

The Effect Of Lower Rom Active On The Risk Of Falls In The Elderly

Fanny Dewi Sartika

Universitas Syekh Yusuf Al Makassar Gowa

ARTICLE INFO

Keywords:

Elderly, falls, lower rom active

Email :

dewisartikafanny@gmail.com

ABSTRACT

A fall is an event in which a person accidentally falls sitting on the ground or in a lower place To determine the effect of active lower joint range of motion exercises on the risk of falls in the elderly. This research is research using the Quasy experimental design method with a cross sectional approach with Purposive Sampling technique. Elderly people at risk of falls discerning using the TUG test. Examination of the risk of falls using the TUG test were carried out pre and post. The results of the study showed that there was an effect of lower joint range of motion training on the risk of falls in the elderly with a p value <0.05. and than conclusion Lower ROM has benefits in reducing the risk of falls in the elderly

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1. INTRODUCTION

According to the World Health Organization, 28-35% of elderly people (≥ 65 years) fall each year globally and the number increases with age. Falls are the main cause of injury, disability and death (Tareef, 2011) Elderly people who experience injuries due to falls have varying levels of severity, and 40-60% of falls result in major lacerations, bone fractures, or brain injuries (Alekn et al., 2015).

The causes of falls in the elderly are multifactorial (Tinetti, 2003). In addition to experiencing a decline in bodily function, these elderly people are also aggravated by the course of the disease which can cause reduced balance control, muscle strength and walking ability (Marrison et al., 2010) and can increase the risk of falls (Dewanti , 2017). The impact of these changes is that the activity of the elderly will decrease, ultimately causing slowness in movement, short steps, decreased rhythm, feet cannot move firmly and tend not to be able to maintain their balance so that the elderly are at risk of falling (Lee & Song, 2018)

Fall prevention is one of the important things for elderly people who are at risk of falling (Holt et al., 2012). Prevention that can be done is by targeting fall risk factors that can be modified, for example balance and gait as well as environmental factors (Lee & Song, 2018). The Time up and Go Test is an example of a balance examination that can be used to predict falls in the elderly, by assessing the elderly's ability to integrate perception, sensory and mobility (Schwartz et al., 2002). Measures to prevent falls are generally more directed at preventing environmental factors that can encourage falls (Pijpers et al., 2012).

Assessing the risk of falls is one of the important things to do in nursing assessments for the elderly. This shows that nurses (as part of a multidisciplinary team) play a role in monitoring various risk factors that cause falls and providing interventions to prevent these risk factors from occurring. Nursing interventions for the elderly have been developed through several studies, including foot exercise interventions, foot massage and range of motion exercises (Vieira et al., 2016).

Several studies were conducted to empirically prove the benefits of various interventions in improving balance in the elderly. Range of motion is an exercise where the client moves the joints as much as possible without causing pain. Lower active range of motion (Lower ROM) where ROM exercises can reduce plantar foot pressure in DM sufferers who are at risk of developing diabetic ulcers caused by neuropathy, active lower range of motion exercises can also increase muscle strength in type 2 DM patients with microvascular complications (Widyawati, I. Y., Irawaty, D., & Sabri, 2010)

The Effect Of Lower Rom Active On The Risk Of Falls In The Elderly. Fanny Dewi Sartika

However, research on lower active ROM in elderly people with a risk of falling is still very lacking. Therefore, researchers are interested in conducting research on the effect of lower rom active on the risk of falls in the elderly.

2. METHOD

Location, Population, and Research Sample

This research is a comparative analytical research with a Quasi-experimental design which is a research design that aims to test cause and effect relationships, a Quasi-experimental design using a nonequivalent control group design model with Pretest and Posttest. This design is a design that carries out treatment in two or more groups which are then observed before and after implementation which is divided into two groups, namely the intervention group and the control group which did not receive the same treatment, and the two groups were not chosen randomly (Polit, F. D., & Beck, 2010) This research uses a descriptive analytical design with a cross sectional approach. Data collection techniques were carried out using surveys and observations. This research was conducted in June-July 2019 in the working area of the Minasaupa Health Center, Makassar, South Sulawesi - Indonesia.

