

## EFFECTIVENESS OF WALKING AIDS WITH THE RISK OF FALLS IN ELDERLY AT TRESNA WREDHA SOCIAL HOME 'INA' I SAHATI TONDANO

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### ABSTRAK

Lanjut usia merupakan tahap akhir dari usia dimana terjadi penurunan biologis, fisiologis, psikososial dan spiritual. Penurunan ini menyebabkan berbagai masalah kesehatan yang terjadi pada usia lanjut. Masalah yang sering dialami oleh lansia adalah jatuh. Hasil survei pendahuluan di Panti Sosial Tresna Wreda (PSTW) 'INA' Sahati Tondano menunjukkan bahwa kondisi lingkungan tempat tinggal lansia terlihat beresiko terjadinya jatuh, seperti lantai yang licin dan resiko jatuh yang paling besar terjadi pada saat memindahkan lansia ke tempat tidur dan lain sebagainya. Tujuan dari penelitian ini adalah untuk mengetahui efektivitas penggunaan alat bantu jalan terhadap risiko jatuh pada lansia di PSTW 'INA' Sahati Tondano. Jenis penelitian ini menggunakan desain penelitian cross sectional. Sampel dalam penelitian ini ditentukan dengan menggunakan teknik total sampling dengan jumlah 32 responden. Instrumen yang digunakan adalah kuesioner. Analisis data menggunakan uji *chi-square* dengan program komputer. Hasil analisis efektivitas penggunaan alat bantu jalan dengan resiko jatuh pada lansia menunjukkan bahwa *p value* = 0,001 yang berarti penggunaan alat bantu jalan terbukti efektif dalam mencegah terjadinya kondisi tidak seimbang atau jatuh pada lansia. Kesimpulan: penggunaan alat bantu jalan terbukti efektif menurunkan risiko jatuh pada lansia di PSTW 'INA' I Sahati Tondano dengan nilai *p value* = 0,001.

**Kata kunci** : alat bantu jalan, lansia, resiko jatuh

### ABSTRACT

*Old age is the final stage of age at which biological, physiological, psychosocial and spiritual decline occurs. This decline causes various health problems that occur in old age. A problem that is often experienced by the elderly is falling. The results of a preliminary survey at PSTW 'INA' Sahati Tondano showed that the condition of the environment where the elderly lived appeared to be at risk of falls, such as slippery floors and the greatest risk of falling when moving the elderly to bed and so on. Objective: The aim of this research is to determine the effectiveness of using assistive devices on the risk of falls in the elderly at PSTW 'INA' Sahati Tondano. Method: This type of research uses a cross sectional study design. The sample in this research was determined using a total sampling technique with 32 respondents. The instrument used was a questionnaire. Data analysis used the chi-square test with a computer program. Result: The results of the analysis of the effectiveness of using walking aids on the risk of falls show that *p value* = 0.001, which means that the use of assistive devices has been proven to be effective in preventing unbalanced conditions or falls in the elderly. Conclusion: the use of walking aids has been proven to be effective in reducing the risk of falls in the elderly at PSTW 'INA' I Sahati Tondano. *p-value*= 0.001, which means that the use of assistive devices has been proven to be effective in preventing unbalance or falls in the elderly. The walking aids have been proven to be effective in reducing the risk of falls in the elderly at PSTW 'INA' I Sahati Tondano.*

**Keywords** : walking aids, risk of falls, elderly

### INTRODUCTION

The aging process is a natural process and is part of the life process that cannot be avoided and will be experienced by every individual. Humans will not suddenly grow old, but

develop from babies, children, adults and finally become old (Palestine, Kholifah, and Arna 2022)

Elderly is the final stage in human growth, as we get older there will be physiological changes in the human body. Changes that occur include innervation, musculoskeletal, vision, hearing (Sholekah, Soesanto, and Aisah 2022)

Physical changes in the elderly will experience several problems, one of which is the result of disorders of the musculoskeletal system which will experience changes in physical deterioration in walking disorders, feet that cannot move firmly. The causes of falls in the elderly occur as a result of slipping, tripping, as well as accompanying illnesses and from an environmental perspective. If the cause of the fall is not treated immediately, it can have an impact on physical, psychological and economic damage (Purnama Sari et al. 2019)

One indicator of the success of national development is seen from a health perspective. The increasing life expectancy of the population shows the government's success in creating a healthy society. Increasing life expectancy can cause an increase in the number of elderly people from year to year (Rohaedi 2016)

*World Health Organization*(WHO) noted that the global population of elderly people aged 60 years or more amounted to 962 million people in 2017 and is expected to continue to increase in 2050 to reach almost 2.1 billion elderly people throughout the world (United Nations, 2017).

