# **A general perspective of falls amongst the elderly.** *A Literature review study*

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# Foreword

We have a list of people to acknowledge in our final thesis. First of all we would like to thank our supervisor Solveig Sundell, for her support and perseverance during the whole process.

We would also like to extend our heartfelt gratitude to our families and friends for their love, support and guidance throughout the entire time you.

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Abstract;

This subject was chosen after the authors had been on several practice work in different old people's homes in Helsinki. The authors realized that falls are a concern among elderly population and researched on the topic whereby, they found that falls in elderly people is a problem worldwide. The aim of this research is to create awareness about the existence of falls amongst the elderly people and to provide information on the importance of active ageing. The research also provides us with the consequences of falls and how they can be prevented using scientific based practices. The research questions are: What are the main consequences of falls amongst elderly people and how does it affect their quality of life? How can falls be prevented in institutions? Active ageing is the theoretical frame of reference for this study and to answer the research questions, the authors used qualitative analysis using deductive content analysis from related articles in order to come up with the recent research work about the topic. The results show that elderly people are prone to unpredictable and unexpected falls. Falls are common in elderly people and the risk of falling increases with increasing age. Old people who fall experience greater functional decline in activities of daily living and may be at a high risk of even falling again. Falling or fear of falling has considerable implications to an aged person's lifestyle, resulting in decreased activity and mobility, and an increase in dependence affecting the person's quality of life.



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Tiivistelmä;

Tämä aihe valittiin sen jälkeen kun opinnäytetyön tekijät olivat olleet työharjoittelussa erilaisissa vanhainkodeissa Helsingissä. Tekijät tajusivat, että kaatumiset ovat huolenaihe vanhusten joukossa ja tutkivat asiaa, jonka mukaan vanhusten kaatumiset ovat ongelma maailmanlaajuisesti. Tämän tutkimuksen tarkoitus on luoda tietoisuutta vanhusten kaatumisista ja tuoda tietoa aktiivisen ikääntymisen tärkeydestä. Tutkimus kertoo myös kaatumisien seurauksista ja kuinka niitä voidaan ehkäistä käyttäen tieteellisiä keinoja. Tutkimuksen kysymykset ovat: Mitkä ovat suurimmat seuraukset vanhusten kaatumisissa ja kuinka se vaikuttaa heidän elämänlaatuunsa? Kuinka kaatumisia voidaan ehkäistä laitoksissa? Aktiivinen ikääntyminen on teoreettinen viitekehys tälle tutkimukselle. Vastatakseen tutkimukseen liittyviin kysymyksiin käytettiin kvalitatiivista analyysiä, jossa taas käytettiin deduktiivistä sisältöanalyysiä aiheeseen liittyvistä artikkeleista saadakseen tuoreita tuloksia. Tulokset näyttävät että vanhukset ovat alttiita odottamattomille kaatumisille. Kaatumiset ovat yleisiä vanhusten keskuudessa ja kaatumisen riski kasvaa iän karttuessa. Vanhukset jotka kaatuvat, kokevat suurempaa heikkenemistä jokapäiväisen elämän aktiviteeteissä ja ovat suuremmassa riskissä kaatua uudelleen. Kaatumisella tai sen pelolla on huomattavia vaikutuksia vanhuksen elämäntyyliin, johtaen alhaisempaan aktiivisuuteen ja liikkuvuuteen sekä toisista riippuvuuteen vaikuttaen henkilön elämänlaatuun.



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| Avainsanat: | Kaatumiset, Aktiivinen ikääntyminen, Vanhukset, Elämän laatu, Kaatumisien seuraukset, Vanhainkodit, Kaatumisien estäminen. |
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## Abbreviations

MMSE -Mini-Mental State Examination

MFS -Morse fall scale

MNA-Mini nutritional assessment

WHO- World health organization

EU – European Union

ADL - Activities of daily living

BMI- Body mass index

EUNESE- European Network for Safety among Elderly

CEREPRI- Center for Research and Prevention of Injuries

LALES - The Los .Angeles Latino Eye Study

FOF – Fear of Falling

QOL – Quality of Life

EEA- European Economic Area

DG SANCO- Directorate General of Health and Consumer Protection

# 1 INTRODUCTION

Falls and fall-related injuries among elderly people are major issues for health and social care providers in Europe and indeed the world. This is due to the rapid increases in life expectancy observed during the twentieth century. Pekka Kannus & Karim M. Khan (2001) The authors worked equally in this thesis work Eunice Muchane concentrating more on the consequences of falls and Eunice Anena on Prevention measures.

## 1.1 Motivation for choice of research topic

The motivation for this topic is because falls are the most serious and frequent home accident among elderly people and therefore the authors were interested in knowing the causes, consequences and prevention of this problem. Falls are the major reason for admission to hospital or a residential care setting, even when no serious injury has occurred.

Fall-induced injuries are increasing more rapidly than can be accounted for by the increase in the elderly population. Fall causes considerable costs as well as physical and social costs. Pekka Kannus & Karim M. Khan (2001)

The factors normally associated with falls among elderly are due to diseases and drugs side effects, although there are other factors like environmental factors. Kallin et al. (2004)

Elderly people are more prone to unpredictable and unexpected falls. Falls are common in elderly people and the risk of falling increases with increasing age. Pekka Kannus & Karim M. Khan, (2001) Falls are frequent events among elderly people and can result in disability, fear of falling, admission into elderly people`s home, and reduced quality of life. Hill et al, (2004). Accumulated deficits in the sensor motor systems underlying balance are strongly predictive of falls among older adults. In particular, the normal ageing process results in progressive deterioration of the visual, vestibular, somatosensory systems, reduced speed of central processing and reductions in muscle strength. These physiologic changes are often accompanied by a generalized slowing of postural responses and altered movement patterns for older adults compared with young adults Murray G et al. (2010)

Falling or a fear of falling has considerable implications on an elderly person's lifestyle, resulting in decreased activity and mobility, and an increase in dependence affecting the person's quality of life (Salkeld et al 2000). According to Skelton D, Todd C. elderly persons who have fallen once or twice are likely to fall again within a year.

## 1.2 AIM AND RESEARCH QUESTIONS

The aim of the study is to create awareness on the existence of falls amongst the elderly and provide information on the importance of active ageing, consequences of falls and how falls can be prevented using scientific based practices.

The research questions below will help us reach the aim of the study.

1. What are the main consequences of falls amongst elderly people and how does it affect their quality of life?

2. How can falls be prevented among the elderly people?

# 2 BACKGROUND

Falls among the elderly constitute a significant problem in health care. Falls may also result in a post fall syndrome that includes dependence, loss of autonomy, confusion, immobilization and depression. Falls among the elderly represent a major economic and social problem too. This decreases their quality of life both at home and in institutional care settings, which will lead to a further restriction in daily activities. Lindy Clemson et al. (2004)

Falls and fall-induced injuries in elderly people are a major public health problem in modern societies with aging populations. Injuries, in turn, are the fifth leading cause of death in elderly people, and most of these fatal injuries are related to falls**.** Data from the Finnish Official Cause-of-Death Statistics for adults aged 50 years or older who died from a fall-induced injury between 1971 and 2002 was used. Kannus et al. (2005)

The number of fall-induced deaths among elderly Finns shows a dear increase. In men, the increase has occurred at a rate that cannot be explained merely by demographic

changes. Therefore, detailed epidemiological studies, in addition to investigations of possible behavioral, environmental, and biological predisposing factors and dynamics, are needed to better understand this phenomenon. With the help of the figure 1 below, there is a clear increase of falls in both women and men. For this reason, falls-prevention and interventions should urgently be implemented to control the problem. Kannus et al. (2005)

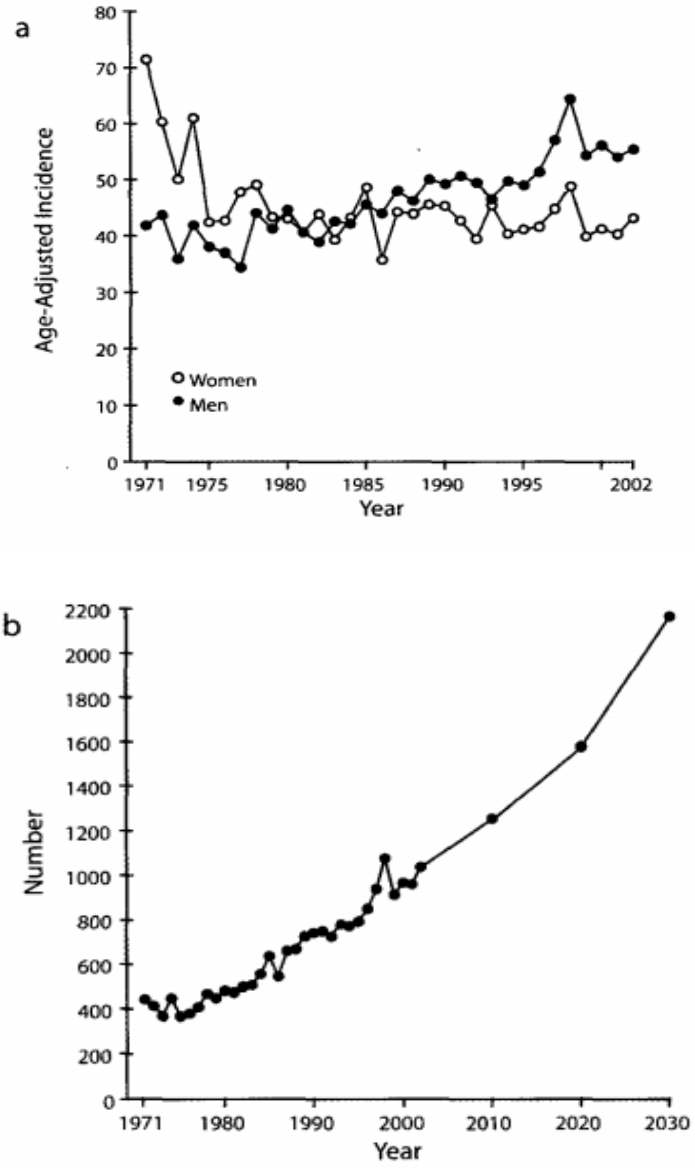



*Figure 1. Secular trends in falls-induced deaths among elderly fins aged 50 years and over*

(a) age-adjusted incidence (per 100000 persons) between 1971 and year 2002

(b) Number of deaths between 1971 and 2002 and the prediction until the year 2030. (Finnish statistics)

The below figure shows the mortality rate of European and EEA countries

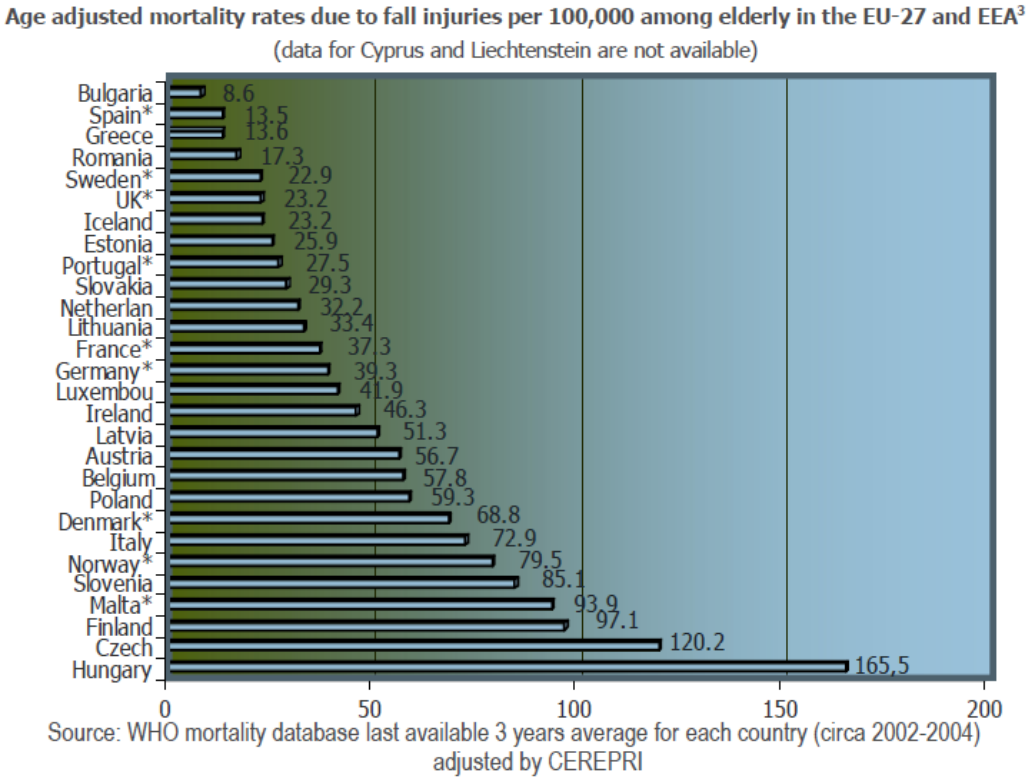



*Figure 2. Age adjusted mortality rate due to fall (world* health organization mortality database)

There are about 40,000 deaths from falls among elderly in EU-27 area. Those older than 80 years and over have 6-fold higher mortality compared to those at 65-79 years because they are frailer. According to the figure above Bulgaria, Spain and Greece have the lowest rates of mortality (< 15) and Hungary, Czech Republic and Finland having the highest rate of mortality.

According to EUNESE- European Network for Safety among Elderly, each year about one of 10 Elderly are treated by medical doctors due to an injury, which amount to 8 million injuries in the EU-27 and EEA. In EU countries falls comprises of 75% of all the elderly patients who need medical attention due to falls.

In the US, 16% of all emergency-room visits and almost 7% of all hospitalizations are for fall-related injuries. Tufts University Health & Nutrition (2007)

• 3 in 10 elderly people fall each year.

• 2 in 10 who need home health care after being in the hospital will fall during the first month after coming home.

• 1 in 10 elderly people suffers a serious fall injury such as a broken bone or head injury.

• 5 in 10 elderly people have problems getting up without help after they have fallen.

• Falls cause more than 90% of broken hips; only half of those who break their hip will get around as they did before their broken hip. Tufts University Health & Nutrition (2007)

## 2.1 LITERATURE

Defining the term fall we considered Huang et al. definition which is "unintentionally coming to rest on the ground or other lower level other than as consequence of sudden onset of paralysis, epileptic seizure or over whelming external force."