Population is a certain group of individuals, who are the focus of research, who have certain qualities and characteristics determined by the researcher (Notoatmodjo. S, 2015). The population in this study were all elderly people who were at risk of falling in the Makassar health center work area Samples are subjects who are part of a selected population. In determining the sample size, researchers used the formula according to M. Sopiudin Dahlan (2016) with a sample size of 18 respondents. The criteria for the sample are as follows:

Inclusion Criteria:

1. Elderly people at risk of falling
2. Screening results with the Time up and go test in the elderly ≥ 12 seconds
3. Domiciled in Makassar and surrounding areas.
4. Age > 60 years.
5. Male and female gender.
6. The respondent did not experience hearing or speech problems.
7. Willing to be a respondent.

Exclusion Criteria:

1. The respondent suffers from joint disorders.
2. Respondents with post-trauma (musculoskeletal injury).
3. Respondents with diabetic ulcers
4. Respondents are not cooperative.
5. Have been a respondent in the same research

Data collection

Data with secondary data, namely data obtained from the research site, namely health center data regarding the number of elderly and the health status of the elderly in 2019-2020, primary data in the form of respondents' demographic data sheets and observation sheets of intervention results. Data processing and analysis will go through three stages (Arikunto, 2002), namely:

1. Preparation
At this stage, the data is selected and sorted so that only the data that is needed is left. By checking the completeness of the research respondent's identity, checking the contents of the instrument, and checking the types of data entry.
2. Tabulation
The activities carried out are item assessment, coding, and totaling scores on the instrument.

3. RESULTS AND DISCUSSION

Respondent characteristics.

Table 1 shows the distribution of respondents based on age, 1 elderly (7.14%) aged 55-69 years, 5 elderly (35.71%) aged 66-74 years, 8 elderly (57.14%) aged 75-90 years. and Table 2 shows

The Effect Of Lower Rom Active On The Risk Of Falls In The Elderly. Fanny Dewi Sartika

the distribution of respondents based on gender, 11 elderly (78.57%) are female, 3 elderly (21.43%) are male. and Table 3 shows the distribution of respondents based on education. There are 2 elderly people with elementary school education (14.28%), 5 people with junior high school education (35.71%), 4 people with high school education (28.57%), 3 people with bachelor degrees (21.43%). Table 4 shows the history of falls in the elderly, 10 people had experienced falls (71.43%) and 4 people had never experienced falls (28.57%)

Table 1. Frequency distribution of respondents based on age

Age	Frekuensi	Persentase
55-69	1	7,14 %
66-74	5	35,71 %
75-90	8	57,14 %
Total	14	100%

Table 2. Frequency Distribution of Respondents by Gender

Gender	Frekuensi	Persentase
woman	11	78,57 %
man	3	21,43%
Total	14	100 %

Table 3. Frequency Distribution of Respondents based on education

Education	Frekuensi	Persentase
SD	2	14,28 %
SMP	5	35,71 %
SMA	4	28,57 %
D3/S1/S2	3	21,43%
Total	14	100%

Table 4. Frequency Distribution of Respondents based on History of falls

History of falls	Frekuensi	Persentase
Never fell	10	71,43 %
Never of falls	4	28,57 %
Total	14	100 %

Analysis of the effect of lower ROM on the risk of falls in the elderly table 5.

Table 5 Results of analysis of the effectiveness of the Lower ROM on the risk of falls

Variabel	Pre H1	Hari 3	Hari 6	Hari 9	Hari 12
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
TUG	14,29(0,91)	12,71(1,27)	11,43(1,22)	11,79(1,12)	9,86(1,03)

TUG Examination Results: The first day before the intervention, the mean was 14.29 with a standard deviation (SD) (0.91), then the third day after the intervention was given, the TUG results were obtained with a mean of 12.71 with a standard deviation (1.27), then on the sixth day the results were obtained. TUG with a mean of 11.43 standard deviation (1.22), on the ninth day of the intervention the TUG value was obtained with a mean of 11.79 standard deviation (1.12) and on the last day the mean was 9.86 with a standard deviation (1.03)

