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Literature Review: Factors Related to the Risk of Falls In the Elderly

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ABSTRACT
Falling is one of the most common physical problems that can cause morbidity and mortality in the elderly. There are various risk factors for falling, including age. In Indonesia, a person is considered elderly if they are more than or equal to 60 years old. Falls often occur in the elderly and can have an impact that affects the quality of life of the elderly concerned, the most common complication is fracture. Fracture is defined as a condition where there is continuity in the bone. This fracture can affect the daily activities of the elderly concerned and can cause dependency. It is estimated that the number of elderly people in Indonesia will continue to increase by around 450,000 people per year. Thus, in 2025 it is estimated that the number of elderly people will reach 34.22 million. Decreased body function in the elderly will result in impaired movement and function in the elderly. Decreased muscle strength due to the aging process will affect the functional abilities of the elderly, especially the ability in terms of mobility such as decreased walking speed, decreased body balance and increased risk of falling. This underlies that when a person's functional ability decreases, it can increase the risk of falling in that person.

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INTRODUCTION

Elderly people generally experience changes in physical and psychological conditions, some of these changes can be seen from the appearance of the skin, face, changes in body organs, sensory systems, nervous systems, and cognitive. These changes will ultimately affect daily life activities. One of the physical problems that often causes morbidity and mortality in the elderly is falling (Fakolade, O. A & Atanda, 2015) .

According to World Health Organization (WHO) in 2014, the proportion of elderly people over 60 years in the world in 2000-2025 will double from 605 million people (11%) to 2 billion people (22%). According to (WHO) in the Southeast Asia region itself the elderly population is 8% or around 142 million people. In 2050, the elderly population is estimated to increase 3 times from 2020. In 2000 the number of elderly people was around 5,300,000 (7.4%) of the total population, while in 2010 the number of elderly people was 24,000,000 (9.77%) of the total population and in 2020 the number of elderly people is estimated to reach 28,800,000 (11.34%) of the total population. While in Indonesia itself in 2020 the number of elderly people is estimated to be around 80,000,000. (Ministry of Health of the Republic of Indonesia, 2020). (Planned, 2021)

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A fall is an unconscious event where a person falls from a higher place to a lower place which can be caused by loss of consciousness, stroke, or excessive force. Based on a community survey in Japan, it was found that around 30% of elderly people aged >75 years experience falls every year. Half of these figures experience repeated falls. The incident of falls in Indonesia was recorded from 115 residents of the shelter, 30 elderly people or around 43.47% experienced falls. (Deniro et al., 2017) A fall is defined as a change in position from standing to lying or sitting which may be accompanied by injury. (Rauwelio et al., 2021)

The results of the Population Census in 2010 showed that the number of elderly people in Indonesia was 18.57 million people, and increased by 7.93% from 2000 which was 14.44 million people. It is estimated that the number of elderly people in Indonesia will continue to increase by around 450,000 people per year. Thus, in 2025 it is estimated that the number of elderly people will reach 34.22 million. (Paramitha & Purnawati, 2017)

Incident fall in the elderly more often occurred at the facility maintenance term long compared to with those living in the community. The incidence rate falls in the elderly in society estimated around 20%-40% per year, while elderly living in facilities maintenance term long own level two more incidents high. This is caused by increasing risk complications Serious consequence fall. Most of incident fall in facility maintenance term long happened in the room or resident 's bathroom, with percentage 41% at the moment make transfers and 36% when walking. Elderly man tend experience incident fall more often and results in more injuries Serious compared to with elderly women. (Julianti et al., 2021)

Risk factors falls in elderly living in facilities maintenance term long more tall compared to with elderly healthy living in society. Some factor risks involved among others the existence of comorbidity more medical many, disturbances sleep, and higher levels of delirium high. The height number incident fall This require existence more effort Serious in prevention and treatment fall in facility maintenance term long. Implementing effective prevention strategies is essential. For reduce risk fall and impact the worst that could happen caused, such as injury serious, decline quality live, and improvement cost maintenance (Yuliyanti et al., 2024) . Elderly safety has an impact on quality of life, social and economic activities in the form of active participation in society, and reducing the burden of dependency costs for families, communities, and the government. (Deniro et al., 2017)

RESEARCH METHODS

This research uses *literature method review* to identify and analyze various factors related to the risk of falls in the elderly. This approach was chosen because it is able to provide a comprehensive picture based on the results of previous studies, without having to collect primary data. The focus of this study is to trace the results of previous relevant studies, both nationally and internationally, related to the causes and risk factors for falls in the elderly age group.

