



Active and Healthy Ageing for Active and Healthy Old Age

**PUBLIC-HEALTH IMPORTANCE OF FALLS IN THE ELDERLY
AND PREVENTIVE STRATEGIES IN SLOVENIA**

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Each fall is a fall too many!

Purpose and objectives of the report

The public-health importance of diseases, injuries or other health-related conditions is assessed according to their prevalence, number of new cases and health, social and economic consequences. In this regard, injuries in all age periods are one of the most important fields of public health. Mainly they are results of falls that leave no severe consequences in majority of cases. However, they could end with fatal injuries, disability, long-term treatments and rehabilitations. The older the people, the more they fall. Thus the attention is increasingly paid to falls with the number of elderly getting higher and to the prevention of falls due to their health, social and financial consequences.

Despite the falls in the elderly cannot be prevented with the best organised preventive measures, their number may however be reduced. In the field of healthy ageing, the European Office of the World Health Organisation in the period by 2020 placed the prevention of falls among the highest priorities with the purpose to reduce the load of their consequences. It recommends the Member States to raise awareness of risks and consequences of falls. They should introduce the programmes for the elderly to maintain the balance, assess the safety of residential premises, eliminate the risks of falls in public areas and with special attention deal with groups with the highest risk level, among which the residents of retirement homes stand out as fragile elderly individuals. (Strategy and action plan for healthy ageing in Europe, 2012 – 2020. Copenhagen: World Health Organization; 2012: 16.)

The enumerated recommendations of the WHO EU consider the circumstances that are in lives of the elderly related to a greater risk of falls and all their consequences. They are intended to maintain safety and quality of life of the elderly that may be fatally struck by falls. The content of this report is intended to the elderly and other Slovenian public with a wish that the ageing Slovenian society would include falls in the elderly in the strategic guidance as an inevitable occurrence in the old age, which is today different than in the past, since the elderly of today are also different and the falls should be dealt with according to their changed abilities and way of life. The understanding of causes, consequences and prevention of falls has never been better which binds the experts and politics to different, more comprehensive preventive actions.

The objective of the European Union is to extend the years of healthy life for two years by 2020 (Innovation Union – A Europe 2020 Initiative. http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=key). This objective may be pursued in all Member States by reducing the number of falls and their severe consequences, death, disability and total dependence. The

purpose of this report is to strengthen the awareness of society and the elderly in Slovenia about the falls and their prevention, to understand them and accept them as an interaction of different factors. In Slovenia, the field of monitoring and prevention of falls is unregulated compared to some other developed European societies which points out to vast unexploited preventive options. The objective of the report is to monitor the elderly and their falls in Slovenia with internationally comparable approaches and indicators, to understand their nature through research and to adopt efficient, locally adequate and transparent preventive actions. In socially-oriented ageing societies, this falls under the culture of public health which does not embody only health, but also cultural and civilisation achievements.

There are several articles related to falls in professional publications every year. They are written in a foreign language and intended for professional public. The Slovenian society has limited knowledge about them. There are not many texts written in such a way that a reader could follow and take his position on the basis of such articles. We constantly pursued this objective when writing this report, and that is why it is not written in the professional language. It is drawn up for decision-makers in health and social policy to facilitate their right decisions on the basis of clearly stated facts, for local societies and caregivers to understand the great importance of their work, for the elderly and all public to accept falls as avoidable events.

1. Part

Falls as the challenge of the times

What is a fall and who a faller?

There is no uniform definition of falls. The international classification of diseases* defines a fall as an unexpected event with a person falling to the ground from a higher or the same level. The World Health Organisation** defines a fall as an event which leaves a person unwillingly on the floor. Dictionaries*** define a fall as a collapse from the higher to the lower position under the gravity force or as a sudden collapse from the standing position.

All definitions have in common only that an individual falls on the floor by himself and unwillingly. The collapses to the floor which are the result of external force, attack, self-injury, animals, vehicles, fire, water or machines cannot be deemed as falls. The nature of a fall is best described by five adjectives: A fall is a sudden, unexpected, unwilling, uncontrolled and uncoordinated collapse to the floor which occurs due to physical or environmental causes and may cause an injury. The simple definition of a fall for the public could be: The fall is when you fall to the floor unwillingly and without being pushed.

*(Manual of the international classification of diseases, injuries and causes of death. Ninth revision; 1997)

** www.who.int/mediacentre/factsheets/fs344/en/

***Collins English Dictionary - Millenium Edition. Glasgow: HarperCollins Publishers 1998; 553.

The victims of falls are fallers, persons who fall and get injured or suffer no consequences. A faller is a person who fell at least once in the period of half a year or a year (Masud T, Morris RO. Epidemiology of falls. Age and Ageing 2001;30-S4:3-7). Since there are some who fall several times, the fallers are divided to single and frequent. Those who fell only once are according to their physical characteristics similar to those who do not fall, while the frequent fallers have problems with vision, strength, balance; they are slow and have a series of other age-related problems which are all regarded as risk factors for recurrent falls. Women fell more in average, while men injure themselves more severely in falls and have more fatal injuries and disabilities caused by falls. A plausible explanation of these differences may be in a more risky way of life of men, while a high number of falls in women may be also attributed to a longer life expectation (WHO Global Report on Falls Prevention in Older Age. Geneva 2007.)

Demographic and public-health challenges

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Falls and the ageing of population. In the last decades, the number of population older than 60 years increases rapidly all over the world. In 2006, there was almost a 700 million 60+ population, while 2 billion are expected by 2050. The group of people aged 80 or more is expected to increase most rapidly. It is forecast that it will present 20% of all the elderly by 2050. Since there is the highest number of falls within this group, their increase in number will also place a greater importance on falls and their prevention. In the last three decades, the prevalence of fractures and spinal cord injuries increased by 130%, while it is expected to double by 2030. Insufficient attention is paid to falls, which is indicated in deficient epidemiological data, in particular in developing countries. (WHO Global Report on Falls Prevention in Older Age. Geneva 2007.)

Similar to European societies, the Slovenian society has also been rapidly ageing in the past decades. In 1984, the share of population over 65 years was 7.27%*, in 2014 this increased to 17.5%** , meaning that the number of people older than 65 increased 2.4-times. In 1948, there were 1,391,873 citizens in Slovenia, of which somewhat over 101,306 people were older than 65 years*, while on 1 July 2014 the population of Slovenia was 2,061,623, of which a good 360,000 people were older than 65 years**, meaning that today there are 3.5-times more people aged 65 or more in Slovenia compared to 1948.

*Zdravstveno stanje prebivalstva SR Slovenije. Ljubljana: Zavod SRS za zdravstveno varstvo; 1972:5

**The Elderly in Slovenia. Ljubljana: Statistical Office of the Republic of Slovenia; 2011.

Longevity and falls in Slovenia. Normally, the longevity is related to a longer healthy life, longer activity and longer independence of the elderly. To remain independent, active and healthy ageing in domestic environments as long as possible is the objective of the World Health Organisation, European Union and each individual country. There is an increasing number of vital elderly aged between 70 and 80, among who the majority of falls occurs outside their residential premises, during various errands, work or spare time activities (Voljč B. Health status of the elderly. Research of the Anton Trstenjak Institute; 2010). The group aged over 80 years, when usually the age-related fragility and other geriatric syndromes occur (falls being one of them) increases most rapidly (International day of the elderly 2014. Statistical Office of the Republic of Slovenia. www.stat.si/novica_prikazi.aspx?id=6513). When this group will be stronger than it is today in terms of numbers, the falls and injuries may be expected to increase in Slovenia, although the successful prevention of falls in the elderly may reduce them relatively.

Trends and forecasts. In Slovenia, the life expectancy at birth in 2013 was 77.2 years for men and 83.6 years for women. By 2050, this is expected to extend to 83 years for men, and 87.8 years for women. The life expectancy at 65 years was 17.4 years for men and 21.1 years for women in 2015. By 2050, this is expected to extend to 21.1 years for men, and 24.6 years for women (Health at a Glance 2015. OECD indicators).

If the demographic development follows the stated forecast in the next years, there will be a high 30% of population older than 65 years in Slovenia considering the same number of population, meaning that the importance and impact of all types of injuries, falls in particular, will be even greater in the next years and decades. By 2020, according to the Eurostat projections, Slovenia is expected to have 20.6% of population older than 65 years and 5.5% older than 80 years. By 2050, the share of population older than 65 is projected to increase to 29.9%, while the share of those older than 80 to 11.1%.

The foreseen increase of the population older than 80 years forecasts a greater importance of age-related health problems, in particular geriatric syndromes, among which the falls especially in combination with other syndromes are particularly important. By extending the healthy years of life or later occurrence of age-related health problems, the fragility of the elderly may be in average postponed to a higher age, which would only mean a delay of problems at the simultaneously increasing longevity. In the regulated conditions, the fall-related issues among the elderly and their prevention will be a part of Slovenian and any other ageing society also in the future.

The listed data present great, but very vulnerable civilisation achievements that must be continuously maintained with well-operated public systems. All presumptions may be realised only under the condition that there is a period of peace, stability, social justice and harmonised

society in Slovenia in the next decades. If the life expectancy continues to extend as per the forecasts, there will be more old and very old people than they are today, meaning that the challenges of present demographic changes will also be even more present. However, the demographic development with the expected life expectancy and expected healthy years of life may also change its direction. Poverty, unemployment of the young, financially starved public system, hindered accessibility of health and social services, negativism and general discontent cannot prolong lives. We may make projections by 2050 and beyond under the conditions that there will not be any war or social and ethnic disagreements. We know where the national disagreements in the recent past left some republics of ex-Yugoslavia. This is why it is necessary to always point out that longevity is a great but very fragile civilisation achievement that may be maintained and prolonged only through democracy, respect of values and just and harmonised society. Only in these conditions the public health system and society may plan and realise the necessary preventive programmes, including the reduction of the number of falls in the elderly.

Epidemiology and consequences of falls

Risk factors. Among the epidemiological challenges, the risk factors fall under a special group, while the knowledge about them is a part of the preventive literacy. The successfulness of the prevention cannot be evaluated only according to the percentage of the occurrence we want to reduce, but also according to what extent and how are those for which the preventive is designed informed about it. It is important that the elderly know that they fall due to typical age-related physical changes or illnesses, as well as due to circumstances or obstacles in their residential premises and public areas. Usually, the causes for falls are divided in intrinsic and extrinsic. The World Health Organisation classifies them in detail to biological, behavioural, environmental and socio-economic (WHO Global Report on Falls Prevention in Older Age. Geneva 2007.). The more they are inter-related, the higher the probability for the fall to occur. Considering that the knowledge about the falls is insufficient in the Slovenian public, the classification of falls of the World Health Organisation seems suitable for the existing Slovenian situation.

