THE EFFECTIVITY OF FAMILY ACCOMPANIMENT FOR ROM EXERCISE UPON ELDERLY POST STROKE PATIENT WITH HEMIPLEGIA

Mumpuni*, Ani Nuraeni, Maidawilis, Uun Nurulhuda
Department of Nursing, Poltekkes Kemenkes Jakarta I Jakarta, Indonesia
Email: nuniwk@yahoo.com*

ARTICLE INFO	ABSTRACT
	The number of stroke patient with average above 60 years old are in second top rank in Asia. Post stroke patient whose stay at home after hospitalization often had lack of treatment for ROM exercise by the believe of family that the exercise upon the elderly are not effective in ability of physical condition, uselless and wasting time. The purpose of this study is expected could give the description of the effect of accompaniment on family for ROM exercise upon post stroke elderly with hemiplegia whose been care in their own domestic in District of Pasar Minggu South Jakarta. The research are Quasi-experimental pre-post test with control group design. The sample of the study consist of 60 persons of family member which choose by purposive sampling as accordance as elderly with minimum of age 55 which got stroke with Hemiplegia at first time and been care in their own domestic. The result of the study shown that the mean difference are significant for motivation in control and intervention group 0,001 (p-value:0,005), significant in knowledge between control and intervention group 0,011 (p-value: 0,005), significant in ability for providing care for ROM exercise 0,006 (p-value: 0,05). Meanwhile the score of muscle strength had shown the difference between control and intervention group, although not significant statistically. As a result, family accompaniment could be able administered to the family with post stroke elderly.

INTRODUCTION

Stroke is a clinical syndrome characterized by the rapid development of focal disturbances, loss of cerebral function with no other cause except vascular disorders (WHO). The cause of stroke as stated by Smeltzer and Bare (2002), is caused by one of four events: thrombosis, cerebral embolism, ischemia, and cerebral hemorrhage. Other causes of stroke are less common, such as congenital defects in blood vessel walls or abnormalities in the blood clotting system (Mulyatsih, 2008). Stroke is a clinical syndrome due to brain blood vessel disorders, arises suddenly and usually affects patients aged 45-80 years (Rasyid & Soertidewi, 2007).

The 2008 International Stroke Conference held in Vienna, Austria, revealed that the number of stroke cases in the Asian region continues to increase (Rachmat et al., 2018). In addition, the number of stroke sufferers worldwide under the age of 45 continues to increase. At the international conference of neurologists in the UK it was reported that there were more than 1000 stroke survivors aged less than 30 years. The world health agency predicts that deaths from stroke will increase along with deaths from heart disease and cancer from approximately 6 million in 2010 to 8 million in 2030 (Winstein et al., 2016). According to Kemenkes (2013), the prevalence of stroke in Indonesia for stroke based on interviews increased from 8.3 per 1000 population (2007) to 12.1 per 1000 population.

The problem of stroke in Indonesia is becoming increasingly important and urgent, because now the number of stroke sufferers in Indonesia is the largest in Asia. The number of stroke sufferers with an average age of 60 years and over is the second largest in Asia, while those aged 15-59 years are the fifth largest in Asia (Indonesian Stroke Foundation, 2010). Based on data from medical records of stroke patients who visited the Pasar Minggu District Health Center for the period from January to August 2021, there were 123 cases. The number of cases is a fairly high number with the majority of patients aged over 60 years.

The goal of rehabilitation in stroke patients is to reach the optimal stage in terms of independence and productivity. Stroke sufferers require a complex and time-consuming rehabilitation process, with the progress and level of progress of patients being varied and unique (Hatem et al., 2016). The scope of rehabilitation for stroke patients includes 3 main things, namely functional capacity, psychological status, and social status (Tsouna-Hadjis et al., 2000). The purpose of rehabilitation according to Lui and Nguyen (2018) is to increase and strengthen natural healing mechanisms. When tissue ischemia occurs, repair mechanisms are immediately initiated, including resolution of post-stroke edema, variations in function, and the reverse of the diachisis process (disruption of neuronal communication), called Vicariasis which refers to the area of the surrounding tissue affected by trauma will take over the function of neuronal activity (Dancause, 2006).

