



Conference Proceedings

THE 2nd ANDALAS INTERNATIONAL NURSING CONFERENCE 2019

Enhancing Capacity of Healthcare
Scholars and Professionals in Responding
to the Global Health Issues

Editor:

Hema Malini
Chong Mei Chan
Estika Ariany Maisa
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5-6 September 2019
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“Enhancing Capacity of Healthcare Scholars and Professionals in Responding
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Padang, 4 – 5 September 2019

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Welcome to AINiC 2019

We are delighted to welcome you at the 2nd Andalas International Nursing Conference (AINiC 2019) to be held in Padang, West Sumatera, Indonesia, 5-6 September 2019. This event will bring together nursing expert, nursing researcher, healthcare professional, nursing educator, and students worldwide.

We expect it to be a great opportunity and an inspiring occasion for research development learning, especially to disseminating of new findings in nursing and to bridge the networking of health professional, researcher and health educator.

During the conference, the scientific programs consist of keynote speeches, plenary sessions and research presentation. We look forward to your attendance and participation and we hope that the conference will provide stimulating research development, networking and cooperation.

Key Note Speakers



Prof. John W. Creswell
(University of Michigan, Mixed Methods Program)
*“Choosing the Right Research Approach in Addressing
Global Health Issues”*



Prof. Michelle Cleary
(University of Tasmania)
*“Taking Research to the Worldwide Stage: Tips and
Tricks for Building a Research Profile and Writing for
Publication”*



Prof. Zabidah Putit
(University of Nizwa)
*“Addressing Mental Health Issues Using Effective
Intervention in Nursing”*



Prof. Dr. Nursalam, M. Nurs. (Hons)
(Universitas Airlangga)
*“Translating Research into Nursing Practice
Recommendation”*



Prof. Dr. dr. Rizanda Machmud, M. Kes, FISPH, FISCM
(Universitas Andalas)
*“Finding The Best Strategies into Problem Solving to
Reduce Community Health Issues”*

Table of Content

Day 1 Room 1	1
1. The Effect of a Ten-Week Short Message Service-based Intervention (SMS) on Self-Management in Type 2 Diabetes	2
Made Rini Damayanti S, Gusti Ayu Ary Antari, Indah Mei Rahajeng, Ni Luh Putu Nopriani	
2. Self Efficacy Correlates with The Formation of Self Care Type 2 Diabetes Mellitus patients in Padang City	3
Esi Afriyanti, Yonrizal Nurdin, Dewi Novita Sari	
3. Comparison of the Efficacy and Cost Effectiveness of Aloe Vera Gel with Nacl 0.9% In Treatment of diabetic foot ulcers	4
Elvi Oktarina, Yance Komela Sari, Hema Malini	
4. Family Experience in Treating Patients of Diabetes Melitus With Gangrene Wounds	5
Beti Kristinawati, Datik Wahyuningsih, Riska Nurul Khasanah, Ana Dwi Irianti	
5. Factors Associated with Exercise Self-Efficacy Among People with Chronic Diseases	6
Hayfa Almutary, N. Tayyib	
6. Hand Open Exercises as a Hand Rehabilitation on Poststroke Muscle Strength by Modified Sphygmomanometer Test	7
Novita Elisabeth Daeli	
7. Understanding of person -centred care concept: medical-surgical nurse perspectives	8
Wan Nishfa Dewi, Safri	
8. Observing the Effectiveness of The Use of Pelawan Leaf Boiled Water (Tristanopsis Merguensis (Griff.) As A Traditional Medicine for Reducing Blood Cholesterol	10
A. Kartika, B. Rachmawati Felani Djuria, Muhamad Seto Sudirman, Auronita Pratiwi	