Indonesia's elderly population reached 23.66 million people in 2018 and is expected to continue to increase to 27.08 million people in 2020 (Indonesian Ministry of Health, 2017).

In 2020, the Central Statistics Agency stated that the elderly population continues to experience an increase, which is characterized by increasing life expectancy and decreasing death rates. The percentage of elderly people in Indonesia reached 9.92% or around 26.82 million people. West Sumatra is one of the provinces in Indonesia which ranks 6th out of 33 provinces that have entered an old population structure, namely a percentage of 10.07%. The prevalence of increasing life expectancy of the elderly in Pesisir Selatan Regency is 49,472 people, with 23,233 men and 26,239 women (Yaslina, Moidaliza, and Srimutia 2021)

Falls in the elderly are a health problem experienced by the elderly which has a very big influence on their lives. Environmental influence is one of the factors that influences the risk of falls in the elderly. Among the elderly, falls are a frequent problem, an estimated 424,000 fatal falls occur every year. Fall injuries in Indonesia for those aged over 55 years reached 49.4%, while those aged over 65 years reached 67.1% (Widowati, Nugraha, and Adawiyah 2022)

Falls is an event that originates from a specific factor that can be observed and measured (Darwoski, 2008). Falls in the elderly can affect the wellbeing of the elderly. health in the long term, this happens because the elderly who experience falls will experience limited activity daily living (ADL) abilities, disability, loss of ability to move, experience a decrease in quality of life and have a high potential to experience recurrent falls to experience repeated falls (Boye et al., 2012).

According to the global report (WHO), the incidence of falls in the elderly is increasing if not treated seriously and can even cause death. The frequency of falls aged 65 years is around 28-35% or 2-4 times every year and increases at the age of 70 years reaching 32-42% falls up to 5-7 times. Elderly people who live in nursing homes fall more often than elderly people who live at home, reaching 30-50% every year and an increase of 40% who experience repeated falls. The incidence of falls in Indonesia alone is 43.47% for elderly people living in institutions, this incident occurs 1-2 times in 1 year (Nugroho, 2015).

Research results from Hutomo (2015) stated that the number of elderly people between the ages of 60 and 86 years was 42 elderly with a fall rate of 26 elderly (57%). Fall incidents based on the location of the incident consisted of: in the kitchen as many as 8 elderly people (18%), in the bathroom as many as 7 elderly people (16%), in the yard as many as 7 elderly

people (16%), and in the bedroom as many as 4 elderly people (0.9%) and those who were not at risk of falling 11.9%, had a risk of falling 88.1%.

The results of the preliminary survey at PSTW 'INA' I Sahati Tondano showed that there were 32 elderly people, and 16 people used walking aids, 3 men and 13 women, some of whom were elderly at PSTW 'INA' I Sahati Tondano used walking aids such as furniture (tables and chairs), wheelchairs, walkers and canes due to external conditions from the surrounding environment and internal conditions such as the physical condition of the body which is old and weak due to illnesses suffered, one of which is diabetes mellitus (Tumiwa, Pondaa, and Musak 2023).

Based on research from Tumiwa (2023) which aims to introduce diabetic foot exercises to elderly patients who suffer from diabetes because these foot exercises have many benefits, including preventing an increase in blood sugar levels, improving circulation and preventing further complications in elderly patients such as difficulty walking which results in risk of falling (Tumiwa et al. 2023)

Apart from that, based on the results of interviews with several elderly people at PSTW 'INA' I, Sahati Tondano, said that he had experienced falls several times (repeated falls) and some had been hospitalized. Based on these data, researchers are interested in conducting research with the title "The effectiveness of walking aids with the risk of falls in the elderly at PSTW 'INA' I Sahati Tondano.

