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Prevalence of Falling Amongst Elderly: A Health Initiative by Hopeapuisto Oy in Ulvila

DEGREE PROGRAMME IN NURSING

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ABSTRACT

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Falls among the elderly have become a significant public health concern due to the prevalence and the severe consequences for physical health, psychological well-being, and overall quality of life of elderly people experiencing them. The falling phenomenon was explored in this project, categorizing fall types, identifying main risk factors, assessing the tools for fall risk evaluation, and examining the consequences and prevention of falls.

The study was grounded in the rationale that the understanding of the reasons, circumstances, and occurrences of falls through specific assessment methods can substantially reduce their likelihood. As a result, this project involved the development and deployment of an educational manual to improve the knowledge of a targeted group of people on the prevention and management of falls amongst elderly people of Hopeapuisto Oy in Ulvila.

The waterfall model, which is a project management approach that promotes linear and sequential organization of tasks for proper documentation, was employed for this project. The model was used in designing, implementing, and evaluating a capacity building intervention for the staff members of Hopeapuisto Oy in Ulvila, with the ultimate goal of enhancing fall prevention strategies within the facility. Through this project, actionable insights and guidelines to mitigate the risks of falls among elderly individuals was shared with caregivers and professionals at the facility.

Throughout the lifecycle of this project, strict evaluation measure was deployed at every stage to ensure that each stage of the project contributed to the achievement of the set objectives and was ethically inclined. The project activities are grouped into five stages,

including the planning, designing, implementation, verification, and maintenance, with each having specific performance metric.

In conclusion, this project generally emphasized the important role of proactive fall prevention measures in fostering safer living environments and improving the well-being of elderly people at Hopeapuisto Oy in Ulvila. Taking cues from the risk factor analysis and the strategic recommendations, this project accentuated the great potential of improving the profession of geriatric care and consequently the quality of life of the elderly, especially in Hopeapuisto Oy.

Keywords: Falls, falls among elderly, public health, quality of life of elderly, educational manual, Hopeapuisto Oy, fall prevention strategies

CONTENTS

LIST OF ABBREVIATIONS

BBS- Berg Balance Scale

COPD- Chronic Obstructive Pulmonary Disease

COVID- Corona Virus Disease

FRAT- Fall Risk Assessment Tools

PKV- Privatkrankenversicherung

TENK- Tutkimuseettinen neuvottelukunta (Finnish National Board on Research Integrity)

TUG- Timed Up and Go test

WHO- World Health Organisation

1. INTRODUCTION

Falls in the elderly population are a significant public health concern worldwide, especially in settings like nursing homes. This is a major issue in Finland, as the elderly population is growing quickly. Statistics Finland predicts that by 2030, around 30% of the Finnish population will be 65 years old or above. This changing population underlines the importance of studying and tackling the high occurrence of falls in nursing homes to create successful prevention methods (Statistics Finland, 2024).

Falls can lead to serious outcomes for older individuals, such as broken bones, brain injuries, and higher death rates. In Finland, elderly adults are frequently hospitalized and die due to injuries caused by falls (THL, 2022). The common physical and cognitive impairments in elderly individuals, along with medication use and environmental hazards, contribute to the high rate of falls in elderly care facilities (Vaishya & Vaish, 2020).

Recent research shows a concerning frequency of falls in elderly care facilities in Finland. For instance, Palvanen et al. (2021) discovered that close to 60% of individuals living in nursing homes in Finland have one fall per year, and a majority of these falls lead to severe injuries. This percentage is much greater in comparison to older people who live on their own, highlighting the specific dangers in residential caregiving environments (Palvanen et al., 2021).

The problem of falls in elderly care facilities includes a variety of risk factors classified as either intrinsic or extrinsic factors. Age-related changes such as decreased muscle strength, impaired vision, and chronic conditions like osteoporosis and arthritis are considered intrinsic factors (Gale, Cooper, & Aihie Sayer, 2016). Dementia, as well as other cognitive impairments, result in a higher risk of falls because of impaired judgment and disorientation (Allan et al., 2009). External factors include dangers in healthcare facilities, like poor lighting, slick surfaces, and misuse of mobility assistance devices. (Cameron et al., 2018).

Technological progress is being more and more used to improve methods of preventing falls. Wearable devices and sensors that track residents' movements and identify potential falls have the potential to intervene early and lower fall-related injuries (Klenk et al., 2016). Pairing these advancements with thorough fall prevention initiatives may greatly enhance the safety and health of older individuals living in nursing facilities in Finland (Ojo & Thiamwong, 2022).

Addressing the high occurrence of falls in Finnish elderly care facilities is an important public health concern that demands ongoing focus and action. The necessity for strong fall prevention strategies is emphasized by the increasing number of elderly individuals and potential dangers in care facilities. It is possible to decrease the occurrence and consequences of falls among the elderly in Finland by addressing both internal and external risk factors through multifaceted interventions and utilizing technological advances. Continuing research and policy efforts are crucial to guaranteeing the successful execution and longevity of these strategies, ultimately improving the quality of life for elderly individuals residing in care facilities (Church, & Goodall, 2015). Therefore, this seeks to examine how common falls are in elderly care facilities in Finland.

2. THEORETICAL BACKGROUND

2.1. Falls Among the Elderly

The key concepts of this project include falling phenomenon among elderly, types of falls, main risk categories, tools of fall assessment, consequences of falls and fall prevention.

Fall is when someone is in a lower position on the ground after being attacked or colliding with something. Typically, occurrences arise from sudden disruptions like stroke, seizures, orthostatic hypotension, sensory deficits, and social seclusion. The majority of falls do not result in death. Falls can result in varying outcomes, from minor to serious, according to WHO (2021).