Identification of fall is very important as different type of fall has different measures when it comes to prevention. Fall can be classified as accidental, anticipated physiological fall or unanticipated physiological fall. (Janice Morse. 2008 pp. 9-11)
There has been many research work done before on falls among elderly and it has been found out that many falls happens due to identifiable and modifiable risks factors.

A survey carried in Canada on incidence rate of fall injuries for men and women by 5-year rage shows that the injuries rate increases with age too. The result shows that the injury rate of Women exceeded those of men in all age groups.

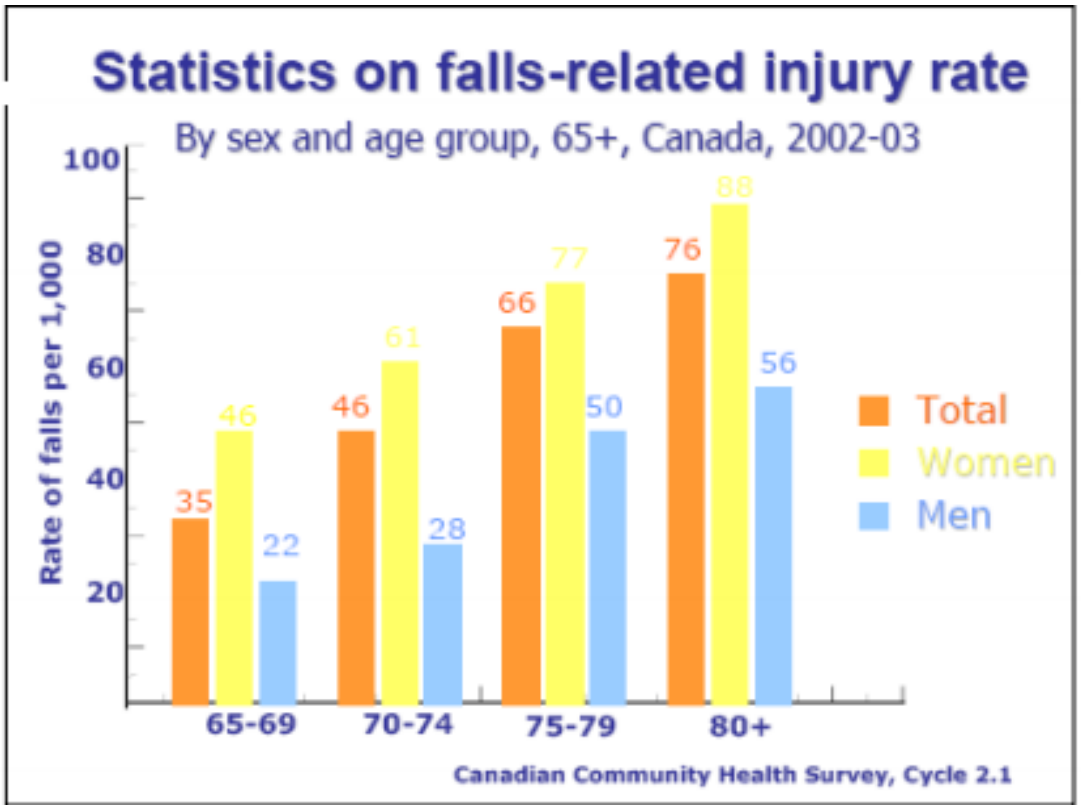



*Figure 3. Statistics on falls-related injury rate by sex and age group, 65+ in Canada, 2002-2003(Canadian community Health survey)*

### 2.1.1 Types of Falls

There are different types of falls and therefore identification of fall is very important as different types of fall have different measures when it comes to prevention.

**Accidental falls**

Accidental falls are caused by patients or residents tripping, slipping and mostly the causes are due to environmental factors, example Unavailability of grab bars, Slippery floors due to spilled water and other factors Inadequate lightening, bed and toilets of inappropriate height Obstructed walkways, upended Carpets edges and raised door sills. Accidental falls cannot be predicated using any scale as other types but they can be prevented by modification of the environment by making it safer for all.
(Janice Morse. 2008 pp. 9-11)

**Anticipated falls and unanticipated falls**

The anticipated falls normally occurs if a patient has been identified as fall-prone by scoring at risk of falling. Some factors behind anticipated falls are if one has more than one diagnose because this leads to polyphamacy and also a weak or impaired gait. (Janice Morse. 2008 pp. 9-11)

Unanticipated falls occurs under conditions which cannot be predicted before the first occurrence. Some causes of unanticipated falls are drop attack or even fainting. Unanticipated falls cannot be predicted by the use of any scale nor can they be prevented by occurring during their first time, In this case protection strategies are ensured to prevent any injury when a patient falls, Example patients with Parkinson Diseases are given some tips on how to fall in case of anything. (Janice Morse. 2008 pp. 9-11)

### 2.1.2 Risk Factors for Falls

As one ages, the tendency of falling increases. Ganz et al. (2007) recently reviewed prospective studies and found that people who have fallen in the past year are more likely than those without a fall history to fall again. Falls in elderly people are often associated with Intrinsic factors such as physiological age changes, though extrinsic factors such as environmental influences. Activity being undertaken at the time of fall also plays a great role of fall. Most falls may result from combination of environmental hazard, physical disability or carelessness or excessive risk taking. However Intrinsic factors are thought to play the major role in the fall of over 75 year's group, though environmental aspects are viewed more as contributory.

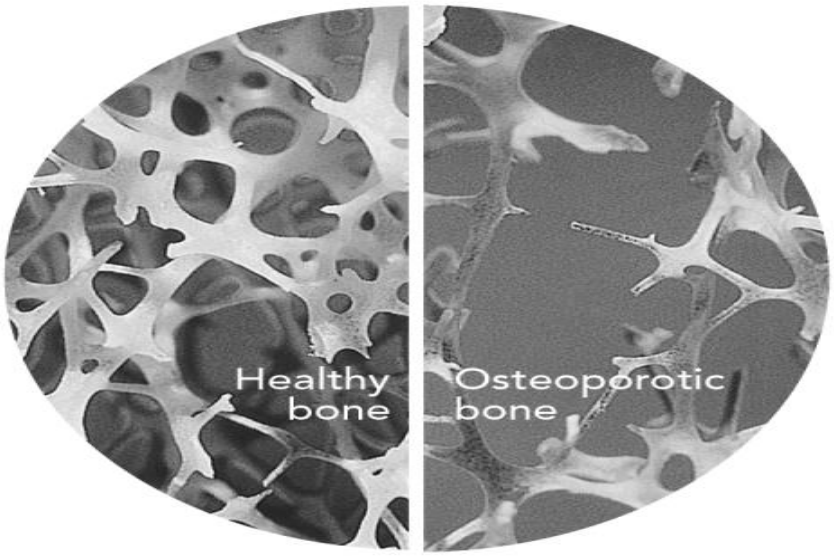
Intrinsic and extrinsic factors can be further classified into four categories of risk factors that reflect the broad determinants of health are Biological Factors, Behavioral risk factors, Environmental risk factors and Social and economic risk factors. There is also activity related causes that is risk taking behaviour such that a resident not using a prescribed walking aid. (Debra J. Rose 2010 pp 36-37)

**Biological Factors**

The natural aging process and the effects of acute and chronic health Problems, increase the risk that an elderly person will fall or sustain other injuries. Parkinson's disease, Arthritis, osteoporosis, heart disease, stroke, bowel bladder incontinence and blood pressure problems is one of the fall leading problems. (Debra J. Rose 2010 pp 36-37)

Osteoporosis is a disease in which the bones become fragile and brittle. They fracture more easily than normal bone. Even a minor bump or fall can cause a serious fracture. Hip fractures are a frequent consequence of osteoporosis. According to National osteoporosis foundation Osteoporosis was once thought to be a women's disease, but now days it strikes both men and women, though women are at a higher risk than men. Osteoporosis is also known to be higher in Caucasians and Asians than other racial and ethics groups (National osteoporosis foundation 2004)

Other osteoporosis risk factors include heredity. Abuse of Alcohol and caffeine is also linked to development of osteoporosis. A lifetime or low intake of calcium is another factor which could lead to osteoporosis problem. Inactive individuals could have low muscle and bone mass due to lack of Physical activities. (Diane 2004 pp. 3-4)
Falling or a fear of falling has considerable implications for an elderly person's lifestyle, resulting in decreased activity and mobility, and an increase in dependence affecting the person's quality of life, regular exercises and giving awareness on bone health could really improve their quality of life. Salkeld *et al. (*2000).




Healthy bone Osteoporotic bone

*Figure 4. Difference between Healthy bone and Osteoporotic bone*

http://www.osteofoundation.org/Facts.html

Urinary incontinence is a prevalence condition in the elderly that causes significant morbidity and affects their quality of life. Urinary incontinence had been the main reason for institutionalization. Difficulty holding urine is a prevalent condition in many elderly people living both at their own homes and in the institutions. This leads to a number of functional problems and health conditions. The problems can be either psychological, physical and even social problems. Urinary incontinence affects more women than men. Psychological consequences of urinary incontinence include depressive symptoms, Embarrassments and even anxiety. Socially urinary incontinence may lead to restriction life which will cause less or no interaction with friends and family. The physical consequences of urinary incontinence may lead to fall on the slippery floors or even one may fall rushing to the toilet. (Richard J. Ham 2007 p. 308)

Parkinson disease is a neurodegenerative disease that presents a constellation of systematic motor and non-motor signs and symptoms. Postural instability, one of the most disabling cardinal signs of Parkinson disease is one of the primary reasons why someone with the disease may be referred for physical therapy. Axial symptoms such as balance impairment are one of the main predictors of quality of life for individuals with Parkinson's disease and have shown to increase fall risk. Up to 68% of individuals with Parkinson's disease will fall in 1 year period which can lead to injury and large personal and societal costs.

People with Parkinson's disease are at high risk of falling Ashburn et al., 2001: Bloem et al., 2001). Balance and mobility impairments may cause people with severe Parkinson's disease (who frequently fall) to reach differently to people with milder signs: whilst some people will develop compensatory strategies independently; others may need a therapist's input. (Debra J. Rose 2010 pp 44)

Poor vision reduces postural stability and significantly increases the risk of falls and fractures in older people. Central vision is the ability to see straight ahead and directly in front of you. Peripheral vision is the ability to see sideways or the surrounding outer area without having to actually turn your head to look. Lord & Day hew (2001)
The Los Angeles Latino Eye Study (LALES) suggests that the worse central and peripheral vision is among the elderly, the more frequent and more serious falls they have.
The frequency and severity of falls increased with the severity of central and peripheral vision loss. Central vision loss increased risk of fall or injury by 2.8 times, while peripheral vision loss increased this risk by 1.4 times. And, nearly 70% of those with central loss also exhibited peripheral loss.
Elderly patients' peripheral vision is a large factor in their chances of falling in addition to central vision loss, which is more directly addressed in the practice. (C. Patino et al. 2010).

Elderly people with multiple chronic illnesses are at greater risk of developing functioning limitations and disabilities. Patients who suffer diseases such as arthritis, dementia and diabetes are at a high risk than just those who are aged with no diseases. Chronic illness, such as arthritis and osteoporosis, will impose limitations on self-care and daily living activities. (Debra J. Rose 2010 pp 36-37)

**Behavioral risk factors**

Behavioral factors are normally associated by choice based. On a review of the research literature the most common behavioral risk factors are poor foot wear, alcohol use, medication use, most people fear of falling again if they have had a fall before. (Scott et al., 2001) A study by (Zijlstra et al. 2007pp. 304–305) states that those who fear doing various activities due to fear of falling again have even multiple falls.

A study by Gill et al. (2008) suggested that lack of recreational physical exercises is more likely to be associated with injuries falls. Sleeping disorders has as well been one of the behavioral problems causing fall in many. Latimer et al. (2007)

Medication plays a significant role in falls among the elderly. A study by Nurmi-Lüthje et al. (2006) has shown that half of patients with an acute hip fracture use benzodiazepines or benzodiazepine-related drugs. Medication Such as sedatives, anti- depressants and anti-psychotic drugs contributes to many falls due to sides' effects from them. Additionally, people taking multiple medications (Poly-pharmacy) are at a greater risk of falling. Poly-pharmacy has a lot of consequences, which includes drugs reactions, drugs interactions and also geriatric syndromes such as fall, cognitive impairments and urinary incontinence. (Hanlon et al 2001 pp, 200 & Stewart 2001 pp. 235-236)

Therefore it is important that medications are prescribed appropriately. Important information about the patient's history should also be observed. That is information about any allergies reactions should be known. Therefore medication should only be prescribed if there of a benefit to the patient and they should be at a lowest dose possible. Instruction on how to use the medication should be communicated clearly to the care taker of to the patient.