Biological causes refer to the gender and age, level of physical, cognitive and emotional decline and severity of chronic non-communicable diseases, including the incontinence and dementia which are particularly related to the falls. In both genders, the probability of falls increases with age itself as well as in combination of one or more chronic diseases and physical, cognitive and emotional decline. Women fell more frequently than men also because they live longer and are more numerous than men in the oldest group of population where the falls are the most frequent.

The characteristic health problems in the old age are **geriatric syndromes**. Geriatric syndromes inter-relate several age-related health issues so that their interaction indicates a special state that can be established and named. The most frequent geriatric syndromes are falls, incontinence, dementia and others. In accordance with the meaning of the syndrome, numerous causes and circumstances interact in the falls. They are an indicator of fragility, which is the most common cause of injuries and accidental deaths. The incontinence is common name for several health issues causing involuntary urination or loss of bowel contents, whereas the nature of dementia, delirium, vision impairments, movements and other geriatric syndromes is multi-faceted. Each of various geriatric syndromes is related to the higher probability of falls, in particular in patients with incontinence and dementia or the combination of both.

The **urinary incontinence**, with its many forms, is among the geriatric syndromes with the higher probability of falls. *Stress* incontinence is related with involuntary urination in small quantities when coughing, laughing, lifting and so on. *Urgent* incontinence occurs as a sudden strong need of urination in any circumstance. If there is no toilet near, the urine frequently pours out in greater quantity without any control, which is also noted in the surroundings. It is typical for the *night-time urination (nocturia)* that the person wakes up several times a night due to the need to urinate. *Mixed* incontinence is a combination of the stress and urgent incontinence and is frequent among the elderly of both genders. In *total* incontinence, the urine constantly leaks due to surgical or other injury of the bladder and sphincter muscle or the loss of control over the continence. The reasons for *psychogenic* incontinence are not in insufficient function of the bladder that's why the psychological assistance is needed. Faecal incontinence or lack of control over defecation has different causes and is treated differently in a therapeutic sense. If not treated, people having this kind of incontinence are socially excluded.

In terms of the risk of falls, the stress incontinence is the least dangerous since it is predictable and the quantity of the leaked urines small. Urgent and mixed incontinences are a major risk factor for falls since the affected at the moment of the greatest need look for the possibility to urinate in a hurry and frequently fall in doing that. When they realise that they cannot control the sudden need to urinate, they avoid public and social events and isolate themselves, frequently also from the close friends and family. This is related to the decreased physical activity which increases the probability of falls in the old age. Night-time urination is particularly dangerous in terms of falls since the night visits to the toilet are related with poor wakefulness and balance, especially if the affected are under the influence of sleeping pills or anti-psychotics. A fall may occur due to a slip on the smooth surface, wet due to the leaking urine.

The falls due to urinary incontinence are frequently related to cognitive disorders, use of walking aids, poor sight, dizziness or orthostatic hypotension, and interaction between medicines and similar. Every improvement of the enumerated risk factors is also an opportunity to reduce the risk of falling. Since the patients do not like to discuss their problems, especially about light and controllable forms, or even conceal them, their prevention and treatment despite its prevalence is not adequately discussed in the primary health care and public. It is an underrated health and public-health problem, the prevalence of which may be objectively assessed with the number of sold diapers and pads. The effective prevention of falls should in any case include also the question about the potential incontinence and its form and the actions for its decrease that may be achieved by strengthening the pelvic floor bladder exercises, medications or surgery. The preventive actions may be carried out at the individual or group level.

In the case of urinary or faecal incontinence, the patients' dignity and social inclusion have to be preserved in the prevention of falls. This may be attained with special pads or nappies that contain the liquid and smell of urine or excreta, and also dry skin in urinary incontinence and thus prevent skin inflammations and infections in the genital area. That is why it is very important that these accessories are of quality, adjusted to the size and weight of an individual and accessible to all social groups.

In average, older patients suffering from **dementia** fall frequently due to reasons that may be also ascribed to other elderly. However, they are more evident in patients with dementia: fragility, poor balance, changed way of walking, physical inactivity, progressing cognitive decline, poor visual perception, disorder, fatigue and to a great extent the side effects of medications and their interactions. Restlessness, pains and malaise, hunger or thirst, boredom and loneliness also contribute to the higher number of falls. The active inclusion of the patients with dementia in the social environment does not only reduce the rate of progression of disease, but also decreases the incidence of falls of these patients.

Behavioural causes are related to the differences in the way of living, diets, insufficient physical activity, dangerous activities and inadequate footwear with the effects of alcohol and other psychotropic substances, with the number and method of taking medications and others. Men do not pay such attention to health problems, also to those causing high number of falls, as do women and look for assistance when the diseases are more advanced and problems serious. Men also in the old age overrate their strength and, contrary to women, do activities with higher risk of falling.

Diet affects the maintenance of health, physical activities and independent life. The most common consequence of improper diet is obesity that affects the agility. Physical exhaustion, also

related to a higher number of falls, is less present in the elderly and is mainly disease-related. Those elderly who live alone frequently eat monotonous and nutrient-poor foods. There is much written about a healthy diet, but mostly in the language not easily understood by the public. The recommended healthy diet is usually more expensive (fish!) and exceeds the financial capacities of increasingly poor elderly. The elderly should be advised to buy affordable diverse food, fresh vegetables, fruit and eating in moderation. They should understand the benefits of good mastication of food, take care for their teeth and mouth hygiene, to which their social acceptability is very much related. Diverse food includes enough necessary ingredients to maintain the health. Well masticated food supports the health of digestive organs and digestion, both being the element of healthy life in the old age.

Physical inactivity is an important risk factor; inactive elderly are of poor health, fall more frequently, there are more severe consequences of falls and they become dependent on help and care sooner. However, one should not exceed in activity at the old age. It should be moderate but regular to fulfil its purposes, i.e. maintaining the independence, delay the disease, prevention of falls, care for muscles, bones and joints, meaning strength, agility and balance. The most recommended, inexpensive and efficient prevention is walking, whereas running increases the probability of falls in the old age.

Dangerous activities or risky behaviours indoors are works at high levels by using ladders, chairs or tables, while dangerous outdoor activities comprise pruning, cleaning of gutters, chimneys and similar. There are more falls in the elderly that do sports, in particular the sports requiring coordination, reaction time and balance. These are ball games, skiing, and gymnastics. The most exposed are lower limbs with the most common severe consequence being the hip fracture. The haste decreases the attention to the floor, e.g. stairs, doorsteps, pavements, carpets, etc. Having loose footwear, slippery slippers on slippery surfaces, walking on very dynamic paths (mountains and hills) is dangerous. Some elderly with poor balance reject walking aids which increases the risk of falling.

Alcohol is more dangerous in the old age, since it is harder to bear. With age the functional and sensory capacities, walking, balance and vision deteriorate, and alcohol even intensifies them. Alcohol also has negative effects on all taking medications. **Smoking** does not cause falls. However, it causes diseases and states related with the fall risk factors. Old smokers also have more problems with balance.

Physicians prescribe **medications** to the elderly inconsistently and the consumption is left over to their decision. Interactions between the medications affect wakefulness, consciousness, judgement, coordination of movements, balance and agility. The awareness about the harmful

consequences of too many medications is lacking in the health sector, while the health policy has not yet dealt with the problem of polypharmacy.

Environmental causes are **inappropriate residential environment**, unsafe premises, insufficient lighting, doorsteps, slippery floor and stairs, folded carpets, cables and other obstacles. However, the old and fragile individuals also know their residential environment and are adapted to spatial arrangements designed by themselves during their life. They avoid dangers that others, also the assessors, would not. They fall if there is a change in conditions they are adapted to or if their body assumes an unusual posture. Outside the residential premises, the risk factors refer to uneven or insufficiently cleaned and lighted public paths, differences in levels, difficult entry and exit from the public transport vehicle and other. With the increasing ageing, there is more instability and falls, therefore the patients should use the walking aids, such as walking canes or gait trainers

The **socio-economic causes** include poverty, low education, inappropriate residential facilities, social separation, addictions, and loneliness, limited access to health and social services and residing at the poor infrastructure and socially developed local communities. In Slovenia, there are no major differences between city communities, whereas the remote areas with lonely old and very old residents in the villages becoming extinct are another story. Those who live alone fall more frequently, whereas those married or living in a community are more safe when falling since they are noticed and assisted to which decreases the potential consequences. The assistance in household tasks reduces the number of falls.

Falls over the world

All over the world, the falls in the elderly are the most frequent cause of injuries and related disability, mortality, dependence and health costs. 424,000 people die worldwide due to consequences of falls, 80% in undeveloped and semi-developed countries. The majority of falls ends in death in the group of 65+. The more one is old, the higher the probability of falling. Over 37 million of falls result in injuries treated in health care facilities. 20-30% of falls result in light or heavy injuries, and 10-15% are referred to the emergency room. The most frequent causes of hospitalisations after falls are the fractures of hip and upper limbs, and brain damages. The people older than 65 years represent 50% of hospitalisations after falls. The syndrome of fallers that may develop at the fall combines the fear of falling again, reduced agility, social isolation, loneliness and depression which all increase the risk of falling again. The World Health Organisation that announces this data recommends education, stretching, safer environments, and more emphasis on research on falls and efficient policies to reduce the risks to reduce the number of falls. (WHO Global Report on Falls Prevention in Older Age. Geneva 2007.)

Falls in the European Union

In 27 Member States of the European Union, 35,000 to 40,000 elderly die every year due to the consequences of falls. Although the majority of Member States recorded a smaller annual falling rate in the elderly in the 2000-2010 periods, there are even sextuple differences between different states which points out to the unexploited preventive potential. In the 65+ age, the injuries that require health care represent 75% of falls. The elderly are referred to the hospital treatment five-times more frequently due to injuries related to falls than other injuries.

The European data also indicates that the key risk factor for falls is the age; in the age of 65 every third old person falls, and in the age of 80 years every second every year. The more time one falls, the higher is the probability that he will fall again. Women fall more frequently than men, but the men have more injuries. In terms of numbers, the most falls occur at home and in residents of nursing homes. There are 2/3 of women and 1/3 of men among those who fall at home environments. They fall most frequently in bedrooms, kitchens and living rooms. The residents of retirement homes are older than 80 years in average; every year every other falls and there are many recurring falls. In both genders the figure is reversed in errands and works outside the residential premises, where men fall two-times more than women. The less one is old the higher is the probability that he will not fall at home, but outside. In general, the more active people who spend their time outdoors fall, while the old fragile individuals are mostly at home, where they fall most frequently. At night, only about 20% of all falls occur. In winter and cold weather there is more falls, in women in particular. During that season also the number of fractures caused by falls increases.

