Conference Paper

Warm Compress Reduced Pain Intensity of Arthritis Rheumatoid for Elderly People; Pre- and Post-test Design Study

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Abstract

Arthritis Rheumatoid (AR) is an autoimmune disease showing erosive of symmetric joint. It sometimes refers to many systems disturbances inside our bodies. The progressivity of AR has chronic fluctuation in daily life. AR can increase mortality risk, especially for chronic disabilities. *This study aims* to understand the effect of warm compress on the pain intensity of AR cases for elderly people. *The method* used in this study was a quasi-experimental one. The sampling method used was a purposive technique. The total number of respondents was 10, with 5 as the interventional arm of the study and 5 as the control arm. This study was conducted between February and July 2014. A paired t-test was used to identify whether the sample means for those in the intervention arm was statistically different from the average of the sample means drawn from those drawn from the control group presumed to be from the general elderly population who do not benefit from the particular intervention of a warm compress. What the author wanted to conclude on was whether the two samples at hand actually differ significantly from each other. The intensity of pre- and post-intervention using parametric statistics following the application of warm compress was noted and used as a basis of comparison. *The result* of the statistics formula showed the effectiveness of warm compress in decreasing the AR pain, the t-test was 6.000 and the p-value was lower than 0.05. It can be summarized that warm compress can be used to decrease pain intensity for elderly people with AR. *Discussion* – the result of this study can be used as a reference to conduct care among elder people who are affected by AR. People living in the community area should help their family member with AR on first aid.

Keywords: Artrhitis Rheumatoid, Warm Compress, Pain Intensity

1. Introduction

Arthritis Rheumatoid (AR) is autoimmune desease where attacks joint of bone. AR can cause inflammation, destroying and deformiting joint progressivity. Dissability and mortality will be caused at this stage (Dwijayanti, 2007). AR has been known around the world causing trouble to all races and ethnics. The etiology of this case has been known as genetic factors, hormone, infectious from other organs, and Heat Shock

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Protein (HSP). HSP is a protein that has a small size (60-90 kDa) which is formulated by all cells species as a response stress. These factors among many others have been documented to increase significantly the arthritis related morbidity and mortality over time.

AR reduces lifespan on average from three to twelve years. Positive responses to treatment may indicate a better prognosis. A 2005 study by the Mayo Clinic explained that AR sufferers suffer a doubled risk of heart disease, independent of other risk factors such as diabetes, alcohol abuse, and elevated cholesterol, blood pressure and body mass index. The mechanism by which AR causes this increased risk remains unknown; the presence of chronic inflammation has been proposed as a contributing factor. It is possible that the uses of new biologic drug therapies extend the lifespan of people with AR and reduce the risk and progression of atherosclerosis. This is based on cohort and registry studies, and still remains hypothetical. It is still uncertain whether biologics improve vascular function in AR or not. There was an increase in total cholesterol and HDLc levels and no improvement of the atherogenic index.

AR affects between 0.5 and 1% of adults in the developed world with between 5 and 50 per 100,000 people newly developing the condition each year. In 2010 it resulted in about 49,000 deaths globally

Onset is uncommon under the age of 15 and from then on the incidence rises with age until the age of 80. Women are affected three to five times as often as men (Paget, 2002).

According to Wikipedia, 2016 mention the age at which the disease most commonly starts is in women between 40 and 50 years of age, and for men somewhat later. AR is a chronic disease, and although rarely, a spontaneous remission may occur, the natural course is almost invariably one of persistent symptoms, waxing and waning in intensity, and a progressive deterioration of joint structures leading to deformations and disability.

With an improvement in life expectancy, the erderly people in the the last five years has significantly increased from 18.96 million in 2007 to 20,547,541 in 2010 (US Census Bureu, International Database, 2009). This is the fourth number after China, India, and Japan. The life expectancy female is also documented to be more-than is male, as such the number of elderly female is higher than elderly male (11.29 million female compare to 9.26 million male). So the big problem of elderly people in Indonesia predominantly female. Stress factor can prdominantly increase the number of elderly female in Indonesia.