According to WHO, all actions aimed at reducing the impact of disability conditions and increasing the ability of people with disabilities to social interaction are called medical rehabilitation. Range of Motion (ROM) exercise is one form of exercise in the medical rehabilitation process which is still considered effective enough to prevent disability in stroke patients (Hosseini et al., 2019). This exercise is a form of fundamental intervention for nurses that can be done for the success of therapeutic regimens for patients and in an effort to prevent the occurrence of permanent disability conditions in post-acute stroke patients in hospital so as to reduce the level of dependence of patients on their families.

In the elderly, the collagen structure is less able to absorb energy, causing muscle mass and the healing process to be slower (Smeltzer & Bare, 2001). Process The loss of a number of muscle fibers due to myiofibril atrophy and replacement of fibrous tissue begins in the 40s as the initial impact of the degeneration process. The impact of the degeneration process can be reduced by maintaining the body in a healthy and fit condition. Strength and flexibility of muscles and joints that are well maintained, accompanied by ROM exercises can increase the ability to maintain muscle and joint condition (Stanley & Beare, 2006).

Research on family support for post-stroke rehabilitation, especially ROM exercises will be able to provide benefits in improving the quality of life of stroke patients and their families. Based on the literature study conducted.

Improving the implementation of regular education with a better structure, especially by using a variety of media such as the use of booklets on the implementation of ROM so that the awareness of patients and families to be willing and able to perform Range Of Motion (ROM)

exercises will increase (Rahayu, 2015). This study aims to be expected to provide an overview
of the impact of family assistance to care for elderly patients after stroke with hemiplegia

METHOD

This study is a quasi-experimental study carried out with a quantitative approach based
on medical record data of stroke patients who came for control to the Pasar Minggu District
Health Center in 2021. The population in this study were elderly post-stroke patients who had
their first attack treated by their families at home, and were control patients. to the Pasar
Minggu District Health Center. The sample to be taken is from the entire object under study or
is considered to represent the entire population with the inclusion criteria being the
characteristics of the sample that can be included or deserves to be studied (Notoatmodjo,
2012).

Formula:

$$N : \frac{N(Z\alpha)^2 P.q}{\alpha2\,(N-1)\,+\,(Z\alpha)^2\,P.q}$$

$$: \frac{35\,(1.96)^2\,(0.5)(0.5)}{(0.05)^2(35-1)+(1.96)^2(0,5)(0,5)}$$

$$: \frac{33.614}{0,085\,+\,0,9604}$$

$$: 32.1$$

Note:
N : total population
n : total sample
P : Population Proportion Estimate
Q : 1-P : 1-0.5   = 0.5
Z : Alpha dependent normal curve value: 0.05 (1- 0.95)
    5% deviation: 0.05

Data Analysis

1. Descriptive analysis

    Univariate analysis of numerical/interval data was carried out to determine the
    distribution of normality, mean, median, and standard deviation of the variable factors that
    influence family care measures for stroke patients.

2. Differential Test Analysis

    The analysis was carried out to identify the implementation of discharge planning, the
    ability of the family to carry out health tasks, and the readiness of the patient & family to
    discharge before and after the intervention using dependent t-test (Mann-whitney → if the
    data is not normally distributed), and to identify differences in the effect of the intervention
    group. and the control group using independent t-test.

3. Multivariate analysis: used to see the simultaneous relationship between the factors of the
    personal system, interpersonal system, and social system with the implementation of
    discharge planning.

RESULTS AND DISCUSSION

A. Results

This research was conducted on 60 respondents of post-acute stroke patients consisting of 30 control patients and 30 patients who were treated at home by their own families, the treatment was in the form of health education about care for stroke patients at home accompanied by assistance for 1 month. This study aims to be able to provide an overview of the impact of family assistance in caring for elderly patients after stroke with hemiplegia. The mentoring process carried out for the family in the form of providing stroke patient care training includes providing knowledge about aspects that affect the physical condition of the elderly after stroke, including nutritional status, medication discipline, ROM exercise routines, psychological support and motivation, cognitive training and exposure (Cannon, 2011). about the risks that can arise in the patient's condition while being treated at home. The specific objectives of this study were to identify the characteristics of families caring for elderly post-stroke patients, to identify the characteristics of post-stroke elderly patients who were cared for at home by their family members, to provide an overview of the effect of providing training on stroke patient care at home on the motivation and ability of families to perform care at home. home, as well as its impact on increasing muscle strength in elderly patients after stroke.

