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THE EFFECT OF PHYSICAL ACTIVITY COUNSELING ON ACTIVITIES OF DAILY LIVING INDEPENDENCY ON ELDERLY WITH FRAILTY SYNDROME

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ABSTRACT

Introduction
Frailty syndrome leads to activities of daily living (ADLs) dependency. Increasing dependency in ADL influencing physical and psychological well-being of elderly. Physical Activity Counseling (PAC) can increase physical activity level in elderly but its effect on ADL independence is understudied. The aim of this study was to analyze the effect of PAC on ADL independence of elderly with frailty syndrome.

Method(s)
This The study design was pre experimental design with one group pre post test. The population was 12 elderly living in sub district Manukan Kulon Surabaya. The independent variable was Physical Activity Counseling and the dependent variable was ADL independence. Barthel Index were used to collect data and analyzed by Wilcoxon Sign Rank test with significance of $\alpha \leq 0{,}05$.

Result(s)
Respondents with no disability are the most benefited from this study. Time to evaluate dependent variable was short, longer time needed to show better result. It is applicable for community nurses to promote physical exercise in community. Further studies should include other instruments and advance assessments needed to determine frailty and ADL independence status, so that the therapy given is more significant.

Conclusion(s)
PAC intervention can increase knowledge and encourage the elderly to increase physical activity so that they can fulfill ADL independently.

INTRODUCTION

Frailty Syndrome (*FS*) is one of the factors that have a negative impact on the elderly. FS is a condition of increased vulnerability caused by a decline in the physiological system due to aging. FS is also associated with poor outcomes, including death and increased dependence on the fulfillment of Activities of Daily Living (ADL) (Conroy & Elliot 2016). However, although it has been generally recognized, both its definition and impact, in Indonesia there is still little research on FS. As previously mentioned, elderly people who experience FS can become dependent on ADL. The cause is not only due to the physiological decline that occurs in the elderly in general, but also the decreased motivation in the elderly. The elderly should be able to meet their ADL needs independently according to their abilities. Although the elderly generally experience a decline in physiological conditions, the elderly with fragility will experience a faster decline in their condition and their homeostasis mechanisms will begin to fail (Clegg et al. 2013). In several recent studies, frailty status can be reversed by providing interventions in the form of specific exercise programs and nutritional provision (Buckinx, F. et al. 2015). Research by Rasinaho et al. (2011) stated that physical activity counseling can significantly increase physical activity in the elderly. However, its effect on ADL independence in the elderly with FS still needs further research. FS is a common occurrence, estimated at 4-59% of the population aged 65 years experiencing FS (Dent et al. 2016a). FS occurs in a quarter of the elderly population aged 85 years, and is increasing as the elderly population grows worldwide (Dent, Kowal & Hoogendijk 2016b). Many studies indicate FS status in the elderly living in the community between 5% and 15%. The prevalence of FS increases with age and is almost twice as high in women as in men. The prevalence of FS increases in the elderly with chronic conditions such as congestive heart failure, myocardial infarction, diabetes, hypertension, kidney failure, cancer and HIV (Milte & Crotty 2014). Based on a preliminary study conducted by researchers on May 25, 2017 in Manukan Kulon Village, Surabaya, 5 out of 8 elderly people with FS (measured by the Tilburg Frailty Indicator) scored ≥5 out of a total score of 8 on the physical component. This indicates high physical frailty in the elderly with FS. Physical frailty shows a significant relationship between FS and poor outcomes (Gobbens & Assen 2012).

The results of the preliminary study conducted Roy's adaptation theory places human adaptive behavior as its main goal. Efforts that can be made by the elderly to cope adaptively with their current condition depend on the coping mechanisms possessed by the elderly. The presence of chronic conditions, or a conscious physiological decline can be a stimulus for the elderly's coping process. Other stimuli can arise from family and environmental support that encourages the elderly to cope adaptively with the stressors currently faced.

Physical Activity Counseling (PAC) intervention can be applied to the elderly with FS. Research by Rasinaho (2011) states that physical activity counseling can significantly increase physical activity in the elderly. This counseling is conducted by professional health workers using motivational interview methods and providing physical exercise suggestions by considering the physical condition and health status of the elderly. PAC provided by nurses includes goal setting activities, goal monitoring, and supportive or motivational relationships.; others are training or monitoring exercise, monitoring physical activity with tools, and prescribing exercises. Interventions can increase physical activity by using techniques that are specific to each client such as specific strategies or helping patients set goals. Therefore, interventions involve several contacts and monitoring with clients, with 3-5 contacts (Richards & Cai 2015). In addition, developing effective interventions to increase physical activity and prevent disability in the elderly is important. The description above underlies the author's research entitled "The Effect of Physical Activity Counseling on the Independence of Activities of Daily Living in the Elderly with Frailty Syndrome".