According to World Health Organization (WHO) that the number Indonesian Elderly Population in 2020 will be 11.34 % or will increase significantly 28.8 million. Provincial

Statistic Beureu (2010) said that a province which called elderly province unless the percentage of the elderly people more than 7% of the population number. There are eleven provinces refered to elderly province these include Yogyakarta, Jawa Timur, Jawa Tengah, Bali, Sulawesi Selatan, Sumatera Barat, Sulawesi Utara, Nusa Tenggara Barat, Jawa Barat, and Nusa Tenggara Timur. In other side there are five provinces which are the number of elderly people lower than 7% such us Papua (2.15%), Papua Barat (2.92%), Kepulauan Riau (3.78%), Kalimantan Timur (4.5%) and Riau (4.86%).

Around 40% of the percentage of Indonesian Population over 40 years old has complained about joint and muscle pain (Dwijayanti, 2007). In another, understanding and response of the public, health practitioners, and governement are still unsatisfaction. This problem shown at the conference of Indonesian Artritis and Rheumatism Council by lead of Handono Kalim in 2010.

Reporting of social affairs of Kabupaten Gowa, Province of Sulawesi Selatan that the number of elderly people who are without care around 10,127 people in 2005. Another side, based on the data from Panti Sosial Tresna Werdha (PSTW) kabupaten Gowa, the number of erderly people around 106 people. They are divided into 21elderly people has trouble with AR who are 9 males and 12 females.

2. Framework of Study

In this study, studyer started conducting this study with pain observation before giving warm compress to elderly respondents. After giving warm compress, respondents will be evaluated to assest of pain reduced. Based on the explanation above, the framework of study to be understood the effect of pain intensity.

AR typically manifests with signs of inflammation, with the affected joints being swollen, warm, painful and stiff, especially early in the morning on walking or following prolonged inactivity. Increased stiffness early in the morning is often a prominent feature of the disease and typically lasts for more than an hour. Slowly movements may decrease symptoms in early stages of the disease. These signs help distinguish rheumatoid from non-inflammatory problems of the joints, often referred to as osteoarthritis.

In arthritis of non-inflammatory causes, signs of inflammation and early morning stiffness are less prominent with stiffness typically less than one hour, and movements induce pain caused by mechanical arthritis. The pain associated with AR is induced at the site of inflammation and classified as nociceptive as opposed to neuropathy. The joints are often affected in a fairly symmetrical fashion, although this is not specific, and the initial presentation may be asymmetrical.

As the pathology progresses the inflammatory activity leads to tendon tethering and erosion and destruction of the joint surface, which impairs range of movement and leads to deformity. Specific deformities, which also occur in osteoarthritis, include ulnar deviation, boutonniere deformity (also "button hole deformity", flexion of proximal interphalangeal joint and extension of distal interphalangeal joint), swan neck deformity (hyperextension at proximal interphalangeal joint and flexion at distal interphalangeal joint) and "Z-thumb." "Z-thumb" or "Z-deformity" consists of hyperextension of the interphalangeal joint, fixed flexion and subluxationof the metacarpophalangeal joint and gives a "Z" appearance to the thumb.

The hammer toe deformity may be seen. In the worst case, joints are known as arthritis mutilans due to the mutilating nature of the deformities. "Spindling of fingers" of hand occurs due to swelling of the PIP but not DIP joints. "Piano key movement" of the ulnar styloid occurs due to inflammation around the ulnar styloid and tenosynovitis of extensor carpi ulnaris.

The inflammatory of the joint will increase the

3. Method of Study

3.1. Study Design

Study design which was used in this study was quasy Experiment by parametric statistic with *T-test*. This study is used to understand the effect warm compress to pain intensity of AR.

TABLE 1: Study Design.

Subject	Pre	Intervention	Post
K-A	O	I	O1-A
K-B	O	-	O1-B
	Time 1	Time 2	Time 3
Reshourche: Nursalam, 2008 Explanation: K-A : subject (elderly people with AR K-B : subject (elderly people with AR) control–: without intervention O: observation of elderly people with AR I: intervention with warm Compress. O1 (A+B): observation intensity of AR Pain after giving warm compress.			