Data according to: Injuries in the European Union 2008 – 2010. Amsterdam: Eurosafe; 2013

Prevention of Falls among Elderly. EUNESA Fact Sheet. Available at:
<http://www.injuryobservatory.net/wpcontent/uploads/2012/08/Older-Guide-Prevention-of-Falls.pdf>

Falls in Slovenia

There were 4,880,047 visits at **the primary level of Slovenian health system** in 2012. Due to injuries and poisonings, there were 7.4% of all the patients who required the intervention of the primary health care. 175.8 per 1000 causes for visits related to injuries that were in 48.6% caused by falls. One quarter of all who fell was older than 65 years. 8.011 men and 17.819 women fell. The injuries were two-times higher in the range of causes per 1000 visits at the primary health care physician in the area of Inner Carnolia-Karst region than in the Coastal-Karst region.

19.257 people died in Slovenia in 2012. Due to injuries and poisonings 1.564 died which is 8.1% of all deaths. Due to the consequences of falls, 524 fallers, 220 men and 304 women, died, i.e. 33% of all deaths due to injuries and poisonings.

Due to injuries and poisonings 30.853 individuals were admitted to hospitals with 1.698.331 hospital days in 2012. Of these, the injuries strongly prevailed with 29.930 injured persons, of which 9.911 or 33% were aged 65 or more. 63.5% of injured persons were admitted to hospitals due to the falls.

Due to injuries and poisonings 520 individuals died in hospitals, of which 509 died only due to injuries, of which 83% aged 65 or more (♂ 172, ♀ 252). In the context of injuries, 364 or 71.5 injured persons (♂ 162, ♀ 202) died in hospitals due to the consequences of falls.

All data from Health Statistics Annual 2012. Ljubljana: National Institute for Public Health.

<https://podatki.nijz.si/pxweb/sl/NIJZ%20podatkovni%20portal/>

Reasons for falls stated by the elderly in Slovenia

In 2010, the Anton Trstenjak Institute of Gerontology and intergenerational coexistence conducted an extensive research throughout Slovenia entitled '**Positions, needs and capacities of the residents of the Republic of Slovenia aged over 50 in the field of health and social function**'. Of 1.800 citizens that were randomly selected by the Statistical Office of the Republic of Slovenia, 1.047 agreed to participate and conduct the interview with the interviewers. The survey included 137 questions, with 55 related to the field of health.

380 or 36.5% of respondents gave affirmative answer to the question whether they got injured at falling making them unable to work and do regular activities for more than three days. This corresponds to the data that at the age over 65 years every third citizen falls every year (Falls among Older Adults: An Overview. Center for Disease Control and Prevention 2012. www.cdc.gov/homeandrecreationalafety/falls/adultfalls.html). Out of 380 respondents who answered the previous question and were unable to do their job for more than three days due to the fall, 374 answered affirmatively to the question of how many times did they get injured in falling so far. In average, they got injured 2.03 times, which confirms that the probability of a repeated fall is higher with those who have already fell.

374 of 380, i.e. 98.4% of fallers answered the question inquiring about the cause for falling. Their answers may be logically divided to several content fields that are classified below by rank and individual causes of falls. Many causes are mentioned that are closely related to the way of living of each individual, while at the same time they point out that the nature of falls is different and that one may fall anywhere and anytime. The respondents included also the

falls, which are contrary to the definition of falls, since they are caused by external force (traffic accidents, animals).

Movement – 44.1% Slip 95x, sport and recreation 28x, inattention, hurry 24x, stumble 14x, wrong step 2x, jump 2x,

Work 13.4%. Various works 19x, works on the roof 14x, cutting trees and pruning 7x, work in the stable 6x, work in the forest 2x, mowing 1x, work in the mine 1x

Health causes - 12.8%. Dizziness, balance disorders 26x, injury 6x, poor health 5x, cramp 5x, osteoporosis 2x, epilepsy 1x, knee 1x, headache 1x, stroke 1x

Traffic and vehicle handling - 11.8% Fall from a motorcycle or a bike 14x, fall from the truck, tractor or carriage 8x, fall from a bus or train 2x, falls from the helicopter 1x, traffic accidents 19x

Surface – 5.3% Stairs 14x, hole in the road surface, uneven road surface, carpet 1x.

Objects – 4.3%. Ladder 11x, unsuitable footwear 2x, chair 2x, suitcase 1x

Circumstances – 1.9% Dark or fog 4x, intoxication 2x, contact with electricity 1x

Not clear – 3.5% Cannot remember the circumstances 10x, unclear external causes 3x

Animals – 2.1% Dog 6x, goat 1x, cow 1.

The data above indicates that more falls occur outdoors than indoors. The prevention of indoor falls encompasses only a part of circumstances that have an impact of when and where someone will fall. Some authors state that a lower half of falls occurs indoors, with from 56% to 57% occurring in open public areas. In any case, the number of indoor falls increases with the age, since the elderly are staying more at home. Of those who are predominantly at home, there is also more falls, whereas the active and independent elderly fall more frequently outside their residences.

Reliability of data

The incidence of falls is very different between countries which could be related to the way of collecting the data. Its reliability is also affected by the fact that it is difficult to objectively assess it due to discrepancies in regard to the definition, non-recording the falls without the consequences and due to poor data. The elderly who fall more frequently, do not recall all falls, their descriptions are changing the longer the time from the fall. The retrospective studies should show the incidence of falls in smaller number than they actually occurred in 13 - 32%. When the fallers were asked when they fell, the incidence of the fall was 20.5% after one month, 15.9% after three months, and 6.4% after a year. Nevertheless, the extensive, quality population research indicates that at age of 65 from 28 to 35% of people fall in one year, while at the age of 75, this value is 32-42% of individuals. Even the healthy, stretched and active elderly also fall in one year in 15%. (WHO Global Report on Falls Prevention. Geneva: 2007)

Consequences of falls

The falls have medical, social, psychological and economic consequences.

Of the **medical consequences**, the most frequent are injuries and fractures (hip, upper arm, wrist and head) and their complications, surgeries, treatments, rehabilitations, decline or loss of agility and disability, reduced muscle mass and other conditions. Although the majority of falls ends without serious consequences, half of them still end with a bruise or a scratch. Of the serious injuries, 5% ends with fractures. There is one hip fracture per 100 falls in average. The falls in the elderly are the most frequent cause of referral to the hospital which is increasing with the age. Compared to the hospitalisations in the age group 65-69, their number is six-time higher at the age of 85. The falls in the elderly are the fifth most frequent cause of death, and at the age of 75 the most important cause of death due to injuries. Who remains lying or is not able to stand up any more, is exposed to the danger of thirst, pneumonia and ulcers. (WHO Global Report on Falls Prevention. Geneva: 2007)

Medical consequences are closely related to their **social consequences**, low quality of life, and decrease of contacts with the family and friends and even social isolation, dependence from care or admittance to the care institution.

Psychological consequences are the fear against repeated fall, loss of self-confidence, depression and isolation. The fear may limit the movement, while the lack of mobility increases the probability of falls and processes of ageing. Since the medical profession observes only injuries after the falls and pays less attention to mental state of the injured person, the successfully treated injury may also end with the vicious circle of losing the self-confidence and their consequences.

Economic consequences of falls affect individuals, families, local communities and society. Falls-related costs are divided to direct and indirect. The direct costs are the price of services, rehabilitation, consultation, care and medications. The indirect costs are related mainly to the loss of income of the faller or family caregiver that would not be lost if he/she worked instead of taking care of the injured person. The fall may have a great negative impact on the family budget.

Good practices and solutions in other countries

In regard to the prevention of falls in the elderly, the European Office of the World Health Organisation recommends to the Member States to raise the public awareness, introduce preventive measures and exercise programmes, improvement of residential safety, inclusion

of the prevention of falls into the quality systems of hospitals and nursing homes and inclusion of knowledge on falls in the educational programmes of medical and social staff (Strategy and action plan for healthy ageing in Europe, 2012 - 2020. Copenhagen: World Health Organization; 2007). For a comparison with Slovenian conditions, we selected few European countries that have already adopted the preventive strategic guidelines at the regional and national levels that stimulate numerous examples of good practices. There are also countries in the European area where the falls fall under the neglected public-health problems, and thus these countries are left out.

In the German speaking area (Germany, Austria), a group of experts in the field of health, insurance, sport and social care prepared a proposal of preventive measures to decrease the number of falls in the elderly living at home environments entitled “Bundesinitiative Sturzprävention”- The objective of the recommendations is to stimulate a development of groups for the prevention of falls within the **primary health care**. Thus, the elderly would have an option of attending the professionally supported preventive activities, of which positive health and economic effects are expected, in the area of their residence. The recommendations to reduce the falls in the **nursing homes** combine the fields of motivation and training of the professional staff, establishment of the risks of falls, providing information to the residents their relatives and cooperation with the family physicians. The instructions for exercises, examples of falls, necessary forms and standards for the professionally in the field of the prevention of falls, etc. are added (Becker C, Rissman U, Lindemann U, Warnke A. Sturzprophylaxe: Sturzgefährdung and Sturzverhütung in Heimen. Vinzenz Network, 2. Auflage; 2009)

In **Switzerland**, the group of professional prepared the preventive recommendations for the needs of the stationary and primary health care and institutions for the long-term care in the special publication entitled 'Sturzprevention'. Recommendations are related to the evaluation of the risk, preventive measures, evaluation and actions in the case of falls. They are adapted to each of the three fields, proposed tests and actions are measurable with internationally comparable indicators (Gschwind YJ, Wolf I, Bridenbaugh SA, Kressig RW. Sturzprävention. Basel: Universitätsspital; 2011)

In regard to the reviewing of the effects of preventive activities, The Chaos Clinic for prevention of falls and injuries Tampere, **Finland** carried out the research on the efficiency of the preventive activities in the elderly living in the home environment. They selected 1.314 over 70 years old persons with a high risk of falling and divided them in two groups; with 661 they carried out a comprehensive 12-month programme of increasing the strength and balance, assessed their medical condition and health care, medications, diet and properly equipped the residential premises to increase their safety. The number of falls, fallers and fall-related injuries were recorded in the group. 653 of the elderly represented the control group without measures. In one year, 825 falls occurred in the control group and 608 falls in the observed group. 296 individuals of the observed group fell at least once a year, while the number of those was 349 in the control group. There were 351 injuries in the observed group,

while the control group registered 468 falls. There were 30% less falls in the observed group which indicates the successfulness of the programme (Palvanen M, Kannus P, Niemi S et al. Effectiveness of the Chaos Clinic in preventing falls and injuries of home-dwelling older adults: a randomised controlled trial. *Injury* 2014 Jan; 45 (1): 265 – 71).