Home community care services offer personal care, support for families, and social support, typically on a long-term basis, enabling countless elderly individuals worldwide to maintain their independence. Nonetheless, elderly individuals participating in community care services have a significantly higher rate of falls compared to their peers who do not utilize these services or engage in fall prevention activities and exercise (Burton, 2021).

The growing need for long-term care for the elderly poses a challenge for both society and the elderly themselves, as society must ensure their quality of life and happiness. This is the reason why modern nursing homes serve not only as facilities for managing and treating chronic illnesses in the elderly, but also as environments focused on enhancing quality of life and addressing the needs of older individuals. It provides satisfaction for elderly individuals residing in nursing facilities (Wolff, 2013).

Nevertheless, the rate of elderly individuals experiencing falls in nursing homes exceeds that of those who reside in the community. While most falls in nursing homes are not severe, fractures, which are prevalent, are serious and necessitate hospitalization. Falls in nursing homes mostly happen in bathrooms and private rooms designated for elderly individuals, making up 75% of all falling incidents. Furthermore, it is common for falls to happen while moving (Chan, 2019).

Serious falls can result in traumatic feeling that may impact wellbeing, decrease quality of life, and result in inability to function optimally. Even with serious injuries like hip fractures or traumatic brain injury, these consequences persist for an extended period. Elderly individuals are at a higher risk of falling compared to younger people, and the outcomes of a fall are more serious for the elderly, even if they have the same injury type (UYMAZ, 2021).

Elderly individuals experience decline in physical health as well as various neurological issues. Common examples include epilepsy, Parkinson's disease, stroke, migraine, multiple sclerosis, Alzheimer's, and other forms of dementia. Assessment and monitoring of mental health and sensory function are important in reducing falls among older individuals. Elderly individuals with slight to moderate neurological deficits experienced a three times higher rate of falls compared to those without any signs of neurological impairment. Nurses need to be aware that all elderly neuropsychiatric patients are highly susceptible to falls, must determine if there is a history of falls, and should create a fall prevention strategy for the elderly. (Homann, 2013).

2.2. Types of Falls

Falling is a situation that can occur to individuals of any age, even those who are in good health, most commonly affecting the elderly. There are numerous reasons for falls, allowing for falls to be categorized into various types for suitable prevention strategies. Falls can be categorized as accidental falls and physiology falls (National Institute on Aging, 2022)

2.2.1. Accidental falls

Accidental falls occur when patients considered to have a low risk of falling slip, trip on water or urine on the floor, or encounter other environmental hazards. Despite being provided with intravenous support, patients are still at risk of falling if the wheels become stuck, stick together, or the top of the poles catch on obstacles like doors, resulting in sudden loss of balance and a fall (Hachigasaki, 2020).).

Accidental falls lead to serious health issues, necessitating intensive medical attention, which in turn pushes hospitals to expand their staff and utilize their healthcare workforce more effectively. Unintentional falls account for 4.6% of workdays missed by elderly individuals, with 5.6% of workdays missed specifically by elderly women. The medical expenses are substantial and create a considerable strain on the utilization of hospital services in Kuwait. (Ibrahim, 2021).

2.2.2. Physiology falls

Physiology can be categorized into two types: expected physiological decline and unexpected physiological decline for simplicity (Morse, 2008). Anticipated physiological falls happen in patients who have been recognized as at risk of falling. These falls happen in patients who have specific risk factors like changes in mental status, unusual gait, and frequent restroom visits. Anticipated physiologic falls make up 78% of total falls, according to Bagui et al. (2019).

Many situations involve predictability of risks, allowing for preventative measures to be implemented. If needed, steps can be taken to prevent falls by addressing the most common physiological causes. Furthermore, tracking and surveillance of high-risk populations can aid in mitigating the outcomes of falls with minimal resource and cost investment (Kafantogia, K., Katsafourou, P., Tassiou, A., & Vassou, N., 2017).

Unexpected physiological falls occur due to physiological factors that are unpredictable but related to the body's functions. This kind of falls is unexpected falls, typically happening in a patient at minimal risk of falling but can also be caused by physiological factors like a seizure, stroke, or fainting. This situation results in unforeseen accidents. To prevent injury from unexpected falls, a strategy for fall prevention is necessary. Patients with Parkinson's disease, for instance, receive instruction on falling techniques in order to prevent serious harm. (Morse, 2008).

2.3. Main Risk Categories

Three distinct types of risks can be recognized: intrinsic, extrinsic, and behavioural. These categories are connected to the body, surroundings, conduct, and actions of humans (Boelens, 2013). The following parts discuss the potential danger in each of these groups.

2.3.1. Intrinsic risks

Intrinsic risk factors are factors that pertain to the human body and physical therapy. The first issue is mobility, which is the leading cause of falls in older individuals and is most common among those of advancing age. As their physical abilities and muscle mass decrease, day-to-day tasks become challenging and eventually impossible to complete. These individuals can rise from their seats but cannot stand and have a heightened fear of falling. Getting older results in muscle weakening, reduced balance, lower bone density, vulnerability to rheumatic diseases, and diminished range of motion and strength, causing alterations in body form. Walking slowly is strongly linked to the risk of falling, balance issues, and impacts the ability of older adults to live independently (Hachigasaki 2020).

Throughout the COVID-19 crisis, numerous nations have enforced stringent regulations and home isolation measures in order to limit the spread of the pandemic and decrease transmission, particularly targeting the elderly population. This results in decreased mobility, which can lead to long-term physiological disorders in the body's bone and muscle engine system. Lack of physical activity in older people can lead to weakened muscles, reduced endurance, and muscle loss. There is elevated risk of falls for older individuals (UYMAZ, 2021).

