

Preventing Falls in the Elderly: More Years of Quality Life

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Abstract: The aging of Finland's population at an accelerating rate has brought about unprecedented challenges to its social welfare and healthcare. The proportion of people over 65 is estimated to be as high as 26% in 2030. Falls in the elderly have long been a concern, as they result in serious consequences, including suffering, disability, and even death. In Finland, the mortality and disability-adjusted life years (DALYs) due to falls in people aged 70 and above have shown a steady increase from 1990 to 2019. The disease burden of falls and DALYs remain significant in Finland. Although national systematic actions have been implemented in Finland for the prevention of falls, continuous efforts should be made. Fall prevention is the responsibility of every professional, and this work must involve the patients and their relatives.

Keywords: Elderly population; Falls; Fall prevention; DALY; Finland population

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1. Introduction

Municipalities, counties, and ministries must come up with new solutions to cope with the changing age structure of the Finnish population. The proportion of people over 65 was around 20% in 2018, and it is estimated to be as high as 26% in 2030^[1]. Elderly people living in their own homes are increasingly more frail than before. The most common accidents among elderly people are falls, most of which occur at home. Falls among those receiving long-term institutional care are comparable to those living at home^[2].

Injuries from falls are the most common type of injuries among the elderly, especially falls in those over 80 years of age are a burden on specialist care^[3]. Falls can result in serious consequences, including suffering, disability, and even death. Falls also increase the risk of falling again^[4]. The expenses of hospitalization due to falls in people over the age of 65 were over 200 million euros in 2016^[2]. However, the overall cost is much higher^[5].

2. Health economic impact of falls

Hip fracture is a common injury sustained by an elderly person after falling. In fact, 6,000 hip fractures occur each year. The annual cost of treating a hip fracture patient is around €30,000, while a reoperation costs approximately €13,000. Elderly victims of falls may have head and cervical spine injuries in addition to hip fractures, which necessitate hospitalization^[5]. After a hip fracture, up to one third of patients die, one fifth will be permanently disabled, and a third will no longer live at home. Those with a history of hip fracture are at high risk of developing a second fracture. One in four or five patients will develop a new hip fracture in less than five years after the previous fracture^[6].

In health economics, the computation of disability-adjusted life years (DALYs) can be used to assess the burden of disease and cost-effectiveness of different interventions. One DALY represents the loss of one year of full health, so the aim is to keep DALYs as low as possible by preventive measures or treatment. The costs of these interventions are considered in relation to the gross domestic product (GDP) per capita. Cost-effective is defined as the cost of less than three times the per-capita GDP. On the other hand, costs that are lower than the per-capita GDP are considered very cost-effective [7].

Compared to Western European countries, Finland has more years of life weighted down. From 1990 to 2017, there was a 10% increase in DALYs due to falls among people over 70 years of age in Finland, but the same study showed a 43% and 21% decrease in Denmark and Austria, respectively (Figure 1) [8].