3.2. Variable of Study

There two variables of this study such us:

1. Independent Variable: Warm Compress

2. Dependent Variable: Pain of Artritis Rheumathoid.

3.3. Population and Respondents

Population in this study was all elderly people who were staying in Erderly Care Compound of Gau Mabaji Kabupaten Gowa around 106 people, Respondents in this study are elderly people who are staying at Elderly Care Compound of Gau Mabaji Kabupaten Gowa. Sampling technique is *purposive sampling* with 10 respondents which are 5 respondents as intervention group and 5 respondents as control. The inclusion criteria of the respondents are (1) elderly with rheumathoid artritis with mild and moderate pain, (2) elderly with conscious, (3) elderly who can be communicated well and the exclusion criteria are (1) elderly who rejected study, (2) elderly who are not in the place of study, (3) elderly with analgetic therapy.

3.4. Place and Time of Study

This study was conducted in the Elderly Care Compound (Panti Werda/Panti Lansia) of Gau Mabaji, Kabupaen Gowa, Sulawesi Selatan, Indonesia on February until july 2014.

3.5. Data Collection

Data was primarily collected by use of structured quetionaire which required information on clients identity, and observation of the warm compress to the client with AR. All data analysis with univariate and bivariate technique. Bivariate analysis is used to understand that two variable has correlation with T-Test Paired and alpha value $\alpha=5\%$ (0.05).

4. Result

4.1. Univariat Analysis

Distribution of respondents based on characteristic of the demography such us age and sex.

Based on the table 2 shown describtion of the age characteristic at the middle age around 10%, elderly 50% and very elderly 40%.

TABLE 2: Distribution frequency based on age.

Characteristic Age (years)	n	%
Middle age (45-59)	1	10
Elderly (60-74)	5	50
Very elderly (75-90)	4	40
($\sum$)	10	100

Source: primary data, (2014)

TABLE 3: Distribution frequency based on sex.

Characteristic Sex	n	%
Male	2	20
Female	8	80
($\sum$)	10	100

Source: primary data, (2014)

Based on table 3 shown dercribtion of sex characteristic which were female around 80% and male 20%.

TABLE 4: Distribution frequency based on grouping respondents.

Grouping	n	%
Group intervention	5	50
Group Control	5	50
($\sum$)	10	100

Source: primary data, (2014)

Based on the data above shown that grouping of the respondents were divided into two groups which are the number of the respondents around 10 respondents. The respondents of intervention group were 50% and same with control group.

TABLE 5: Elderly Distribution based on Level Observations of AR pain before giving warm compress.

Level of Pain before giving warm compress	Elderly with AR				Total	
	Control		Intervention			
	n	%	n	%	n	%
No pain	0	0	0	0	0	0
Minimum pain	1	20	0	0	1	10
Mild pain	0	0	0	0	0	0
Moderate pain	4	80	2	40	6	60
Severe Pain	0	0	3	60	3	30
Total	5	100	5	100	10	100

Source: primary data, (2014)

Based on the tabel 5, elderly people with AR as a control group which were moderate pain 80% and minimum pain 20%. In contrast at intervention group which were severe pain 60% and moderate pain found 40%. Totally elderly distribution based on the level observation of AR pain before giving warm compress shown erderly which trouble with severe pain 30%, moderate pain 60% and 10% of minimum pain unless no mild pain and no complain (no pain).

TABLE 6: Elderly Distribution based on level of AR pain before and after giving warm compress.

Level of Pain before giving warm compres	Elderly with AR				Total	
	Control		Intervention			
	F	%	F	%	F	%
No pain	0	0	0	0	0	0
Minimum pain	1	20	0	0	1	10
Mild pain	3	60	3	60	6	60
Moderate pain	1	20	2	40	3	30
Severe Pain	0	0	0	0	0	0
Total	5	100	5	100	10	100

Source: primary data, (2014)

Based on the tabel 6 shown distribution data of the elderly people based on level of AR after giving warm compress. This table above shown that 20 % as minimum pain, 60% as mild pain and moderate pain was 20% as part of group control. To compare with intervention group was 60% of mild pain and 40% was moderate pain. Totally of this data shown that elderly people which has minimum pain 10%, mild pain 60% and moderate pain 30%.

4.2. Bivariate Analysis

This analysis was to show the effect of warm compress to the pain intensity of AR of elderly people. This analysis was used T-test paired respondents using analysis test with alpha value ($\alpha = 0.05$).