The expired medications and those that are not in use should too be removed from the cardboard. And the cardboard should always be locked. (Paul C. Walker et al 2005) patients too taking the medication should be carefully monitored for therapeutic effectiveness and also for any side effects.
(Semla & Rochon 2002.pp 37-38)

Foot wear has also been a risk factor and thought to play a contribution role in some falls. Walking indoors barefoot or with socks which are not suitable or even walking outdoors with high-heals have increased falls among elderly. A shoe's sole material and the tread design can affect one when walking, heel height is not good because it affects shoe's tendency to tip sideways on some uneven surface, and it has also been found that the sole thickness can be a problem too. Poorly fitted shoes have lead to foot problems which in turn cause falls problems.
A non-slip sock should be recommended in nursing home because they prevent one from slipping, therefore preventing falls. The below image shows a non-slip sock which has been suggested as a means of preventing falls which could happen accidentally by either an elderly forgetting to put on their shoe hence walking bare foot.
(Jasmine C. Menant et. al 2008 P. 1174)

*Figure 5 Non slip sock*

*shttp://s3.hubimg.com/u/3970450_f120.jpg*

Fear of falling has been recognized as serious and most common among elderly. It is more prevalent on women more than men. (Friedman, et al., 2002) Researchers has demonstrated that those who fear falling again tend to have less physical activities, Bruce et al,. 2002; poor morbidity can be associated with Fear of falling, decreased social life is also observed, low self-esteem also occurs which in turn lead to depression and decreased quality of life which in turn fear increases the risk of falling again.
(Bruce et al, 2002)

**Environmental risk factors**

One´s surrounding environment can cause harm. Most of the households contain environmental hazards such as inadequate lightening, obstacles on the way, door sills, slippery floors, electric cords, loose rugs and unstable furniture. Lack of important aids such as grab rails, grab bars in the bathtub, lack of bed rails and the beds been too high are some of the causes of fall among the aged. Therefore the efficiency of home improvement is very important. (Stephen .R. Lord. 2006 P. 55)

**Social and economic risk factors**

Social determinate are as well important as any other factor, It has been studied that people with low income, low education, inadequate housing and those that lack support network and appropriate social services and health are normally at high risk for the chronic health problems that are in turn considered as a risk factor for falls.WHO (2002)

## 2.2 Consequences of falls

Falls are a public health issue that particularly affect elderly people and result in injury, hospitalization, premature death and impaired mobility. Along with these factors, loss of independence, social isolation and fear of falling result in costs to individuals, families and public services. Falls have physical consequences which are immediate like bruises, or even more serious fractures. There are also secondary consequences which are

caused by one being on the ground for a long period, for example, one might be dehydrated. Consequence can be psychological, social or economic consequences causing one´s quality of life to deteriorate drastically after a fall. Brenda Roe et al., (2008)

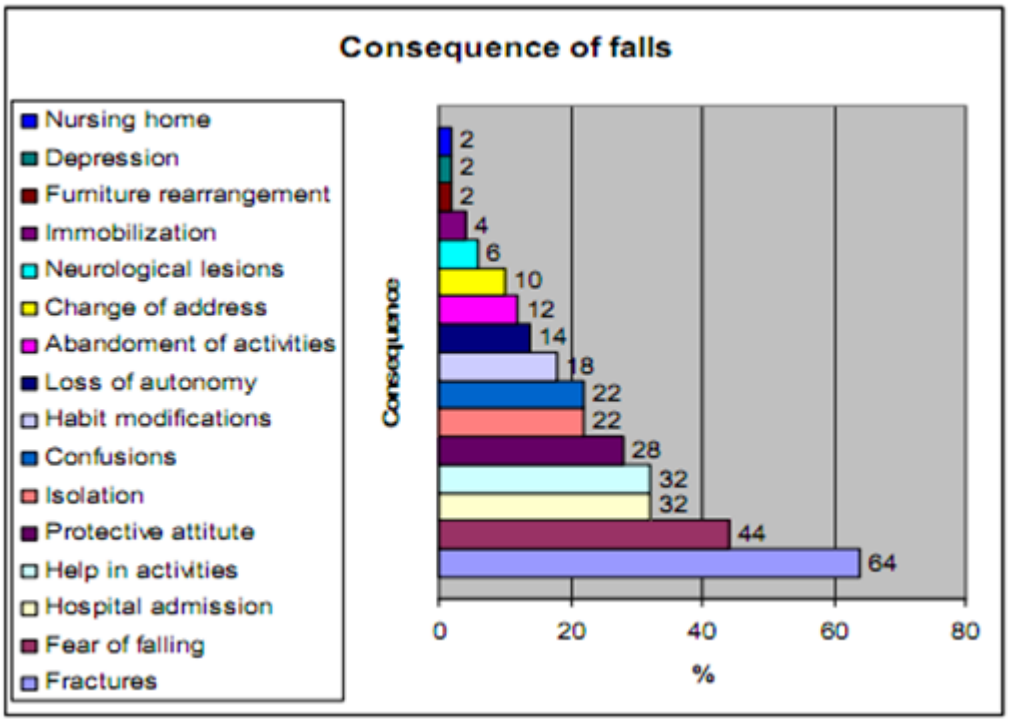



*Figure 6 multiple Consequences of falls* (Fabrício *Suzele Cristina Coelho)*

The above figure shows that Fracture is the leading consequence of fall followed by fear of falling.

### 2.2.1 Physical Consequences

The most common injuries include fractures, cuts, bruises and burns if one falls in a radiator. Whereas the injuries that requires hospitalization comprises of hip fractures and Pelvic. Most of the elderly who have hip fractures recover slowly and even cause death to many. A recent study found that 80% of the elderly women said that they would rather die than experience loss of independence that affects their quality of life, which results from the common hip fractures hence being the leading cause of admission into nursing homes. This leads to obvious some cost money wise. Osteoporotic fractures are

the main concern as approximately 1.66 million hip fractures each year worldwide, and the number will increase 4- fold by 2050. Carter et al. (2001)

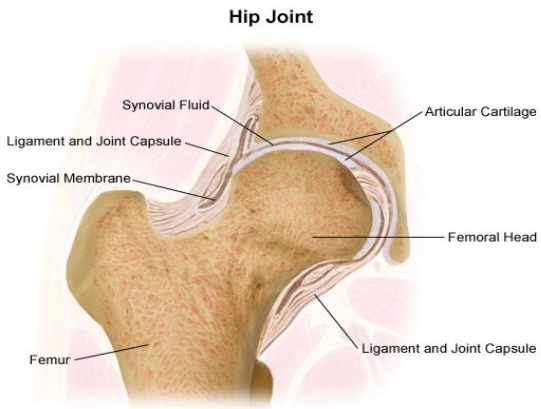



*Figure 8 an example of a hip joint without any fracture*

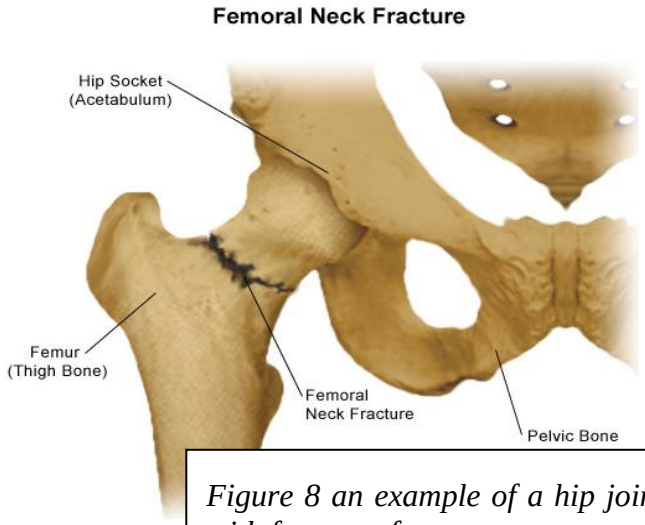



*Figure 8 an example of a hip joint with fracture. fracture*

http://www.uchospitals.edu/images/gs/ei_0244.gif)(http://www.uchospitals.edu/images/gs/ei_2611.jpg)

According to a Canadian survey falls are the most common cause of hospital admission for traumatic injuries which accounts to 40% of the hospitalization. The survey which was analyzed 1998-99 through 2002-2003 founds that approximately 85,000 Canadian age 65 and over had been admitted to hospitals due to injuries which were related to falls.

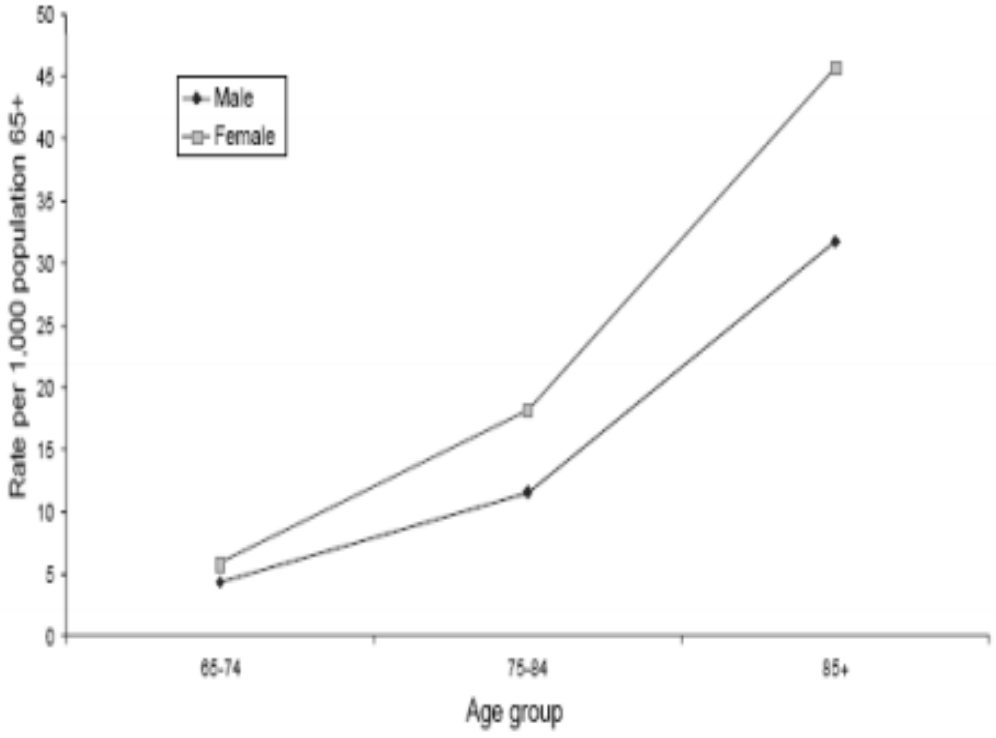
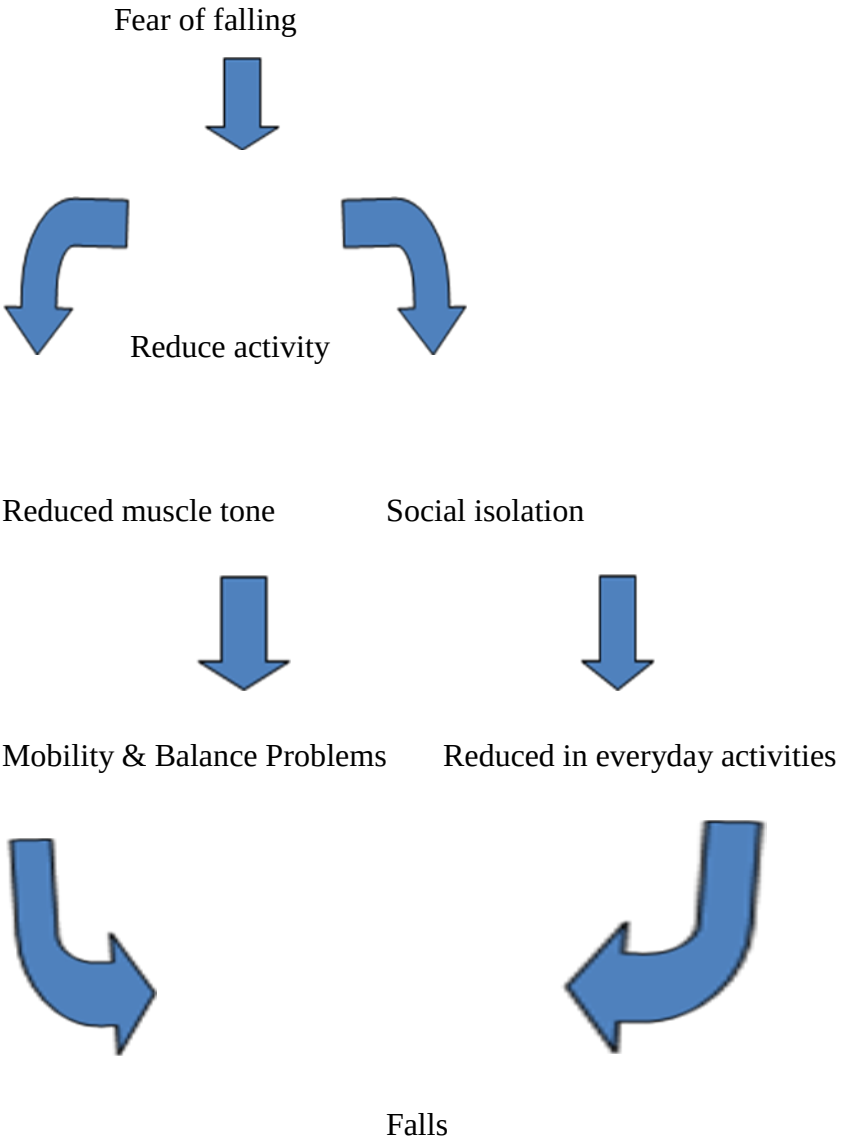



*Figure 9. Fall related hospitalization rates by sex and age groups, age 65+ (Public health of Canada)*

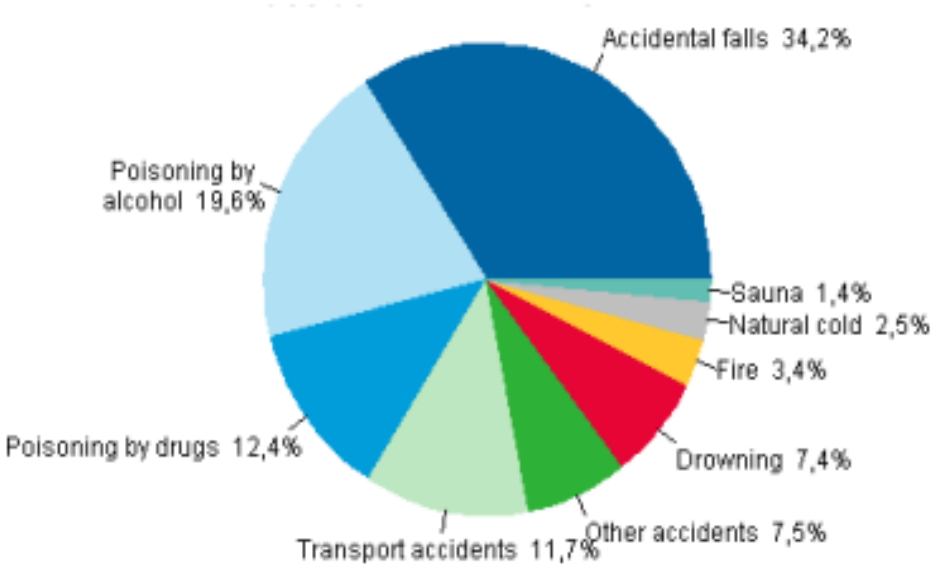
### 2.2.2 Social consequences

Falls can as well result to restriction of activities and fear of falling again which is also known as post fall syndrome, which result in reducing one´s quality of life affecting one's self-esteem. Other social consequences includes possible move into residential homes Carter et al. (2001)




### 2.2.3 Mortality

According to Finish statistics taken on 2009 accidental falls were the most common accidents leading to deaths for both women and men. A total number of 1,188 people died from the accidents.



