

Fall risk screening for the elderly in RW 07 Notoprajan Village, Yogyakarta City

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Abstract

Falls in the elderly can cause serious injury and disability. Early detection through screening is needed, but in RW 07 Notoprajan Village Yogyakarta, there has never been a fall risk assessment. The purpose of this service is to find out the risk of falling in the elderly through the screening method. The method of this service is Community Participatory Screening of Fall Risk in the Elderly. The instrument used is the Time Up and Go Test (TUGT). Of the 38 respondents, the majority were pre-elderly (73.7%) and female (68.4%). The TUGT results showed that most of the elderly were in the low fall risk category (92.1%) with an average time of 12.37 seconds, while 5.3% included moderate risk, and 2.6% high risk. The conclusion in this research is that the majority of elderly in RW 07 Notoprajan have good mobility with a low risk of falling, but groups with moderate and high risk still need special attention. Prevention efforts through education, physical activity, and environmental improvements are important to minimize the risk of falls.

Keywords: elderly; fall risk; TUGT

1. Introduction

The term used to refer to individuals who have entered the aging stage is elderly (elderly). The Ministry of Health categorizes the elderly into three categories including Pre- Elderly (Pre-LU) which are individuals aged between 60 to 69 years, the Elderly (LU) are those aged 70 to 79 years and the Late Elderly (LUA) are individuals who have reached the age of 80 years and above (Kementerian Kesehatan Republik Indonesia, 2023). Along with the aging process, the elderly experience an increased risk of various diseases, decreased body function, and impaired balance. These conditions contribute to the increased risk of falls in the elderly (Siti & Irfan, 2025).

Fall risk is a condition when a person is suddenly in a sitting or lying position on the ground or floor, either consciously or unconsciously. In the elderly, falls are a common problem (Muawanah, Ismaningsih, Samosir, & Valzon, 2024). It is estimated that about a third of the elderly experience falls each year, and almost half of them experience repeated falls. Various factors can increase the risk of falls in the elderly, including sociodemographic factors such as age, gender, and socioeconomic status, as well as physiological factors including the neuromuscular and musculoskeletal systems (Putri, Luthfa, & Aspihan, 2025).

The prevalence of falls in the elderly worldwide reaches 26.5%. This figure indicates that about one in four elderly people experience a fall in a year. When viewed by region, Oceania has the highest prevalence at 34.4% followed by the Americas at 27.9% (Salari, Darvishi, Ahmadipannah, Shohaimi, & Mohammadi, 2022). The rate of falls increases with age leading to high morbidity and mortality. Falls are the second leading cause of death in the world, with 60% of them occurring in Southeast Asia (Geetha, Sakthivadivel, & Gaur, 2021). In Indonesia, approximately 22% of the population aged over 55 years experience injuries, and 65% of these cases are caused by falls. Data from the Indonesian Ministry of Health shows that the prevalence of injuries due to falls in the age group above 55 years reached 49.4%, while in the age group above 65 years it increased to 67.1%. In addition, the incidence of falls in the elderly living in the community increases with age, which is around 25% at the age of 70 years and reaches 35% after the age of more than 75 years (Fadilah et al., 2024). According to 2018

data from the Health Office in Yogyakarta, the prevalence of injuries was recorded at 12.4%, with 41.0% of them caused by falls. Falls were the main cause of injury (40.9%), especially in the elderly with the highest distribution in age (70%), non- working status (34.4%), and self-employment (21.5%). The most reported falls occurred at home (36.5%). When examined by age group, the prevalence of injury was 7.1% in 45-54 years old, 7.7% in 55-64 years old, respectively. years, 8.1% at age 66-74 years, and increased to 9.2% at age ≥ 75 years (Siti & Irfan, 2025).

In the aging process, the elderly will experience a decrease in physical abilities that have an impact on daily activities. Not only physical, but biological functions also decline, including sensory, neurological, and motor systems. This condition causes a delay in the body's response to maintaining balance, increasing the risk of mobility instability and falls. Falls in the elderly are part of the aging process and a decline in body function that can be one of the leading causes of death (Puspitosari & Nurhidayah, 2025).

The risk of falls in the elderly is influenced by various factors, especially in those with a history of previous falls. Falls are closely related to the body's ability to maintain balance (Dwisetyo, Dareda, & Sabentar, 2024). The process of maintaining balance is a complex mechanism as it requires a quick and precise response involving various systems, including the musculoskeletal, central nervous and sensory systems. However, the exact mechanism of falls due to balance disorders in the elderly is still not fully understood by researchers to date. Risk factors for falls are generally divided into two, namely intrinsic and extrinsic factors. Intrinsic factors stem from conditions within the individual, such as advanced age and medical problems, while extrinsic factors relate to the environment, such as inadequate lighting, slippery floors, or the use of footwear that potentially increases the risk of tripping (Setiawati, Eldrian, Rosmalini, & Arif Ilham, 2025).