TABLE 7: Effect of warm compress to the pain intensity of AR of elderly people (control group).

Pain	Pre Test	Post Test	Change	Sig.	
	Mean	Mean	Mean	T	
Scale Decrease of Pain Intensity	3.00	3.00	0.00	0.000	1.000

Source: primary data, (2014) p=1.000

Based on the tabel above shown the output rezult of analysis test of control group got average value in pre-test 3.60 and post-test 3.00. There was a changing value becoming 0.60. Based on the table above shown value t_{hit}=0.000. In order to see the effect of warm compress to decrease of pain intensity. It can be seen to compare t_{hit} value and den t_{tab}. If there was $t_{hit} < t_{tab}$, it can be concluded that there was not influence/correlation. Based on the df=4 with significantly value 5% around 2.132 shown that $t_{hit} < t_{tab}$. In order to see value significantly (p), it can be known that p=1.000 or p>0.05.

TABLE 8: Effect of warm compress to the pain intensity of AR of elderly people (intervention group).

Pain	Pre Test	Post Test	Changing		
			Sig.		
	Mean	Mean	Mean	T	
Scale Decrease of Pain Intensity	4.60	3.40	1.20	6.000	0.004
Source: primary data, (2014) p=1.000					

Based on the tabel shown the average value of pre-test was 4.60 and post-test was 3.40 for the intervention group. The average value of changing pain scale was 1.20, then value of t_{hit}=6.000. In order to see the effect of warm compress to the pain intensity of elderly people with AR by comparison value of t_{hit} and t_{tab} also explanation the significan of alpha value 5% (0.05). Based on the output of analysis test result shown t_{tab}=2.132 and p=0.004 which is lower than 0.05. it means that Ha accepted and Ho rejected. The result has shown that there was effectiveness effect of warm compress to decrease of pain intensity in elderly people with RA.

5. Discussion

Based on the rezult of statistically consent of research, warm compress can be given with 50°C maximum in 5-8 minutes for one time be given. Warm compress will help blood vessel dilatated in order to maintain of blood circulation to the area of has inflammation. According to Perry and Potter (2000) that the fhysiologic response of the body to the warm are vasodilation, decreased of blood viscosity, decreased muscle tension, increased tissue metabolism and capillary permeability.

Decreased of pain or sensation of pain from the severe pain to be mild pain or minimum pain or no pain as cause of warm. Effect of warm can block the nerve motoric impulse of muscle in order to decrease of spasm joint and maximum relaxation. Warm from the water will affect to decrease of blood viscosity and synovial fluid. In order to decrease of blood viscosity will make blood circulation becoming effective to bring

White Blood Cell (WBC) and Platelet to place which is attack inflammation. WBC will destroy death tissue and microorganism around the imflammation area. Decreased of viscosity of the sinovial fluid will help sinovial fluid be spread evenly around the joint, so it will decrease of the friction between cartilage bone, pannus, and nodus in order to decreas the emphasis of propioseptif nerves at the joint.

Vein congestion at joint will cause insistence of fluid and increase of intraarticular tension as cause of vascular necrotic. Increasing the tension of intrarticular will push to radiks of propioseptif nerve. Then the nerve impuls will transfer to the brain as pain. Warm compress to the inflammation area will decrease vein congestion in order to minimize of pain sensation.

Moreover, body fhysiological response to the warm is blood vessel vasodilation. Along with the increasing of vasodilation effect will support blood circulation to inflammation area increased. Diffusi process will running smoothly, increased of tissue metabolism, nutrition transfer and release of residual substances increasingly. All of those will help recovery of tissue which is trouble by inflammation (Desty, 2007).

In my opinion to the group control who has severe to the minimum pain caused by subjectively pain. The pain perception of the person was different as cause of response and coping to protect pain. At intervention group, minimum pain was not reduced to minimum pain. AR has been known as autoimmune deseases with pain as sign or symptom. Warm compress effectively to minimize AR pain of the elderly people. Warm compress can help them for a while from severe pain to be minimum pain.

Nurse or all practitioners who are working in the community, clinical area or elderly compound can help them to decrease of their pain as cause of AR by warm compress. It will as the first aid to reduce pain of AR. The cost and side effect of the medicine or drugs can be change by this intervention to them.

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