METHODS

The research design used in this study was a pre-experimental design, with a pre-post test approach in one group. The population was the elderly who met the inclusion criteria determined by the researcher, as many as 12 people. The target population based on the characteristics of the elderly with a Tilburg Frailty Indicator score ≥5, a Barthel index ≤99 as many as 12 people and had an MMSE score of 24-30. The accessible population that researchers can reach is limited by the time of July-August 2017 and a place of 12 people. The

sample size in this study was 12 elderly people obtained using the total sampling technique. The independent variable in this study is Physical Activity Counseling, the dependent variable is the independence of ADL in the elderly. The instrument of this study is SAK which is used as a reference in conducting physical activity counseling and the Barthel Index to measure the independence of ADL in the elderly. The data analysis used in this study is the Wilcoxon Rank Test, used to test the difference in rank scores in 2 paired sample groups so that the scale becomes nominal for the independent variable and ordinal for the dependent variable. Error! Reference source not found. The interpretation of the results for the Wilcoxon Rank Test is that the hypothesis (Ho) is accepted if the significance value is ≤ 0.05, so that it is stated that there is a significant influence on the dependent variable. If the significance value is > 0.05 then there is no significant influencen.

RESULTS

The results of this study include identification of demographic data, physical activity, sleep quality, physical fitness in the elderly and analyzing the relationship between variables. In Table 1 it can be seen that 9 people (75%) of the respondents are female. A total of 8 people (67.35%) are aged 60-70 years. Most (8 people) have more than 2 chronic diseases and 6 people (50%) have an income of >Rp 3,045,000.00.

Tabel 1. Demographic Characteristic

Responden Characteristic	Frequency (n)	Presentage (%)
Gender		
Female	9	75
Male	3	25
Age		
60-70	8	67,3
>70	4	33,3
MaritalStatus		
Marriade	6	50
Not Marriade	0	0
Divorce	0	0
Widower	6	50
Last Education		
Elementary School	4	33,3
Junior/Senior High School	8	67,7
University	0	0
Having More than 2 chronic disease		
Yes	8	67,7
No	4	33.33
Montly income		
Not income	1	8,3
<Rp 3.045.000,00	5	41,7
>Rp 3.045.000,00	6	50

Based on table 2, it can be explained that the majority of elderly people (91.7%) need help with going up and down stairs, 16.7% need help using the toilet and moving around.

Table 2. Distribution of ADL components in the elderly with FS before being given PAC.

Level of Independence	Pre	
	f	%
Depending on Weight	0	0
Depending on Medium	9	75
Depending on Light	3	25
Total	12	100

Tabel 3. Distribution of the level of ADL independence of the elderly with FS after being given PAC.

Level of Independence	Post	
	f	%
Depending on Weight	0	0
Depending on Medium	4	33, 3
Depending on Light	6	50

Independence	2	16,7	

Level of Independence	Pre		Post	
	f	%	f	%
Depending on Weight	0	0	0	
Depending on Medium	9		4	33,3
Depending on Light	3		6	50
Independence	0	0	2	16,7
Total	12		12	100
Wilcoxon Signed Ranks Test p value 0,008 (α ≤ 0,05)				

Komponen ADL	Do		Need Help		Independence	
	f	%		%	f	%
Eat	0	0	0	0	12	100
Bath	0	0	0	0	12	100
Wearing	0	0	0	0	12	100
Defecate	0	0	0	0	12	100
Bladder	0	0	3	25	9	75
UsingToilet	0	0	2	16,7	10	83,3
Walk in stairs	1	8,3	11	91,7	0	0
Walk	0	0	6	50	6	50
Moving	0	0	2	16,7	0	83,3

Tabel 4. Distribution of the level of ADL independence of the elderly with FS before and after PAC intervention

Based on table 4, the level of ADL independence of the elderly with FS after being given PAC is partly in the category of mildly dependent ADL independence (50%).

It can be explained that before the provision of PAC intervention for the elderly, 3 had a mildly dependent ADL independence level (25%) and 9 elderly people had a moderately dependent ADL independence level (75%). PAC intervention was given to the elderly in 4 sessions in 4 meetings to 12 respondents. The level of ADL independence of the elderly after being given PAC intervention changed, including 4 people with moderately dependent ADL independence (33.3%), 6 people with mildly dependent ADL independence (50%) and 2 (16.7%) people were independent.

The results of the Wilcoxon Signed Rank Test statistical test with a p value of 0.008, which means there is an effect before and after the intervention. This shows that the hypothesis is accepted, namely that there is an effect of PAC on the independence of the elderly with FS.