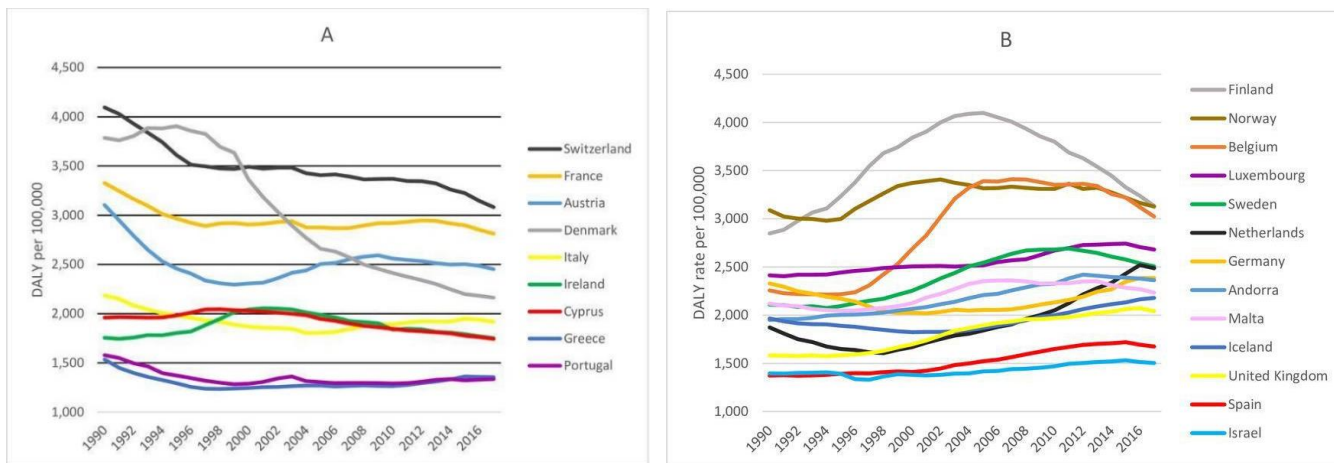


Figure 1. Number of disability-adjusted life years per 100,000 population aged over 70 [8]

As shown in Figure 2, for people aged 70 and above, the deaths from falls and DALYs steadily increased from 1990 to 2019. More than 1,000 deaths and 36,000 healthy life years lost could have been prevented.

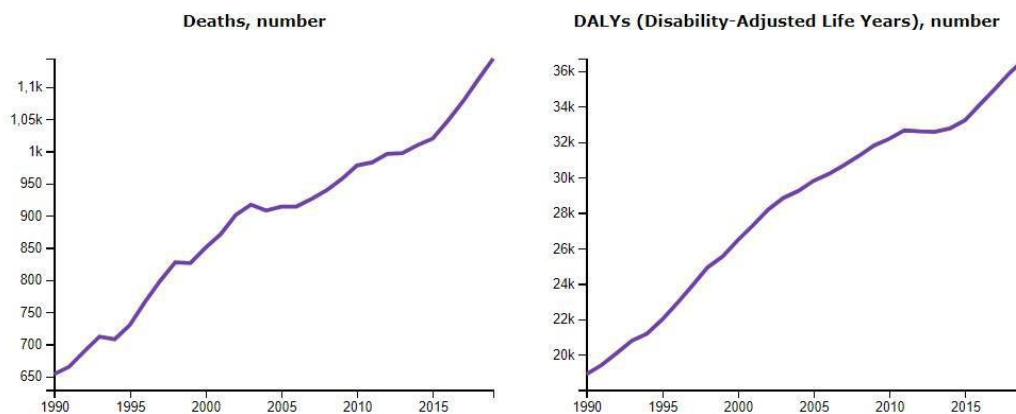


Figure 2. Deaths and DALYs due to falls among people aged 70 and above in Finland from 1990–2019 [9]

In the World Health Organization (WHO) report [10], nations are called to transform elderly health services into priority-orientated ones. The current healthcare system is focused on the treatment of acute illnesses rather than their prevention. The system is precisely divided into different silos, which means that treatment is not always appropriate, and the risks of polypharmacy and unnecessary interventions may be higher. Elderly patients place an unnecessary burden on emergency departments when no one has a clear picture of their overall situation. Fragmentation of care makes it difficult to achieve effective interventions.

3. Factors that increase the risk of falls

Falls can be effectively prevented, and efforts have been made in many localities through multi-professional and multisectoral cooperation between the public and the third sector. The basis is screening for the risk of falls in older people for which, for example, the IKINÄ indicator can be used [3]. With the IKINÄ indicator, whenever a professional meets an elderly person, he or she will ask the elderly person whether he or she has had a fall in the last year and if so, how many times. If the elderly person has had falls, a comprehensive risk assessment for falls is carried out, taking into account of issues affecting balance, such as polypharmacy and cognitive status. While scoring the risks, an individualized plan is drawn to reduce the risk of falls. The best thing would be if the same measure is used, so that the risk data can be used in another care unit [6].

The risk of falls is attributed to several factors. In practice, the more factors that are involved, the greater the risk of falling. **Figure 3** [5] lists the risk factors of falls, dividing them into internal and external risks. Internal risks include risks related to sensory functions, health status, and medication. Examples of external risks include slippery or uneven surfaces, lack of lighting, lack of handrails, poor footwear, and the use of assistive devices [4].