One of the causative factors of falls for older adult is sensory impairment. Sensory impairment, particularly poor vision, is a common issue in the elderly due to the aging process. This usually lead to a decrease in movement, restricted chances to engage in social events, and increased vulnerability to diseases. When older people lose their ability to move around easily, they become more likely to become overweight, which in turn raises their chances of developing long-term conditions like diabetes, high blood pressure, and heart disease (Ray, 2008).

Prescription drugs are also a significant cause of falls. Medications like benzodiazepines, neuroleptics, sedatives, and antihypertensive drugs are linked to higher rates of falls among the elderly. Additionally, older individuals often experience sleep disorders. Difficulty falling asleep at night caused by sleep disturbances results in daytime drowsiness. It hinders the body's reaction time and affects memory and focus. All the intrinsic factors mentioned above elevate the likelihood of elderly individuals experiencing falls. (Boelens, 2013).

2.3.2. Extrinsic risks

External factors are connected to the surroundings. Environment is described as all things that engage with people. Falls are more likely to occur in the afternoon. This could be due to the fact that individuals are typically more fatigued in the afternoon and there are fewer afternoon shifts for nursing staff in facilities. Additionally, slippery floors, especially in bathrooms, are a common location for falls to occur. The identical danger can be found in kitchen spaces as well. Elderly individuals often have trouble maintaining balance, walking unsteadily, and falling easily due to thick carpets. Furniture that is not adjusted for the user's needs or improperly positioned can also increase the likelihood of falls among the elderly. For example, the elderly may have trouble getting up due to the seat being too low, resulting in loss of balance and increased risk of falling (Boelens, 2013).

In addition, factors like inadequate room lighting and the type of walking aid used by the patient can also impact the likelihood of falling. The height of the chair may not be appropriate for the patient's reach, depending on the bed's height, in areas without handrails like the toilet or bathroom, leading to potential misuse of the furniture. Although they are not directly related to illness, these factors can worsen the consequences of fall injuries caused by internal factors. This particular group is crucial in avoiding falls in the elderly population (Kafantogia, K., Katsafourou, P., Tassiou, A., & Vassou, N., 2017).

2.3.3. Behavioural risks

Engaging in activities is seen as a factor contributing to behavioural risks. The fear of falling could be connected to a restriction in physical activities. Nevertheless, restricting fall-related activities may result in decreased lower limb strength, reduced fitness, and diminished maximal muscle strength. This cause results in an increase in falls and disability. Moreover, some older individuals are quite active and participate in risky activities indoors, like replacing light bulbs or rearranging furniture. These actions involve taking risks and impact the incidence of falls in older individuals (Boelens, 2013).

Rushing, strolling, resting, or leading a sedentary lifestyle can all contribute to falls in older individuals. They frequently move at a slower pace, exhibiting an altered walking style that increases their likelihood of tripping. This could lead to frequent occurrences of falls. Younger individuals may have greater adaptability to prevent accidents, while older individuals may have slower reaction times compared to their youth, increasing their susceptibility to falling.

41% of falling incidents are attributed to movement or changing positions. Elderly individuals at risk of falling are those who can stand but struggle to keep an upright posture. (Boelens, 2013).

2.4. Tools of Fall Assessment

Identifying the reasons, circumstances, and occurrences that result in falls, as identified by particular evaluation methods, helps decrease the likelihood of falls. Medical professionals conduct these evaluations and then take necessary preventative measures. An example of this is the implementation of the STEADI Tool, which could help identify seniors at risk of falling and improve the collaboration of fall prevention services across community and clinical settings (Lohman MC, Crow RS, DiMilia PR, Nicklett EJ, Bruce ML, Batsis JA., 2017).

There are numerous reasons for falls in older individuals. Hence, there are various assessment instruments available for evaluating the risk of falls. One instance is the use of the Timed Up and Go test (TUG), Performance-Oriented Mobility Assessment, and Berg Balance Test as tools for assessing gait and balance. The pace at which one walks can indicate an elderly person's health and may help predict potential falls. The SPPB, a tool for assessing physical activity, can double as a full evaluation of elderly physical fitness linked to falls. Ultimately, FRAT-up is a newly suggested forecaster that can estimate the likelihood of experiencing a decrease at least one time within a twelve-month timeframe (Palumbo, 2015). The main goal of fall risk assessment tools (FRAT) is to assess levels of fall risk and identify specific risk factors in order to develop effective preventive strategies (Nunan, 2018).

2.5. Consequences of Falls

Falls in elderly individuals are strongly linked to both illness and death, resulting in a heavy workload for healthcare workers and organizations focused on improving healthcare for the elderly. In elderly individuals, falls not only lead to physical harm but also impact their quality of life, which is associated with the expenses of medical care (National Institute on Aging, 2022)

2.5.1. Impacts of falls for elderly

Most falls in the elderly do not result in death, however, each year a certain number of elderly individuals die from falling. Statistics Finland states that as individuals get older, the likelihood of falling and suffering fatal consequences also increases.