For the prevention of falls to be successful, it is important how it is accepted by the elderly and the health sphere treating the consequences of falls. The **Norway study** states the interest and relation of the elderly, their families, medical workers and health system as conditions for the successful prevention. Since the elderly have no interest in the prevention of falls, the participation in the preventive programmes is poor. Transparent recommendations based on the findings of various projects and research is needed. (McInnes E, Askie L. Evidence review on older people's views and experiences of falls prevention strategies. *Worldviews Evid Based Nurs.* 2004;1(1):20-37).

The European Innovation Partnership for Active and Healthy Ageing is the organisation intended for an active and healthy ageing in Europe. In the field of the prevention of falls, it links over 150 regional governments, service organisations, health and academic institutions, industry, organisations of the elderly and the association of the elderly patients. They have established the action group (EIP-AHA Action Group on Falls) that should with its preventive programmes, handbooks and instructions for the preparation, management and assessment of activities and measures supported by the ICT solutions link all the above-mentioned stakeholders. Within the scope of the innovation service and product market, it collects the data on the best practices and education of the professional personnel. By expanding successful programmes, they want to develop the awareness about the falls and their prevention, as well as strengthen the effects of the programmes with the increase of critical mass and thus decrease the incidence as well as prevalence of falls (ICT and fall prevention for elderly. EU Commission. <https://ec.europa.eu/digital-agenda/en/ict-and-fall-prevention-elderly>).

Of European preventive networks, **The Prevention of Falls Network for Dissemination - ProFouND**, must be mentioned which operates in closely with the European Innovation Partnership. The purpose of the organisation is to combine the responsible stakeholders to prepare suitable preventive instructions and stimulate the cooperation between the providers and key stakeholders (public and private voluntary organisations) at the national, regional and local level. The objective of the endeavours is to increase the awareness about the falls and stimulate the innovative programmes in all areas and organisations that deal with the elderly people. ProFouND is also active in the endeavours of the European Innovation Partnership for the ICT support in preventing the falls. This is expected to be more directed to the individual level, instructions adapted to local environments through free accessible handbook and forms in the majority of the European languages. It should include the exercises for strength and balance and instructions to train the trainers. ProFouND connects to other fall-related European networks, E-NO FALLS, which is financially also supported by the European

Commission. With a series of events and other activities, the network should stimulate the capacities and competitiveness in the European area. Every year ProFouND organises the EU Falls Festival, where the stakeholders present their activities and achievements.

Good practices in Slovenia

There are not many organised activities for the prevention of falls in Slovenia. For several years the Anton Trstenjak Institute has been organising preventive meetings of the elderly and trainings of promoters of balance exercises in Slovenia. The Institute published two educational publications. In 2010, B. Voljč prepared the handbook for promotion entitled 'Let us reduce the falls in the elderly', followed by the handbook for the members of prevention group in 2011 entitled 'Prevention of falls in the elderly'. The interest in educational courses and membership in prevention groups is high, but for now their effects are not measured in a comparable way.

To objectively measure the preventive effects in the nursing homes, the Emonicum Institute for healthy and active life with the support of the Ministry of Health conducted a preventive pilot project in the Tabor retirement home in Ljubljana and DOSOR nursing home in Radenci in 2013-2014. The effects of exercises were positive and proven with objective indicators. The project, despite being the pilot, is a solid basis to develop preventive activities at the national level, understanding of the nature of falls and comparable inclusion of Slovenia in the international activities.

Indirectly, the good preventive practice may include regular mobility, strength and balance exercises of the residents in nursing homes that are led by the professionally qualified staff. Exercises are voluntary and there are no analyses that would with objective indicators compare the incidence of falls in those residents that do exercise and those who don't.

Since the basis of a prevention of falls in the elderly is the maintenance of strength, agility and balance, all recreational and sport activities that have a positive impact on all three areas may be deemed as indirect prevention of falls. However, one must be careful. Too intensive exercises as well as physical inactivity in the old age are related to a greater number and more severe falls. In this context, a special attention must be paid to the frail elderly. How to find the right intensity for each individual and for different age periods while taking into account their physical and mental fitness and health conditions is the question to be answered by the experts in different clinical fields that should be included in the planning of preventive activities. It must be provided that the frail individuals voluntarily partake in the preventive activities, after their purposes and objectives were clearly presented to them.

Summary

Falls in the elderly are the subject of numerous studies and approaches all over the world, with many causes ascribed to them. They may be monitored and studied in different ways; through questionnaires, survey, calendars, telephone interviews, etc. The majority of authors believe that a great number of falls remains non-registered and that the official statistics do not reflect the right number. This is logical if we know that at least one half of those who fall do not notify their physicians. When we analyse the causes for falls as described by the respondents, we see that almost all look for the causes for fall elsewhere and not with themselves where the true cause actually lies. That is also the reason why there is no ideal preventive approach. The conditions for falls indoors are the easiest to control and this is dealt with in the majority of the preventive activities. For a comprehensive prevention of falls also different and new approaches are required that would more individually include the character of the old person with his living environment and way of life.

In Slovenia, the registered falls are monitored at the primary and hospital levels in the health statistical yearbooks and structure of health expenses. We have accurate data on the number of falls by individual years at the national, regional and municipal level, categorised by gender and age, which is a good basis for the objective evaluation of the preventive effects. However, there is lack of knowledge on the circumstances in which the falls occurred and on their long-term health and social consequences. It is hard to realistically evaluate the total costs of all indirect and direct forms of health and social services that are related to falls. If we had them, the health and social policy may be directed to other social messages in addition to mere cause and prevention of falls.

Part II

How to proceed?

Definition of the key objective and proposal of activities in the field of the prevention of falls in the elderly in Slovenia by 2025

Key objective

On the basis of all the data from the first part of the report, the key objective of the prevention of falls in the elderly in Slovenia by 2025 may be defined. **Through cross-sectoral preventive activities, the prevalence of falls and their consequences in Slovenia by 2025 should be reduced by at least 10%.**

The purpose of the key objective is to reduce the prevalence and incidence of falls. It combines the fields of various activities with the same common objective. It is understandable, attainable, and measurable and its fulfilment may be monitored through transparent and objective indicators. It should provide the reduction of health, social and economic consequences of falls and their social burden. Less falls means less injured people, less costs related to treatments, surgeries, hospitalisations and rehabilitations and more elderly people independent from assistance. The savings are particularly important since they do not reduce the scope of the rights related to health.

In the enumerated countries it was proven how the number of falls could be reduced. If this is known but not executed, the responsibility of competent experts, services and policies emerges at the national level.

Baselines

There are an adequate number of different activities in Slovenia that may contribute to the fulfilment of the key objective. They are dispersed among numerous stakeholders and their activities and competences. However, they are not linked in the common national objective – better exploitation of means and new programme collaborations. Transparent, clear and widely-accepted national programmes are required that will bind every stakeholder in its respective field to executable preventive activities. To realise the proposed objectives, there are no great financial means but the efficient cooperation of politics, experts and society needed.

In planning the activities that may enable to attain the key objective in Slovenia, it must be observed that

- the injuries are important cause of death, disability and dependence on care in the old age;
- 75% of all injuries in the elderly are the consequence of falls;
- the number of the elderly in the Slovenian society will continue to increase;
- with the extension of longevity there will be significantly higher number of people aged 85 or more;

- at the age of 85 years every other person falls every year;
- due to a high age of residents, the most falls occur in nursing homes;
- accurate data on the causes and consequences of falls is needed for their successful prevention;
- there are many preventive options not yet exploited in Slovenia;
- Slovenia has not regulated public-health approach to prevention of falls;
- prevention of falls in the elderly is one of the top priorities of WHO and EC by 2020.

Priority guidelines

In Slovenia, the following facts require the following priorities:

- At the government level, the harmonised cross-sectoral national strategy for the prevention of falls in the elderly should be prepared with clearly defined objectives.
- To attain the common objective, the existing activities should be related in the field of the prevention of falls in the elderly.
- The strategy should define the selection of data that would enable a controlled monitoring of the dynamics of falls and eliminate the lack of regulation and transparency of the respective field;
- At all administrative levels, from the governmental to the local, the measures should be defined to reduce the falls as well as the competence of the responsible bodies at expert and executional level;
- The competence of nursing homes should be extended to the execution of preventive actions also for the elderly living nearby.

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On the basis of the listed priorities, it is best to pursue the recommendations of the World Health Organisation in forming the concrete guidelines and their related activities. In relation to the prevention of falls WHO recommends to the Member States to:

- strengthen the public awareness on the danger of falls and their prevention;
- introduce the programmes to preserve strength, agility and balance of the elderly;
- support the safety of residential premises;
- eliminate risks of falls in public areas;
- pay special attention to groups with the highest risk.

(Strategy and action plan for healthy ageing in Europe 2012 – 2020. Copenhagen: World Health Organization; 2012).

Successful fulfilment of the enumerated recommendation along with the support of government sectors, media and public should also be supported by measures to preserve the

active and healthy life of the elderly and their participation in preparing the preventive actions. The activities of the elderly should be based on the contents of age-friendly environments that actively include the elderly in defining the safe residential environments, preserve their social inclusion and accessible health and social services.

The successful prevention of falls is a characteristic of socially harmonised societies that provide their citizen health and social security. There are multiple differences in the prevalence of falls in the elderly among transition and developed countries. Slovenia in the field of falls also falls under the transitional countries, without any great social differences so far, which is regarded a valuable heritage of the Slovenian society. Present conditions are different; the social gradient is wider particularly among the elderly than in the past, the people are treated less socially and more severely, also by the politics. On the one hand, the implementation of preventive programmes in the field of falls in the elderly may be jeopardised by the inadequate support of the government and competent ministries, lack of means, lack of qualified personnel, while on the other hand also by insufficient interest of the elderly and their organisations.

Proposal of preventive activities

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To fulfil the key objective and priority guidelines, the formation of activities in different fields related to falls are given below.

1. 1.

Definition of internationally comparable data and indicators

Since the logic of falls is the same all over the world, every data or indicator is internationally comparable if available and reliable. In regard to falls, the indicators should not be limited only to the prevalence and incidence by individual age cohorts in the primary, secondary and hospital health care or by the type of their consequences (type of injury, treatment, etc.), since in this way only the consequences are dealt with that upon their prevention allow only general conclusions and recommendations.