CONFERENCE PROGRAM SCHEDULE

1. PRE-CONFERENCE

<i>PRE-CONFERENCE</i>	
4 September 2019	
07.30 – 08.30	<i>Registration</i>
08.30 – 08.40	<i>Opening</i>
08.40 – 08.45	Alqur'an
08.45 – 08.50	Doa
08.50 – 09.00	<i>Coffee break</i>
09.00 – 12.00	<i>Pre conference session 1 :</i> Prof. John W. Creswell (University of Michigan, Mixed Methods Program)
12.00 – 13.00	<i>Lunch Break</i>
13.00 – 16.00	<i>Pre conference session 2 :</i> Prof. Michelle Cleary (University of Tasmania)
16.00	<i>Closing</i>

1. CONFERENCE DAY

<i>1st Day</i>	
5 September 2019	
07.00 – 08.00	<i>Registration</i>
08.00 – 09.20	<i>Opening Ceremony</i> Indonesia Raya Alqur'an <i>Speech :</i> <i>1. Committee President</i> Ns. Mahathir, M.Kep, Sp.Kep.Kom <i>2. Dean of Nursing Faculty</i> Prof. Dr. dr. Rizanda Machmud, M.Kes, FISPH, FISCN <i>3. Rector of Andalas University</i> Prof. Dr. Tafdil Husni, SE, MBA <i>Tradisional Dance</i> Do'a
09.20 - 09.30	<i>Coffe Break</i>
<i>PLENARY SESSION</i>	
09.30 – 11.00	<i>Session 1 :</i> Prof. John W. Creswell <i>University of Michigan, Mixed Methods Program, USA</i>

11.00 – 12.30 *Session 2 :*
Prof. Michelle Cleary
University of Tasmania, Australia

12.30 – 13.30 *Lunch Break*

SYMPOSIA

13.30 – 17.00 *Oral & Poster 1*

15.00 – 15.15 *Break*

15.15 – 17.00 *Oral & Poster 1*

2nd Day

6 September 2019

07.00 – 08.00 *Registration*

PLENARY SESSION

08.00 - 09.30 *Session 3 :*
Prof. Zabidah Putit
University of Nizwa, Oman

09.30 - 09.45 *Coffe Break*

09.45 -11.00 *Session 4 :*
Prof. Dr. Nursalam, M.Nurs (Hons)
Universitas Airlangga, Indonesia

11.00 -12.30 *Session 5 :*
Prof. Dr. dr. Rizanda Machmud, M.Kes, FISPH, FISCM
Universitas Andalas, Indonesia

12.30 – 13.30 *Lunch Break*

SYMPOSIA

13.30 – 17.00 *Oral & Poster 1*

15.00 – 15.15 *Break*

15.15 – 17.00 *Oral & Poster 1*

Hand Open Exercises As a Hand Rehabilitation on Poststroke Muscle Strength by Modified Sphygmomanometer Test

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Abstract

Stroke is a disease that affects of arteries leading to and within the brain. Poststroke patients have may experiences like a loss of motor function and may cause impaired mobility. Hand open exercises could increasing the strengthening muscles and the recovery of hand function is one of the most challenging topics in stroke rehabilitation. This research aims to determine the effectiveness of Hand Open exercises on muscle strength by modified sphygmomanometer test (MST) as a measurement method. This research design used quasi experimental design. Number of samples 90 respondents with sampling technique used purposive sampling. Most respondent of this study has age (55-65 years) that 38.9% and female is 56.7%. Different paired test results showed a significant increase in muscle strength before and after intervention $p=0.000$ ($<0,05$). The result of independent different test have a significant increase in muscle strength between the hand open intervention group and the control group with $p=0,000$ ($<0,05$). Hand open intervention gives an effect to increasing of muscle strength by modified sphygmomanometer test (MST) method as many 45,1%. It means that hand open can be increased muscle strength of poststroke patients and this research recommends for further research as nursing self-care interventions in nursing care.