Data sources in literature This review was obtained from various scientific databases such as Google Scholar, PubMed, and ScienceDirect. The articles reviewed were publications within the last ten years (2014–2024) to ensure the recency of the data and the relevance of the context. The inclusion criteria used included articles in Indonesian and English, having full

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access (*full text*), and directly discusses the risk factors for falls in the elderly from physical, environmental, psychological, and social aspects (Shalahuddin et al., 2022) .

The literature search process was carried out using keywords such as "risk of falls in the elderly", " fall risk in elderly ", "factors causing falls", and "prevention of falls in the elderly". After going through an initial selection process based on the title and abstract, relevant articles were further reviewed to identify their content, methods used, and the results and conclusions obtained. Each article was critically analyzed to explore key findings and to see consistent patterns and differences between studies (Rauwelio et al., 2021) .

Data collected from selected articles were then categorized based on the type of risk factors, such as balance disorders, muscle weakness, medication use, visual impairment, environmental conditions, and cognitive and emotional status of the elderly. The results of this analysis were systematically arranged to provide a comprehensive understanding of the main factors contributing to the risk of falls in the elderly, as well as providing a scientific basis for more targeted prevention and intervention efforts.

RESULTS AND DISCUSSION

Fall Risk Assessment in Hospitals

The purpose of fall risk assessment in the elderly is to identify patients at risk of falling and implement strategies to prevent falls. Tools used include: Morse Fall Scale, Hendrich II Fall Risk Model and STRATIFY (St. Thomas Risk Assessment Tool in Falling Elderly Inpatients). The main components of fall risk assessment are:

1. Initial Screening: Perform a thorough evaluation of the patient's medical history, including previous falls, medication use, and mobility issues.
2. Physical Assessment: Evaluates strength, balance, and gait through specific tests such as the Timed Up - and -Go test and 30-Second Chair Stand Test
3. Environmental Assessment: Identifying potential hazards in the patient's environment, such as clutter, poor lighting, and slippery floors.

The requirements for hospitals are:

1. Routine Assessment: Conduct routine falls risk assessments for all patients, especially those over 65 years of age or with known risk factors.
2. Staff Training: Ensure that healthcare staff are trained in falls prevention strategies and familiar with assessment tools.
3. Patient Education: Providing information to patients and their families about fall risks and prevention strategies.
4. Intervention Strategy: Develop a customized treatment plan that may include:
    a. Physical therapy to improve strength and balance
    b. Physical therapy to improve strength and balance
    c. Environmental modifications to improve safety

Fall risk prevention measures:

1. Use of Assistive Devices: Provide a walker, cane, or other mobility aid as needed.
2. Monitoring: Increased monitoring for high-risk patients, especially during activities such as getting out of bed or using the toilet.

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3. Safety Protocols: Establish a protocol for responding to falls, including immediate assessment and treatment for injuries sustained.

The next step is documentation and follow-up with recording to maintain detailed records of assessments, interventions, and outcomes to track effectiveness and improve future practice. Once recorded, make continued improvements by routinely reviewing and updating fall prevention policies based on the latest evidence and feedback from staff and patients. In conclusion, Effective fall risk assessment and management in hospitals is critical to improving patient safety and reducing fall-related injuries. By adhering to established protocols and continually improving practices, healthcare facilities can significantly reduce the risk associated with falls among patients. [18]

Factors Associated with the Risk of Falls

Elderly people are individuals who are included in the vulnerable group because they experience cell degeneration, resulting in decreased ability in the musculoskeletal system. This condition causes decreased physical activity ability which is associated with risk factors for falls in the elderly. (Agustiningrum et al., 2023) Other groupings of factors that influence falls in the elderly are internal factors, from the elderly themselves, and external factors, from outside the elderly themselves. Several previous studies have identified risk factors for falls in hospitals such as impaired balance, mobility, history of previous falls, increasing age, cognitive impairment, depression, dizziness or vertigo, orthostatic hypotension, visual disturbances and use of drugs such as benzodiazepines, antipsychotics, and sedatives. (Vera, 2021) (Yuliyanti et al., 2024)

Risk factors for falls in the elderly can be classified into intrinsic factors and extrinsic factors :

1. Intrinsic Factors

   Intrinsic factors are things that come from within the elderly, such as age, gender, ethnicity, body posture, and various body functions. Intrinsic factors that can cause falls in the elderly can be categorized into two, namely:

   a. Physique

      The risk of falls in the elderly increases with age, female gender, Caucasian ethnicity, menopausal status, height (too tall), weight (low), having cognitive impairment, muscle and bone disorders, chronic arthritis, balance disorders, gait, sensory disorders, low blood pressure, history of previous falls, and use of drugs such as benzodiazepines, sedative-hypnotic drugs, antidepressants, anti - hypertensives, anti- arrhythmics, diuretics and anti- seizures. Other physical factors that are the risk of falls in the elderly are nutritional factors that result in decreased balance function or weakness. Elderly people with low dietary intake of calcium and vitamin D, phosphorus, protein, and iron are more at risk of falling. In addition, nervous system injuries, visual impairment, hearing impairment. The level of daily physical activity is also one of the causes of falls in the elderly. Elderly people who are less independent in their daily activities will have a greater risk of falling later in life (Okamura, et al. al., 2009). A weak body condition can also be a relevant predictor of falls; the weaker a person is, the lower their mobility can lead to falls,