DISCUSSIONS

Analysis of ADL independence of the elderly before being given PAC intervention The results of the study on the level of ADL independence of the elderly with FS before being given PAC showed that most respondents were in the moderate dependent ADL independence category and a small number were mild. The highest dependence was on the ADL component of using stairs. The results of the characteristics of the respondents showed that most respondents were female.

ADL independence is the ability to fulfill ADL without assistance. ADL independence in the elderly with FS can decrease due to risk factors related to physical and psychological health, environmental conditions, social barriers, nutrition and lifestyle, depression, cognitive disorders and the consequences of functional decline (Beswick. et al. 2010).

The results of the analysis of the study on ADL independence of the elderly with FS showed that the components that the elderly could not fulfill independently were the use of stairs. Respondents stated that they felt pain in the knee joints when going up or down stairs. This caused respondents to need help when using stairs. Other components that the elderly could not fulfill independently were using the toilet and moving. Respondents also expressed the same complaints when doing both activities. Most respondents stated that they had complaints such as pain, morning stiffness and fatigue, these are things that signs and symptoms of musculoskeletal disorders. Stamm. et al. (2016) stated that elderly people with musculoskeletal complaints are more disturbed in their ADL. The ADL components that are disturbed are using stairs and walking without aids. The inability to fulfill ADL in the components above is also followed by other complaints. These complaints include the inability to do heavy activities such as lifting laundry to dry, squatting, standing or walking for a long time and not being able to follow routine physical exercises held routinely by the integrated health post. FS is described in 5 phenotypes, namely weakness (weak grip), slowness (length of walking), low levels of physical activity, feeling powerless and unwanted weight loss (Gorman 2015). The results of the analysis of the research on the level of physical activity of respondents were that all respondents had low levels of physical activity. The respondents' daily activities in their spare time were sitting while watching television, sleeping or sitting on the terrace of the house. Respondents stated that there was no special time set aside for exercise. The most dominant reasons respondents did not exercise were physical complaints felt when doing heavy exercise, low motivation to exercise and lack of knowledge about the types of exercise that are safe and can be done by respondents with their current physical condition. Exercise is important to maintain physical functions such as muscle strength, balance and mobilization, which are the basis for maintaining independence in performing ADL (Frändin & Helbostad 2016). The level of physical activity can also affect health status, mobilization, autonomy and social contact, and the risk of decreased mental well-being.

Analysis of ADL independence in the elderly after being given PAC intervention

The results of the study on the level of ADL independence in the elderly with FS after the provision of PAC showed changes, where most respondents had mild dependence, others had moderate dependence and were independent. The intervention given to respondents was in the form of physical activity counseling. The intervention was given in 4 sessions in 4 meetings. Activities carried out include assessing the health status of respondents and physical activity patterns, planning physical exercise for respondents, mentoring and monitoring and evaluating the entire program.

Research according to Frändin & Helbostad (2016) states that physical functions such as muscle strength, balance and mobilization are very important for maintaining ADL independence and physical activity. The results of the research analysis showed that after respondents were given PAC intervention and carried out the recommended physical exercises, there was an increase in scores on the components of stair use and mobilization. This is in accordance with previous research by Josyula & Lyle (2013), that there was a significant increase in balance, physical activity levels and mobilization after an intervention period specifically designed for respondents. The level of respondent activity also increased after the provision of PAC intervention. Respondents said that their desire to exercise increased.

Some respondents did not experience an increase in ADL independence. One respondent had a disability and some had indeed used mobility aids for a long time. Mobility limitations are an important factor that must be considered in counseling programs. Research by Rasinaho et al. (2011) stated that elderly people with mobility limitations need more support to start an exercise. When elderly people have

mobility limitations, the influence of limitations on physical exercise is difficult for researchers to predict. In this study, respondents with chronic mobility limitations may need more time and additional counseling sessions.

Other respondents who did not experience an increase in ADL independence did not comply with the agreed goals. Respondents only did 1x physical exercise in 1 week. Respondents stated that they had difficulty making changes to physical activity. Respondents may have difficulty understanding and remembering the instructions given. In addition, respondents may not follow therapy because respondents do not understand the rationale for therapy, and therapy is difficult and unclear. Respondents may not get immediate benefits after doing therapy, for example experiencing pain and fatigue after physical exercise. The right treatment is to provide education to respondents regarding the health benefits of physical exercise and provide rationale for action from physical exercise recommendations, assess motivation and identify barriers to change (Stonerock & Blumenthal 2017).

Analysis of the effect of PAC on ADL independence in the elderly with FS

1. Treatment given in each PAC intervention session

In Session I (Assessment of problems experienced by respondents related to the need to fulfill ADL & physical exercise) an assessment was carried out regarding current physical activity (type, intensity, frequency and duration), contraindications to physical activity and the respondent's readiness to change. This assessment was carried out to determine whether the respondent met the minimum physical exercise recommendations. The researcher also asked the type of physical activity followed by the respondent to determine the intensity and make recommendations specifically according to the respondent's interests (Meriwether 2008). In the implementation of this session, respondents actively expressed their health complaints and their opinions regarding daily physical activity.