Keywords: hand open, stroke, muscle strength, Modified Sphygmomanometer Test (MST)

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ABSTRACT

Stroke is a disease that affects of arteries leading to and within the brain. Poststroke patients have may experiences like a loss of motor function and may cause impaired mobility. Hand open exercises could increasing the strengthening muscles and the recovery of hand function is one of the most challenging topics in stroke rehabilitation. This research aims to determine the effectiveness of Hand Open exercises on muscle strength by modified sphygmomanometer test (MST) as a measurement method. This research design used quasi experimental design. Number of samples 90 respondents with sampling technique used purposive sampling. Most respondent of this study has age (55-65 years) that 38.9% and female is 56.7%. Different paired test results showed a significant increase in muscle strength before and after intervention $p=0.000$ ($<0,05$). The result of independent different test have a significant increase in muscle strength between the hand open intervention group and the control group with $p=0,000$ ($<0,05$). Hand open intervention gives an effect to increasing of muscle strength by modified sphygmomanometer test (MST) method as many 45,1%. It means that hand open can be increased muscle strength of poststroke patients and this research recommends for further research as nursing self-care interventions in nursing care.

Keywords: hand open, stroke, muscle strength, modified sphygmomanometer test (MST).

Background

Stroke is a disorder of the nervous system that occurs suddenly because there is no blood flow through the arterial supply system in the brain [1]. Stroke is divided into two classifications, namely, hemorrhagic stroke and ischemia stroke. Stroke is caused by risk factors such as smoking and drinking alcohol, lack of exercise, hypertension, age, diabetes, and heart disease can also affect stroke [2]. The brain is very sensitive to the condition of decreased or restored blood supply. Hypoxia can cause cerebral ischemia so the brain cannot use anaerobic metabolism if there is lack of oxygen or emissions [3].

Stroke is the second most common cause of death worldwide and causes a major disability. In the world, the number of deaths caused by stroke is more increasing on every year. The World Health Organization (WHO) in 2012 revealed that all world deaths caused by strokes were 6.7 million people [4,5]. In Indonesia, the prevalence of stroke increased from 8.3 per 1,000 in 2007 to 12.1 per 1,000 in 2013 [6]. Stroke patients may experience some problems, especially physical needs, such as impaired mobilization, defecate and urination problems, depression and anxiety. All these problems must be dealt with immediately [7].

In acute phase, the first symptom of stroke disease is hemiparesis and decreased tendon reflexes, when the tendon reflexes reappear (usually 48 hours), muscle tone increases too. Hemiparesis is a common problem that can cause disability. The exercise can be used to increase cerebral blood flow, minimize disability due to stroke, and can improve sensory motor [8]. Hemiparesis can cause reduced range of motion and upper extremity functions [9]. Limitations of movement in the upper limb make sufferers difficult to perform activities of daily living and this is directly related to the functions and movements of the upper limb [10,11]. Therefore, the improvement in motor skills of the upper limb is needed through a rehabilitation program in stroke patients [12].

Hand open exercise is one of the exercises that can be used to increase muscle strength in stroke patients. For stroke sufferers, movement exercise interventions are very important to improve functional abilities, restore functional abilities such as self-care independence and carry out activities of daily living. The problem of impaired motor function specifically the muscle strength scale in this study was measured by using the Modified Spymomanometer Test (MST) technique. This assessment technique is based on the adaptation of the conventional sphygmomanometer and this tool is easily available because it is often used as a blood pressure measurement tool by health professionals [13].

Research methods

The study design used a quasi-experimental with pretest and posttest design. Muscle strength scale data was collected before and after the intervention. Samples in this study were 90 respondents divided into two groups namely the intervention group and the control group of stroke patients. The data was collected on April-June 2018. Further, this research employed total sampling techniques. The sample criteria include the willingness to participate, no permanent disability, the history of stroke at least 3 months after the first attack and adulthood [14]. The interventions carried out were hand open exercise once a day for four weeks. Muscle strength was assessed before and after doing the exercise by using the Modified Spymomanometer Test (MST). The measurement of muscle strength, specifically the hand grip, was conducted by positioning the patient in a sitting position and hands raised by forming an angle of 90° (no pedestal), the cuff pump shows a number (up to 20 mmHg) and the patient is encouraged to apply pressure to the cuff roll for 5 seconds, carried out 3 times and the last result will be used as an evaluation of muscle strength. The results of exercises that have increased to only 2 mmHg from the results of the pretest strength test are called significant [13,15].