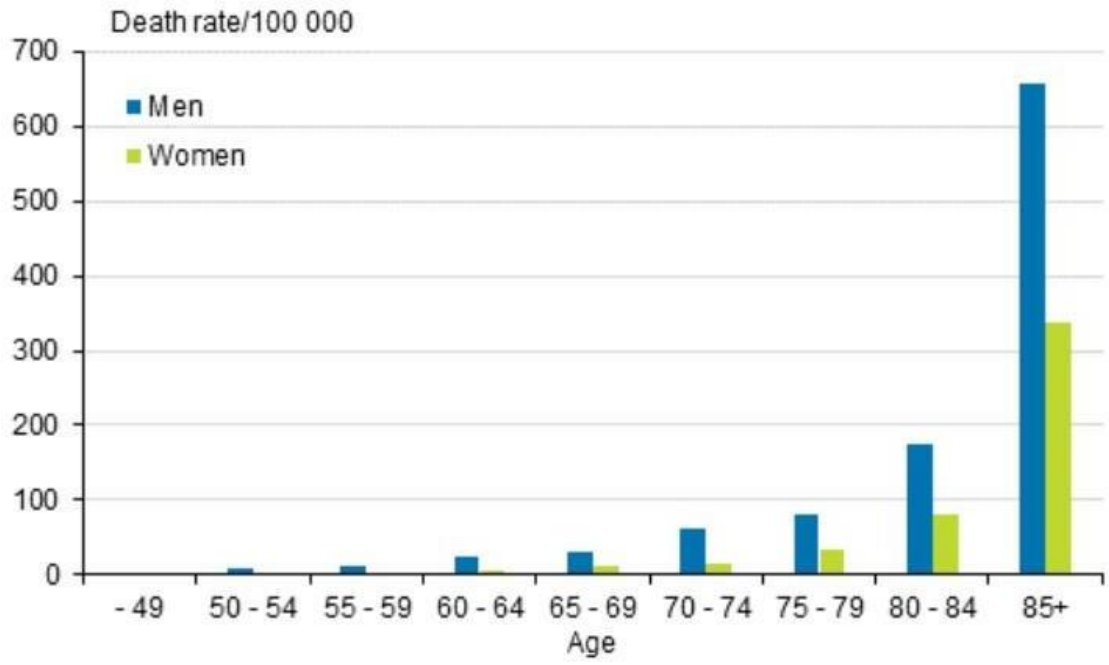

Figure 1: Men's and women's mortality from accidental falls by age in 2017

In Finland, in the year 2017, there were nearly 10 deadly falls for individuals under 35 years old, with the majority occurring in individuals over 75 years old. Men typically died from falls at around the age of 81, while women tended to pass away at around 88 years old. Moreover, in every age bracket, men had a consistently higher number of deaths from falls compared to women (Statistics Finland, 2018).

After experiencing one year of falls and hip fractures, there is a quick decline in the elderly's functionality and health, leading to a decrease in quality of life. If an elderly person falls and suffers a severe injury like a hip, upper limb, or lower limb fracture, or a traumatic brain injury, the consequences of the fall are prolonged, and their recovery time is typically longer compared to younger individuals (Boyé, 2013). Older individuals who have fallen before are twice as likely to experience a fear of falling compared to those who have never fallen; they continue

to deal with inferior health, functional limitations, and reduced independence even after addressing their sociodemographic factors and health condition. (Lavedán, 2018).

2.5.2. Impacts of falls for community

Falls result in most hospital admissions. The expenses for treating falls make up 5% of the overall medical costs. Medical costs for treating falls encompass both direct and indirect expenses. Direct costs consist of expenses related to medical services, nursing care, diagnostic tests, medications, medical care, and support at home, as well as accommodations at the treatment facility. Indirect costs include expenses covered by family, relatives, and friends. Healthcare costs for elderly individuals 65 years and older are increasing globally. In Finland, the average healthcare system cost per fall injury for people aged 65 and above is US$3611, while in Australia it is US$1049 (Boyé, 2013). Between 2007 and 2009 in the Netherlands, there was a correlation between the yearly visits to an Emergency Medical Canter by individuals aged 65 and above and a 3% average of falls, resulting in approximately €675.4 million in medical expenses each year. Specifically, 80% of falls resulting in fractures account for €550 million. Medical care costs for women who fall are €9990, exceeding the costs for men who fall, which are €7510. The expense of medical care rises as individuals get older, reaching €3900 for those aged 65-69 and increasing to €14,600 for individuals over 85 years old due to falls. Additionally, individuals aged 80 and above make up 47% of all fall incidents and incur 66% of the total costs for medically necessary care. Additionally, it results in more nursing duties and prolonged home care tasks following elderly falls (Hartholt, K. A., Polinder, S., van der Cammen, T. J., Panneman, M. J., van der Velde, N., van Lieshout, E. M., Patka, P., & van Beeck, E. F., 2012).

Not just elderly people who have experienced a fall are fearful of falling once more, but also their caregivers are anxious about the possibility of elderly individuals in their care falling again. Caregivers sometimes unintentionally hurt elderly people while trying to assist or prevent them from getting up. This unintentionally impacts both sides. Elderly family members with a past of serious falls might need to alter their schedules or occupations in order to take care of them instead of sending them to a nursing facility. These adjustments unintentionally lead to their isolation from the community, causing them to feel tormented and anxious. The caregiver's physical and mental health is impacted by this anxiety regarding the caregiving process, becoming a weight for the caregiver (Ang, 2018).

2.6. Fall Prevention

Falls are a frequent occurrence among the elderly, occurring commonly in both family settings and healthcare facilities such as hospitals or nursing homes. Falls result in harm to the patient's well-being, requiring medical attention and raising the expenses of healthcare, ultimately boosting the demand for labor. Nevertheless, it is possible to prevent falls, and if one does occur, the risks and consequences can be minimized. Prevention methods vary for each risk factor. This involves creating a customized program for fall prevention in order to decrease the chances and avoid falls among older individuals. (Morse, 2008).

Making sure the environment is safe can prevent accidental falls. Establishing a secure environment that is obstacle-free also removes the reason for accidents. Falls can happen to individuals with typical walking patterns, but are more common in those with abnormal walking patterns. In patients with changes in walking patterns, lifting or moving a leg that is out of alignment may be challenging. Hence, eliminating the environmental dangers is necessary in order to reduce the likelihood of accidents involving falls. In order to ensure a safe moving environment, it is important to coordinate the cleaning of the room and the removal of obstacles, as well as wheelchairs, walking aids, and beds requiring inspection by technical staff. This covers both brake and side rails; extra handrails should be added if needed. By recognizing potential falling hazards and addressing them through interventions like adjusting medications, enhancing muscle strength, and providing gait training or walker usage instruction, expected physiological falls can be avoided. Additionally, nurses can aid in preventing falls by implementing a care plan that includes enhancing the patient's mobility, waking them when necessary, and assisting them with nighttime bathroom trips. Unexpected physiological falling cannot be predicted beforehand and therefore cannot be prevented, making it challenging to identify the risk of falling in such instances. For instance, nurses may be unaware of a patient's potential for convulsions until they occur, putting fall prevention measures in jeopardy in the future. This includes advising patients to stand up slowly in case of low blood pressure leading to dizziness, or recommending they wear protective padding to avoid falls and fractures. (Morse, 2008).