In Session II (Suggesting and compiling recommendations for physical activity) respondents and researchers held discussions to plan safe physical activities that could be done according to the respondent's abilities. In this session, the respondent and researcher discuss ways to bring about change. The researcher helps the respondent to state concrete and specific goals, identify the resources needed to achieve those goals, and create ways to evaluate how well the plan has been prepared (Stonerock & Blumenthal 2017). The researcher and respondent create goals that the respondent can achieve within 1 week. Goals should be realistic and aim to increase activity and independence (Frändin & Helbostad 2016). The agreed goal is to add morning walks and physical exercise according to the guidelines provided with a target of 3x exercise for 1 week.

In Session III (Accompanying and monitoring), assistance and monitoring were carried out in the implementation of the approved physical activity plan. The provision of written materials that support counseling messages and written absorption showed an increase in the effectiveness of health behavior interventions (Meriwether 2008). After 1 week, respondents were given the opportunity to carry out the previously prepared physical activity plan, respondents were re-assessed regarding the targets achieved, complaints during physical exercise and opinions about the changes experienced.

Then the researcher and respondents discussed the next steps, whether the target remains the same or is increased according to the respondent's ability.

In Session IV (Conducting an evaluation), an evaluation was carried out related to the PAC activities as a whole. Starting from the assessment, planning physical activities to implementation and monitoring. Respondents revealed that there had never been a health worker who had provided PAC. Respondents felt helped by the PAC so that they could increase their knowledge about health and physical activities that were safe and could be done according to their abilities.

The types of sports and physical exercises chosen by the elderly during the PAC intervention, respondents had different levels of strength and taste in exercising. All respondents agreed to take a 30-minute morning walk as a sport and do it at least 3 times per week. The aerobic exercises chosen by the respondents were different. Some respondents chose aerobic exercises that can be done sitting down. This is because respondents have weak leg endurance. Some other respondents chose aerobics that were done standing up so they felt more enthusiastic in implementing it.

During the implementation of the PAC intervention, several respondents with close houses formed groups to do physical exercises together. Respondents preferred to do physical exercises in groups so that they could remind each other. Respondents stated that group physical exercise is more enjoyable and minimizes forgetfulness.

1. The role of PAC intervention in changing ADL independence in the elderly with FS

PAC intervention acts as a contextual stimulus that can influence the elderly's coping with the focal stimulus experienced. According to Roy (2014), contextual stimulus is an existing stimulus that influences. the effect of the focal stimulus. PAC intervention along with all other stimuli work together and influence a person's level of adaptation so that they can respond positively to a problem. PAC intervention helps patients in the cognator process, namely forming perceptions, learning processes, decision making and actions for the problems faced. These things can be observed through effectors such as activity and rest, body image, and primary roles. After PAC was implemented, respondents stated that their desire to do physical activity and exercise increased. The increase in respondents' physical activity levels was marked by the results of counseling which stated that every morning respondents took a morning walk and did exercises according to the guidelines as physical exercise.

The provision of PAC interventions was focused on the physical exercise goals that had been jointly determined by researchers and respondents. All PAC intervention activities were carried out in accordance with the goals that had been set. Most respondents agreed to the physical exercise target according to the guidelines provided, 3 times per week. The target achieved by most respondents was 4-5 times per week. Respondents stated that several things that hindered the implementation of physical exercise were forgetfulness, feeling less energetic and feeling lazy to exercise physically. Most respondents stated that the musculoskeletal complaints they experienced decreased. The results of the analysis showing an increase in the independence of ADL components in several respondents showed that PAC interventions had an effect on ADL independence. The role of PAC interventions in the independence of ADL in the elderly is to increase the activity and physical exercise of the elderly so that they can function independently in meeting ADL needs. PAC interventions improve coping mechanisms in the elderly with FS so that can respond positively to the problems of the elderly with FS related to ADL dependence and physical activity. Overall, PAC intervention has the potential to increase physical activity in the short term (Verwey et al. 2016).

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CONCLUSIONS

PAC intervention can increase knowledge and encourage the elderly to increase physical activity so that they can fulfill ADL independently. The elderly are expected to be able to do physical exercise regularly and can use the media that has been given during PAC as a guide so that they can maintain ADL independence. The elderly can invite other elderly to be able to do physical exercise as a prevention so that other elderly are not in a state of FS. The elderly can form groups to continue doing physical exercise. Further research can pay attention to the respondents' desire to change and can overcome it appropriately. It is hoped that research can further examine FS and interventions other than PAC that can be applied to handle FS.

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