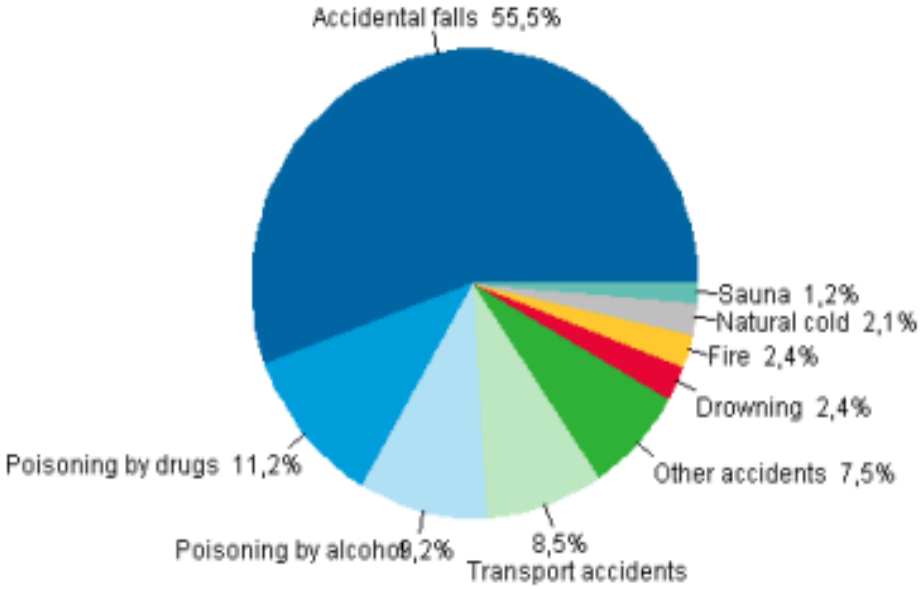




*Figure 10a.Fatal accident among women in Finland in 2009. (Finnish statistics data 2009*

*Figure 13b. Fatal accidents among men in Finland in 2009*

Falls and falls induced injuries among the aged has been latest an alarm because is a leading health problem. According to the study done in falls induced deaths of elderly people in Finland for more than 3 decades (1971- 2002) shows that the number of induced death is increasing rapidly especially in men.

The study was obtained from the Finish official cause of death statistics and the age limit was 50 years and over. The mortality data were drawn from the entire population of adults aged 50 years and over in Finland, which was 1 154 968 in 1971 and 1 826 356 in 2002.

According to the results the number of fall-induced deaths in elderly Finns increased considerably between the years 1971 and 2002 from 441 to 1039 overall (a 136% increase), from 162 to 488 in men (a 201% increase), and from 279 to 551 in women (a 97% increase). In men, the age-adjusted incidence of fall-induced deaths also increased during the study period—41.8 (per 100 000 persons) in 1971 and 55.4 in 2002

According to Canadian vital statistics on all the direct deaths caused by falls on those 65 and + years stated that in the duration of six years when the examination was carried more than 7,000 Canadians age 65 and over died.

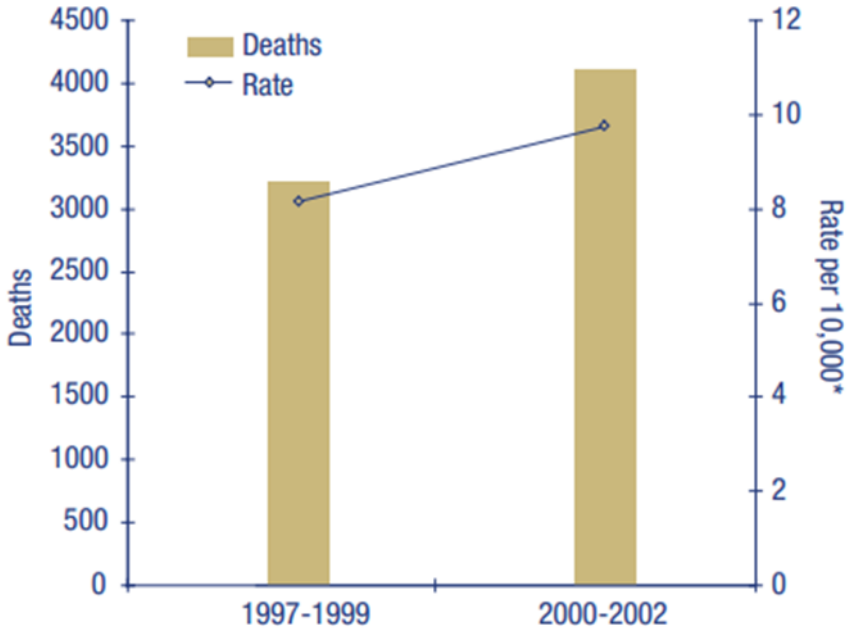



*Figure 11. Mortality rate due to falls among elderly aged 65+ in Canada 1997-2002. (Statistics Canada, Deaths Database.)*

The figure above shows a great incensement from 3,209 in the year 1997-1999 periods to 4,110 in the 200-2002 period.

DEATHS DUE TO FALLS, BY AGE GROUP, 65+ CANADA 1997-2002

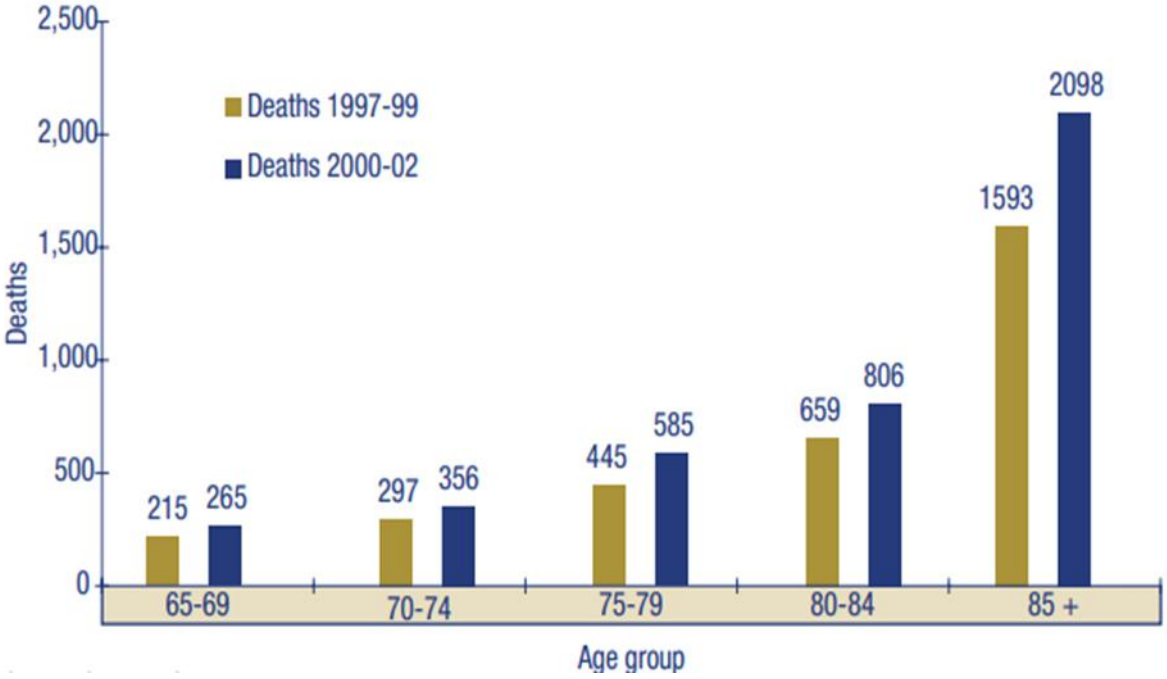



*Figure 12. Increasing by age of Mortality rate due to falls among elderly aged 65+ in Canada 1997-2002 (Statistics Canada, Deaths Database.)*

### 2.2.4 Psychological consequences

Many elderly people may experience one or even more emotional problems including loss of confidence, shame, fear and anxiety. Individuals suffering from other chronic illness and their emotional problems could cause addictive effects. All these problems lead to dependency causing lack of any motivation. Carter et al (2001)

About 33% of the elderly population experiences functional decline after a fall. Elderly persons experience psychological difficulties directly related to the fall and among these psychological consequences are fear of falling (FOF), loss of self-efficacy, activity avoidance and loss of self-confidence.

Self-efficacy which was introduced in 1978 by Bandura refers to ‘an individual's perception of capabilities within a particular domain of activities’. Scheffer et al. (2007)

For a long time, FOF was merely believed to be a result of the psychological trauma of a fall, also called 'post-fall syndrome'. This syndrome was first mentioned in 1982 by Murphy and Isaacs who noticed that after a fall, ambulatory persons developed intense fear and walking disorders.
FOF has been identified as one of the key symptoms of this syndrome and since that time, FOF has gained recognition as a specific health problem among elderly people. However, FOF was also commonly found among elderly persons who had not yet experienced a fall. Scheffer et al. (2007)

### 2.2.5 Economical consequences

Economically falls has and is becoming a major public health problem because of the high cost that occurs from all the falls among elderly. According to a research carried in the United States shows that emergency room, hospital, nursing facility stay and home care, the total average costs approximate $19,440 per elderly person following an injurious fall.

The Economic consequences of falls are a significant problem to Families and the society. This is a major problem not only locally but worldwide. World health organization has categorized this falls incurred cost into two, direct and indirect costs.
Direct cost comprises of all health care cost such as doctors visits, medication, home modification after falls and other services provides such as rehabilitation. Indirect cost include Patients morbidity and mortality cost. (Stephen R. Lord et al. 2007 pp. 19-20).

Hip fractures in elderly individuals are a major public health concern worldwide. These fractures are expensive to treat and represent one of the most important causes of long standing pain, functional impairment, disability, and death in this population. Most of the people suffering hip fractures never regain their previous mobility and permanently lose their independence. Hips protectors has been associated with cost saving.
(Pekka Kannus, MD, PhD; Jari Parkkari, MD, PhD, 2007) However, during recent years, the age-adjusted incidence of hip fractures has declined (Kannus et al. 2006). Nurmi & Lüthje (2002) found that the direct health system cost per fall injury episode

for people 65 year and older in Finland was 944 euros in 1999. (Scuffham et al. 2003) found that costs rise after the age of 75.

Osteoporosis fractures does not only affects one physically, rather they have psychological and social consequences. Fractures in the vertebrae can cause loss of height, back pains, immobility and deformity, decrease pulmonary functions, leading to dependency to others and as well affecting their self-esteem. Osteoporosis has major financial consequences as well. Mortality can result too as osteoporotic fracture.
Calcium and vitamins D supplementation has been shown to reduce the incidence of osteoporotic (Nancy E. Lane &Philip N. Sambrook p. 123)

Falls are the leading causes of injuries-related hospitalization among elderly age 65 and over. The study below was conducted in Austarilia. A research which was examining the cost of 11 injuries categorigories, the finding was Falls were the most costly of any mechanical injuries as shown in the figure below. Potter-Forbers and Aisbett

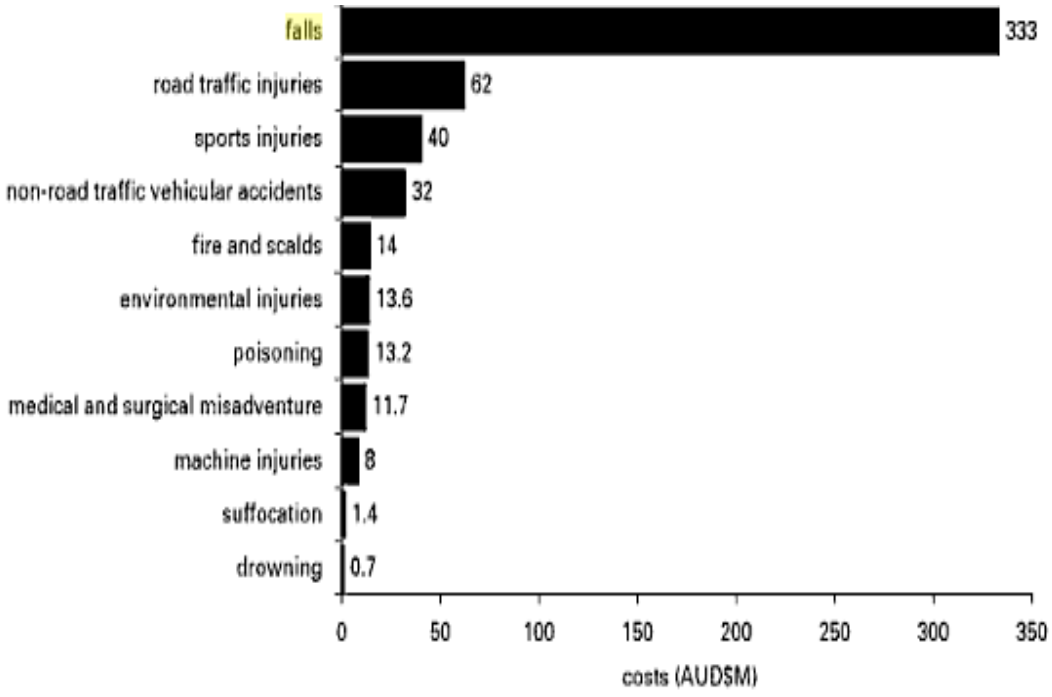



*Figure 13. Australian research on the cost of 11 injuries categories. Potter-(Forbers and Aisbett)*

## 2.3 Preventions of falls

Preventing falls is an important consideration for older adults. Thirty percent to 50% of community-dwelling older adults fall at least once a year. In people aged 65 and older, falls are the most common cause of injuries and hospital admissions, 6 accounting for 87% of all fractures, and are the second leading cause of spinal cord and brain injuries. Falls also leads to psychological trauma, motor deficits, loss of autonomy and enormous economic costs. Mau-Roung Lin et al. (2007)