Nurses have a crucial role in reducing factors linked to falls in the elderly, ultimately enhancing their quality of life. Simultaneously, the effective performance of nurses in preventing falls among the elderly helps in saving healthcare expenses and cutting down on the time spent caring for patients who have fallen (Luzia Mde F, Almeida Mde A, Lucena Ade F., 2014).

The nurse actively guides the patient to prevent falls. Nurses need to be careful when discussing the risk of falls with patients as some may be vulnerable to the consequences of fear of falling. Nurses need to delicately engage with them in order to assist them in understanding how it could make a difference. Moreover, the nurse gives useful details about strategies, including ways to enhance independence, boost physical movement, and engage in the hobbies and routines of older individuals. Nevertheless, nurses must anticipate that patients may not consent to or comply with the mentioned interventions. Next, these patients are entitled to make their own choices regarding healthcare services and illnesses they may have. The nurse creates a nursing care plan for the elderly to avoid falls, considering factors like health status, risks, age, and physical condition. Nurses should also educate family members and social networks in the community on how to take necessary precautions to support the elderly, in addition to the patient themselves (Registered Nurses' Association of Ontario, 2017).

3. PURPOSE AND OBJECTIVE OF THE PROJECT

The purpose of this project, "Prevalence of Falling Amongst Elderly," is to offer detailed instructions and an information kit to staff at Hopeapuisto Oy in Ulvila. This project seeks to tackle the pressing problem of falls among elderly individuals, as it can have severe impacts on the health and overall well-being of this at-risk group due to its frequent occurrence.

The aim of this project, focused on the topic "Prevalence of Falling Amongst Elderly in Nursing Homes," is to enhance understanding of falls among elderly residents at Hopeapuisto Oy, Ulvila. This project seeks to establish a thorough comprehension of the reasons behind the increased occurrence of falls in nursing homes, pinpoint successful methods for prevention, and improve the knowledge and skills of nursing home employees in handling and reducing fall hazards.

The project aims to develop a customized framework that meets the unique requirements and circumstances of Hopeapuisto Oy. The aim is to examine in depth the frequency and reasons for falls in elderly individuals living there, taking into account internal factors such as age-related physical changes and external factors such as unsafe surroundings and caregiving methods. The project seeks to discover patterns and correlations through thorough research to improve fall prevention strategies.

4 PROJECT IMPLEMENTATION

The waterfall Model was adopted for this project. The model is a traditional framework for designing, implementing, and evaluating project to ensure that each phase of the project builds into the next. When the waterfall model is used as a framework for health promotion interventions, it helps to manage the project as series of tasks, each of which must be validated before moving to the next stage, therefore preventing drawbacks and complexities (Ruël, et.al., 2012). Hence, the model was chosen for this project to ensure the project phases are well executed to derive comprehensive understanding of the health-related risks of falling and provide actionable solutions that are sustainable for managing the prevalence falling amongst elderly people.

This project-based project employs the waterfall model to ensure that the ultimate goal of assessing risks of falls and providing implementable preventive strategies for the healthcare professionals at Hopeapuisto was systematized. This will provide a well-structured, linear, and detailed framework for addressing falls among elderly residents of Hopeapuisto Oy. This methodology ensures that each phase of the project builds on the previous one and enables a systematic and documented structure for the project.

4.1 Project Stages and Timelines

This project is modelled using the waterfall approach. The model emphasizes five stages of project management, which include requirement or project planning phase, project designing phase, project implementation phase, verification phase, and maintenance phase (Atlassian, 2024). These stages were the broad categories under which the various activities were carried out in order to achieve the objectives of this project.

The project requirement or planning phase is the formative stage where the project idea is formed, and the goal is set. During this phase, the formative research was conducted to have a comprehensive understanding of the concept formed. This includes reviewing medical and incident reports, conducting interviews, and auditing the environment for potential hazards. These activities help in identifying key factors contributing to falling amongst elderly. Hence, the researcher becomes familiar with the essentials of the project development, setting ground for the next stage (Irfan et al., 2021).

The second phase is where the strategic planning takes form, using insights from the first phase. This phase was instrumental to the success of the project, as it required well-thought-out design or plans, active communication, mapping of resource, and outlining the timelines. The next stage of the project is strongly built into this second stage. The implementation phase was where all planned activities are brought to life to achieve the set objectives for the project. This phase involved implementing planned tasks, meeting up with the project deliverables, and getting feedback to improve the effort. Identifying and sourcing relevant literature to form an evidence-based theoretical background are critical tasks during this stage (Gagné, 2018).

Following the implementation phase is the verification phase, which was characterized by testing, continuous evaluation, review, and oversight of the project progress. This stage gave room for the modifications needed to keep project on track. The quality of the feedback received on the project and manual are the performance indicators for this stage (Nagy, 2023). The maintenance phase is the conclusive phase, where the deliverables are expected to have been finalized, reviewed, and submitted.