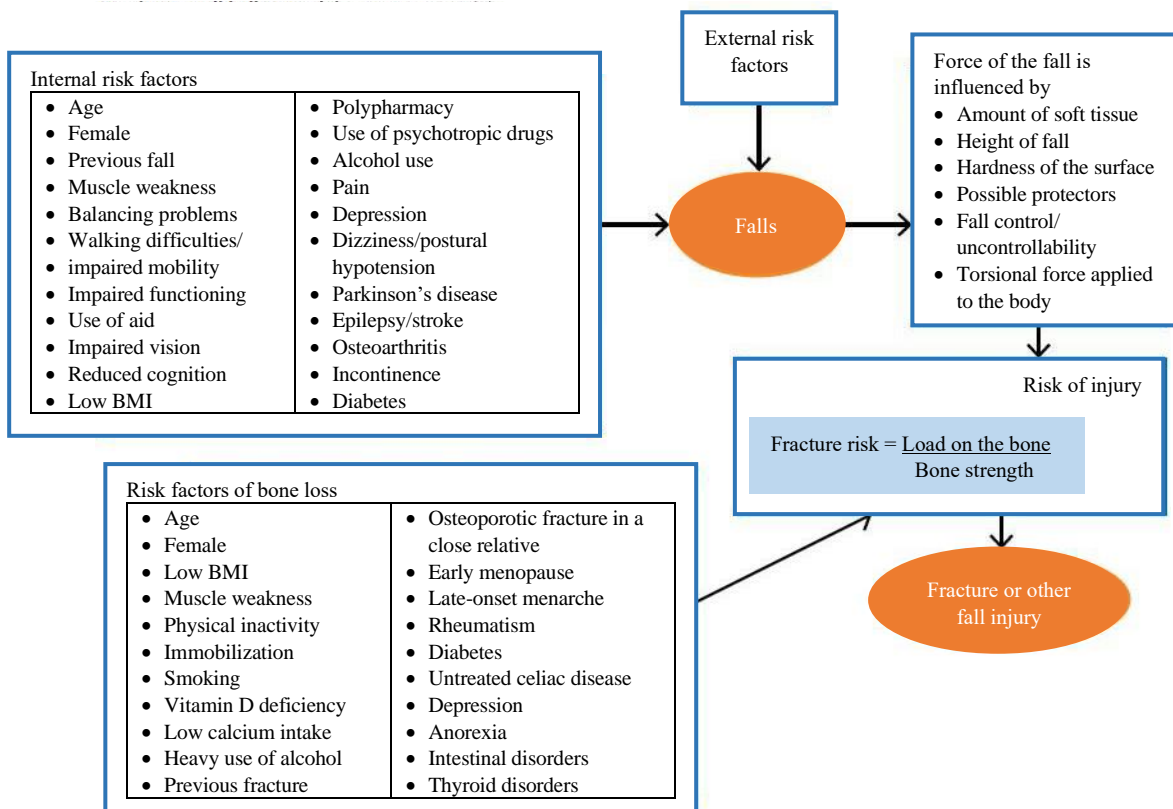


Figure 3. Risk factors of falls [5]

Polypharmacy, *i.e.*, the use of four or more medications concomitantly on a daily basis, increases the risk of falls. Some groups of drugs such as benzodiazepines, drugs used for cardiovascular disease and Parkinson’s disease, antidepressants, antipsychotics, antiepileptics, opioids, and urinary antispasmodics are associated with higher than the usual risk. Some elderly people have a history of intentional or memory-related unintentional misuse of medication. Obtaining prescriptions and renewal through multiple sources increase the risk of unnecessary use of medication. Changes in the body of elderly people, such as the increase in adipose tissue, the decrease in muscle tissue and the amount of fluid in the body, and the deterioration of kidney and liver functions, predispose them to drug accumulation and longer-than-normal elimination [11].

Malnutrition also increases the risk of falls in older people; 15% of the elderly living at home are at risk of malnutrition or are already malnourished. Among those receiving long-term institutional care, one in two people at risk of malnutrition, and one in four already have malnutrition. The risk and prevalence in home and hospital care are as high as in long-term institutional care. Even an expert cannot assess the risk of malnutrition in an elderly at a glance, because the body mass index (BMI) of a person with protein malnutrition may be considerably high. In Finland, the MNA and NRS-2002 screening tools are used to assess the risk of malnutrition. It is important to carry out regular screenings when meeting an elderly person ^[12].