1. Univariate analysis

Table 1
Characteristics of families caring for patients by gender, education, and occupation

Variable	Groups				Total	
	Intervention		Control			
	N	%	N	%	N	%
Gender						
Male	12	40,0	7	22,6	19	31,1
Female	18	60,0	24	77,4	42	68,9
Education						
High Schools	17	58,6	15	48,4	32	53,3
D3/S1	5	17,2	4	12,9	9	15,0
S2	0	0,0	1	3,2	1	1,7
Others	8	24,1	10	35,5	18	30,0
Occupation						
Unemployment	20	66,7	22	74,2	42	70,5
Honorary employee	1	3,3	1	3,2	2	3,3
Private company employee	7	23,3	6	19,4	13	21,3
Civil service employee	2	6,7	1	3,2	3	4,9
Total	**30**	**100,0**	**30**	**100,0**	**60**	**100,0**

In table 1, it can be seen that gender is dominated by women in both the intervention group (60.0%) and the control group (77.4%). Furthermore, the Education variable was dominated by respondents with a high school education level, both in the intervention group (58.6%) and in the control group (48.44%). Furthermore, in the employment variable, it is known that respondents are dominated by those who do not work both in the intervention group (66.7%) and the control group (74.2%), followed by private workers in the intervention group (23.3%) and the control group (19. 4%).

Table 2
**Characteristics of Respondents based on age of the family caring for the
patient and the length of time the patient had a stroke (in months)**

Variable	Mean	Median	SD	Min	Max
Age of the family caring for the patient					
Intervention Groups	45,30	44,50	14,160	15	66
Control Groups	42,76	43,00	16,681	14	74
The length of time the patient had a stroke (in months)					
Intervention Groups	53,71	54,000	37,3284	0,5	144,0
Control Groups	45,53	24,000	43,6520	0,5	156,0

In table 2, it can be seen that the average age of family members who care for patients in the intervention group is 45 years with the youngest age being 15 years and the oldest age being 66 years, while in the control group it can be seen that the average age of family members caring for patients is 42 years. with the youngest age 14 years and the oldest age 74 years. Furthermore, the average length of time patients suffered from stroke in the intervention group was 53 months with the duration of the stroke being at least 2 weeks and the longest being 144 months (12 years), while in the control group the average length of stroke was 45 months with a duration of stroke. a minimum of 2 weeks and a maximum of 156 months (13 years).

Table 3
Frequency Distribution of ROM exercise in the intervention and control groups

Variable	Groups				Total	
	Intervention		Control			
	N	%	N	%	N	%
Family ability to do ROM exercises						
Unfollowing SOP	7	23,3	10	33,33	17	28.33
Following SOP	23	76,7	20	66,67	43	71.67
Total	30	100	30	100	60	100

In table 3 it can be seen that the ability of the family to do ROM exercises according to the SOP in the intervention group (76.7%) was higher than the control group (66.67%).

2. Bivariate Analysis

Analysis for factors related to changes in the status of stroke patients who were treated at home after mentoring, including family motivation in carrying out treatment, knowledge of ROM exercise treatments and procedures (SOP) as well as family care actions for stroke patients at home.

Table 4 shows the results of statistical tests on motivation, knowledge and action variables, which obtained a significant p value (0.000) in the intervention group. This shows a significant difference in the scores of the three variables in the pre and post intervention measurements.

Table 4
Distribution of Respondents in the Intervention Group Based on the Average Score on before and after treatment

Variable	Mean	SD	SE	P value	N
Motivation klg					
Pre	3,30	0,429	0,078	0,000	30
Post	4,47	0,539	0,098		
Knowledge klg					
Pre	3,45	0,458	0,083	0,000	30
Post	4,37	0,505	0,092		
Treatment					
Pre	3,19	0,438	0,080	0,000	30
Post	4,07	0,467	0,085		

Based one the Wilcoxon test, obtained a significance value of 0.000 (p < 0.05), then H0 is rejected, thus it is concluded "there is a significant difference in motivation between before and after treatment."