Below is the summary of the project stages:

Table 1: Project Stages

Requirement or Planning phase	• Choosing to do a project and choosing a topic for the project • Choosing project pair. • Choosing that the final product will be manual
Design Phase	• Writing an action plan for the project • Getting project plan accepted • Writing an agreement for the project
Implementation Phase	• Literature search and review • Writing and completing the project • Developing an educational manual • Introduction of the manual to the healthcare workers • Evaluation of the effectiveness of the manual
Verification Phase	• Submitting project and manual

	• Getting feedback on whether implementation phase fulfils all project requirements
Maintenance Phase	• Addressing any issues that may arise after deployment of the manual • Incorporating feedback and submitting the final project

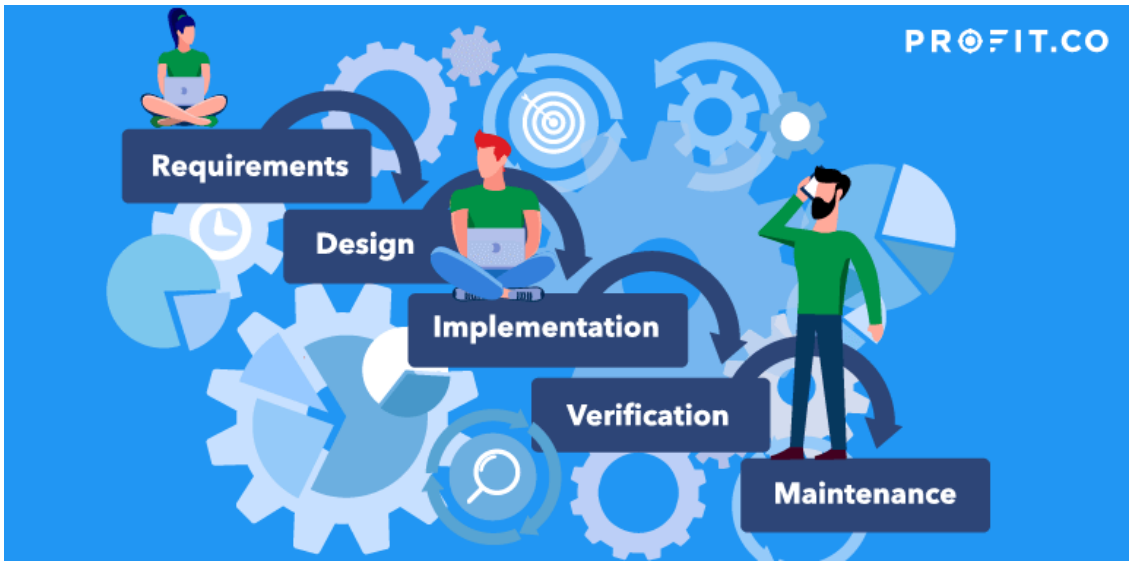

Figure 2: Waterfall project management phases (retrieved from profit.co)

4.2. Target Participants and Setting

Hopeapuisto, a well-established elderly home located in the serene region of Satakunta, Pori, Finland, provides a warm and supportive environment for its residents, most of whom are in their later years of life. The facility is known for its commitment to ensuring the safety, well-being, and quality of life of its elderly residents. It offers a variety of services aimed at meeting the physical, emotional, and social needs of the elderly, with a particular focus on preventing common health issues such as falls (Burton, 2021).

Falls among the elderly are a significant concern at Hopeapuisto, given the advanced age and varying health conditions of the residents. The participants in this project include the elderly residents, who range in age from their late 60s to over 90 years old. Many of these residents have chronic health conditions, including mobility impairments, balance disorders, and cognitive decline, which increase their risk of falling. Also, some residents use assistive devices

such as walkers or canes, and others require more comprehensive care due to conditions like dementia or Parkinson's disease (Appeadu & Bordoni, 2023).

The staff at Hopeapuisto plays a crucial role in this project. They include a multidisciplinary team of healthcare professionals, such as nurses, physiotherapists, occupational therapists, and caregivers. These professionals are responsible for providing daily care, monitoring the health status of the residents, and implementing fall prevention strategies. The staff's involvement in the project is vital as they are the first line of defence in recognizing fall risks and taking preventive actions. They are also responsible for educating residents and their families about fall prevention and ensuring that the environment is as safe as possible (Guerra et al., 2022).

The physical setting of Hopeapuisto also plays a significant role in this project. The facility is designed to be accessible and safe for elderly residents, with features such as non-slip flooring, handrails in hallways, and well-lit spaces to reduce the risk of falls. The rooms and common areas are equipped with furniture and fixtures that are easy for residents to navigate around, minimizing the chances of tripping or losing balance. Additionally, the outdoor areas, which are often used for recreation and physical activity, are carefully maintained to prevent falls, with smooth pathways and adequate seating (Campani et al., 2020).

The project focuses on identifying the factors contributing to falls among the residents of Hopeapuisto and developing strategies to mitigate these risks. This involves assessing the individual health conditions of the participants, their mobility levels, and the adequacy of the facility's environment in preventing falls. Regular evaluations and updates to the fall prevention strategies are conducted to ensure they remain effective and relevant to the needs of the residents (Appeadu & Bordoni, 2023).

The participants are registered and practical nurses working in the setting. The setting is the Hopeapuisto facility itself, designed with the safety and well-being of the elderly in mind. This project aims to enhance the quality of life for the residents by minimizing the risk of falls and promoting a safe and supportive living environment.

4.3 Development of the Manual

The manual was developed, focusing on the factors causing falls amongst the elderly and the falls prevention and management strategies. During the development stage information was gotten through thorough literature search. The manual contains the definition of fall, the

prevalence of falls in Finland, risk factors for falls, prevention strategies, fall risk assessment tools, and the beneficial physical activities for Finnish elderly.