## METHOD

This type of research is descriptive analytical research using a cross sectional research design, research design by carrying out measurements or observations at the same time (one time). The sample in this study was elderly who used walking aids at PSTW 'INA' I Sahati Tondano, totaling 32 elderly. The sampling technique uses total sampling. The research location is the Panti Sosial Tresna Werdha 'INA' I Sahati Tondano. The research was conducted in September-October 2023. Researchers used questionnaires as research instruments. The questionnaire to assess the risk of falls in the elderly uses the Morse Fall Scale (MFS) which consists of 6 assessments using the Guttman scale and the answer "yes" is given a score of 15-30 while the answer "no" is given a score of 0, with a score of 0-24 = no risk of falling, 25-50 = low risk, and  $\geq 51$  = high risk of falling. Meanwhile, the assessment of the use of assistive devices uses a questionnaire consisting of 7 questions using the Guttman scale for the answer "Yes" is given a value of 2 and "No" is given a value of 1. Data was collected within two months. All variables were measured using a reliable questionnaire. All respondents willing to participate in this study should sign the informed consent. The completeness of the questionnaire will be analyzed using computer software. STIKes Bethesda Tomohon, North Sulawesi, has approved this study. The descriptive analysis was used to describe the characteristics of respondents and the dimensions of variables. Bivariate data analysis to determine the effectiveness of using assistive devices on the risk of falls in the elderly using the chi square test with a p-value  $<0.05$  shows an effective relationship if a p-value  $\geq 0.05$  shows the relationship is not significant or ineffective.

## RESULTS AND DISCUSSION

### Univariate Data Analysis

#### Characteristics of respondents

Based on Table 1, it is known that 40.6% of respondents were female, while 59.4% of respondents were male, 15.6% of respondents were 55-60 years old, while 84.4% of

respondents were over 60 years old, 34.4% Respondents had elementary school education, 25% had junior high school education, and 40.6% of respondents had senior high school education. 25% of respondents used assistive devices poorly (the condition of the assistive devices was not good), while 75% of respondents used assistive devices well and the condition of the assistive devices was well maintained. 34.4% of respondents had a high risk of falling, while 65.6% of respondents had a low risk of falling.

**Table 1. Distribution of Respondents Characteristics at the Tresna Wredha 'INA'I Sahati Tondano Social Home in 2023**

No	Aged	Frequency (f)	Percentage(%)
1.	55-60 years old	5	15.6
2.	> 60 years old	27	84.4
<b>Total</b>		<b>32</b>	<b>100</b>

  

	Gender	Frequency (f)	Percentage(%)
1.	Male	19	59.4
2.	Female	13	40.6
<b>Total</b>		<b>32</b>	<b>100</b>

  

	Educational Background	Frequency (f)	Percentage(%)
1.	Elementary School	11	34.4
2.	Junior High School	8	25
3.	Senior High School	13	40.6
<b>Total</b>		<b>32</b>	<b>100</b>

### Descriptive Analysis of Research Variables

**Table 2. Distribution of the Use of Walking AIDS and the Risk of Falls in the Elderly at the Tresna Wredha 'INA'I Sahati Tondano Social Home in 2023.**

No	Walking aids	Frequency(f)	Percentage (%)
1.	Not Good	8	25.0
2.	Good	24	75.0
<b>Total</b>		<b>32</b>	<b>100</b>

  

	Risk of Falls	Frequency(f)	Percentage (%)
1.	High	11	34.4
2.	Low	21	65.6
<b>Total</b>		<b>32</b>	<b>100</b>

Based on table 2, 25% of respondents used assistive devices poorly (the condition of the assistive devices was also in poor condition), while 75% of respondents used assistive devices well and the condition of the assistive devices was well maintained. 34.4% of respondents had a high risk of falling, while 65.5% of respondents had a low risk of falling.

### Bivariate Analysis

#### Effectiveness of the Use of Walking Aids with the Risk of Falls in the Elderly at the Tresna Wredha 'INA'I Sahati Tondano Social Home

Based on the table above, it shows that respondents who used poor assistive equipment with a high risk of falling were 7 people (63.6%) while respondents who used poor assistive equipment with a low risk of falling were 4 people (36.4%). Respondents who used walking aids in good condition with a high risk of falling were 1 person (4.8%) while respondents who used walking aids in good condition with a low risk of falling were 20 people (95.2%) out of a total of 32 respondents. Based on the results of the chi-square test  $p = 0.001 <$

$\alpha=0.05$ , it can be concluded that walking aids are very effective in reducing the risk of falls in the elderly at the Tresna Wredha Social Home 'INA'I Sahati Tondano.