If we want to increase our knowledge about the nature of falls and understand the causes of their occurrence, the following basic data is required:

- Age, gender, education and status of a faller;
- When and where a faller took the test of strength, agility and balance;
- Environment and type of residence, its safety arrangement;

- When, where, how, why, at what errand and in what circumstance the fall occurred;
- Did a faller fall several times, when was the last fall;
- What footwear was a faller using;
- What chronic diseases does a faller have and how are they managed;
- How many different medications and in what quantities and how often does a faller take them;
- How is the faller's cognitive capacity, continence, vision, hearing and balance;
- Is the faller active and independent, what physical exercises does the faller do regularly;
- Does the faller need assistance, how much and what kind;
- Does the faller participate in preventive activities for falls.

The enumerated data together with those normally collected and published in the health sector, comprehensively relates the way of life with social and health circumstances. The problem is that the majority of falls and their causes remain unregistered if they cause no heavy consequences. It is also important how the faller describes his fall, to what extent and in what way he recalls it. When the patients describe falls, the data are mixed with stories and characters. Those who fall frequently do not recall all falls and their circumstances, with the last fall being the most important. The more the fall is distant, the less precise is its description. The most precise data on the circumstances of falls may be acquired only in the organised environments of nursing homes and hospitals.

To share the data and good practices, Slovenia should be included in the international associations to decrease the number of falls, e.g. Prevention of Falls Network for Dissemination (ProFouND), EuroSafe and others.

1. 2.

National register of falls

In Slovenia with the population of two million it is not reasonable to fragment the data on falls, but it needs to be registered at the national level. Thus, it is possible to objectively assess the successfulness of preventive measures and plan the directed and measurable preventive activities. To realise this, the data is required that comprises the following fields: assessment of motor skills and sensory functions, comprehension, health status or presence of illness or conditions that may affect the prevalence of falls, number or history of falls and safety of residential environment.

The enumerated fields relate falls with the way of living and social and health circumstances. In addition to this data traditionally collected and published in the health sector, they provide

a different understanding of the nature of falls and circumstances in which they occur. In the existing conditions, the most accurate data on falls in Slovenia may be acquired only in the organised environments of nursing homes and hospitals, although the falls in these institutions are not monitored by all above-mentioned fields. There is no rule that would determine the data that must be defined at every fall. Where the falls are monitored, this is done in their own way. At the national level, the data is collected only within the scope of the Manual of the international classification of diseases, injuries and causes of death, where the data is precisely prescribed and non-applicable for an efficient preventive planning since it presents only the consequences of falls and not the circumstances in which they occurred. In the Health Statistical Yearbook, the falls in all age periods are monitored also at the level of 11 Slovenian regions. The differences in the prevalence and incidence of injuries and falls are very large, which is nonetheless a registered but in terms of public-health and prevention overlooked phenomenon.

The national register of falls, where the data agreed at the national level would be collected, will open possibilities in planning efficient preventive activities in the fulfilment of the key objective. The register is expected to combine the data of the Health Statistical Yearbook, data of retirement homes, hospitals and other institutions or sources. Through harmonised and internationally comparable indicators it should provide a uniform, transparent and objectively measurable monitoring of the success of preventive activities. Its role will also be to raise the public awareness on the importance of falls and their prevention, on their prevalence, incidence and good practices. It should be managed by the Committee for the prevention of falls at the respective expert institution, e.g. NIJZ (National Institute of Public Health) or a suitable expert body with the Slovenian Medical Association, or by the authorised non-governmental organisation.

1.3.

Active Ageing Index - AAI and falls

The meaning and purpose of AAI is informing the society and the elderly of the used and unused potential of healthy longevity (Zaidi A. Active Ageing Index 2014. University of Southampton. http://www.un.org/esa/socdev/documents/ageing/workshop/2015NewYork/Pesentation_Asghar.pdf). If the objective of the EU and WHO is to prolong a healthy life by two years until the year 2020, this should have a positive social effect. The aim is not just to ensure an independent life of the elderly for as long as possible, but also to make their independence socially useful, otherwise it only presents a longer upkeep of the healthy, independent but socially inactive unprofitable elderly people. Among the characteristics of a longer healthy life beside the possibility of prolonged employment are other socially beneficial roles of the elderly, like: part-time and full-time employment, voluntary work, helping their children and grandchildren and other

roles that include paying taxes for health protection and pension. AAI connects all potential of the elderly and their social inclusion with numerical indicators on four fields or domains: employability and socially responsible inclusion that depend on independence and physical activity, but also partly to the expected years of physically and mentally healthy life, included in the environment. AAI is an indicator that gives meaning to healthy longevity and its potential.

It is possible to include almost all areas of the life of the elderly in the above mentioned fields. Regarding falls, we can ask ourselves about all four domains of AAI, how much they influence the potential and vice versa, how potential influences the incidence of falls? We get the answer to these questions, if we compare the average AAI of the fallers with the average Slovene value of AAI in all four domains. In this way, AAI can express the social meaning of falls in an objective, numerical way under the condition that the entered data is available and correct. The current data on falls in Slovenia does not yet enable such comparisons as the AAI is just being introduced.

The AAI indicators intertwine with almost all areas, which determine the degree of active and healthy life of the elderly. They are distinctly interdisciplinary, adjusted to the potential of the elderly and their social benefit. Their indicators show whether the Slovene society accepts the increasing longevity as a new possibility for development or as a threat and burden. Falls do not influence much the answer to that question; the indicators tell us more on the social importance of longevity, which is another reason, why they are needed.

2.

Increase the social awareness on falls and their prevention

Raising awareness to the danger of falls and their prevention should be intended to all Slovene public. The manner and language should be simple and understandable to all regardless of their social class. It is important to approach the realisation of the objective by emphasizing the importance of maintaining the strength, mobility and balance in all stages of life and in every state, also in case of disability and by stressing that this represents the way to reduce the number of falls in all areas. Raising awareness of the elderly should be kind, encouraging and connected to positive values. Falls should not be presented as a weakness of the elderly; instead promoting a healthy and active lifestyle should include the recommendations to avoid risky and dangerous activities. Falls should be comprehended as foreseeable events that can be avoided or reduced by the individual's active participation.

The elderly and people who are in close contact with the elderly in any way should cooperate in order to raise the public awareness of the meaning of falls and their prevention, which can

be achieved by public appearances of eminent individuals. It would be beneficial to organise the Day of Falls Prevention among the elderly and emphasize the meaning of an active and healthy lifestyle. Since the awareness of the necessity of fall prevention among the elderly is low in professional circles as well, professional guidance on methods for monitoring and treating falls of the elderly should be prepared for professionals in primary care (Falls Awareness Campaigns take the first step to fall prevention. Care Innovations. www.careinnovations.com/falls-awareness-campaigns-take-first-step-fall-prevention/).

3.

Connecting existing professional and empirical potential

The guidelines for the prevention of falls among the elderly should prove helpful to politics, health and social authorities, local communities, institutions, nongovernmental organisations, associations, economy, various professions and individuals. To achieve such broad purpose, the starting-point must include all risk factors and associated participants on national and local level. The areas that are cross-sectoral by nature or the areas that open the possibility of cross-sectoral cooperation in the field of fall prevention among the elderly are healthy and active lifestyle, raising awareness on the importance of falls and the influence of behavioural patterns on their incidence. Key risk factors – dementia, incontinence, nutrition, chronic diseases, multimorbidity, polypharmacy, social isolation, fear of falls, and use of medical devices – are also sectorally interconnected. The same applies to the methods of risk evaluation, preparation of strength maintaining exercises, exercises for mobility and balance, the use of ICT technology and other devices. Safety adjustments of private and public space are one of the first age-friendly environments connecting all social activities. The broad nature of the prevention of falls includes cross-sectoral education of propagators, volunteers and affected individuals. The connecting thread of all this is a broad social consensus on the meaning and the need to reduce falls among the elderly.

In all areas from the national to the local communities, the preventive activities should include experts, politicians and leading representatives of the involved areas, who should work together to achieve the goals. Existing potential at the local level, especially unused or overlooked should be included. Knowledge, experience and skills are typically the overlooked potential of the elderly, who can greatly contribute as trained volunteers or paid experts in every programme as well as in falls prevention. One example of such programme is the “Elderly for the Elderly”, which has been carried out by the Slovene Federation of Pensioners’ Association for several years.

It is essential to support international relations and the inclusion of Slovenia in European project activities as well as the orientation to the prevention of falls.

4.

Attitude of the elderly to preventive activities

In realising preventive activities, the attitude of the elderly to the prevention of falls is a crucial fact that is insufficiently considered. A research of the elderly's attitude to the prevention of falls has revealed the same results in six European countries. The elderly are willing to participate in exercises for strength, mobility and balance in order to maintain their independence, joy, good humour and health but not to reduce the danger of falls, since they do not see falls as a real threat, which means that special activities to avoid falls are not necessary. Among the reasons why they would not attend preventive meetings are transportation barriers, expenses, effort and negative attitude towards group activities. Therefore, in order to attract participants, it is advised to point out numerous positive and pleasant characteristics and effects of group exercises which include less falls. The recommendations of healthcare personnel prove to have a positive impact. For those who do not want to participate in group activities, home exercises should be organised where possible (Yardley L, Bishop FL, Hauer K et al. Older people views of falls prevention interventions in six European countries. *Gerontologist* 2006 Oct; 46 (5): 650 – 60).

As many as 65 % of Slovenian seniors strongly or partly agree with the inclusion in the programmes for increasing muscle strength, 24 % of seniors are undecided and 10.9 % do not agree with cooperation. 46 % of seniors would like to have the safety of their homes evaluated, 32.5 % are undecided and 21.5 % do not agree with the safety evaluation of their homes (Zupan D, Košnik I. Odnos slovenskih starostnikov do preprečevanja padcev. *Slovenian Journal of Public Health* 2011 Oct; 50 (4): 213–226)

5.

Maintaining strength, mobility and balance

All three values support the self-esteem, dignity and equal participation in social activities and represent the key conditions for an active and healthy life. They are connected to the prevention of falls as part of a viable, independent and healthy old age. For the needs of the elderly living in home environment and in nursing homes, the experts in the field of physiatry and rehabilitation should prepare materials on the importance and the methods of maintaining power, mobility and balance at all ages, which should be adapted to different ages and abilities. The materials should include physical activities and exercises for maintaining and increasing the strength, mobility and balance, written in an understandable way, without foreign words or technical terms. They should include instructions on how to assess the hazard and the likelihood of falling with a simple test of strength, balance and mobility for every individual. Among the simple tests that the elderly can conduct themselves is a test of physical abilities according to Guralnik (Short Physical Performance Battery Protocol and Score Sheet. http://hdcs.fullerton.edu/csa/Research/documents/SPPBInstructions_ScoreSheet.pdf).