Table 1. Literature search results from databases

Keywords	PubMed (Results from original search)	PubMed (Results after selection)
Falls	33,095 results	2
Prevalence of falls	8,484 results	4
Falls in the elderly	11,764	3

4.4 Introduction of the Manual to the Healthcare Workers

The meeting at Hopeapuisto was a significant step toward enhancing the knowledge and the existing practices of primary care providers in managing the risks associated with falls among the elderly. The gathering brought together a dedicated team of healthcare professionals who are at the forefront of providing care in the elderly home. During this meeting, the distribution of the printed "Falls Prevention" manuals was a key highlight. These manuals, meticulously prepared, served as comprehensive guides for the caregivers, offering them valuable insights into the prevention of falls, which is a critical concern in elderly care.

The presentation accompanying the distribution was designed to be both informative and engaging. The speaker effectively communicated the purpose and main objectives of the manual. Emphasis was placed on understanding the various factors that contribute to falls, such as environmental hazards, physical limitations, and medication effects. The session also provided an in-depth discussion on additional preventative measures that could be implemented to mitigate these risks. These strategic measures included environmental modifications, regular physical activity, and medication reviews, all aimed at creating a safer living environment for the elderly residents. The meeting emphasised the commitment of Hopeapuisto to prioritize the safety and well-being of its residents by equipping its staff with the necessary tools and knowledge to prevent falls.

5 EVALUATION

The introduction of the "*Falls Prevention*" manual to the Hopeapuito primary care providers marked a pivotal turning point in enhancing the safety and well-being of the residents. This manual, meticulously designed to address the specific needs and challenges of the elderly population at Hopeapuisto, provided comprehensive guidelines and evidence-based strategies to prevent falls, a common and serious concern in elderly care facilities. By educating the care providers on the importance of proactive measures such as environmental modifications, regular risk assessments, and individualized care plans, the manual empowered them to take more informed and effective actions.

The implementation of the strategies in the manual was therefore accompanied by a feedback collection process on the effectiveness of the strategies and where improvement is needed. By utilizing the Waterfall Model framework, each phase of the project was systematically reviewed and validated to ensure alignment with the project's objectives.

5.1. Manual evaluation

The "Falls Prevention" manual distribution to health workers became one of the cornerstones of staff training and awareness. There was considerable improvement, as revealed from the caregiver’s feedback regarding the knowledge on the risk factors, preventive strategies, and the use of assessment tool. Particular mention of usefulness has been expressed in regard to the practical guidelines and recommendations based on evidence from this manual to everyday caregiving practices.

5.2. Sustainability and Future Steps

For this project's perpetuity, updates to the manual should be constantly reviewed and the staff educated. More use of technology, like wearable devices that detect falls, could give more credence to the prevention strategies. Scaling up the project to other nursing homes in the region will showcase best practices in learning from each other.

6. ETHICAL CONSIDERATIONS

According to TENT (2021), the risks associated with research includes potential bias in data reporting and ethical considerations related to privacy and anonymity of participants. However,

by using data validation procedures and adhering to ethical guidelines and regulations, these risks can be mitigated. This project employed these measures.

Every task in this project (planning, literature search, implementation and evaluation) was done in accordance with the principles of responsible conduct. The project was written in the author's own words and due regard and recognition were given to authors whose publications, books or articles were used. The author made use of scientific and reliable sources in the completion of this project. Before submission, the project will be scanned for plagiarism using Turnitin to avoid the unauthorized use of someone else's intellectual property. The results of this research will be reported honestly and clearly. Finally, this project ensured that the privacy, confidentiality, and rights of participants are protected through lawful data use, transition, and storage.

7. DISCUSSION & CONCLUSION

The project of Hopeapuisto demonstrates the effectiveness of a comprehensive, multi-faceted approach to fall prevention in elderly care facilities. By addressing environmental hazards, promoting physical activity, managing medications, and educating both staff and residents, Hopeapuito successfully reduced the prevalence of falls and improved the overall quality of life for its residents. This case study serves as a valuable model for other elderly homes aiming to enhance resident safety and well-being.

The impact of falls on the physical and mental well-being of older adults cannot be over emphasized. This project has meticulously shown how fall prevention can improve the well-being as well as quality of life of the elderly. The aim of the study was to increase knowledge about the risk factors of falls and the preventive measures. Much emphasis was placed on the impact of falls on the older adults and what professionals need to do, thus, there is much room for future study to explore the effectiveness of wearable devices, sensors, and fall detection systems in predicting falls risks and reducing fall-related injuries. Further studies can also examine how interventions at earlier stages of aging can impact long-term fall prevention outcomes. Such studies have the potential of also reducing the prevalence of falls amongst older adults, improving their general well-being, and ensuring they live longer and are healthy.

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APPENDIX 1: THE MANUAL ON FALLS PREVENTION

A manual for Hovikoti Hopeapuisto primary health care workers.

1. INTRODUCTION

A fall is an unexpected incident that can significantly affect the well-being of both the individual involved and those around them. A fall can range from causing minor or no injuries to causing major, life-changing injuries that can permanently impact the person's way of life. The second leading cause of unintentional injury death worldwide is falls, as stated by the World Health Organization. Approximately 684 thousand deaths related to falls are reported globally, with the majority (almost 80%) occurring in middle- and low-income countries. Individuals above 60 years old are more susceptible to severe injuries, with approximately 37.3 million falls necessitating medical attention annually. (WHO 2021.)

Despite efforts to prevent it, the rate of fall in Finland continues to rise. In 2017, nearly half of all accidental deaths recorded that year were due to falls, with a total of 1200 fatalities. Four out of every five falls involving individuals over the age of 75 resulted in death. (Statistics Finland 2018) As age increases, so does the mortality rate. In Finland, fewer than 10 deaths from falls occurred among individuals under 35 years old, while the average age of those who died from falls was 81 for men and 88 for women, with the majority of fall accidents occurring in individuals aged 75 and older. The information was compiled by Statistics Finland in 2018. Autumn ranked seventh highest in terms of causes of death in Finland, surpassing COPD and pancreatic cancer. Autumn ranked as the third cause of disability among the Finnish population. (WHO 2019.)

