sufferers are more experienced by women than men. This is possible because of the role of the hormone estrogen which is closely related to autoimmune as the trigger for rheumatoid arthritis. Similarly, Vollehovven<sup>12</sup> explains that more women suffer from arthritis.

Maryam and Hartini<sup>13</sup> suggest that the level of education is closely related to cognitive function. People with a high level of education have good cognitive functions, where their nerve functions work well. Therefore, the higher the level of education, the more able someone is to maintain their health.

The age characteristics of the majority of respondents were in the age group of 40-59 years, which was followed by long suffering of mostly 1 year or <5 years while the respondents in the age group of 75-90 years were not too many that the duration of arthritis >20 years tended to be lesser.

Alterations in self-efficacy of pain in respondents who received ASCME interventions were in line with the research conducted by Dave Parise and Ann O'Hanlon.<sup>14</sup> His research on 85 respondents found that education related to self-management of arthritis given for 6 weeks could improve the respondent's self-efficacy. Research conducted by Unsal and Kasicki<sup>15</sup> suggested the results of his research, namely that there were groups who were distributed ASCME interventions experiencing increased self-efficacy of pain.

Moreover, self-efficacy of other symptoms changed significantly in respondents who obtained ASCME intervention. The results of this study, in line with the research conducted by Lorig et al.<sup>16</sup> in 855 arthritis patients by providing an arthritis self-management education program for 6 weeks, found that other symptoms of self-efficacy increased. Brekke, Hjortdahl and Kvein<sup>4</sup> address that mental aspects, psychology is strongly influenced by arthritis, leading to a few arthritis sufferers to experience instant anger, irritation, and experience of physical and psychological fatigues.

For respondents who were supplied with HBE intervention, there was an improvement in self-efficacy of pain. The

results of this study are supported by research conducted by Yip et al.<sup>17</sup> in 120 arthritis patients who were provided with stretching exercises stating that the discovery of their study showed an increase in pain self-efficacy for arthritis sufferers. Crowley<sup>18</sup> suggests that HBE does not only rise muscle strength but also the self-confidence of respondents to be able to handle self-complaints due to arthritis.

In addition, HBE increases self-efficacy of other symptoms. Evcik and Sonel<sup>19</sup> provided home-based training interventions in his study of 30 arthritis sufferers. The results of his research signify that HBE possesses an effective effect on treating arthritis symptoms. The research carried out by Yip et al.<sup>17</sup> seems to embody a notable difference in the level of self-efficacy of other symptoms in the group that participated intervention with exercise compared to the control group which only implemented routine activities.

The daily activities of arthritis patients are increasing after engaging in ASCME interventions and HBE interventions. Warsi et al.<sup>20</sup> analyze 17 research journals on the provision of ASCME, it is identified that these interventions could reduce pain and record muscle tone.

## Conclusions

This research points out that ASCME and HBE occupy a positive impact on self-efficacy and ADL for arthritis patients. ASCME can be provided by professional nurses to small groups of arthritis patients while HBE is also taught by professional nurses with the assistance of other relatives and family members. The implementation of ASCME and HBE for 6 weeks escalated the confidence of arthritis patients that pain and other symptoms caused arthritis are manageable, and improve patients' abilities to carry out activities daily living. Thus, people with arthritis can develop their quality of life without being limited by complaints that arise due to arthritis. It is therefore important to apply ASCME and HBE interventions to arthritis patients as independent nurse interventions by evidence-based.

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## Conflict of interest

The authors declare no conflict of interest.

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