6.

Nursing homes

In Slovenia, there is a large network of nursing homes. Since the number of falls in them is the highest due to the age of the residents, they have a lot of practical knowledge and experience. Voluntary exercises under professional guidance and other activities are organised daily. Nursing homes should provide exercises to the elderly who live in the neighbourhood and could become regional centres for the prevention of falls among senior citizens.

There are no regulations in Slovenia that would oblige the management of nursing homes to monitor the falls that happened in their institution. They record the falls among residents in a way they find most suitable. A single way for recording falls and annual reports should be implemented. This would provide a thorough overview not only of the nature and causes of falls in nursing homes, but also of their number, the consequences as well as health and social costs.

Nursing homes could establish rehabilitation programmes after easier fall-related injuries. The personnel should work together in examining the effectiveness of measures to reduce falls and their association with polypharmacy, incontinence and dementia, which they face every day.

7.

High-risk groups

This group includes people who have repeatedly fallen, are over the age of 80 years, do not have properly corrected visual or hearing impairments, have vertigo or other disorders of balance, have diabetes, cognitive disorders, patients with impaired movement, incontinence, uncontrolled hypertension and others. Isolated elderly who are confined to homes are also at risk. A high-risk group are the lonely elderly – residents of remote rural areas, who are in most cases left to them.

Associations of patients with the same disease (hypertension, osteoporosis, dementia, incontinence, etc.) can assist in counselling, early detection and appropriate treatment or lifestyle. It is recommended that the patients with the same disease and similar problems are dealt with in smaller groups and effort should be made to develop friendly social relations among the members of the group.

Programmes for each of these groups that include different measures according to the disease and are adapted to the abilities of patients must be prepared by health professionals with medical training, who are able to properly assess the advantages and disadvantages of measures provided according to the overall condition of the patient, not only in consideration of the patient's mobility.

8.

Support of preventive activities from nongovernmental and other organisations

The importance of NGOs in the prevention of falls among the healthy and ill elderly individuals is invaluable. Their activities cover many areas that nobody else is willing or unable to implement in such an extent and in such a way. In local environments where the direct prevention of falls begins and ends, the activities of NGOs are easily adaptable to specific requirements and needs. Depending on the nature of their activities, they also have a variety of professional and experiential competences, which should be taken into account at the implementation of preventive measures.

In Slovenia there is an increasing sense of values of a healthy and active lifestyle among the elderly, which is reflected in the expansion of a number of recreational activities. Healthy and active old age is becoming a value. There are numerous effects on recreational areas that all contribute to a higher health and social culture. The recreational, sport and other activities of non-governmental organisations are in most cases intended for the physically independent elderly people, maintaining their skills and social inclusion. Regardless of the type of activity, they all help maintaining the strength, mobility and balance of participants and thus indirectly significantly contribute to the reduction of falls. Recreational activities are an important element of active aging, functional health, prevention of chronic diseases, maintaining cognitive abilities and active involvement in the social environment, all of which is also associated with fewer falls. They can be adjusted to different age groups and allow cooperation with various participants. Although the elderly like to attend preventive meetings, they seldom associated them with the prevention of falls. As the elderly consider an active and healthy lifestyle as a value which is worth investing in, the prevention of falls is an added value of recreational activities.

Patients' associations of diseases that have a greater danger of falling (osteoporosis, Parkinson's disease, incontinence, dementia, conditions after stroke and others) may introduce preventive activities that are professionally adjusted to the capabilities and needs of their members. By maintaining their strength, mobility and balance, they may reduce falls, maintain the social involvement of their members and, together with the patients' lifestyle that is adapted to the specificities of the disease, also slow the progress of the disease.

Patients, especially those who take different medications on a daily basis, must be warned of the impact on the incidence of falls. Preventive activities should promote the dignity of older patients and reduce the negative view on the old age. The preservation of dignity, healthy lifestyle and social inclusion are especially important for patients with cognitive decline. Patients' associations already include such activities. By complementing them, the key objectives could be achieved.

For NGO activities in local communities, the basis of preventive programmes should be prepared. NGOs should choose and plan their own programmes and determine who will implement them. For this purpose, the volunteers, who would disseminate preventive activities, should be trained. Although there are no limitations for volunteers, it is advisable that they have some professional experience (e.g. teachers, professors, nurses, clerks, and the like). The local community should determine how many volunteers for dissemination are needed and the ways of their cooperation.

NGOs unite numerous professional activities of various participants, which we already have in the field of medicine and healthcare, on motor and recreational fields. Each NGO should contribute to achieving the key objective within their respective competences, organisational, material and developmental opportunities and cross-sectoral integration.

9. Safety of dwellings

Since with increasing age the majority of the fragile elderly more or less stays at home, the security of homes or individual living spaces is of great importance for falls prevention. How each living space should be equipped for secure reasons is known. However, mounting rails, automatic lighting, removing thresholds, safe stairs and the like, is not enough. The safety of homes is supported by safe habits. Senior citizens should be aware not to leave objects on the ground or on the stairs, should have slippers with non-slip soles, pay attention to the edges and creases of carpets, not enter into unlighted areas, pay attention to the cables, vacuum cleaners and other electrical devices, should avoid using chairs and tables for standing when changing light bulbs, curtains, when sweeping, washing windows, and the like.

Those who have them should always keep their **mobile phones** at hand. If they cannot stand up after falling, they can call for help if the phone is within arm's reach. In this respect, security bracelets are more reliable. Installing cameras that monitor the movement of the resident in the event of a fall and initiate a call for help is a good but expensive solution and for many people also ethically unacceptable. In any case, the home safety fitting depends on financial

resources of the resident. A lot of elderly cannot afford these safety measures. They should be subsidised to achieve a greater effect.

The new housing units should keep ground floor apartments available to the elderly and they should comply with the safety standards.

10.

Safety of public spaces

Age-friendly environment, which is a global project of WHO that some Slovenian towns and municipalities are a part of, includes safety trends in public areas that do not comprise only walking surfaces without holes and obstacles, but also separate bicycle lanes, enough time to safely cross the road, secure access to public buildings, which are equipped for safety, clean, non-slip walking surface especially in winter, a sufficient number of benches around the city, safe entering and descending, safe driving with public transport, a sufficient number of public toilets on ground level and other safety adjustments. In Slovenia, in this regard, Ljubljana, Velenje and other cities that are part of the network prevail over the other places, where age-friendly arrangements are not as challenging. A key condition for the identification and elimination of unsuitable areas or practice is the active participation of the elderly and those who work closely with them are in their work with them (social and health services, banks, shops, hairdressers, postmen, drivers of city buses, and others).

With the implementation of the mentioned measures the safety of life in the community will increase. Following the example of other countries, we could introduce the Day of Safety in Ljubljana, Maribor, etc. with its main purpose to raise and keep the awareness on the danger of falls. The European Union pays great attention to injuries and falls in the old age and encourages the exchange of good practices. On this basis, the instructions and various preventive models are being prepared at the European level. All countries are not included in these efforts to the same extent. Slovenia should pay more attention in a more organised manner to falls in the old age. Warnings and information on the risk of falls in the old age and their prevention should become a regular part of preventive measures as well as a part of instructions for active and healthy aging.

11.

Including ICT achievements in preventive care

The development of ICT technologies with the monitoring of bodily functions and the registration of risk and falls enables completely new and effective preventive approaches even in the most difficult areas, i.e. the homes of the elderly. ICT technology will make it possible

to register the falls that occur without consequences, most of which has previously remained unknown. This will allow new insights into the nature of falls and their prevention.

With the increasing number of ICT devices, it is possible to predict, detect and prevent falls from happening. Healthcare professionals, engineers and industry are involved in the development of these devices. New domestic and foreign solutions are emerging also in Slovenia, which brings several new possibilities to the prevention of falls.

Conclusion

All proposed activities are not associated with high expenses but with bringing together the participants and the activities they are already carrying out. The main weakness of the prevention of falls in Slovenia is the disconnection and fragmentation of the activities and the lack of willingness to cooperate at all levels.

The implementation of the key objective and priority policies require co-ordinated preparation of cross-sectoral activities in specific areas. It is necessary to highlight the respective competences of key participants and invite them to draw up programmes and participate in their implementation. In order to successfully achieve the key objective, the coordinated support from the relevant ministries is of the utmost importance.

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Annex I

Responsible stakeholders and their competencies

Responsible stakeholders are governmental, national, professional and other institutions that have granted authorities and duties of responsible activities in the public interest at all important public areas. Within the framework of their powers the following public service activities and facilities are committed to the prevention of falls among the elderly in Slovenia: primary care, hospitals, traumatology and orthopaedics, physiotherapy and rehabilitation, nursing homes, the National Institute of Public Health, Health Insurance Institute of Slovenia, the Agency of the Republic of Slovenia for Medicinal Products and Medical Devices and the Association of Social Institutions of Slovenia.

The following is a draft of their professional and legal competencies, which can be further complemented or changed. Each competency may be included in the cross-sectoral activities.

- **Primary care**

- Evaluating the risks of falls by testing strength, mobility and balance;
- Organising cross-sectoral physical activities in local environment;
- Coordinated prescription of drugs and control over their interactions;
- Careful prescription of sedatives, psychotropic medicines and antidepressants;

Treatment of patients with dementia and incontinence;
 Training of volunteers for dissemination of preventive care in local environment.

- **Hospitals**

Coordinated reporting on falls among hospitalised patients and measures for their reduction;
 Geriatric treatment of patients;
 Public preventive recommendations.

- **Hospitals (emergency and traumatology)**

Treatment of fall-related injuries;
 Coordinated reporting on falls among hospitalised patients;
 Publication on falls and injuries;
 Public preventive recommendations.

- **Hospitals (orthopaedics)**

Treatment of fall-related injuries;
 Coordinated reporting on falls among hospitalised patients;
 Public preventive recommendations in the field of motor skills disorders;
 Publication on falls and injuries.

- **Physiotherapy and rehabilitation**

Treatment of fall-related injuries;
 Publications on rehabilitation of patients with fall related injuries;
 Preparation of exercises for maintaining strength, mobility and balance;
 Public preventive recommendations.

- **Nursing homes**

Coordinated reporting of falls among the residents;
 Testing of strength, mobility and balance of the residents;
 Preventive exercises of residents on a daily basis;
 Recreational and entertainment activities (walking, dancing);
 Rehabilitation after minor fall-related injuries;
 Maintaining dignity of residents suffering from dementia or incontinence;
 Organising preventive exercises for the elderly living in the neighbourhood;
 Annual reports on the falls of residents;
 Training of volunteers for dissemination of preventive care in the local environment.