The background of community service regarding the risk of falls in the elderly in the RW 07 area of Notoprajan Village, Yogyakarta City is based on data showing that the prevalence of falls in the elderly in Indonesia is quite high, reaching 49.4% in the age group over 55 years, and this figure increases to 67.1% at the age of over 65 years, age above 55 years, and this figure increases to 67.1% at the age of over 65 years. In Yogyakarta alone, the prevalence of injuries was recorded at 12.4% with the biggest cause being falls (41.0%). Although the incidence of falls is quite high, until now an examination of the risk of falls in the elderly in the RW 07 area of Notoprajan Village, Yogyakarta City, has never been carried out. This is important as falls can be triggered by intrinsic factors, such as age. Without fall risk screening, the potential for injury and further impact on the elderly cannot be optimally anticipated.

2. Method

This service uses the Community Participatory Fall Risk Screening Method for the Elderly. The activity was carried out in RW 07 Notoprajan Village, Yogyakarta City, involving the elderly as the main participants and support from RW administrators and local health cadres. The Timed Up and Go Test (TUGT) screening was conducted individually and alternately on elderly people over the age of 60. Before the examination began, we explained the procedure and purpose of the examination to each participant. The initial position of the participant was to sit upright with their back against the chair and both arms on the armrests, wearing their usual everyday footwear. After the “start” signal is given, the elderly person stands up from the chair, using their hands for support if necessary, then walks straight ahead for three meters, turns around, returns to the chair, and sits down with their back against the backrest. The time is recorded from the moment the signal is given until the participant is seated properly in the chair.

Table 1. Interpretation of Time Up and Go Test (TUGT) Scores

Values	Interpretation
< 20 seconds	Good mobility (can travel independently / low risk of falling)
21 – 30 seconds	Less mobility (traveling with assistive devices / moderate risk of falling)
31 – 40 seconds	Very poor mobility (high fall risk)

3. Results and Discussion

3.1. Results

Table 2. Data of Elderly Respondents in RW 7 Notoprajan

No	Variable	Frequency	Percentage
1	Age		
	Pre-Advanced	28	73,7
	Age Late	8	21,1
	Advanced Age	2	5,3
2	Gender		
	Female	26	68,4
	Male	12	31,6
3	Fall Risk		
	Low	35	92,1
	Medium	2	5,3
	High	1	2,6

In table 2, there are 38 elderly people in RW 07 Notoprajan. In terms of age, most of the respondents fall into the pre-elderly category (60-69 years), as many as 28 people (73.7%). Furthermore, the elderly category (70-79 years old) recorded 8 people (21.1%), while the elderly category (70-79 years old) recorded 8 people (21.1%). (21.1%), while the late elderly category (>80 years) was only 2 people (5.3%). This shows that the majority of respondents are in the pre-elderly age range with an average age of 64.46 years. Based on gender, there were more female respondents, namely 26 people (68.4%), while men amounted to 12 people (31.6%).

In table 2, the results of the fall risk examination using the Time Up and Go Test (TUGT) show that most of the elderly are in the low fall risk category, as many as 35 people (92.1%) with an average time of 12.37 seconds. Meanwhile, there were 2 people (5.3%) who were in the medium risk category, and only 1 person (2.6%) was in the high risk category.

3.2. Discussion

The results of the community service in RW 07, Notoprajan Village, show that of the 38 respondents who participated in the screening, the majority were in the pre-elderly age group (60–69 years) at 73.7%, followed by the elderly group (70–79 years) at 21.1%, and the late elderly (>80 years) at 5.2%. These findings illustrate that the number of elderly people at the community level is quite significant, with the majority being in the early stages of old age and potentially experiencing a decline in mobility. This condition is in line with demographic trends in the city of Yogyakarta, which has a fairly high prevalence of elderly people. Based on data from the Yogyakarta City Government as of December 2024, the number of elderly people was recorded at 64,267 out of a total population of 415,605, or around 15.46% of the total population. This means that almost one in seven residents of Yogyakarta is classified as elderly. This increase in the number of elderly people underscores the importance of fall risk screening efforts among the elderly, both at the community and city levels, to prevent health issues that could reduce quality of life (Pemerintah Kota Daerah Istimewa Yogyakarta, 2025).