The large financial and economic weight that comes with the decline is also significant. In Finland, the typical expense for a fall injury is approximately 3611 dollars per fall according to the World Health Organization in 2021. The health care cost of fall-related injuries among older adults in Finland is actually high. On average, health system cost due to every fall injury in individuals aged 65 years and above stands at about $3,611 (WHO, 2021). In Western Europe, which includes Finland, the incidence rates of fall injuries are so high; the economic burden as well as DALYs lost due to falls are

immense. These injuries often involve long hospitalization and continued medical treatment; thus, they are a drain on health resources. (BMJ, 2017; WHO, 2021).

The present manual provides necessary information to understand the causes, prevent, and respond to falls effectively within the context of an elderly care home facility in Finland.

2. UNDERSTANDING FALLS

Fall: a definition

Fall is defined as an event that results in a person coming to rest inadvertently on the ground or another lower level, not as a result of a major intrinsic event or overwhelming hazard (WHO, 2021).

Prevalence of falls in Finland

Falls are common among the elderly individuals in Finland. Approximately one-third of adults aged 65 and older experience a fall each year. In elderly care facilities, the prevalence of falls is even higher due to factors such as frailty, chronic health conditions, and environmental hazards (Salari et al., 2022).

Risk factors for falls

Several risk factors increase the likelihood of falls in elderly individuals in Finland:

- Impairment in mobility due to muscle weakness and balance problems
- Medical conditions such as osteoporosis, arthritis, and cardiovascular diseases
- Medication: medication interaction and side effects, especially those affecting balance
- Environmental hazards, such as icy pathways, slippery floors, and inadequate lighting during dark seasons (Appeadu & Bordoni, 2023).

3. FALLS PREVENTION

In order to prevent falls among elderly population, a combination of interventions should be implemented. It includes conducting the initial assessment of individual's health history, ongoing evaluations of the health supported treatment and health status, as well as environmental modifications (Clemson et al., 2020).

Comprehensive assessment

Conduct comprehensive fall risk assessments for all elderly residents upon admission and regularly thereafter. Assessments should include evaluating mobility, balance, strength, vision, cognition, and medication use.

Recommended assessment tools:

- **Timed Up and Go (TUG) Test**

The Timed Up and Go (TUG) test evaluates the individual's mobility and requires a chair and a stopwatch. Individuals are timed in their rising from a chair, walking three metres, turning, and then returning to sit in the chair. This test assesses functional mobility, balance, and lower-limb strength and is very commonly used to identify those older adults who have an increased risk of falls. Times of 12 seconds or more may be indicative of increased risk (Podsiadlo & Richardson, 1991; CDC, 2021).

- **Berg Balance Scale (BBS)**

BBS is an extended balance tool of 14 items where the individual assesses balance by performing a variety of tasks: standing on one leg, reaching forward, and making a full circle of 360 degrees. Each item is scored from 0 (unable to perform) to 4 (able to perform independently). Scores range from 0 to 56; the lower the score, the higher the risk for falls. BBS is an assessment scale that is widely used in the clinical setting for determining impaired balance among elderly individuals or those with neurological disorders (Berg et al., 1992; Blum & Korner-Bitensky, 2008).

- **4-Stage Balance Test**

The 4-Stage Balance Test assesses static balance by having the individual maintain four progressively difficult standing positions: feet together, semi-tandem, tandem, and single-leg stance. The test measures whether an individual can maintain each stance for

at least 10 seconds. It is a quick test of balance that would find significant application in the prediction of fall risk in community-dwelling older adults. Difficulty maintaining a tandem or single-leg stance indicates increased fall risk (CDC, 2017).

Medication management

Review and monitor residents' medications regularly to identify and minimize side effects that may increase fall risk. Collaborate with healthcare professionals, including pharmacists and physicians, to adjust medications as needed (Carollo et al., 2023).

Education and awareness

It is necessary to educate residents, family members, and staff about fall prevention strategies, including the importance of proper footwear, staying active, and reporting any environmental hazards promptly.

Promotion of physical activity

It is important to encourage the residents to stay physically active through activities suitable for Finnish conditions, such as:

- Indoor exercises tailored to individual abilities
- Outdoor walks during safe weather conditions, with proper footwear and assistance if needed
- Participation in organized activities offered within the facility or nearby community centers (ThisisFINLAND, 2024)

Environmental modifications

A safe environment could be created by:

- Ensuring well-lit pathways, especially during dark seasons
- Removing ice and snow from outdoor areas promptly
- Installing grab bars and handrails in bathrooms and hallways

- Using non-slip mats in wet areas like bathrooms and kitchens (National Institute on Aging, 2022)

4. RESPONDING TO FALLS

Immediate Response

In the event of a fall, it is recommended to follow the established protocols for immediate response, which includes:

- Assessing the resident for injuries and providing first aid if necessary
- Calling for medical assistance if the resident is injured or unable to get up safely
- Documenting the fall incident thoroughly, including time, location, and any observed injuries

Follow-Up and Reporting

A thorough investigation following a fall should be conducted to identify contributing factors and implement appropriate interventions. Findings should be communicated with healthcare professionals, residents, and their families to develop personalized fall prevention plans (Almeida et al., 2022).

5. CONCLUSION

By understanding the prevalence of falls, implementing preventive measures tailored to Finnish conditions, and responding effectively to incidents, primary healthcare professionals can contribute to creating a safer environment for elderly residents in Hovikoti Hopeapuisto. Saying vigilant, promotion of mobility and independence, and the collaboration with interdisciplinary teams will minimize the fall risks contributing factors and enhance the well-being of elderly individuals in a facility within the Finnish context.