- **National Institute of Public Health**

Monitoring of falls according to ICD at a national level;
 Publications on falls;
 Recommendations on preventive care;
 Annual reports on the incidence and the prevalence of falls, the effectiveness of reaching the key objective;

Organising preventive activities at a national and regional level;
 Research on falls;
 Cooperation on preventive care with hospitals and retirement homes;
 Cooperation on preventive care with NGOs;
 Proposals for safety regulations of homes and public areas.

- **Health Insurance Institute of Slovenia**

Data on falls among the insured;
 Public information on the costs due to falls and the prices of every service;
 Preventive activities of the Health Insurance (polypharmacy etc.);
 Tenders for funding preventive programmes of NGOs;
 Ensuring the availability of services to the insured after fall-related injuries;
 Ensuring equal access to the necessary medical devices.

- **Association of Social Institutions of Slovenia**

Cooperation with nursing homes in coordinated reporting on falls among residents;
 Seminars intended for the leadership of nursing homes on the legal aspects of the prevention of falls among the residents.

- **Centre for Health and Development Murska Sobota** (example of regional institution)

Organising recreational activities (Nordic walking, regular walks, etc.);
 Training of volunteers to promote a healthy and active lifestyle;
 Training of home care assistants;
 Cooperation with chronic disease associations;
 Cooperation with local environment.

- **Ministries of the Republic of Slovenia**

Implementing regulations for prevention of falls;
 Calls for proposal for preventive activities of non-governmental organisations;
 Control over the implementation of regulations in institutions, establishments and offices.

- **Educational institutions (faculties and schools)**

Falls and their prevention as part of the curriculum of undergraduate study programmes;
 Postgraduate education;
 Research;
 Preventive programmes and projects.

- **Nongovernmental organisations**

In the field of prevention of falls are participants of the NGOs that deal with maintaining motor skills of the elderly and the prevention of falls through project activities or volunteer work and seek innovative approaches to improve the physical abilities and the quality of life of the elderly.

In Slovenia, the following nongovernmental organisations are directly or indirectly involved in the field of preventive care of the elderly:

- **Slovene Federation of Pensioners' Association;**
- **Gerontological Association of Slovenia;**
- **Antona Trstenjak Institute of Gerontology and Intergenerational Solidarity;**
- **Emonicum Institute for Healthy and Active Living;**
- **The Association of Societies for Social Gerontology of Slovenia;**
- **Association of Patients with Osteoporosis;**
- **Trepetlika, Federation of Associations of Patients with Parkinson's Disease;**
- **Spominčica, Slovenian Association for Helping Patients with Dementia;**
- **Inkont, Association of Patients with Incontinence;**
- **Home Care Centre;**
- **Local urban and rural associations.**

Their competencies in the field of falls prevention:

Organising recreational and other physical preventive activities;

Organising training of volunteers for dissemination;

Development of appropriate exercises in cooperation with healthcare professionals;

Monitoring the data on falls at a national level;

Cross-sectoral and independent preventive programmes and projects;

Training of home care assistants;

Cooperating with primary and secondary healthcare;

Cooperating with the local environment.

Annex II

Views and contributions of selected stakeholders

Views of the National Health Insurance Institute on demographic changes related to injuries and falls:

Injuries are the third leading cause of death in Slovenia. They affect a large number of children and young population; therefore they represent a huge social and economic burden. If before the focus of premature mortality was directed especially to children and young adults, the injuries of the elderly are now becoming a growing public health challenge. Standardized mortality rates in Slovenia, despite the significant decline in the last decade (from 70.1 in 2001

to 56.3 per 100,000 inhabitants in 2010), are still significantly higher than the EU-27 average, which was 36.5 in 2010. The leading causes of death due to injuries are falls, suicides and traffic accidents. Even decades ago, the traffic accidents were the leading cause of mortality in Slovenia. However, due to the ageing population, the falls are becoming the leading cause of death. Falls are also among the main reasons of hospitalisation due to injuries. A quarter of the 30,000 people who are annually treated in hospitals due to injuries are older than 64 years, among them every second injured person seeks treatment in a hospital due to fall-related injuries. With an ageing population, the problem of fall-related injuries will increase, which will affect financial costs, particularly the cost of hospital treatment. The need for rehabilitation and care of the elderly in different institutions will also grow. The data shows that in addition to traffic accidents and suicide preventive actions, the appropriate preventive actions in the field of falls prevention should be taken to address the issue of falls among the elderly population.

In the period between 2010 and 2013, the prevention of falls among the elderly was not among the priority programs of the Health Insurance Institute. The guidelines for the creation of business plans for 2014–2019 in addition to adapting to the needs of the elderly, include areas in which they are negotiating partner activities of "strategic shopping or ordering" of selected health programs for the implementation of the priority goals and also state the importance of fall prevention or control of the injuries. Preventive programmes of cardiovascular diseases CINDI and early cancer detection (ZORA, DORA, SVIT) will continue. The prevention of falls among the elderly is included in the development tasks and projects of Health Insurance until the year 2020, which means that its position to the issue of falls of the elderly is of operational nature. Health Insurance is still developing the project of secure drug prescription, which is indirectly linked to the prevention of falls. On the other hand, abolishing the principle of payment for incontinent patients will definitely not reduce the number of falls among incontinent patients which is already above average. Falls among the elderly are a growing problem of Slovenian society, but the organisation of the content and financial aspects cannot yet cover the complex nature of the incidence of falls and their causes. At the national level, the Health Insurance has an important role in the prevention of falls, however this area, which is of health and social nature, exceeds its competence and is the responsibility of social and economic policies and the coordinated approach of the Ministry of Health and the Ministry of Labour, Family, Social Affairs and Equal Opportunities for the most part.

Source: Publication »Strategic Development Programme of the Health Insurance Institute of Slovenia for the period between 2014 and 2019«, Ljubljana, June 2014

Centre for Health and Development, Murska Sobota

The issue of falls was never directly addressed, however the project »Lead a healthy life« promoted physical activities and was successfully implemented in several local communities

of Pomurje. Training courses for education in home care were conducted, which are indirectly connected to dealing with falls in the home environment. Due to the low birth rate, the Pomurje region is rapidly ageing, but the activities in connection with dementia, incontinence and polypharmacy have not yet been organised, although the needs are becoming increasingly apparent.

Source: Tanja Buzeti

Anton Trstenjak Institute of Gerontology and Intergenerational Solidarity

Survey: Attitudes, needs and capabilities of Slovenian population aged over 50 years in the field of health and social functioning, 2010

The findings connected to fall-related injuries and a comment.

Have you ever had a fall-related injury that incapacitated you for work and regular activities for more than three days?

Out of 1,047 respondents, 1,041 or 99.4% answered the question.

Out of 1,041, 380 or 36.5% had a fall, which made them impossible to work and activities for more than three days.

Comment:

Falls among the elderly are the most common cause of injuries, hospitalisations and injury-related deaths. 31,600 injured people were hospitalised in 2009. 18,869 or 60% of injuries were fall-related, out of which 11,083 or 59% of injured was aged 50 or higher. Patients who were hospitalised spent 122,238 days in hospital; men spent 56,973 days in hospital, while women were hospitalised for 65,265 days. Due to fall-related injuries, 336 injured people died – 173 men and 187 women.

In the United States, every third citizen over the age of 65 suffers a fall each year. Half of the falls are without consequences and people affected by them do not seek medical help. But fall-related injuries are the main cause of hospitalisation and deaths. In 2010, the emergency departments treated 2.3 million injuries and hospitalised 662,000 injured people. The medical costs of the consequences of injuries amounted to 30 billion USD. 20% to 30% of fall-related injuries include damage to tissue or head and bone fractures. Most of them are fractures of the spine, hip, forearm, leg, wrist, pelvis, upper arms and hands. 95% of hip fractures are the result of falls; women break hips three times more often than men. In general, women suffer twice as much bone fractures connected to falls than men. In 2009, 20,400 people in the United States died due to fall-related injuries; of which there were 34% more men than women. The likelihood that the consequences of fall will lead to a nursing home facility is four to five times higher at the age of 75+ than at ages from 65 to 74 years. Many people are afraid

to fall again, which results in less movement. They start losing their shape and are exposed to a greater risk of falling again.

The results of our survey confirm the fact that the likelihood of falls in the old age is greater. With 36.5% of those who reported severe fall injuries in the past, they are relatively consistent with the US data that every third citizen aged 65+ suffers a fall each year. Among the injured citizens of Slovenia, as much as 60% suffered fall-related injuries, according to the Institute of Public Health. Among 18,869 falls, 11,083 or 50% happen to people aged 50 or higher.

Injuries, fear, dependency, institutionalisation and death are the consequences of falls. They represent an important part of the national pathology and a challenge to public health, since they can be reduced by half with appropriate preventive measures.

Sources:

Health Statistical Yearbook 2009. The Institute of Public Health Ljubljana, p. 499, 502-3.

Centre for Disease Control and Prevention 2012 Falls Among Older Adults: An Overview

www.cdc.gov/homeandrecreationalafety/falls/adultfalls.html (26/12/2012).

Bowker LK, Price JD, Smith SC. Oxford Handbook of Geriatric Medicine. Oxford University Press 2006, str. 116.

How many times have you injured yourself by falling?

380 respondents who answered the previous question affirmatively, 374 or 98.4% responded. The average of the injuries was 2.03.

Comment:

The average confirms the fact that the probability of falling is higher in those who have already fallen.

What was the cause of your fall?

Of 380 respondents who answered positively to the initial question on falls, 374 or 98.4% answered this question. Every cause of falling is recorded separately and placed in the appropriate category of causes. These are shown by ranking as general causes, each of which is divided into more specific reasons.

Most falls, 143 or 38.2% out of 374 happened during **movement**; of which slipping was the cause of fall in 95 cases, sport and recreation in 28 cases, tripping in 14 cases, false step in 2, jump in 2 and haste in 2 cases.

The relatively high number of falls, 52 or 13.5% out of the 374, happened **at work**; 19 respondents fell while doing various works, 14 people fell at work on the roof, 7 people fell at sawing tree branches, 6 people fell at work in stables 6, 2 people fell in the woods, 1 person fell at mowing and 1 at work in the mine.

Health reasons were associated with 48 or 12.8% of the 374 falls; dizziness and balance disorders caused 26 falls, injuries 6, poor health 5, cramp 5, osteoporosis 2, epilepsy 1, knee 1, headache 1, stroke 1 and fall 1.