The community service program in RW 07, Notoprajan Village, showed that most respondents were women (68.4%), while only 31.6% were men. This finding is in line with the literature which states that gender is one of the factors that influence the risk of falls in the elderly. Hormonal and physiological differences due to the aging process in men and women are one of the factors that differentiate the incidence of falls. In women, the menopause phase contributes to a decline in physical condition, thereby increasing the risk of falls. Estrogen deficiency during menopause can decrease osteoclastogenesis and accelerate bone loss. This condition affects posture and reduces stability, which ultimately increases susceptibility to falls. Conversely, in men, andropause occurs more gradually and tends not to have a significant physical impact, so its effect on the risk of falls is relatively smaller than in women (Novianti & Naufal, 2023).

The Time Up and Go Test (TUGT) is a simple yet effective instrument for assessing the functional ability of the elderly, especially regarding balance and mobility. In this activity, TUGT was used as an initial screening method to identify decreased mobility function and fall risk in the elderly group (Siti

& Irfan, 2025). The procedure was conducted in a standardized manner, where participants were asked to sit in a chair, then stand up, walk three meters, turn around, return to the chair, and sit back down (Magfiroh, 2025). Travel time was recorded as an indicator of mobility. Results <20 seconds indicate good functional mobility, whereas >20 seconds indicates a higher risk of falling (Ikatan Fisioterapi Indonesia, 2025).



Figure 1. Time Up and Go Test Fall Risk Screening

The Time Up and Go Test (TUGT) examination showed that most respondents were in the low fall risk category (92.1%) with an average travel time of 12.37 seconds. Only a small proportion of elderly people are in the medium (5.3%) and high (2.6%) risk categories. This study shows that in general, the elderly in RW 07 Notoprajan still have good mobility skills. However, the elderly with moderate and high risk still need attention, because falls can cause serious impacts such as injury, disability, and increase morbidity and mortality rates. Previous research reported that as many as 11.2% of falls in the elderly and pre-elderly led to physical disability. The most common forms of disability include permanent scars (7.6% in pre-elderly and 10.2% in elderly), impaired sensory function (0.8% in pre-elderly and 2.1% in elderly), and partial limb loss (0.4% in pre-elderly and 1.2% in elderly). These findings reinforce that although the proportion of elderly with moderate and high fall risk is relatively small, the impact can be very serious (Gizela, Almira, & Pratiwi, 2024).

The risk of falls in the elderly is a complex health problem because it is influenced by various intrinsic and extrinsic factors. Intrinsic factors include decreased physiological functions such as muscle weakness, impaired balance, visual impairment, and the presence of comorbidities such as hypertension, diabetes mellitus, or arthritis (Gusma, Adityasiwi, Kristina, & Khenda, 2025). Meanwhile, extrinsic factors are generally related to environmental conditions, such as poor home lighting, slippery floors, the use of inappropriate footwear, or the layout of home furniture that has the potential to hinder the movement of the elderly. The combination of these two factors can increase the likelihood of falls even in elderly people with relatively good mobility (Anenengo, Djamaluddin, & Liputo, 2025).

The results of the service in RW 07 Notoprajan Village showed that the majority of elderly people were in the low fall risk category based on the Time Up and Go Test (TUGT) examination. This finding indicates that most of the elderly in the area still have good functional mobility. However, this condition cannot be ignored because the risk of falling can increase if the elderly experience a decrease in physical activity as they age. This is in line with other studies which found that elderly with low physical activity levels have a higher risk of falling in the elderly who are over 70 years old and no longer working tend to spend time with light activities at home, such as sitting or lying down, and rarely do household chores. Physical conditions shown include hunched posture, slow walking, fatigue, aches, and most have a history of falling in the past year with a proportion of mobility impairment reaching 31.6% (Agustiningrum, Winarti, Setianingsih, Suyami, & Khusnawati, 2023). Fall risk screening through TUGT can be an effective initial instrument in detecting elderly groups who need further intervention. The results of the study in RW 07 Notoprajan illustrate that although the majority of the elderly have

good mobility, a comprehensive prevention strategy is still needed to minimize the risk of falls in the more vulnerable elderly.

4. Conclusion

Screening results using the Time Up and Go Test (TUGT) in the elderly in RW 07 Notoprajan Village showed that most respondents were in the low fall risk category (92.1%) with an average travel time of 12.37 seconds. Only a small proportion of respondents were in the medium (5.3%) and high (2.6%) risk categories. This indicates that the majority of elderly people in the area still have good functional mobility. Nevertheless, the presence of moderate and high risk elderly still requires serious attention because falls can cause injury, disability, and increase morbidity and mortality rates. Intrinsic factors such as declining physical function and health, as well as extrinsic factors such as environmental conditions, still have the potential to increase the risk of falls in the future. Therefore, ongoing prevention efforts are needed, including education, increasing appropriate physical activity, and modifying the home environment to support the safety and mobility of the elderly.

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