There are several causes of malnutrition, including sensory impairment, dry mouth, poor oral health, and impaired digestion due to polypharmacy, economic and social causes, psychiatric reasons, memory problems, and other diseases. Large injuries, such as hip fractures, can cause malnutrition, but malnutrition can also occur concomitantly with hip fracture. In addition, heart or kidney failure, rheumatic disease, cancer, and chronic obstructive pulmonary disease are factors that predispose to malnutrition ^[12].

4. Measures to prevent falls

The most effective measure to prevent falls in elderly people is individualized exercise programs. For an individualized exercise program to be effective, it must be versatile, challenging, progressive, and regular, increasing muscle strength in the lower limbs and improving balance and mobility ^[5]. As shown in a report, 35% of people aged 75 and above do not engage in any leisure-time physical activity ^[1]. Hence, the challenge for public healthcare is to encourage these people to be active and support their ability to function. In a study conducted in the U.S. ^[13], positive outcomes were achieved with a 10-week exercise program aimed at nursing home residents. The MWB (Move With Balance) program included exercises aimed at improving balance, muscle tone, perception, and cognitive skills. Each exercise combined physical training with a thinking task, the purpose of which was to improve balance and restore anti-fall reflexes. The 10-week exercise program was one hour per week, with up to 15 residents participating at a time. The program was a success, as it achieved a 65% reduction in falls statistics.

Exercise has optimistic effects on many diseases and thus reduces the number of falls. In nursing homes and under nursing care, it is important to support the elderly's ability to function and to allow them to do as much as possible for themselves in their daily activities. Balance exercises may influence their fear of falling, thereby negatively affecting their willingness to go out. A particularly effective form of exercise is Taiji, as it reduces falls in elderly people by up to 35% ^[6].

Multi-professionalism should be taken into account when prescribing medications to elderly patients. Pharmacists should play a greater role in reviewing medications, as they have the most up-to-date knowledge of medications and their possible interactions, while doctors should only prescribe medications that are necessary and consider the possibility of reducing the dose for patients in this age group. Taking the necessary medications will reduce the risk of falls. Hence, it is important for caregivers and relatives to ensure that the right medications are taken at the right time ^[6].

Reducing the risk of malnutrition in older people will improve their overall well-being and health, not only by reducing the risk of falls and preventing falls, but also by balancing disease management and rehabilitation after fracture. The key in managing malnutrition is to change nutrition to meet the needs of elderly people by ensuring adequate protein intake, increasing the amount of energy in the diet, and minimizing bed rest to prevent muscle loss ^[12]. Ensuring fluid balance is also important, as the sensation of thirst in elderly people may be impaired. Incontinence may also be a factor influencing an elderly person's desire to drink. Older people tend to drink diuretic stimulants, such as coffee and tea, which would worsen incontinence and increase elimination of fluid from the body. This can cause a drop in blood pressure and dizziness, thus increasing the risk of falls ^[6].

The oral health of older people is also worth considering. Poor oral health has been shown to be associated with an increased risk of falls. In particular, dry mouth syndrome has been shown to be related to the risk of malnutrition and thus the risk of falls. Anticholinergic drugs are known to be associated with dry mouth. In turn, reduced saliva affects talking, chewing, and swallowing of food. Teeth are also more likely to decay when the rinsing effect is affected as a result of reduced saliva ^[14].

A fall can occur due to substance abuse or domestic violence, which also occurs in households. There should be a professional relationship between the caregivers and the cared-for persons, so that even difficult issues can be openly discussed. Peer support and social contacts are also very important in preventing falls. Multifaceted support by family caregivers saves costs, as it allows the elderly to live in their own homes for a longer period of time ^[2].

Professionals should also regularly ask older people about alcohol use. Alcohol has contributed to a large proportion of falls as an underlying cause. As metabolism is slower in older people, even a small amount of alcohol can have a debilitating effect on their ability to function. In addition, the effectiveness of some drugs may increase with alcohol use, indicating that joint use may cause a drop in blood pressure. The Alcohol Use Disorders Identification Test (AUDIT) is a screening tool commonly used to detect possible overuse of alcohol. Asserting this issue may seem difficult for a professional, and it may not be easy for an elderly person to admit to drinking too much alcohol. “Normal” alcohol consumption may not mean the same as to a professional ^[6].