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even to the point of being at low risk of falling if they stop moving.

b. Psychological
Psychological disorders (depression), as well as sleep disorders can also affect the incidence of falls in the elderly. In addition, the occurrence of disorders or decline in mental health status is also a risk factor for falls in the elderly. Other psychological disorders such as fear of falling are also risk factors for falls. According to Todd and Skelton (2004), more than 70% of elderly people who fall admit to having a fear of falling before. Reduced physical and functional activity is associated with fear and anxiety about falling. More than 50% of elderly people who are afraid of falling limit their social and physical activities because of this anxiety. (Almeida et al., 2016)

2. F extrinsic actor
The extrinsic factors referred to are environmental factors such as facilities, sedentary lifestyle, malnutrition, uneven and slippery floors, poor lighting, no handrails, and inappropriate footwear. Extrinsic factors are also related to the condition of stairs without railings, high enough chairs, tables, beds, and inappropriate walking aids. Toilet conditions that are too low and the bathroom surface is sloping, slippery and there is no anti-slip on the floor, and bathroom walls do not have handles are also considered as risks for falling at home.

The influence of these extrinsic factors is smaller when compared to intrinsic factors (such as chronic pain).

a. Environmental Conditions
The environment is a factor that can affect the balance of the elderly and can increase the risk of falls. Minor hazards in the environment that are easily overcome by healthy individuals can be a major challenge for the elderly who have decreased mobility and balance, thus endangering their safety. Falls in the elderly are more common in the bathroom and bedroom. Falls also often occur especially when the elderly go down the stairs. Unsafe environments that can increase the risk of falls in the elderly include cracked floors, narrow roads, and poor lighting.

b. Equipment for Daily Activities
To support daily activities, the equipment used should be ensured to be in accordance with the posture of the elderly and in good condition. Unsafe equipment, for example, slippery sandals, slanted chair legs, chair height that does not match the height of the elderly's legs, and weak armrests on the chair. For bedroom equipment, the bed is also important to pay attention to. A bed that is too high, sheets that are hanging on the floor, placement of items or furniture that are difficult to reach, and the narrow area of the room to walk are some of the risk factors for falls in the elderly.

c. Family Factors
Health education for elderly families is one of the external factors that can reduce the risk of falls in the elderly. Families should often pay attention to the elderly at home because in addition to physical needs, psychological and social needs are also very much needed by the elderly; observing walking ability and balance, and helping body stability.

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Based on the results of studies from various literatures, it can be concluded that the risk of falling in the elderly is influenced by a combination of various factors, both internal and external. Internal factors include decreased physical function such as muscle weakness, impaired balance, decreased vision, and the use of certain drugs. Meanwhile, external factors such as unsafe environmental conditions, poor lighting, and slippery floors also have a major contribution to the increased risk of falling. In addition, psychological aspects such as fear of falling and decreased cognitive conditions also worsen the condition of the elderly and increase vulnerability to accidents.

These findings demonstrate the importance of a holistic approach to preventing falls in older adults. Effective interventions should not only focus on physical improvement, but also consider the living environment, social support, and medication monitoring. Literature review This review is expected to be a basis for health workers, families, and policy makers in designing comprehensive and sustainable fall prevention programs, in order to improve the quality of life and safety of the elderly in various environments.

CONCLUSION

Risk fall in the elderly influenced by several aspect main that is condition physical, environmental, use medicines, as well as factor psychological. Weaknesses muscle, disorders balance, disturbance vision, as well as disease chronic such as diabetes and hypertension is factor dominant physical. In addition, the environment is not safe like poor lighting, surface slippery floors, and lack of tool help also participate enlarge risk fall. Psychological factors like disturbance cognitive, depression, and fear Excessive falls can also occur influence balance and improve risk incident fall. Prevention fall in the elderly need a holistic approach with consider all over factor existing risks. Efforts that can be done covering exercise physique For increase strength muscles and balance, adjustment environment to be more safe, educational about safe behavior for elderly, and review use drugs that can influence balance. Support from family, energy health, and parties related is very necessary For create a supportive and safe environment for elderly. With implementing appropriate prevention strategies, risks falls and possible complications happen can minimized, so that quality life elderly can awake with Good.

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