**Table 4. Distribution of the Effectiveness of Using Walking Aids on the Risk of Falls in the Elderly at the Tresna Wredha Social Home 'INA'I Sahati Tondano in 2023**

		Fall Risk		Total	$\rho$ - value
		High	Low		
Walking Aids	Not good	<i>Count</i>	7	4	11
		% of Total	63.6%	36.4%	100%
	Good	<i>Count</i>	1	20	21
		% of Total	4.8%	95.2%	100%
<b>Total</b>		<i>Count</i>	8	24	32
		% of Total	25.0%	75.0%	100%

## DISCUSSION

Based on the results of statistical tests, it shows that respondents who used assistive devices poorly and had a high risk of falling numbered 7 respondents (63.6%) while respondents who used assistive devices poorly and had a low risk of falling numbered 4 respondents (36,4% ). Based on this data, there were 7 respondents who used poor and unsafe tools (for example: tables and chairs) so there was a high risk of falling. Apart from that, it could also be caused by the physical factors of the respondents along with environmental factors, because there are several respondents who are currently undergoing treatment for chronic illnesses, and there are also respondents who are currently recovering from surgery, coupled with the environmental conditions in which they live,

Using tools for a long period of time also has the potential to cause falls in the elderly (Centers for Disease Control and Prevention, 2018). Meanwhile, 1 respondent (4.8%) had good use of assistive equipment but had a high risk of falling, this was due to environmental factors around where they lived and the physical condition of the respondent. Meanwhile, 20 respondents (95,2%) of the total 32 respondents had good use of assistive devices and a low risk of falling. This is because respondents use assistive devices that are safe and comply with standards such as wheelchairs and walkers with the equipment in good condition and well maintained.

### Use of Walking Aids

Using a walking aids for a long period of time can affect balance and can cause falls (Safe Saskatchewan and the Seniors' Falls Provincial Steering Committee, 2010). The size, type and way of using walking aids such as walkers, canes, wheelchairs and crutches contribute to falls (Centers for Disease Control and Prevention, 2018). To ensure that elderly people remain active and safe in carrying out all activities both indoors and outdoors, it is recommended that they use assistive devices such as glasses, canes, wheelchairs and other walking aids. However, there are things that need to be considered when using assistive devices, namely, check the assistive devices (canes, wheelchairs, or other assistive devices) so that they remain safe and comfortable when using them and ensure that the assistive devices are used according to needs.

### Relationship between the use of walking aids and the risk of falls

Falls often occur or are experienced by the elderly. Many factors play a role in this, both intrinsic factors in the elderly such as gait disorders, lower extremity muscle weakness,

joint stiffness, syncope, dizziness, as well as extrinsic factors such as slippery and uneven floors, tripping over objects, poor vision due to insufficient light. bright, and so on (Idris and Kurnia 2017).

Based on the results of the chi-square test  $p = 0.001 < \alpha = 0.05$ , it can be concluded that there is a significant relationship between the use of walking aids and the risk of falls in the elderly at PSTW 'INA' I Sahati Tondano. This is because assistive devices are very important to support the mobility and activities of elderly people who have experienced declining muscle and joint function, not to mention health problems that cause their physical condition to decline further and require treatment in hospital. The use of good assistive devices plays an important role and is the main support for elderly people to move so that walking aids that are good, safe, well maintained, not damaged, not slippery, not rusty or that meet standards are an important factor so that this does not happen. The risk of falls is greater in the elderly.

This is in line with research from Anggraini (2016) entitled factors related to the incidence of falls in the elderly in the Andalas Health Center Working Area which states that there is a relationship between walking aids and the risk of falls in the elderly.

The results of research from Dwi (2017) regarding the analysis of factors related to the risk of falls in elderly people who live at home in the Lima puluh Riau Health Center Work Area. The research results showed that 33 respondents (34.4%) used walking aids. The results of statistical tests show that there is a relationship between walking aids and the risk of falls in the elderly ( $p$  value = 0.000).

Research Results from (Riyadi and Wiyati 2021) about factors associated with falls in the elderly. The results of the study show that there is a relationship between falls and aspects of walking aids in the elderly.