Table 5 shows the results of statistical tests on motivation, knowledge and action variables, which obtained a significant p value (0.000) in the control group. This shows a significant difference in the scores of the three variables in the measurements before and after treatment.

Table 5
Distribution of Control Group Respondents Based on the Average Score on Measurements before and after treatment

Variable	Mean	SD	SE	P value	N
Motivation					
Pre	3,37	0,61	0,117	0,000	30
Post	4,00	0,38	0,701		
Knowledge					
Pre	3,74	0,25	0,467	0,000	30
Post	3,89	0,43	0,798		
Treatment					
Pre	3,36	0,286	0,057	0,000	30
Post	3,66	0,315	0,093		

Table 6
Distribution of Respondents in the Control Intervention Group Based on the
Average Score on Measurements before and after treatment

Variable	Score	Intervention		Control	
		Pre	**Post**	**Pre**	**Post**
Motivation	Mean	3,30	4,47	3,37	4,00
	SD	0,429	0,098	0,61	0,38
	P value	0,001		0,001	
Knowledge	Mean	3,46	4,37	3,74	3.89
	SD	0,465	0,502	0,25	0,43
	P value	0,000			
Treatment	Mean	3,14	3,98	3,36	3.66
	SD	0,438	0,467	0,286	0,315
	P value	0,000		0,001	

1. Based on Mann-Whitney test, obtained a significant number of 0.148, because the p value> 0.05, then H0 failed to be rejected (accepted), it can be concluded that "There is no significant difference between motivation scores before treatment in the control group and the intervention group".

2. If the BMI of the control group is not different from the intervention group, then the chance factor alone can explain 14.8% to obtain a score obtained > 5%, then this result is considered not significant.

3. Based on Mann-Whitney test, obtained a significance number of 0.001, because the p value <0.05, then H0 is rejected, it can be concluded that "There is a significant difference between the post-treatment motivation scores in the control group and the intervention group"

4. Based on Mann-Whitney test, obtained a significant number of 0.011, because the p value <0.05, it can be concluded that "There is a significant difference between the knowledge scores before treatment in the control group and the intervention group".

5. Based on Mann-Whitney test, obtained a significant number of 0.003, because the p value <0.05, then H0 is rejected, it can be concluded that "There is a significant difference between the post-treatment knowledge scores in the control group and the intervention group".

6. Based on Mann-Whitney test, obtained a significant number of 0.048, because the p value <0.05, then H0 is rejected, it can be concluded that "There is a significant difference between the scores of treatment actions before treatment in the control group and the intervention group".

7. Based on Mann-Whitney test, obtained a significant number of 0.006, because the p value <0.05, then H0 is rejected, it can be concluded that "There is a significant difference between the scores of post-treatment care actions in the control group and the intervention group"

8. Based on Wilcoxon test, the control group obtained a significance value of 0.000 (p < 0.05), then H0 was rejected, thus it was concluded "there is a significant difference in motivation between before and after health education to families."

Based on Wilcoxon test, obtained a significancy value of 0.078 (p > 0.05), then H0 failed to be rejected (accepted), thus concluded "there is no significant difference in

knowledge between before and after counseling." Based on Wilcoxon test, a significance value of 0.001 (p <0.05) was obtained, then H0 was rejected, thus it was concluded "there is a significant difference in action between before and after health education treatment and monitoring.

3. **Muscle Strength Analysis**

Table 7
Distribution of muscle strength of stroke patients in the intervention group based on the average score on measurements before and after exercise ROM

Variable	Mean	SD	SE	P value	N
Hand					
Pre	3,09	1,19	0,218	0,059	30
Post	3,32	1,15	0,210		
Leg					
Pre	3,75	1,06	0,19	0,074	30
Post	3,95	0,91	0,16		

Table 7 shows the average score on the measurement before the ROM exercise is 3.09 with a standard deviation of 1.19 while the ROM exercise after the average score is 3.32 with a standard deviation of 1.15. The average difference in hand muscle strength scores before and after ROM training was 0.23 with a standard deviation of 0.649. The results of the statistical test showed that the p value was not significant (0.059) possibly because the length of the intervention was too short, the time period was 1 month.