Clinicians typically underestimate patients' desires for information on their condition and on healthcare services. In addition, enhancing patient participation in decision-making may result in better health outcomes and a better sense of well-being. Health-related quality of life (QOL), a measure of health status filtered by perceptions and expectations of the individual, have increasingly gained recognition as an important tool for evaluating effects of medical treatments and healthcare services. The assessment of QOL in elderly people is particularly important, because it can predict healthcare utilization and mortality, and improving QOL is considered to be the primary goal of medical treatment in this population because QOL is a broad, multidimensional construct that includes at least such domains as physical, psychological, and social functioning, a fall prevention program often affects fall risks as well as many other aspects of health in older people, QOL measures can provide a comprehensive health profile resulting from such programs. Furthermore, QOL measures may also efficiently and objectively help enhance the selection of optimal interventions for older people. Nevertheless, little is known about potential benefits of fall prevention programs on the QOL of older people. Mau-Roung Lin et al. (2007)

### 2.3.1 Physical activity

Regular participation in moderate physical activity is integral to good health and maintaining independence, contributing to lowering risk of falls and fall-related injuries. Physical activity can help combat heart disease, muscular tension, joint pain and osteoporosis. It can improve circulation and stimulate digestion. It also heightens alertness, increases self-confidence (Yoshida 2007, Lamb et al. 2005), The lead author of the French study, Philippe Perrin, MD, PhD, and his colleagues, reported that simple, regular exercise regimens such as tai chi, swimming and walking--seemed to improve balance and reduce fall risk. Looking at the positive results of the seniors who took up exercise later in life, Dr. Perrin suggested it's never too late to start exercising for better health. It is very important the in institutions the staffs should include physical exercises time during the schedules. Tufts University Health & Nutrition (2007)

### 2.3.2 Learning from past mistakes

Lessons need to be learned and acted on to minimize the likelihood of reoccurrence, Nurses are responsible for maintaining the safety of patients in their care and On a daily basis nurses' vigilance and judgment prevents potential harm to patients. When a patient safety incident occurs, the crucial question is not 'who is to blame for the incident but how and why did it occur? Very few patient safety incidents are caused by malicious or reckless practitioner behavior. Woodward S (2006)

Isolation and loneliness are most common among elderly, either those who have lost their spouse or those who live alone. The isolated and those who are lonely are more likely to be at fall risk than those who are active and socialize more. Social activities improve quality of live hence reducing loneliness.

### 2.3.3 Improving the system of care

The development of a system of care to deal with falls and fractures is a major undertaking which requires commitment and co-operation from acute trusts, community hospitals, general practice surgeries, social services, and of course the patients themselves and their immediate carers. Tony Luxton & Jackie Riglin (2003)

Fear of falling again is a problem to many of those who had a fall before. Fear of falling causes people to restrict their activities. This can be prevented identification of the fears, counseling and educating the individual. Skelton D, Todd C (2004)

Environmental modification of the living quarters of elderly persons consistent with universal design philosophy (with attention to floor surfaces, lighting, bathrooms, stairs, traffic patterns, and accessibility) to reduce or eliminate hazards,

Assistive devices such as wheel chairs, canes and walkers could prevent falls if well used. Conducting equipment safety checklist is also very important and there can be reduction in the number of falls. Below find the checklist

- Bed side rails
  - lowers and raises easy
  - Always secure when the rail are up
- Wheel chair
  - Always check if the brakes are working

- Hand rails
  - Nice grips
  - Should always be available in the bathroom and toilets

Along with good leadership and collaboration, (Hill et al. 2000) found that education is an essential strategy for profession staffs in nursing homes building the necessary capacity for effective fall prevention policy and practice. All the staffs should as well know how to use the assessment scale correctly encouraging self-management rather than dependence. This gives the elderly an active role to play. (Hill et al. 2000) Nurses should as well be taught how to keep things needed example call bell, glass of water and others to make it easy for the patient (Janise M. Morse 2008 PP. 9-11)

### 2.3.4 Local initiatives

A falls prevention project can be established throughout the county where a falls coordinator for different regions or cities are appointed to co-ordinate and develop sustainable evidence-based practice for the prevention and management of falls in older people across health and social services, housing and the voluntary sector by involving the development of a three-tiered assessment process to identity falls risk appropriate interventions relating to risk levels (low, medium, high)

- Guidelines for best practice in all locations
- Training for staff and volunteers from all agencies
- Opportunities for older people to exercise in the community
- Provision of information and publicity to raise awareness with the general public and promote self-help strategies
- Monitoring of current research initiatives and networking with parallel projects around the country to ensure currency of local guidelines and standards
- Extensive evaluation of the projects, including the collection of both qualitative and quantitative data covering learning outcomes after training sessions, numbers attending training sessions, activity measures of the falls clinic and specialist therapy assessments, questionnaires to sheltered housing managers about their attendance at falls
- Training sessions and compliance with local guidelines for assessment and onward referral, and training of residential home staff and day centre staff, the rehabilitation programmes using the Tinetti Balance

Assessment Tool (Tinetti 1986) and the Activity Specific Based Confidence scale-UK (Parry ero/2001) as outcome measures. Evaluation has shown that after a six week rehabilitation programme the relative risk of falling is lower and confidence with activities of daily living is higher.

Examples of local community falls prevention initiatives include a three tiered assessment process for identifying falls risk. The pyramid illustrates that a large number of level 1 assessment is needed to detect those at risk of further falls and that a smaller number need a specialist assessment.

**Level 1** of the pyramid helps identify a falls problem. All those people aged 65 and over coming into contact with health or social services, housing or the voluntary sector are screened by a trained person from that agency to identify whether they have a falls problem. A simple four question assessment developed locally is used. This initial assessment is linked to the single assessment process locally

**Level 2** of the pyramid helps determine risk factors for falling. All those identified as having a fails problem are referred on to the second tier of assessment, to determine the individual's risk factors for falling.

**Pyramid for identifying falls risk**

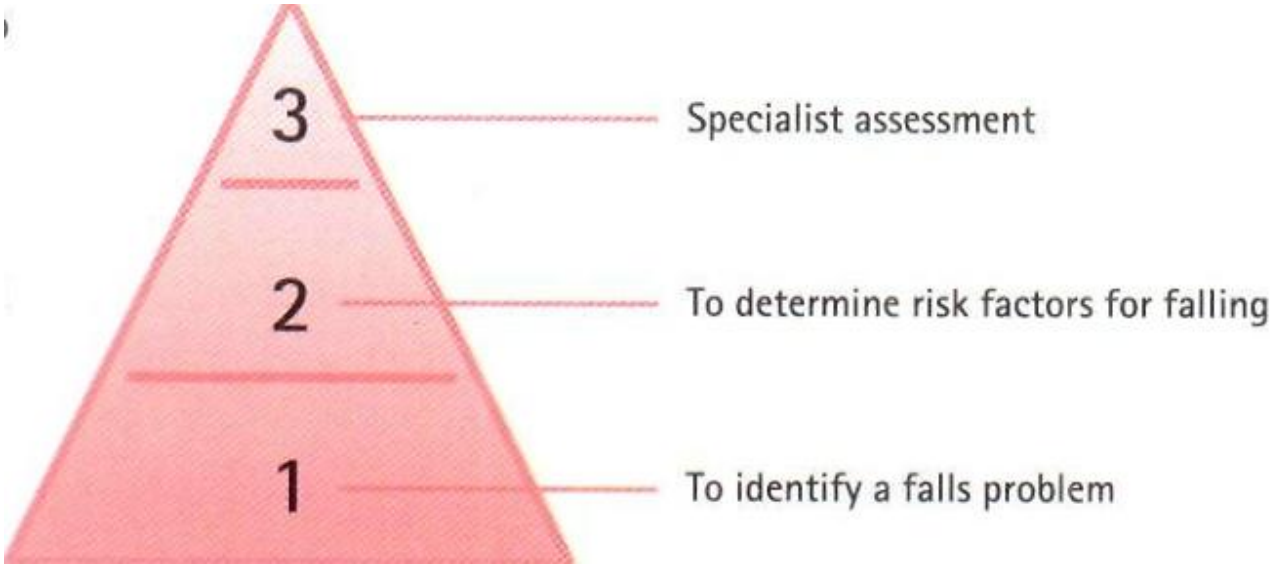



*Figure 14. Identifying falls risk (Gerontological nursing practice)*

**Falls assessment questioner**

- Have you had a fall in the last year?
- If yes...
- Did you hurt yourself or need to call a doctor? If yes- level 2
- Were you able to summon help? If no- level 2

Are you able to do the things you used to, prior to the fall? If no - level 2 of assessment is completed by occupational therapists, physiotherapists and nursing staff across primary and secondary care. We have found that a single half-day training session is suffi-

cient to equip nursing staff to use the assessment tool based on the Oueen Mary and Westfield College (2000) model. This examines the main risk factors for falling, including:

- Number of falls in the past year
- Number of medications
- Central nervous system suppressants
- Postural hypotension
- Trigger factors for osteoporosis
- Alcohol intake
- Nutrition
- Vision
- Hearing
- Footwear/foot care
- Balance
- Transfers
- Walking
- Environmental hazards
- Coping strategies
- Memory/ comprehension.

Accompanying guidance prompts the assessor on the type of intervention needed for each risk factor identified. For example:

- Dizziness on standing and/or the use of four or more medications would prompt the need to measure lying and standing blood pressure, and a medical review aimed at reducing the number of medications, involving medical and nursing staff
- Problems with vision or hearing would prompt referral to the optician or audiologist
- Difficulties with personal care would require onward referral to social services
- Health promotion, lifestyle or other advice and support would usually be implemented by nursing staff

- Problems with balance, gait, confidence or the domestic environment would indicate the need for onward referral to therapists.

For a much smaller number of people, referral on to the third tier of specialist falls assessment is required. This tier involves one or both of the following:

- Falls clinics, which take place in two community hospitals and are led by consultant geriatricians looking for possible medical causes of falls. A detailed review of medication is also undertaken
- A specialist therapy assessment, completed by a specialist occupational therapist or physiotherapist, to look in more detail at the intrinsic risk factors for failing, loss of confidence/fear of falling and coping strategies.

### 2.3.5 Interventions for falls prevention

A 'Walk Tall, Don't Fall' health promotion campaign targets groups of older people; for example, in sheltered housing, church groups and luncheon clubs for people over 65. A presentation is made that includes information on the causes of falls and how they can be prevented and the value of exercise. A falls prevention pack, developed locally, is issued to each person present in order to reinforce the information given.

A community exercise programme can be developed through the appointment to the falls team coordinators. They have a remit to train wardens in sheltered housing and staff in day centres and residential homes to lead an effective exercise class in their workplaces, Balance and safety groups are run for people at high risk of falling. This is a ten-week educational and exercise programme aimed at older people with a history of falls and subsequent loss of confidence, whose risk factors for falling include poor posture and balance, with loss of joint range and muscle strength. The educational component includes information on the causes of previous falls and how they can be prevented, safety in the home and coping strategies in case of a further fall. The osteoporosis nurse consultant from the local acute trust attends one session to talk about the disease and screen each patient for risk factors, with appropriate follow-up.

The importance of long-term compliance to falls prevention strategies is emphasized throughout the programme. The other component includes exercises for balance and co-ordination, muscle strengthening and bone loading, and the use of backward chaining to teach the older person how to get up off the floor. Adapted T'ai Chi routines are now included in the programme, using advice from a local instructor.

A pilot project looking at the level of compliance and cost effectiveness of hip protectors for residents at high risk of falling should be done in this project addressing the problem of older residents with dementia where it is not always possible to implement falls prevention strategies in those who are liable to wander and cannot remember to behave safely.

Finally, a 'Safer Homes' project addresses environmental issues that increase the risk of falling, by providing information and practical help with small household jobs and offers onward referral to other agencies as appropriate.

Tony Luxton & Jackie Riglin (2003)

On October 2, 1999, the WHO Aging and Health Program launched a campaign to increase public awareness of the importance of physical activity. A central feature of the campaign was a series of coordinated walks for older persons collectively known as the Global Embrace. The goal of the Global Embrace was to emphasize the importance of active and successful aging by organizing walking events across the world synchronized in such a way as to start at the same time of day in every time zone throughout the globe WHO (2000).

Campaign needs to raise awareness not only to the aged but also to their family members and health professions. These interventions talked about could improve balance and prevent falls among elderly people. Advertisements could be in form of posters which could be given to the Elderly themselves, Family members and Nurses taking care of the aged. The media have an important role to play too in promoting a positive image of ageing, therefore building awareness on falls prevention is paramount. The media can help by widely disseminating realistic and positive images of active ageing, as well as by sharing educational information on falls and falls prevention strategies. WHO (2002)

### 2.3.6 Osteoporosis services

Osteoporosis can be defined as: 'A progressive systemic skeletal disease characterized by low bone mass and architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture'(WHO 1994).

The chance of developing osteoporosis increases as we age. It is important to keep ones bones healthy by eating a diet rich in calcium and vitamin D and taking regular, weight-bearing exercise. (Salkeld et al. 2000).

Osteoporosis affects approximately one in three women over the age of 50 and one in ten men (Madhok 2000). More than 95 per cent of hip fractures are due to a fall and more than 90 per cent of hip fractures are due to osteoporosis (Cryer and Patel 2001). Therefore, for any falls prevention strategy to be effective, measures will need to be taken to identify those older people both at risk of falling and at risk of osteoporosis.

The detection of risk factors for osteoporosis and the development of formal links with services for osteoporosis are obvious next steps for evolving falls services.

Risk factors for osteoporosis include:

- Family history: genetic predisposition; maternal hip fracture
- Nutritional status: poor nutrition in childhood and adolescence; low dietary intake of calcium and vitamin D
- Lifestyle: low exposure to sunshine; alcohol and tobacco use; caffeine; lack of bone loading exercise
- Past medical history and medication: onset of menopause at an early age; secondary amenorrhea; low weight and bone mass; thyrotoxicosis; Cushing's syndrome; steroid therapy; long-term heparin; chronic renal failure; malabsorption syndromes; organ transplantation; prolonged immobilization.