Discussion

The effect of lower ROM on the risk of falls in the elderly

In this study, it was found that the TUG value in elderly people who did Lower ROM decreased from day to day with a p value < 0.05, which means Lower ROM is effective in reducing the risk of falls in elderly people, this is also supported by (Widyawati et al., 2010) who said Lower ROM can improve balance in elderly people suffering from type 2 DM. Apart from that, ROM also plays an

important role in balance and driving performance and is related to mechanical effects (Vaillant, J., Rouland, A., Martigné, P., Braujou, R., Nissen, M. J., 2009)

Range of motion is an exercise where the client moves the joints as much as possible without causing pain. Leg muscle strength is related to balance and falls in the elderly (Chiba et al., 2015). Falls are also the result of interactions between long-term or short-term predisposing factors. One study on fall risk showed that the risk of falls increased in proportion to the severity of chronic muscle pain, the number of joint groups affected, and the amount of interference with daily activities. Other research was also conducted by Cho, Ko, & Lee, (2012) that ankle joint mobilization carried out in the elderly can improve functional balance. By regularly moving the joints of the lower extremities, you can eliminate stiffness in the joints and increase the flexibility of the muscles in this area, which ultimately can prevent and reduce the incidence of falls in the elderly.

The relationship between elderly characteristics and the provision of lower ROM interventions in the elderly

When administering lower ROM intervention, there appeared to be changes in TUG values from day to day, but these changes appeared irregular. This is also supported by the age factor, where the age of the elderly has a mean age of 75.85. Age is one of the supporting factors for a decline in body function, which can increase the risk of falls (Lee & Song, 2018). Additionally, as a person ages, the likelihood of accumulating medical and medication-related problems increases, and so does the risk of falls (Tareef, 2011). Many changes occur in gait with aging, such as decreased stride speed and stride length, a wider base, and decreased lower limb strength (Deandrea S, Lucenteforte E, Bravi F, Foschi R, La Vecchia C, 2010).

As we get older, various complaints and health problems appear one by one. One of the health problems most often experienced by the elderly is due to a reduced ability of the body to maintain postural balance (Tareef, 2011). Important parts for normal gait include fine nervous tissue such as nerve ganglia, basal cortical and basal ganglia-brainstem systems, appropriate musculoskeletal structures with precisely regulated muscle tone, and proper processing of sensory information (i.e., cerebral cortex, vision, hearing, fine touch, and proprioception) (Takakusaki K, Tomita N, 2008).

In the results of this study, the frequency of falls was (1.3.4%). One of the risk factors for falls is a history of previous falls (Tinetti ME, 2010). Apart from that, the risk factors for falls are balance disorders, decreased muscle strength, visual impairment, polypharmacy (more than 4 drugs) or psychoactive drugs, gait disorders and difficulty walking, depression, dizziness or orthostasis, functional limitations, older age. than 80 years, female gender, incontinence, cognitive impairment, arthritis, diabetes, and pain (Tinetti ME, 2010)

The research results show that there is an influence of lower ROM in reducing the risk of falls. By reducing the risk of falls in the elderly, we can reduce the number of falls/injuries that most often occur in the elderly. And it can be used as a reference to improve the balance of elderly and adults both in the community and in hospitals. Nurses at Community Health Centers and Hospitals can carry out assessments and interventions to improve the balance of elderly people and adults who are at risk of falling. Apart from that, nurses can also teach Lower ROM to families, so that it can be implemented and done at home. The limitation of this research is that it took a sample of elderly people with homogeneity among elderly people in general without looking at the comorbidities experienced by the elderly as respondents so that further research can homogenize the respondents' illnesses..

4. CONCLUSION

Lower ROM can reduce the risk of falls in the elderly as indicated by a decrease in TUG values. The older an elderly person is, the more likely they are to experience falls.

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The Effect Of Lower Rom Active On The Risk Of Falls In The Elderly. **Fanny Dewi Sartika**

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