On leg strength, the average score on the measurement before ROM exercise was 3.75 with a standard deviation of 1.06, while the measurement after ROM exercise was 3.95 with a standard deviation of 0.91. The average difference in muscle strength scores before and after ROM training was 0.19 with a standard deviation of 0.567. The results of statistical tests showed that the p value was not significant (0.074), possibly because the intervention was too short for a period of about 1 month.

Table 8
Distribution of muscle strength of stroke patients in the control group based on the average score on measurements before and after ROM exercise

Variable	Mean	SD	SE	P value	N
Hand					
Pre	3.06	1.17	0.21	0,277	30
Post	3.26	0.93	0.17		
Leg					
Pre	3,50	1,04	0,19	0,294	30
Post	3,66	0,88	0,16		

Table 8 shows the average score on the measurement before ROM exercise is 3.06 with a standard deviation of 1.17 while the measurement after ROM exercise is 3.26 with a standard deviation of 0.93. The difference in the mean score of muscle strength measurements before and after ROM exercise of hand strength was 0.20 with a standard deviation of 0.987. Statistical test results obtained p value which is not significant (0.277).

On leg strength, the average score before ROM exercise was 3.50 with a standard deviation of 1.04, while the measurement after ROM exercise was 3.66 with a standard

deviation of 0.88. The difference in the mean score of muscle strength in the measurements before and after is 0.16 with a standard deviation of 0.854. Statistical test results obtained p value that is not significant (0.294).

Table 9
Distribution of muscle strength in stroke patients in the intervention and control groups based on the average score on measurements before and after ROM exercise

Variabele	Score	Intervention		Control	
		Pre	Post	Pre	Post
Hand Strength	Mean	3,09	3,32	3,06	3,26
	SD	1,19	1,15	1,17	0,93
	P value	0,059		0,277	
Leg Strength	Mean	3,75	3,95	3,50	3,66
	SD	1,06	0,91	1,04	0,88
	P value	0,074		0,294	

There is a difference in the average score of muscle strength in the intervention group and the control group given after the treatment did not show a significant difference.

Table 10
The relationship of motivation to treat stroke patients' muscle strength before and after intervention

Variable	N	Mean	Score	Std. Deviation	p-value
Pre-intervention hand muscle strength					
Not getting motivated	25	12.24	3.06	4.968	0,855
Get motivated	35	12.41	3.10	4.519	
Post intervention hand muscle strength					
Not getting motivated	25	14.28	3.57	4.596	0,786
Get motivated	35	14.67	3,66	3.921	
Pre-intervention leg muscle strength					
Not getting motivated	25	13.08	3,27	4.812	0,950
Get motivated	35	13.33	3.33	3.672	
Post intervention leg muscle strength					
No	25	14.80	3.70	3.464	0,209
Yes	35	15.89	3.97	3.511	

In table 10, it can be seen the relationship between motivation to care for stroke patients on the strength of the muscles of the hands and feet, whether motivated or not,

before and after the intervention. The average value of hand muscle strength in patients who are not motivated is 12.24 with a standard deviation of 4.968 and the average value of hand muscle strength who is motivated is 12.41 with a standard deviation of 4.519. The results of the statistical test obtained a p-value of 0.855 (> 0.05), which means that there is no difference in the average hand muscle strength in respondents who are motivated or not motivated before the intervention.

Furthermore, the average value of hand muscle strength in patients who are not motivated is 14.28 with a standard deviation of 4.596 and the average value of hand muscle strength who is motivated is 14.67 with a standard deviation of 3.921. The results of the statistical test obtained a p-value of 0.786 (> 0.05), which means that there is no difference in the average hand muscle strength in respondents who are motivated or not motivated after the intervention.

Furthermore, the average value of leg muscle strength in patients who are not motivated is 13.08 with a standard deviation of 4.812 and the average value of leg muscle strength who is motivated is 13.33 with a standard deviation of 3.672. The results of the statistical test obtained a p-value of 0.950 (> 0.05), which means that there is no difference in the average leg muscle strength in respondents who are motivated or not motivated before the intervention.