For falls prevention project to succeed, links with the local osteoporosis services should be developed. Staff undertaking falls assessments should be aware of osteoporosis,

identifying those at risk and arranging onward referral for further assessment and treatment. Nurses encounter older people in all settings and will often have the opportunity to identify those who are at risk of falling. The evidence base for falls prevention shows that in order to be effective, each risk factor for falling for a given individual must be identified and measures taken to eliminate or minimize as many as possible (Tinetti 1988). The availability of the screening tools mentioned above will help nurses to identify these risk factors, intervene effectively in order to reduce the risk of falls and to participate in a range of community-based services. Tony Luxton & Jackie Riglin (2003)

Hip protectors cannot prevent falls among elderly but rather it can prevent hip fractures if one falls. Hip protectors are non-pharmacological intervention that can reduce and incidence of hip fractures in institutional and also in community dwelling elderly people (Peter Tugwell, 2004, p. 205)


*Figure 15a An example of Hip fracture and a hip protector*

(http://www.esleyhtio.fi/eslemedical/images/lonkka_1012.)

### 2.3.7 Reducing the Risk

The risk of falling for people over 65 increases with the number of risk factors present, rising from 8 per cent for those with no risk factors for falling to 78 per cent for those with four or more risk factors (Tinetti et al 1988). There is evidence to show that falls interventions likely to be effective include:

- Home-based balance re-training, muscle strengthening and walking programmes
- T'ai Chi group exercise programmes
- Home hazard modification (for those with a history of falling)
- Gradual withdrawal of psychotropic medication
- Multidisciplinary, multi-factorial, risk factor screening/intervention programmes (for all community-dwelling older people) (Gillespie et al 2001 & Day er 2002).

Interestingly, exercises to improve muscle strength alone have not been shown to reduce the risk of falling. However, programmes that include: bone loading, improving muscle strength, endurance, balance and reaction time (including T'ai Chi activities), functional floor activities and measures to boost confidence have been shown to reduce the risk of failing (Skelton and Dinan 1999).

Maximizing safe shoes use is very important because it may offer an effective falls prevention which is the main problem in may nursing homes, Suitable socks should also be improvised incase an elderly person walk without shoes he or she can be safe from falling. Poorly fitted shoes have led to foot problems which in turn cause fall problems. Therefore proper shoe Numbers should be check with care when issuing the shoes to the residence. (Jasmine C, Phd, et. al 2008)

Regular checking on the risk assessment of the physical functions, e.g. blood pressure, cardiac function, or mental status need to be evaluated during the health care visit and also it is important to have eyes checkup once or twice a year. For the vision problem it is important that one has a regular checkup. Always remember to clean glasses daily for a better vision, adequate lightening is important. Giving orientation to the new clients is

very important because of the new surroundings. Care givers should also check the fall history regularly.

Patients who have fallen or who are at a high risk of falling should have their medication reviewed thoroughly. Some medicines can make you dizzy and increase your risk of a fall. If dizziness is one of the side effects of any medication you are taking or if you take more than four different medicines it is also important that the doctor do some dose reduction to prevent these side effects hence preventing high chances of falls. (Semla and Rochon 2002. pp 37-38.)

According to World health organization, WHO, good nutritional that is eating a balanced diet is central to health ageing, Diet and lifestyle influence morbidity and mortality therefore it is important that the aged people should adopt a diet and a good life style habit that can minimize the risk of morbidity. They have also stated that eating a well-balanced diet rich in calcium may decrease the risk injuries which could be caused by fall among the aged. WHO, (2002) it is important to: assess elderly individuals' nutrition, pay attention to nutritional problems, use more nutritional supplements, and provide energy and protein-dense food which might delay malnutrition or even improve the nutritional status of elderly residents and patients. Merja Suominen (2007) an effective concentration of vitamin D in the blood may improve bone health and musculoskeletal function in the elderly, the researchers posited. "Past studies have shown that vitamin D could help prevent falls in seniors, and may be due to a possible strengthening effect the vitamin has on the musculoskeletal system," wrote lead author Kerry E. <, MPH, of the Institute for Aging Research and colleagues. Tufts University Health & Nutrition, (2007).

Ensuring that nursing home residents receive adequate daily supplemental vitamin D could reduce their falls and potentially reduce the risk of hip fracture in this high-risk group. There are usually a number of factors at work regarding falls in nursing homes. While the positive effects of vitamin D supplementation certainly are encouraging, they wrote, this should not be seen as a cure-all. Tufts University Health & Nutrition, (2007)

Emergency phones are very important. Here in Finland there are some companies that are responsible for emergencies rescue cases. Esperi is one of the commonly known. Esperi Care provides housing, security, telephone and home care services for older peo-

ple, mental health and housing services for the mentally handicapped and medical transports (Esperi Finland)

Security phone makes it possible to get help in acute situations at all hours. The device allows for an emergency situation. Security Phone is connected to a landline and the alarm is a separate wrist or neck connected to the alarm button. If the telephone network is not available, security can be connected to your phone with a GSM adapter. Also, most home phones can be connected to an adapter to play through the GSM network. (Esperi Finland)

The below picture show an example of commonly used devices in case of any danger (Esperi)

*Figure 16. An example of Falls Rescue Devices (Esperi).*

There are other networks which are involved in preventing falls in Europe for a better life among elderly The European Network for Safety among Elderly (EUNESE) is one of the networks.

The European Network for Safety among Elderly (EUNESE) is an open, multi-ethnic and multi-cultural network developed in the context of the European project EUNESE, which is coordinated by the Centre for Research and Prevention of Injuries (CEREPRI), Department of Hygiene and Epidemiology, Athens University Medical School and run

under the auspices of DG SANCO (Directorate General of Health and Consumer Protection), within the framework of the Public Health Program of the European Union.

Anticipated falls are prevented by first knowing who is at risk of fall. This is done by administering the Morse fall scale (MFS). The Morse Fall Scale (MFS) is a rapid and simple method of assessing a patient's likelihood of falling. It consists of six variables that are quick and easy to score, and it has been shown to have predictive validity and reliability.

**Assessment Tool**

The Morse Risk Assessment Tool was chosen as the most appropriate tool available as it had undergone rigorous statistical testing for reliability and validity. Janice Morse is a Canadian research nurse who developed the tool over a ten-year period following detailed background research into risk factors associated with falling. It is also one of the few assessment tools available that is designed for use in an acute care environment.

The Morse tool has six risk factors that are assessed. These are:

• History of falls

• Secondary diagnosis

• Mobility Aids

• Attachment to equipment

• Gait

• Mental Status

After the assessment is done those patients who score at high or medium risk of Falling are again assessed to see if there is anything that can be done to lower the risk. It is important to check through each and every residents care plan. This helps in identifying those who are at risk of falling. (Janice M, Morse 2008)

Check appendixes, Table 1 & Table 2 page (72-73).

Other useful tool is Mini Mental State Examination (MMSE) since its creation by Folstein et al. in 1975, The Mini Mental State Examination has been so useful screening tool for cognitive impairment with older, community dwelling, hospitalized and institutionalized adults. The Mini Mental State Examination (MMSE) is a tool that can be used to systematically and thoroughly assess mental status. It is an 11-question measure that tests five areas of cognitive function: orientation, registration, attention and calculation, recall, and language. The maximum score is 30. A score of 23 or lower is indicative of cognitive impairment. The MMSE takes only 5-10 minutes to administer and is therefore practical to use repeatedly and routinely

Check appendixes, page (74-75).

# 3 THEORETICAL FRAME WORK

## 3.1 Active ageing and its determinants

According to World health Organization (WHO), being active refers to continuity in participating economically, socially and culturally, therefore increasing healthy life ex pectancy and quality of life.

Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. It applies to both individuals and population groups. Active ageing allows people to realize their potential for physical, social, and mental well-being throughout the life course and to participate in society, while providing them with adequate protection, security and care when they need. WHO (2002)

Twenty years ago, in many regions of the world, it would have been an unusual sight to observe a 70-year-old woman enthusiastically exercising in a public place. At that time, throughout many countries and cultures, old age was considered to be a time in which elderly persons were expected to take it easy. The prevailing models of retirement encouraged elderly persons to adopt relatively passive lifestyle choices and overtly or sub-

tly discouraged seniors from being physically active. Chodzko-Zajko, PhD, and Andiara Schwingel, PhD

To develop a cohesive strategy with respect to the promotion of health and well-being of elderly persons throughout the world, in April 1995, the World Health Organization (WHO) launched a new program on aging and health. The goal of this program was to respond to the challenges of population aging in a dynamic, life course oriented fashion. Writing in an editorial in the Journal of Aging and Physical Activity, Alexandre Kalache, the director of the WHO Aging and Health Program, stressed that a major role of the WHO Aging and Health Program would be to raise awareness of the importance of lifestyle factors in healthy aging through a combination of advocacy, training, and research (Kalache, 1996).

Active Ageing depends on a variety of influences or determinants that surround individuals, families and communities as expressed in Figure 6 below. They include gender and culture, which are cross-cutting, and six additional groups of complementary and inter-related determinants:

1. Access to health and social services

2. Behavioral

3. Physical environment

4. Personal

5. Social

6. Economic

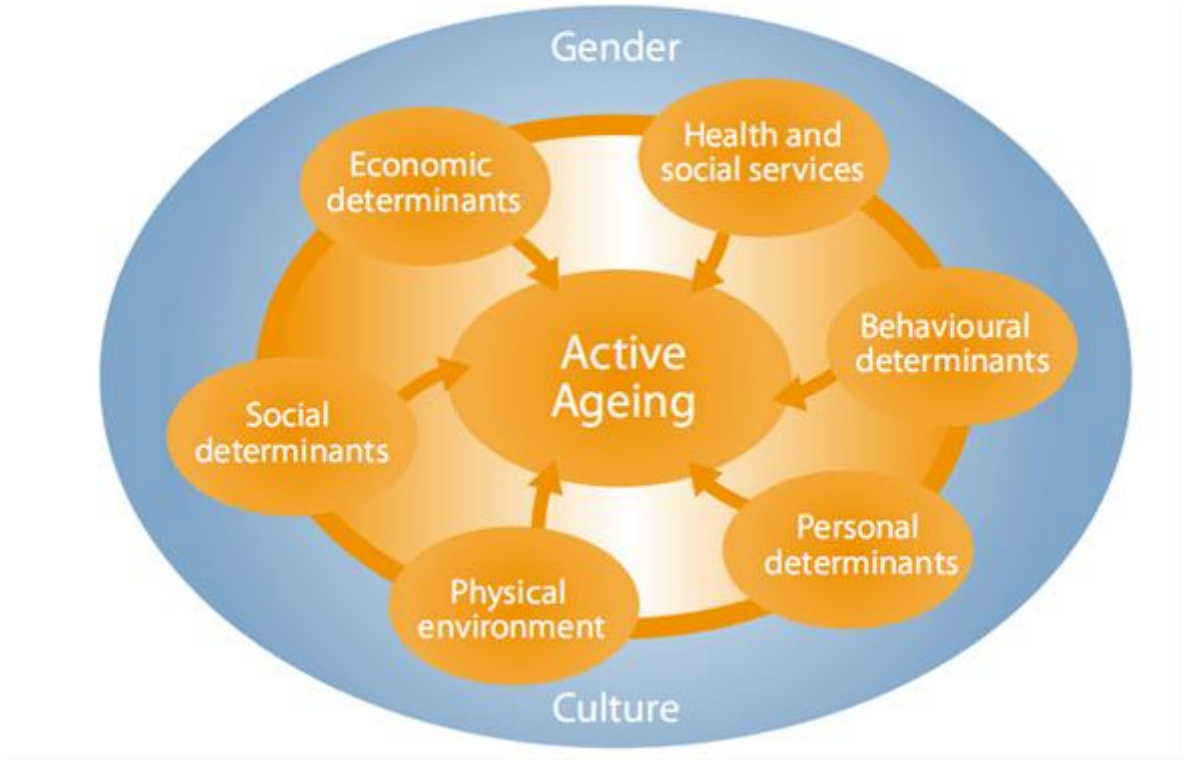



Figure 6. The determinants of Active Ageing

Source: Active Ageing: A Policy Framework, WHO, 2002

There are various determinates that can affect someone as one gets aged. This can affect one positively if well followed, it can also have a negative effect on one's life if they are not well followed.

### 3.1.1 Behavioral Determinants

Engaging in appropriate physical activity, healthy eating, not smoking, avoiding alcohol consumption and using medications wisely in older age can prevent disease and functional decline, extend longevity and enhance one's quality of life. WHO (2002)

Physical activities are also very important in day to day life and if not carried out it can cause functional declines. Physical activities if carried out in regular bases it can reduce the risk of chronic diseases and even prevent falls among the elderly which is a problem nowadays. It also improves mental health and often promotes social contacts. Social contact is practiced as people share their experiences with each other. Physical activities improves independence life too as one is fit to do all that he or she should do. Economi-

cally, physically fit can also be of a help because one might save medical bills. WHO (2002) seniors who have been physically active throughout their lives and remain so after retirement have significantly better balance and consequently suffer fewer falls than their less vigorous counterparts. A new study by French researchers offers hope for people who have been sitting on the sidelines: It's never too late to start!

The results, published in the International Journal of Sports Medicine, showed that simple, regular exercise improved both muscle strength and balance. Active people have stronger, more balanced musculature that gives them quicker response and more control over their bodies. Tufts University Health & Nutrition, (2007)

Healthy eating is important though there are some reasons that can cause poor eating habits. Malnutrition can be caused by limited access to food, tooth loss, socioeconomic hardships, emergency situations, a lack of nutritional knowledge and information ,poor food choices (e.g., eating high fat foods), disease and the use of medications, social isolations, and cognitive or physical disabilities that inhibit one's ability to buy food and prepare it, lack of physical activity. Insufficient calcium and Vitamin D is associated with a loss of bone density in older age and an increase in painful and this can cause the osteoporosis which is one of the main reasons why many elderly falls today. (WHO, 2002) As one ages, the tendency to fall increases, often with serious conse-quences but two recent studies offer some encouraging news: Exercise and vitamins may not only protect the bones, but also help keep one from falling in the first place. Tufts University Health & Nutrition (2007)

Tobacco use and alcohol consumption is one of the main problems. Tobacco has negative effects on elderly people's health, especially to those who suffer from asthma or other respiratory. Elderly people also have greater risks for alcohol related falls and injuries, as well as dementia and the potential hazards associated with mixing alcohol and medications. WHO (2002)

### 3.1.2 Social Determinants

Social support is also very important in ensuring active ageing, loneliness, social isolations, illiteracy and lack of education, elder abuse and exposure to conflict increase elderly people's risks for disabilities and early death. WHO (2002) state that inadequate

social support is associated not only with an increase in mortality, but also with morbidity and psychological distress. Therefore family members, friends, working mates, neighbors and community groups are as important as one age. Having a good connection with all these groups can make a significant difference in one`s life. Social isolation in old age is linked to a decline in both physical and mental capacities and an increase in health damaging behaviors such as excess alcohol consumption, excess tobacco use and physical inactivity. WHO (2002)

### 3.1.3 Economic Determinants

Active ageing policies need to intersect with broader schemes to reduce poverty and increase the involvement of older people in income generating activities. WHO (2002)

# 4 METHODOLOGY

This chapter explains the method and the various databases used to search for the materials for the study. This is a qualitative study where the authors used literature review and content analysis by deductive method since the study was done earlier to formulate the theoretical background and answer the research questions.