Result

Table 1 Frequency Distribution of Respondent Characteristics

Characteristics	Frequency	Percentage (%)
Age		
20-35 years old	0	0
36-45 years old	3	3
46-55 years old	22	24,4
56-65 years old	35	38,9
> 65 years	30	33,3
Gender		
Male	39	43,3
Female	51	56,7
Length of Suffering Stroke		
First 3 months	54	60
3 months - 1 year	21	23,3
> 1 year	15	16,7
Body Mass Index		
Underweight	2	2,2
Normal	25	27,8
Overweight	52	57,8

Obesity I	9	10,0
Obesity I	2	2,2

Table 1 shows the characteristics of respondents by age are the majority of the group 56-65 years as much as 38.9%. Regarding gender, the majority is female, as many as 51 people (56.7%). The number of respondents who suffered a stroke in the first 3 months was 54 (60%) and the majority body mass index was overweight, that is, 52 (57.8%).

Table 2. Muscle Strength Differences between Before and After the Interventions

Muscle Strength	Pre-Post Test		P _{value}
	Frequency	Percentage (%)	
Significant	52	77,6	0,000
Not Significant	15	22,4	

Based on the data above, the difference in the average level of muscle strength by using the measurement of the Modified Sphygmomanometer Test (MST), before and after the Hand Open Exercise interventions, demonstrates that the Wilcoxon test results are significant with $p = 0,000$ ($p < 0,05$). This means that there are significant differences in muscle strength before and after Hand Grip interventions.

Table 3. Respondents' Muscle Strength Differences After the Interventions in the Intervention and Control Groups

Muscle Strength	Interventions Groups		Control Groups		P _{value}
	Frequency	Percentage (%)	Frequency	Percentage (%)	
Significant	52	77,6	0	0	0,000
Not Significant	15	22,4	23	100	

The table demonstrates the difference in the average level of muscle strength with the measurement of the Modified Sphygmomanometer Test (MST) after the Hand Open Exercise intervention in the intervention group and the control group. The result is that the value of the Mann-Whitney U test is significant with $p = 0,000$ ($p < 0,05$). This means that there are significant differences in muscle strength in the intervention and control groups.

Table 4. The Effect of Hand Open Intervention toward Muscle Strength Changes

Independen Variabls	Parameters Estimates		
	Estimate	P _{value}	Cox and Snell
(Muscle strengtf after interventions=1,00)	22,622	0,000	0,451
Age	,025	0,941	
Gender	,498	0,420	
Length of Suffering Stoke	,227	0,595	
Body Mass Index	,682	0,153	
Hand Open Interventions	20,779	0,000	

Based on the table, the intervention of Hand Open Exercises has a significant effect on changes in muscle strength by using the Modified Sphygmomanometer Test for stroke patients. Further, the p value on the variables of age, sex, length of suffering, and BMI do not have a significant effect on changes in muscle strength (p value $> 0,05$). In addition, the variable of Hand Open Exercises intervention contributes to the muscle strength variable by 45.1%, the remaining 54.9% is explained by the variables outside the model or variables not examined in this study.

Discussion

Muscle nervous innervated by different motor neurons too. One motor neuron can be supplies some muscle fibers, but each muscle fiber is only supplied by one motor neuron. When motor neurons are activated, all the muscle fibers supply are stimulated to contract simultaneously. This functional unit is called a mototric unit. For stronger contractions, some muscle need to recruit more motor units and this is called the motor unit recruitment process.