Family members, mostly women, are forced to care for their elderly relative at the expense of their own work. Relatives and loved ones play a very important role in preventing falls among the elderly. According to the Ministry of Social Affairs and Health, about 350,000 people in Finland assume responsibility over their relatives, but only some of them have entered into a caregiver’s contract with the municipality. Many of these caregivers are elderly themselves, as evident by a finding in 2017, where 58% of caregivers and 67% of cared-for relatives were over 65 years of age. The municipality provides support if certain criteria laid down in the law are met. For instance, when caring for a relative, the safety of the home must be considered to reduce the risk of accidents ^[2].

The municipality has a legal obligation to provide education, training, and health checks for caregivers. This guidance can influence the practices that, according to research and evidence-based practices, reduce the risk of falls ^[2]. It is necessary to take various home-safety measures, such as introducing lighting automation, adding handrails to stairs and bathrooms, installing assistive devices, and widening doorways to facilitate access ^[15].

5. Reflection

The aging of Finland’s population at an accelerating rate has brought about unprecedented challenges to its social welfare and healthcare. Much is expected of the reform of social services, as tax revenues are falling at the same rate as the number of the working age population. The latest proposed social model aims at improving the basic services offered in welfare areas for residents of all ages, since equality in municipal services has not been achieved in neighboring areas. In the neighboring municipality, there could have been more support for older people to self-manage at home and gain easier access to medical care. The reform of the social welfare system is a one-stop strategy whereby the customer would receive a comprehensive service when meeting a healthcare professional. The reform would be truly significant if implemented as envisaged because priority-oriented support and assistance can prevent problems from escalating. This would also reduce the pressure on specialist care, and the costs can be maintained at a modest level ^[16].

When developing healthcare services for older people, it is good to be aware of the stereotypes about older people in society. Older people may be seen as fragile, confused, dependent, burdensome, and a mere expense. Such misconceptions, attitudes, and assumptions must be rectified. The elderly is a diverse group

of people, some of whom need a great deal of assistance even at the age of 65, while others, being at an advanced age of 90, can still live on their own without assistance and can be physically very active. Life does not end at retirement. Many of them desire to fulfil themselves in different ways, be it to continue to work part-time or to take part in organizational work. Misconceptions about the lives of the elderly may also distort the perceptions this group of people have on themselves, reinforcing isolation and loneliness, impairing physical and cognitive functioning, and reducing physical activity. Providing for people's basic needs creates a functioning healthcare ^[10]. One in three people over 65 and one in two people over 80 fall every year. One in two falls is followed by a disability, and more than 1,000 Finns die each year from falls. Falls always result in suffering and pain. In addition, it limits social life and movements for fear of falling ^[17]. The economic impact of falls is significant: the hospital treatment for injuries resulting from falls among the elderly was around €200 million in 2015. There are different interpretations of the total cost because recording practices vary from country to country. In addition, falls also cause indirect and long-term costs. In any case, the disease burden of falls and DALYs remain significant in Finland ^[18].

National systematic actions have been implemented in Finland for the prevention of falls, such as the Ministry of Social Affairs and Health's Home and Leisure Prevention Target Program in 2014–2020. Preventing falls is not only the work of professionals and relatives, but also the provinces, municipalities, and organizations. The Finnish Institute for Health and Welfare (THL) has introduced the IKINÄ model for social professionals, and the UKK Institute has carried out pioneering work on the KaapumisSeula® project, with third sector players also being involved ^[3].

Regular screening of elderly people for fall risk is carried out preferably with the same indicator, so that the screening result is reliable when moving from one care provider to another. The risk assessment will take into account, among other things, previous falls, polypharmacy, cognition, nutrition, and treatment for underlying conditions. There will be better outcomes when individualized fall prevention measures are taken. The measures include physical activity guidance, use of non-slip shoes, environment modification work, and update of medication in collaboration with a pharmacist ^[17].

Preventing falls is the responsibility of every professional, and this work is worth involving the patient and their relatives. The use of different risk assessment indicators ascertains reliable assessment by professionals and facilitates the implementation of priority-oriented measures. The management of organizations must take the prevention of falls as part of their strategic objectives and, together with all the staff, monitor the related indicators on a regular basis. Investing in preventive work saves costs ^[5]. Fall prevention is an occupational safety and risk management work ^[2].

Disclosure statement

The author declares no conflict of interest.

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