Literature review is the comprehensive study and interpretation of literature that relates to a particular topic. When one uses literature review research questions are identified, then one seek to answer this research questions by searching for and analyzing relevant literature. Some importance of literature reviews is that new insights can be developed by the re-analyzing the results of the study. (Aveyard 2010 pp.5-7)

The authors focused on the latest information from the year 2000 and above. Information was gathered on researched bases books, articles, countries government given information and also from known associations. On limitation the Authors worked on only articles that were published in English.

## 4.1 Data collection

The information for this study was obtained from secondary source since the authors used literature review, from existing research articles. The authors did use content analysis and Content analysis is a research technique for collecting and interpreting materials from valid inferences from texts, journals, books to the content of their use. (Krippendorff 2004)

Articles that were used in this study were carefully chosen in order to get the most current and relevant information, A systematic search of electronic database EBSCO, CINAHL, GOOGLE SCHOLAR AND GOOGLE BOOKS. Before collecting any data the authors highlighted their two research questions in order to come up with the key words.

The authors did use the following subject terms or keywords, Active ageing* falls * Consequences of falls * prevention of falls. And Elderly * falls assessment tools. The authors started with simple search such as falls in elderly, whereby there was limitation in the articles. Including other key words like falls among eldely AND consequences* Falls in elderly AND prevention resulted to more articles. other terms like Active ageing AND elderly too was a plus to the search work leading to more relevant articles.For the key word Elderly, some data bases such as EBSCO search engine suggested to use Older people instead, which resulted to many articles.

During this study, published studies related to falls among elderly were targeted. Due to the fact that the study is based on elderly people the age targeted was people over the age of 65years. The table below shows the articles used for the study,the Databases used, the literature found and the chosen articles which amounted to 17

*Table 1. Sample processing and results of the search databases*

| Database | Search word | Found literature | chosen articles |
|---|---|---|---|
| EBSCOhost | Falls (Accidents) in old age AND Prevention AND physical fitness | 26 | 1 |
| EBSCOhost | FALLS (Accidents) AND OLDER people AND REMEDY AND Residen- | 224 | 1 |

| | | | |
|---|---|---|---|
| | tial care facilities | | |
| Google scholar | Consequences of falls AND Older people AND Nursing homes | 16,900 | 2 |
| EBSCOhost | Psychological Impact AND Falls (accidents) AND Institutional care AND Older people | 41 | 1 |
| EBSCOhost | Quality of life, Elderly people AND Falls | 5507 | 2 |
| EBSCOhost | Falls (Accidents) in old age AND Prevention AND Nursing facilities | 93 | 2 |
| EBSCO host | Injuries AND falls And elderly | 381 | 3 |
| Academic Search Elite (EBSCO) | Deaths AND Elderly AND<br><br>Finland | 2 | 1 |
| Academic Search Elite (EBSCO) | Footwear AND falls AND aged | 12 | 1 |
| Google scholar | Active ageing AND falls AND prevention | 16,000 | 1 |
| Google books | Risk factor AND falls And Elderly | 8,00 | 2 |

## 4.2 Inclusion and exclusive criteria

The authors chose carefully what criteria were to be included in the study because these criteria will determine the quality of the study; therefore in the search the authors chose only the most relevant articles to the study. All together 17 articles were used for data analysis to provide answers to the research questions.

For the study to be more reliable, it was necessary for the authors to exclude some criteria just as it was crucial to include some criteria. Any article that did not fall within the subject of the study was not considered. The title of the article was not enough but the content of the article mattered most.

*Table 2 Illustrates inclusion and Exclusion criteria*

| Including Criteria | Excluding criteria |
|---|---|
| • Published articles between year 2000 and above<br>• Articles that were related to our work<br>• Articles that were free<br>• Articles with full PDF Format<br>• Articles with abstract<br>• Articles written in English<br>• Articles written by scholars<br>• Articles available in full text<br>• Articles retrieved from academic databases | • All articles that were not published in English<br>• Articles that were older than our limitation<br>• Non-scientific articles<br>• Articles that was not relevant for the study.<br>• Articles without an abstract<br>• Articles not from academic databases<br>• Articles that were chargeable |

## 4.3 Data analysis : deductive content analysis

The authors did use content analysis to analysis the data, whereby content analysis is a research technique for collecting and interpreting materials from valid inferences from texts, journals, books to the content of their use. (Krippendorff 2004)

According to Elo & Kyngäs (2007) deductive content analysis is good for studies where the main findings relies more on previous theories. However, a deductive content analysis approach begins with development of facts, categorization and later code the data according to similar ideas. After the categorization process the authors proceed with reviewing each selected articles for correspondence. (Elo & Kyngäs, 2007)

Since this is a study based on earlier studies the authors used a deductive method to analyse the contents of the selected articles. Then the selected articles are then used to answer the authors two research questions in form of categories in the result part.

## 4.4 Ethical consideration

The authors studied thoroughly and understood the Helsinki Declaration. The scientific published articles that were used as the basis for this study were reported in truth throughout the study.

## 4.5 Validity and Reliability

According to Smith (1991 p. 106) "validity is defined as the degree to which the researcher has measured what he has set out to measure." In terms of measurement procedures, therefore, validity is the ability of an instrument to measure what it is designed to measure. (Kumar, 2011p.178)

In this study therefore, validity refers to the extent to which the research method has been able to measure the objectives of the study. The aim of the study is to create awareness on the existence of falls amongst the elderly and provide information on the

importance of active ageing, consequences of falls and how falls can be prevented using scientific based practices; and to achieve this, the authors answered the research questions.

The articles for this study were retrieved from authentic databases suggested for use by Arcada, and are scientific works from professional researchers. The authors studied the materials and obtained results which were relevant for answering the research questions. The findings of this study have been used in formulating the results and conclusions. The authors also used articles not older than ten years to make sure that they had the latest information; it therefore means that it supports the validity of the study.

When a research tool is consistent and stable, hence predictable and accurate, it is said to be reliable therefore, the greater the degree of consistency and stability in an instrument, the greater its reliability. (Kumar, 2011p.178)

In this study, reliability refers to the consistency of the findings from different studies, and the fact that same data is produced by different researchers repeatedly in spite of the fact that those researchers used different research methods. Therefore data produced from this study can be used for other studies.

## 4.6 Problems encountered in the study

The authors could not access all articles since most of articles needed pass words to access and therefore hindering the authors to only work on the available articles.

The articles in the search databases were so much so the authors had to use a lot of time to go through the articles in order to come up with the right articles.

Initially the authors wanted to work with questioners in order to attain fresh information from a chosen elderly people's home but that was not possible, so the authors had to review articles. The authors in deed thought the thesis work would have obtained fresh details from the elderly person themselves, their caregivers either Family members at home or nurses in nursing homes, and also from rehabilitation centers where they go for rehabilitation after falls if only interview was done or questioners. Another limitation was that most of the articles were found were from second or even third person source.

# 5 RESULTS

This section contains the summary of the results from the literature review that help the authors answer the research questions. The results are tabulated for easy understanding and grouped into categories, sub categories and main categories.

**What are the consequences of falls and how it affects their quality of life?**

Elderly people are more prone to unpredictable and unexpected falls. Falls are common in elderly people and the risk of falling increases with increasing age.

In comparison with older people who do not fall, those affected experience greater functional decline in activities of daily living and morbidity and therefore one may be at a high risk of even falling again. Falls causes morbidity too.

Most of the fractures among older adults are caused by falls and a hip fracture is number one in consequences of falls among elderly. Many elderly people may experience one or even more emotional problems after fall, Most of affected people loss confidence, have shame, fear, and anxiety leading to less or no motivation in doing anything in life hence affecting their quality of life.

Direct and indirect cost affect and drains the affected person themselves, families and the governments financially as the cost of treatment and rehabilitations are so expensive.

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Consequences of falls | Physical consequence | Leading causes of injuries-related hospitalization, immediate like bruises, or even more serious fractures. Burns if one falls in a radiator. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Consequences of falls | Social consequence | Fear of falling again, restriction to activities, loss of independence, reduce or even non social contact |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Consequences of falls | Economic consequence | Injuries-related hospitalization are so expensive, Direct and indirect cost. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Consequences of falls | Physiological consequence | loss of confidence, shame, fear and anxiety |

**How can falls be prevented in institutions?**

Identifying risk factors of falls help to evaluate the problems and to plan personal and community intervention strategy. Thus, fall prevention in elderly people consists of regular strength and balance training, vitamin D and calcium supplementation, reduction of the number and doses of psychotropic medication, professional home-hazard assessment and management in people with a history of falling.

Elderly people with a history of falls are at greater risk of falling again. Multifunction's approaches and interventions strategy is needed to effectively reduce the rising rate of falls. The majority of falls and fall related injuries that are happening are preventable using prevention measures. Prevention of falls can be accomplished through the combination of various interventions.

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Physical activity(exercises) | • Helps combat heart disease, muscular tension, joint pain and osteoporosis.<br>• Improves circulation and stimulates digestion.<br>• Heightens alertness, increases self-confidence. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Reducing Risk of falls | • Home-based balance re-training, muscle strengthening and walkingprogrammes.<br>• Home hazard modification (for those with a history of falling).<br>• Gradual withdrawal of psychotropic medication.<br>• Multidisciplinary, multi-factorial, risk factor screening/intervention programmes.<br>• Good nutrition and Vitamin D<br>• Emergency phones |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Improving the system of care | • Develop a system of care to deal with falls and fractures, requires commitment and co-operation from acute trusts, community hospitals, general practice surgeries, social services, patients themselves and their immediate carers. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Local Initiatives | • Develop sustainable evidence-based practice for the prevention and management of falls in older people across health and social services, housing and the voluntary sector. |

| | | |
|---|---|---|
| | | • Provision of information and publicity to raise awareness with the general public and promote self-help strategies. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Osteoporosis Services | • Links with the local osteoporosis services should be developed and Staff undertaking falls assessments should be aware of osteoporosis, identifying those at risk and arranging onward referral for further assessment and treatment. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Interventions for falls prevention | • A health promotion campaign e.g. A 'Walk Tall, Don't Fall' campaign that targets groups of older people, in sheltered housing, church groups and |

| | | |
|---|---|---|
| | | luncheon clubs for people over 65. A presentation is made that includes information on the causes of falls and how they can be prevented and the value of exercise, A falls prevention pack, developed locally, is issued to each person present in order to reinforce the information given. |

| MAIN CATEGORY | CATEGORY | SUBCATEGORY |
|---|---|---|
| Prevention of falls | Environmental modification | • Living quarters of elderly persons should be consistent with the universal design philosophy (with attention to floor surfaces, lighting, bathrooms, stairs, traffic patterns, and accessibility) to reduce or eliminate hazards.<br>• Conducting equip- |

| | | |
|---|---|---|
| | | ment (Bed side rails, wheel chairs and hand rails) safety checklist is also very important and there can be reduction in the number of falls. |

# 6 CRITICAL REVIEW OF RESULTS

The method used for the study was literature review and only free literature in English was sought because some articles needed passwords. This may constrain the study result from seeing both sides of impacts access to evidence based research articles at work place, Primary data collection and analysis from the elderly people and people working directly with the elderly would have been more specific for the study and especially in finish language as it is widely spoken in Finland.

Some literatures reviewed for this study reports that: The evaluation of precipitating factors were made by 3 different professionals (nurses, physiotherapists, and physicians), all with experience in care of older people therefore the authors' opinion was that the cooperation of these different competencies had resulted in valid judgments regarding precipitant factors for the falls, despite that the evaluation of a precipitant for a fall always included some degree of subjectivity.

The QOL outcome was more sensitive to fall prevention programs than to the number of falls. The authors' also reported that the evidence was inconsistent that exercise alone could reduce the risk of falls, and a common explanation that some studies had made use of exercise of insufficient duration, intensity, and frequency. Nonetheless, vigorous exercise empirically increases the cumulative risk of falling for elderly people with osteoporosis, and vigorous elderly groups were more likely to experience serious fall injuries.

Falls Preventive measures which are so important in reduction of falls were only Researched by Researches but not implemented by many, either in nursing homes or in individual homes.

# 7 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## DISCUSSIONS AND CONCLUSIONS

Fall and fall related injuries are major public health challenges that call for global attention. Fall-induced injuries are increasing more rapidly than can be accounted for by the increase in the elderly population. Depending on the injury, falls can lead to hospital admission, disability and functional limitations that significantly decrease the quality of life for older people. Elderly people are more prone than younger people to unpredictable and unexpected falls, the rate of fall and falls injuries increase with age.

Identification of fall is very important as different types of fall have different measures when it comes to prevention. Fall can be classified as accidental, anticipated physiological fall or unanticipated physiological fall. There are also different risk factors of falls as follows: Biological risk factors, Behavioral risk factors, Environmental risk factors and also social risk factors.

Poor vision reduces postural stability and significantly increases the risk of falls and fractures in older people Central vision is the ability to see straight ahead and directly in front of you. People who have fallen in the past year are more likely than those without a fall history to fall again. Elderly people with multiple chronic illnesses are at greater risk of developing functioning limitations and disabilities. Patients who suffer diseases such as arthritis, dementia and diabetes are at a high risk than just those who are aged with no diseases, chronic illness such as arthritis.