Finally, the average value of leg muscle strength in patients who are not motivated is 14.80 with a standard deviation of 3.464 and the average value of leg muscle strength who is motivated is 15.89 with a standard deviation of 3.511. Statistical test results obtained a p-value of 0.209 (> 0.05), which means that there is no difference in the average leg muscle strength in respondents who are motivated or not motivated after the intervention.

4. The Influence of Age to Muscle Strength

Table 11
Frequency Distribution of Patient Age

Variable	N	%
Age		
<60 Years old	21	35.0
≥60 Years old	39	65.0
Total	**60**	**100,0**

In table 11, it can be seen the distribution of the patient age variable, where there were 22 (36.1%) age less than 60 years and the remaining 39 (63.9%).

Table 12
Age distribution of patients in the intervention and control groups

Variable	Group				Total	
	Intervention		Control			
	N	%	N	%	N	%
Age						
<60 Years old	9	30,0	12	40.0	21	35.0
≥60 Years old	21	70,0	18	60.0	39	65.0
Total	**30**	**100**	**30**	**100**	**60**	**100**

In table 12, it can be seen that the age of patients aged more than 60 years in the intervention group was higher than in the control group.

Table 13
Relationship of Age to muscle strength before and after intervention

Variable	N	Mean	Score	Std. Deviation	p-value
Pre-intervention hand muscle strength					
<60 Years old	22	11.27	2.81	4.255	**0,181**
≥60 Years old	38	12.94	3.23	4.833	
Post intervention hand muscle strength					
<60 Years old	22	13.59	3.39	3.936	**0,726**
≥60 Years old	38	15.03	3.75	4.270	
Pre-intervention leg muscle strength					
<60 Years old	22	12.91	3.22	3.890	**0,134**
≥60 Years old	38	13.41	3.35	4.315	
Post intervention leg muscle strength					
<60 Years old	22	14.91	3.72	3.308	**0,235**
≥60 Years old	38	15.74	3.93	3.618	

In table 13, it can be seen the relationship between the age of stroke patients and the strength of the muscles of the hands and feet, before and after the intervention. The average value of hand muscle strength in patients aged under 60 years is 2.81 with a standard deviation of 4.255 and the average value of hand muscle strength in patients aged 60 years and over is 3.23 with a standard deviation of 4.833. Statistical test results obtained a p-value of 0.181 (> 0.05), which means that there is no difference in the average hand muscle strength in respondents aged under 60 years and aged 60 years and over before the intervention.

The average value of hand muscle strength in patients aged under 60 years is 3.39 with a standard deviation of 3.936 and the average value of hand muscle strength in patients aged 60 years and over is 3.75 with a standard deviation of 4.270. Statistical test results obtained a p-value of 0.726 (> 0.05) which means that there is no difference in the average hand muscle strength in respondents aged under 60 years and aged over 60 years after the intervention.

The average value of leg muscle strength in patients aged under 60 years is 3.22 with a standard deviation of 3.890 and the average value of leg muscle strength in patients aged 60 years and over is 3.28 with a standard deviation of 4.315. Statistical test results obtained p-value 0.134 (> 0.05) which means that there is no difference in the average leg muscle strength in respondents under 60 years of age or over 60 years of age before the intervention.

The average value of leg muscle strength in patients aged under 60 years is 3.72 with a standard deviation of 3.308 and the average value of leg muscle strength in patients aged 60 years and over is 3.93 with a standard deviation of 3.618. Statistical test results obtained

p-value 0.235 (> 0.05) which means that there is no difference in the average leg muscle strength in respondents aged under 60 years and aged 60 years after the intervention.

5. Multivariate analysis

Table 14
Multivariate Analysis of Factors Affecting Change Hand Muscle Strength

Variable	Coefficient	95% CI		P-value
		Lower	Upper	
ROM Exercise	0,143	-0,151	0,438	0,335
Motivation from Family	-0,028	-0,257	0,201	0,808
Patient's age	-0,043	-0,116	0,030	0,240

The results of multivariate analysis of changes in leg muscle strength, obtained p-values of all > 0.05. This means that there are no variables that affect changes in hand muscle strength.