## CONCLUSION

There is a significant relationship between the use of waking aids and the risk of falls in the elderly. Walking aids are effective in reducing the risk of falls in elderly people living at Tresna Wredha Social Home 'INA' I Sahati Tondano.

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## REFERENCES

- Boye, N. D., Lieshout, E. M., Beeck, E. F., Hartholt, K. A., Cammen, T. J., & Patka, P. (2012). The impact of falls in the elderly. *Journal of Trauma*, 29-35.
- Darowski, A. (2008). *Fall : the facts*. New York: Oxford University Press INC.
- Dadi, Fany, 2019. Hubungan Bahaya Lingkungan dengan Risiko Jatuh pada Lanjut Usia di BPLU Senja CERAH Manado. *JPPNI Vol 03/No.03*. Poltekkes Kemenkes Manado.
- Idris, Esi Natalia Trijayanti, and Erlin Kurnia. 2017. "Factors of Walking Aids with the Risk of Falls in the Elderly at Posyandu for the Elderly RW 04 Ward, Kediri City." *STIKES Journal* 10(2):139-47.
- Katia, Nur Sholihatul Umah. 2018. Pengaruh Latihan Jalan Tandem terhadap keseimbangan untuk mengurangi resiko jatuh lansia di PTSW Kabupaten Ponorogo. (Skripsi), Ponorogo (ID), STIKES Bakti Husada Mulia Madiun.

- I Wayan Sudiartawan, Ni Luh Putu Eva Yanti, A.A. Ngurah Taruma Wijaya. 2017. Analisis Faktor Risiko Penyebab Jatuh pada Lanjut Usia. *Jurnal Ners Widya Husada* Volume 4 No 3, Hal 95 - 102. Program Studi S1 Ilmu Keperawatan, Sekolah Tinggi Ilmu Keperawatan (STIKES) Widya Husada Semarang.
- Palestine, Bondan, Siti Nur Kholifah, and , Yessy Dessy Arna. 2022. "The Determinants of Active Aging for Improving Elderly Abilities." *Asian Journal of Pharmaceutical Research and Development* 10(6):14–17. doi: 10.22270/ajprd.v10i6.1203.
- Purnama Sari, Ita, Sanny Frisca, Lilik Pranata, Faculty of Health Sciences, and Musi Charitas Catholic University Palembang. 2019. "Overview of Fall Risk in the Elderly in Elderly Social Care Institutions." *Pharmaceutical Service Scientific Journal* (2):1–6.
- Riyadi, Sugeng, and Ruti Wiyati. 2021. "Factors Associated with Falls in the Elderly." *Mersi Nursing Journal* Vol X Number 1:19–24.
- Rudi, Abil. 2019. Analisis Faktor yang Mempengaruhi Risiko Jatuh Pada Lansia. *Jurnal Ilmiah Ilmu Kesehatan* Vol. 5 No. 2. STIKES Kapuas Raya, Sintang Indonesia.
- Rohaedi. 2016. "Level Of Independence Of The Elderly In Daily Living Activities At The Tresna Werdha Senja Rawi Social Home." *Indonesian Journal of Nursing Education* 2(1):16–21.
- Sholekah, Lia Aryanti, Edy Soesanto, and Siti Aisah. 2022. "The Relationship between Physiological Factors in the Elderly and the Risk of Falls in Wangil Hamlet, Sambonganyar Village, Blora Regency." *Primary Scholar's Journal of Nursing and Public Health* 11(2):174. doi: 10.31596/jcu.v11i2.1116.
- Tumiwa, Finni Fitria, Angelia Pondaa, and Rivolta Alfiko Musak. 2023. "The Effect of Diabetic Foot Exercises on Changes in Blood Sugar Levels in Elderly People with Type II DM at PSTW 'Ina' I Sahati Tondano." *Tambusai Health Journal* 4(2):452–58.
- Widowati, Daruning Tyas, Susiana Nugraha, and Asyifa Robiatul Adawiyah. 2022. "The Relationship between Home Environmental Risk Factors and Falls in the Elderly in Bandung City in 2022." *Journal for Healthy Communities (JUKMAS)* 6(2):168–76. doi: 10.52643/jukmas.v6i2.2472.
- Yaslina, Maidaliza, and Rada Srimutia. 2021. "Physical and Psychosocial Aspects of Functional Status in the Elderly." *Pioneer Health Seminar Proceedings* 4(2):68–73.