Fall risk is not the same for all older adults. Elderly people who remain Active as they age retain very good posture even as they age than those who are less involved in physi-

cal activities. Active ageing is the continuing participating in economic, social and culture, and the aim is to increase health life expectancy and the quality of life as we age.

Active Ageing depends on a variety of influences or determinants that surround individuals, families and communities. There are various determinates that can affect someone as one age, this can affect one positively if well followed and it can also have a negative effect on one's life, they are: Behavioral Factors, Social Factors and Economical Factors

Older people aged 65 and above are admitted to hospital with falls as the common cause of injuries, therefore fall prevention is a very important consideration for the elderly, identifying fall risk factors help to evaluate the problems and to plan personal and community intervention strategy. Thus, fall prevention in elderly people consists of regular strength and balance training, vitamin D and calcium supplementation, reduction of the number and doses of psychotropic medication and professional home-hazard assessment and management in people with a history of falling.

Fall among the elderly and their consequences have been the major global public health issue, be it for the aged at their homes or in the institutions. The major injury associated with falls is Hip fractures, Even the falls that do not cause physical injuries can result to post fall syndrome which can be either loss of confidence, restriction of activities hence leading to dependency affecting one's quality of life. Falling is one of the most common problems in the elderly that can cause morbidity, including fracture and disability, and mortality.

Elderly with a history of falls are at greater risk of falling again. Multifunction's approaches and interventions strategy is needed to effectively reduce the rising rate of falls. The majority of falls and fall related injuries that are happening are preventable using prevention measures. Prevention of falls can be accomplished through the combination of various interventions.

## RECOMMEDATION

Active ageing throughout one's life time should be encouraged and it is never too late to start because it has got very good benefit for the elderly person.

Patient participation in decision making may result in better health outcomes and a better sense of wellbeing, except that people with dementia should be watched closely as they cannot remember to help themselves in any of the ways that may prevent falls.

Hip protectors are also important to be worn by the elderly although they cannot prevent falls amongst the elderly, but rather it can prevent hip fractures from happening.

Emergency phones help in several ways, it may prevent some fall injuries occurring and also help the patient get immediate help once a fall has occurred.

Risk assessment should be done often and wearing of safe shoes for the older person should be taken seriously .Fall should not be perceived as part of ageing, when one falls, the first cause of fall should not be because of the age, and rather other factors should be checked.

Rehabilitation is very important and therefore there is need to rehabilitate those who have had a fall. Most victims of fall have great fear of falling again and hence declining in daily activities and they no longer want to involve themselves in social lives. Physical activity facilities where activities like balance training, Yoga and Tai chi be accessed for all easily should be enhanced.

Home hazard assessment is very important as well as modification. Development of effective community programmes which will give awareness to many about what are the consequences of fall and also tell them how to prevent falls.

Preventing falls among the aged means reducing cost that occurs after falls, Example hospitalization costs and other incurred cost after falls. One remains active and productive member in his or her own community and not relaying on others.

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## APPENDICES

Table 1. Morse fall Scale (MFS): (Assists in assessing the elderly at risk of falls)

| ITEM | SCALE | SCORING |
|---|---|---|
| History of falling , immediate or within 3 months | NO 0<br>YES 25 | |
| Secondary diagnoses | NO 0<br>YES 15 | |
| Ambulatory aid<br>Bed rest /nurse assist<br>Crutches/ cane/walker<br>Furniture | 0<br>15<br>30 | |
| IV/ Heparin Lock | NO 0<br>YES 20 | |
| Gait/Transferring<br>Normal /bed<br>rest/immobile<br>Weak<br>Impaired | 0<br>10<br>20 | |

| | | |
|---|---|---|
| Mental statues<br>Oriented own ability<br>Forgets Limitations | <br>0<br>15 | <br>_____<br>_____ |

Table 2. Sample Risk Level: (Assists in assessing the elderly at risk of falls)

| Sample | MFS Score | Action |
|---|---|---|
| No risk | 0-24 | Good basic nursing care |
| Low risk | 25-50 | Implement stand fall<br>Prevention interventions |
| High risk | >50 | Implement stand fall<br>Prevention interventions |

**The Mini-Mental State Exam:** (Tool used for screening cognitive impairment in elderly people, it systematically and thoroughly assesses mental status)

Patient_____ Examiner
_____ Date_____

Maximum Score

1. **Orientation**

5 ( ) what is the (year) (season) (date) (day) (month)?

5 ( ) Where are we (state) (country) (town) (hospital) (floor)?

2. **Registration**

3 ( ) Name 3 objects: 1 second to say each. Then ask the patient

all 3 after you have said them. Give 1 point for each correct answer.

Then repeat them until he/she learns all 3. Count trials and record.

Trials _____

3. **Attention and Calculation**

5 ( ) Serial 7's. 1 point for each correct answer. Stop after 5 answers.

Alternatively spell "world" backward.

4. **Recall**

3 ( ) Ask for the 3 objects repeated above. Give 1 point for each correct answer.

5. **Language**

2 ( ) Name a pencil and watch.

1 ( ) Repeat the following "No ifs, ands, or buts"

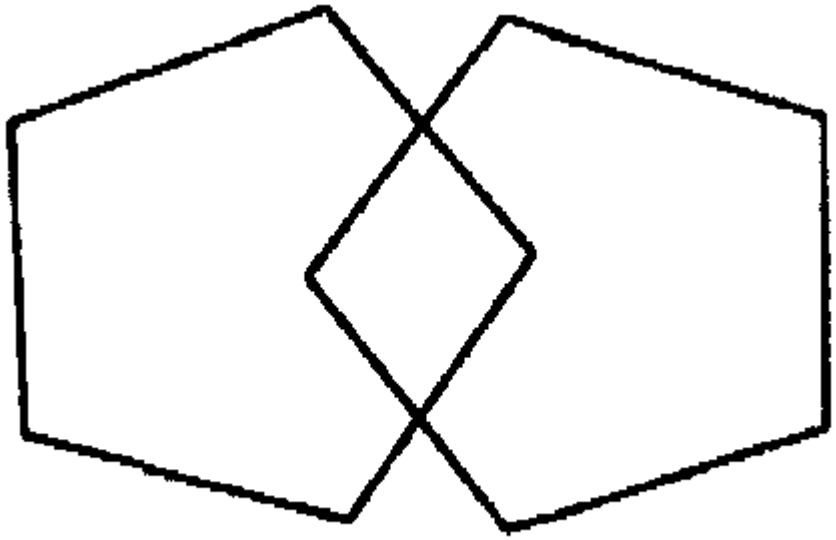
3 ( ) Follow a 3-stage command:

"Take a paper in your hand, fold it in half, and put it on the floor."

1 ( ) Read and obey the following: CLOSE YOUR EYES

1 ( ) Write a sentence.

1 ( ) Copy the design shown.



_____ Total Score

*Table 3. Selected articles for the study*

| Author/Source/ Date | Title | Objectives | Interventions/Recomendation |
|---|---|---|---|
| Tufts University Health & Nutrition Letter<br><br>Special Report/ May 1, 2007 | Research Helps Keep Seniors Steady on Their Feet | To prove that Exercise and vitamins may not only protect your bones, but also help you from falling in the first place | People who have never practiced physical activity in their life, without cardiovascular limitations are encouraged to take up physical activity, both to counteract the effects of aging on balance function and to reduce the risk of falls.<br><br>Seniors at risk for falls receive adequate vitamin D addresses only one aspect of a compre- |

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| | | | hensive fall-prevention program, they emphasized. Making patients aware of falling risks and ensuring a safe living environment also are key in preventing falls and their potentially serious injuries and consequences |
| Isola. A.et al. /2003 | Family members' experiences of the quality of geriatric care | The purpose of this paper is to report on the quality of institutional geriatric nursing as evaluated by family members in 2001 and to compare the responses to those obtained in 1998. | Family members were more content now than in 1998, when the corresponding figures were 86% and 7.3 (range 4–10). Nevertheless, the results still highlight certain aspects that should be improved and developed. |
| Kallin et al. /January 2004<br><br>Prospective cohort study | Why the elderly fall in residential care facilities, and suggested remedies | To study precipitating factors for falls among older people living in residential care facilities. | Among older people in residential care facilities, acute diseases and side effects of drugs are important precipitating factors for falls. Falls should therefore be regarded as a possible symptom of disease or a drug side effect until proven otherwise. Timely correction of precipitating and predisposing factors will help prevent further falls. |
| Lindy Clemson et | The Effectiveness | To test whether | The results of this study renew |

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| al./ September 2004<br><br>A randomized trial with subjects followed for 14<br>months. | of a Community-Based Program for Reducing the Incidence of Falls in the Elderly: A Randomized Trial | Stepping On, a multifaceted community-based program using a small-group learning environment, is effective in reducing falls in at-risk people living at home. | attention to the idea that cognitive-behavioral learning in a small group environment can reduce falls. Stepping On offers a successful fall-prevention option |
| Scheffer et al. /<br><br>September 17, 2007 | Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons | The study consists of a systematic review concerning measurement instruments, prevalence, risk factors and consequences of FOF in community-dwelling older persons | The review shows that there is great variation in the reported prevalence of FOF in older people and that there are multiple associated factors. Knowledge of risk factors of FOF may be useful in developing multidimensional strategies to decrease FOF and improve quality of life. However, the only identified modifiable risk factor of FOF is a previous fall. In order to measure the impact of interventions, a uniform measurement strategy for FOF should be adopted, and follow-up studies should be conducted |
| Zijlstra G. A. R et al. /<br><br>December 29, | Prevalence and correlates of fear of falling, and associated avoid- | To assess prevalence rates and study correlates of fear of falling and | Fear of falling and avoidance of activities due to fear of falling, were highly prevalent in the sample of community- |

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| 2006<br><br>A cross- sectional study | ance of activity in the general population of community-living older people | avoidance of activity due to fear of falling in this population. | living older people. Particularly, poor perceived general health showed a strong, independent association with both, fear of falling, and related avoidance of activity. Findings of the study may help health care professionals to identify people eligible for interventions aimed at reducing fear of falling and activity restriction. |
| Mau-Roung Lin et al./<br><br>April, 2007 | A Randomized, Controlled Trial of Fall Prevention Programs and<br>Quality of Life in Older Fallers | To compare the effects of three fall-prevention programs (education (ED), home safety assessment and modification (HSAM), and exercise training (ET) on quality of life (QOL), functional balance and gait, activities of daily living (ADLs), fear of falling, and depression in adults aged 65 and older | The QOL outcome supports the superiority of ET over the other two interventions in older people who have recently fallen. This finding also parallels those gathered from the functional measures |
| Brenda Roe et al. / | Older people and falls: health sta- | This study has investigated older | Local informal care and support networks are as important |

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| 31 October, 2008 | tus, quality of life, lifestyle, care<br><br>networks, prevention and views on service use following a recent fall | people's experiences of a recent fall, its impact on their health, lifestyle, quality of life, care networks, prevention and their views on service use. | as formal care for older people at risk of falls or who have fallen<br><br>Falls prevention initiatives and services should work with local communities, agencies and informal carers to ensure equitable access and provision of information, resources and care to meet the needs of older people at risk or who have fallen. |
| Tony Luxton & Jackie Riglin /April, 2003) | Preventing falls in older people: a multi-agency approach | The article is aimed at nurses who work with older people in hospitals, general practice, community services and care homes because of their Potential role in identifying people who fall, determining risk factors for falling, implementing appropriate interventions and initiating onward referral where necessary. | an inter-agency approach in which nurses play an important role can help identify risk factors and prevent falls occurring |

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| Woodward S/ 2006 | Learning and sharing safety lessons to improve patient care | The aim of this article is to provide nurses and other healthcare staff with a consistent and structured methodology to investigate incident to enable them identify where systems are failing and where improvements in patient care and safety can be made | The success of efforts to improve patient safety is reliant on a safety culture, the design of safer systems, demonstrable and enthusiastic leadership of the organization, as well as leadership and teamwork at ward and community practice level |
| World Health Organizing. 2002 | Active ageing | Promote healthy and active ageing | Active Ageing leads to less falls due to one engaging in various activities, examples Physical Exercises, social activities, Healthy eating and living in a clean environment. |
| Kannus et al. 2005 | Fall-Induced Deaths Among Elderly People | This study shows the number of fall-induced deaths of Finns aged 50 years or older. | Falls preventions have been highly recommended due to the high rise of deaths associated with falls. |
| Jasmine C. Menant et al. 2008 | Optimizing footwear for older people at risk of falls | The article is a research that was done to find the most appropriate | Older people should wear appropriate fitted shoes, whether they are indoors or outside. |

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| | | shoe for the elderly who have either fallen or those at risk of falling as Most falls occur during motor tasks, and footwear has been identified as an environmental risk factor for both indoor and outdoor falls | |
| Tzu-Ting Huang et al. 2011 | Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioral strategies and intense Tai Chi exercise | This study is the first trial using a combined cognitive behavioral strategy and Tai Chi intervention to reduce (FOF) fear of falling among community-dwelling elders | Tai Chi intervention is effective and recommended as it reduces fear of falling in community dwelling older adults. |
| Carole. E. Johansson et al. 2009 | Screening for the hearing loss | Highlight the importance Hearing screening in a way of preventing falls | Making use of assessment tools, example the screening at least after 2 years but one can always have eyes checkup in case of any eyes problems. |
| Skelton D, Todd C. 2004 | What are the main risk factors for falls amongst | The article analyses the main risk factors for falls | Home hazard modification |

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| | older people and what are the most effective interventions to prevent these falls | amongst older people and what are the most effective interventions to prevent these falls | Strength exercises |
| Stewart RB 2001, | Drug use in elderly | The book discusses of different drugs used by the elderly. | The use of multiple drugs is not good as it has some consequences of fall. Medicine review is important. |
| Cameron, K., et al.,2005 | Falls Free | promotes national falls prevention action plan | Prevention of falls through awareness |
| Hengamett Hosseini, Nooshin Hosseini 2008 | Epidemiology and prevention of fall injuries among the elderly | The problems facing elderly after falls | Good foot wear<br>Educating both the elderly and the caregivers on prevents issues. |
| Stephen lord et al. | Falls in Older people | Risk Factors and strategies for preventions | Importance of reducing the falls risks, through exercises strength training programmes. |