Participation in **traffic and vehicle** management is associated with 44 or 11.8% of the 374 falls. These are specific type of events that cannot always be considered as falls, but have caused injuries. Thus, respondents reported of 19 traffic collisions as falls. There were 14 cases of falls off a motorcycle or bicycle, 6 off a tractor or cart, 2 of a lorry, 2 off a bus, 2 off a train and 1 off a helicopter.

23 or 6% of falls out of 374 happened due to **carelessness and haste**, according to the respondents.

10 or 2.7% happened for **unknown reasons**, because the respondents do not remember the circumstances under which they fell.

In 8 or 2.1% a fall was caused by **animals**; dog in 6 cases, goat in 1 and cow in 1 case.

Various circumstances led to 7 or 1.9% of falls; dusk fog in 4 cases, drunkenness in 2 and electrical contact in 1 case.

3 or 0.8% of answers indicated **external causes**, which cannot be classified.

Comment:

Each fall takes place in specific circumstances; people remember them and tell stories. Every fall is a story. It can be put in different categories, depending on what we are interested in the analysis. It is therefore that all falls, which were captured by the survey, can be categorized in a different way, as shown in the above schedule. When we were particularly interested in how many of these falls happened in respondents' home, we found that there were only 8. Two respondents fell from a chair; there was one fall in the bathroom at night on the way to the toilet, in the kitchen and the bed. One fall happened because of a carpet, another by electricity.

Here is the main issue raised by the results of our research in connection to falls. Most preventive activities are concerned with the prevention of falls in domestic environments or indoors, however, the majority of falls occurs outside. The prevention of falls indoors thus captures only part of the circumstances that influence where and when someone falls. Some authors state that less than a half of falls happen indoors and more than 56% to 57% in outdoor public spaces (Lord et al 2001 Bergland et al 2003). However that is still a lot in

comparison to our study, which means that we should take into account that a lot of falls happened indoors, like falls connected with movement, work, rapidity, and other. Still, the low number of falls in the bathroom, kitchen and other rooms is surprising. Lord et al. reports on several falls that happened in the bedroom, the living room, the kitchen, the toilets, stairs, on ladders or chairs. In any case, with increasing age, the number of falls indoors increases because older people spend more time at home. This is especially true for ill or fragile and lonely elderly. Our research shows something else, namely that the majority of respondents live a very active life and perform all the work that they performed at a younger age. This is also greatly influenced by the fact that we included respondents from the age of 50 onwards in our research, when active life in all respects is at its peak. In any case, the information that we got is very rich and it would be useful to examine it more closely.

Falls among the elderly, but also in general around the world, are the subject of numerous studies and approaches. There are a number of causes why they happen. We can monitor and examine them in different ways; through questionnaires, surveys, and calendars for different periods, telephone interviews and others. Most authors believe that a large number of falls remain anonymous and that the official statistics do not reflect the actual numbers. This is clear if we consider that the majority does not inform their doctor about them falling. When analysing the causes of falls in the manner described by respondents, we see that almost everyone is looking for the causes elsewhere, but not by themselves, where lies the actual true cause (Lord 2001). That is why there is no preventive approach, which would be perfect. The easiest way is to monitor the conditions for the falls indoors; therefore the majority of preventive activities evolve around indoor conditions. The real prevention of falls is still left to be done. Different and new approaches are required that would include a more subjective way to incorporate the personality of the elderly with the environment in which they live and the way of life that they have chosen.

Sources:

Lord SR, Sherrington C, Menz HB. Falls in older people. Cambridge University Press 2001. catdir.loc.gov/catdir/samples/cam031/00023656.pdf (27.12.2012).

Bergland A, Janio GB, Laake K. Predictions of falls in the elderly by location. *Aging Clin Exp Res.* 2003 Feb 15(1):43-50. www.ncbi.nlm.nih.gov/pubmed/12841418 (27.12.2012)

Processed and commented by: Božidar Voljč

Annex III

Proposal of Protocol for Falls Recording in Nursing Homes in Slovenia

The proposal was endorsed by the Health Council at the Ministry of Health on 4th December 2015.

Introduction

The proposal was drafted in the Slovenian Medical Association. In collaboration with colleagues in the field of traumatology, rehabilitation, orthopaedics, family medicine and geriatrics, prepared by Prof Dr Radko Komadina and Dr Božidar Voljč. The proposal will need to be aligned with the nursing homes. Until the final content is agreed, other additions or corrections are still possible. The purpose of the proposal is to unify the recording of falls in Slovenia on the prescribed form, which will allow objective monitoring of falls among residents of nursing homes for the elderly, their international comparison, better-targeted planning of preventive activities and research on the incidence and nature of falls among the elderly.

The form is also quite extensive for falls, ending without consequences. In case of major injuries, fractures, wounds, bleeding and the like, the form does not only describe all the circumstances in which the fall occurred, but offers greater protection to the institution in case of compensation claims.

Why recording of falls of retirement home residents is important?

Public health significance of the disease, injury, or other health-related conditions is assessed according to their prevalence, the number of new cases and the health, social and economic consequences. From this point view, injuries in all age groups are among the most important areas of public health. They are often the result of falls, which in most cases occur without serious consequences, but can also end with death, disability, long-term treatment and rehabilitation. The more people age, the more they fall. Due to the growing number of the elderly more attention is devoted to circumstances and the prevention of falls because of their health, social and financial consequences. The European Office of the World Health Organisation put the prevention of falls among the highest priorities in order to reduce the burden of their consequences. Member States are recommended to enhance public awareness of the risks and consequences of falls. Programmes should be implemented to maintain balance, assess the safety of housing and eliminate the risk of falls in public places. Groups with the highest risk, among which are the retirement home residents, should be treated with special attention. (WHO EURO Active Ageing 2020 Falls and Nursing Homes, www.cdc.gov/homeandrecreationalafety/falls/nursing.html). Knowing the causes, consequences and prevention of falls has never been better than it is today, the professionals and politicians are bound to realise a more complete preventive action.

In comparison to some developed European societies, in Slovenia, the area of monitoring and the prevention of falls are only partially regulated, which draws attention to untapped preventive options. The proposed protocol includes monitoring of falls of the residents in retirement homes with internationally comparable indicators and opts for efficient and

transparent preventive activities. This should improve the safety of the residents on the one hand and operation of nursing homes on the other hand.

Why only nursing homes if the elderly can fall anywhere? In Slovenia, the culture of recording falls is mainly focused on their consequences; the monitoring of the circumstances in which they occurred is insufficient. The elderly often fall at home or outside and most of the falls do not have serious consequences. That is why they remain unregistered. Experience shows that the narratives of the circumstances of falls are inaccurate, which limits our understanding of the nature of falls, their causes and consequences. The most accurate information about the circumstances of falls can be obtained only in regulated environments such as nursing homes and hospitals. The acquired knowledge and experience can also be applied to recording falls in domestic environments by means of electronic technologies. In Slovenia, with only two million inhabitants, the recording should be unified as much as possible.

Principles on recording falls in nursing homes

In regulated environment of nursing homes, it is possible to provide quality, useful information on falls among residents.

The data is entered in a single protocol that meets the technical, research and forensic criteria.

Every complete or incomplete fall is recorded that satisfies the defined conditions.

Carefully met protocols ensure legal certainty to the management of retirement homes in the case of compensation claims.

The protocol should be completed within 24 hours after the fall; subsequent fulfilment is more difficult and less reliable.

If the resident is found lying or sitting on the floor, it is not necessary that he/she fell.

The protocol should be signed by the witnesses who describe their vision of the fall.

If the fall is associated with alcohol intoxication, the protocol should always be signed by two witnesses.

In case of severe injuries, the protocol should be completed by the responsible person (head nurse) and signed by the director.

Also the falls that are reported a few days after the incident and falls which happened without witnesses should be registered.

Structure of protocol

Organisation data

Number of protocol

Person who entered the data, date and time

Information on the person who fell

Circumstances of the fall

Fall description

Consequences of the fall

Indirect measures

Preventive and corrective measures

Information on the person who fell

Surname and first name, sex, age, department, room

Previous falls

Fear of falls

Physical limitations

Cognitive impairment

Vision, hearing

Continence disorders

The type and quantity of drugs

Medicines that could affect the fall; sleeping pills, antidepressants and other psychopharmaca

Fall circumstances

Time of fall and the time when a person has been found

Place a fall - room, toilet, hallway, stairs, other

How the person was discovered – lying/sitting; sitting on a chair/bed/other

What did the person when he/she fell – standing/walking – getting up/sitting down – lying down/getting up

What kind of shoes the person had

Security arrangements of the place of fall

Lighting and the place of fall

Were there any barriers or sliding material on the floor

Did the person carry any mobility aids – cane, crutches, wheelchair, other

Did the person carry any protective devices, e.g. for hips

If so, did the person use them correctly

Did the person wear glasses or hearing aids

Was the person able to call for help - doorbell, telephone, button calls, incidental calls, other

If the person fell out of bed, was it enclosed on one or both sides

Was the person strapped before the fall

Did anybody from the employees accompany the person who fell, e.g. on the toilet, enter the name

Who among the employee was first on the spot, enter the name

When was the person last seen before the fall and in what condition

Has the person complained about anything

Has anyone from the employees seen the fall? If not, where were they?

Fall description

Fall description

Is the person able to describe the fall

Witnesses and their description, names

Consequences of the fall

No consequences
Mental consequences, fear
Injuries
Type of injury and location
Material damage, e.g. glasses, other

Direct actions

Action of doctors, nurses, other professional staff, residents - indicate their names
No action
Observing
Physical examination
Analgesics, compresses, wound care
X-ray, emergency room, surgery, other

Measures at institutional level

Data on relatives, physician, insurance company
What preventive and corrective measures have been introduced
Record, decisions, dates
List of present
Who was informed
Original + 2 copies of signatures
Reviewed by qualified personnel (head nurse, other); signature
Subsequent corrections or additions to the protocol, who, when, why, signature

Fall recording and the structure of protocol adapted from:

Universitäts Klinikum Bonn: Das neue Formular Sturzprotokoll
<http://88.198.249.35/d/Das-neue-Formular-Sturzprotokoll-UKB.pdf>
Schweizerische Fachgesellschaft für Geriatrie: Vorschlag für ein Sturzprotokoll
<https://www.yumpu.com/de/document/view/21721570/vorschlag-fur-ein-sturzprotokoll-sfgg-spsg>
Das Altenpflegemagazin im Internet: Mustervorlage »Sturzprotokoll/Ereignisprotokoll«
www.altenpflegemagazin.de