Hand open exercises are a modality for sensory stimulation of smooth touch and pressure on the receptors capsules in the upper limb. The response will be conveyed to the sensory cortex in the brain's sensory pathway through the cell body in the C7-T1 nerve directly through the limbic system. Existing processing of stimuli gives a rapid response to the nerves to act on these stimuli. This mechanism is called feedback. Sensory of stimuli and pressure will be processed in the sensory cortex which then impulses are distributed in the motor cortex. This process will then lead to muscle movements in the upper limb. This mechanism is called feed-

forward control in response to pressure stimuli and the smooth touch of rubber balls and objects on the hands^[3,12].

The problem experienced by stroke sufferers and the most feared is movement disorders. Patients have difficulty, especially in carried out activities using the upper extremity due to interference with muscle strength. Stroke sufferers have a experience disorders of the central nervous system that controls and triggers the motion of the neuromusculoskeletal system. Movement training for stroke patients is a prerequisite for achieving patient independence. Because exercise will help the hand function gradually return to or near normal, and give strength to the patient to control the life. The training given is adjusted to the patient's condition and the main target is awareness to make movements that can be controlled properly. A further mechanism is the adaptation of the nervous system, resulting in hypertrophy of muscle fibers which can increase muscle mass, especially if routine physical exercise is carried out [23].

The grip strength can be evaluated by using a dynamometer [13]. However, the modification of the sphygmomanometer test can be conducted with the aim of providing a more objective measure and lower costs. The study was conducted on stroke patients who experienced hemiparesis and showed that there was a significant correlation in the muscle strength assessment of stroke patients by using a modified sphygmomanometer with a p value of 0.05. In multivariate analysis of ordinal logistic regression obtained Cox and Snell values of 0.451 which means that the intervention variable contributed to muscle strength by 45.1%, the remaining 54.9% is a variable that has not been examined in this study. The measurement of muscle strength by the sphygmomanometer modification method has the potential to be used in a clinical context because it uses portable, easily accessible, low-cost equipment, and can be used by health professionals because its ability to provide objective measurements [16]. In addition to providing an objective, reliable, and valid measurement of strength, MST is also feasible because an aneroid sphygmomanometer used for muscle strength assessment is easily found worldwide, and is commonly used by health professionals [17]. Muscle strength is a top priority in rehabilitation of stroke patients, especially in the upper extremities which have very complex functions [1,19].

After four weeks of intervention, there was a significant difference in the effect on the muscle strength of stroke patients. Muscle weakness in the first exercises given (47%) but after four weeks of grip exercises intervention there was a significant increase in muscle strength over 50% [22]. The exercise is conducted in one session for four weeks and the overall role of the fingers and the grasping function in the area experiencing hemiparesis is performed simultaneously [21]. Providing hand open exercises is a modality for sensory stimulation of the subtle touch and receptor pressure on the upper limb. Impulses are delivered to muscle cells through the neuromuscular motor end plate and then muscle movements will occur in the upper extremities. This mechanism is called feed-forward control in response to pressure stimuli and the smooth touch of rubber balls and objects in the hands [12]. Based on this, the researchers assume that the recruitment of muscle contractions in this study is not just one technique so that the active muscle fibers are also more numerous and complex. The implementation of consecutive exercises for 4 weeks also increases the activity of each muscle cell so that there is a significant increase in muscle strength.

Conclusion

In this study, muscle strength in the measurement method experiences a significant increase which means it gave a good effect on improving the patient's self-care abilities such as bathing, tooth-brushing, changing clothes, and toileting. The nursing theory in this study is in accordance with the theory put forward by Orem which focuses on self-care and emphasizes that self-care needs can be fulfilled by nurses, individuals or both. Nursing plays an important role in helping individuals who have decreased ability to meet their own care needs, because self-care is not only the responsibility of the patient but also the responsibility of the nurse. Nurses play a role as facilitators to help patients who experience self-care deficits, so that patients may optimise themselves in their self-care efforts. With an increase in muscle strength and improvement in individual patients, especially patients with stroke, the patient may be responsible for minimal activities that help in meeting their daily needs.

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