Table 15
Multivariate Analysis of Factors Affecting Changes in Leg Muscle Strength

Variable	Coefficient	95% CI		P-value
		Lower	Upper	
ROM Exercise	-0,076	-0,450	0,298	0,685
Motivation from Family	0,012	-0,279	0,302	0,936
Patient's age	-0,001	-0,094	0,092	0,984

The results of multivariate analysis of changes in leg muscle strength, obtained p-values of all > 0.05. This means that there are no variables that affect changes in leg muscle strength.

DISCUSSION

The results of Univariate analysis of 60 respondents' data showed that 68.9% were female, this is not in accordance with the literature which is known that stroke sufferers are dominated by men, 53.3% education level is high school, job data obtained 70.5% already Doesn't work. The age of the patients is 65% over 60 years, the family caring for the average age is 44 years. Based on the length of stay, it is known that the intervention group patients had an average of 53 months while the control group had an average length of stay of 45 months, meaning that the intervention group consisted of patients who suffered from stroke longer than the control group. Statistical data shows that of all respondents as much as 71.67% did ROM according to the SOP, this shows that the health education carried out on the patient is effective.

The family is the basic system in which health and care behaviors are managed, implemented and maintained (Friedman, 2012). Assistance for families of stroke survivors is something that is needed considering the impact that occurs on the family when there is a sick family member, the focus of attention, resources and support systems in the family will experience changes to be more focused on caring for sick family members. Family assistance in the care of post-acute stroke patients at home includes training through health education, monitoring the health status of elderly patients who are treated at home and providing consultation to families regarding the care of post-acute stroke patients at home.

Health education provided to families as a stroke patient system includes several aspects that need to be considered in order to facilitate the factors needed in the healing process or improvement of the condition of post-acute stroke patients. The aspects that are needed include increasing mobilization exercises, improving nutrition, maintaining communication, motivation, cognitive training, continuing treatment and physical therapy in the form of ROM (Range of Motion) exercises. The ROM exercises that are taught to the family are focused on passive exercises on the part experiencing hemiplegia to increase the patient's muscle strength. These aspects are interventions given to families of stroke patients, both the control group and the intervention group. The difference in the treatment given was that the intervention group was assisted through home visits once a week for 1 month.

There is a significant difference in the average score of motivation, knowledge and action variables in the two groups (intervention and control) (p value 0.000). These results indicate that although the control group received different treatment from the intervention group, the results showed significant differences. These results can be explained because the treatment in the control group was carried out by providing health education to families of stroke patients regarding the necessary actions in caring for stroke patients at home, while in the intervention group the treatment was given in the form of health education plus 2 times monitoring during the span of 1 month. This is done because it pays attention to the ethical aspects of research with the consideration that control patients are still being treated and there is no neglected action, the second possibility is that patients in the control group and the intervention group are not divided based on the length of suffering from stroke and based on the length of stroke so the possibility old patients in the group had received health education or exposure to the family from other health workers.

Maintenance of muscle strength and joint flexibility with ROM exercises can increase and maintain muscle strength and joint flexibility Kozier (2004), based on this belief, the researchers wanted to prove the impact of ROM exercises on elderly stroke patients. Based on the results of research by Lindberg et al. (2004), it was found that active and passive ROM exercises on the nervous system have an impact on reactivation of nerve connections in stroke patients.

CONCLUSION

Characteristics of respondents in this study were post-acute stroke patients (survivor) aged 55 to 84 years, female 68.9%, male 31.1%, type of work stating that they are not working 70.5% , 53.3% of the highest education levels are high school graduates.

There is a significant difference in the family's ability on the aspect of motivation in the control and intervention groups with a significance level of 0.001 (p value: 0.05), knowledge aspects with a significance level of 0.011 (p value: 0.05) and the ability of family actions to carry out home care by focusing ROM exercise has a significance level of 0.006 (p value: 0.05).

There is a difference in muscle strength scores between the intervention and control groups after being given treatment, indicating that the ROM exercise intervention carried out by the family is effective even though it does not show a statistically significant difference, so it is necessary to consider extending the period of observation and monitoring in stroke survivor to ROM exercises after more than 1 month.

Statistical test results obtained a p-value of 0.726 (> 0.05), which means that there is no difference in the average muscle strength of respondents under 60 years of age or over 60 years of age after the intervention.

Multivariate analysis did not show any influence of motivation, knowledge and action variables on patient care on muscle strength of treated patients.

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