Non-Communicable Diseases Watch

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衞生防護中心 Centre for Health Protection

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Falls in the Elderly

Key Facts

※ Falls are one of the important causes of ill health and death among older people.

※ In Hong Kong, about one in five community-dwelling elders aged 65 and above fall every year. Among those who fall, about 75% would sustain an injury including head trauma and broken bones.

※ Falls do not "just happen". Rather they often result from an interaction of risk factors involving the faller and the environment.

Fall prevention tips for elders and caregivers

※ Falls are preventable and are **NOT** a normal part of ageing.

※ To assess the risk of fall of you or your family elders, seek help from your family doctor.

※ It is never too late to adopt a healthy lifestyle and reduce your fall risk. Start today and change for health:

- Be physically active
- Eat a balanced diet and have regular meals
- Do not smoke
- Refrain from alcohol use
- Manage medical conditions properly
- Take medications properly as prescribed by doctors
- Wear appropriate clothing, especially non-slippery footwear
- Wear suitable spectacles
- Address hearing problems, such as use hearing aids appropriately
- Use walking aids properly

※ Making simple changes to your home can keep you safe and reduce your fall risk:

- Always keep the walkways clear
- Repair broken, uneven walking surface
- Paint sharp colours or put sharp-coloured stickers on doorsill (enhancing contrast at change of flooring levels)
- Maintain adequate lighting
- Wipe all water or oil spills
- Avoid using rugs that are movable and damaged
- Use non-slip mats in bathtub or shower and install handrails when necessary
- Store clothing and other household necessities within easy reach
- Select bed with suitable height and use stable chairs

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Falls in the Elderly

Falls and related injuries are a major public health problem. Each year, an estimated 424 000 people die from falls globally, making it the second leading cause of unintentional injury deaths after road traffic injuries. Although most falls are not fatal, approximately 37.3 million falls worldwide are severe enough to require medical attention.[1]

In older populations, falls are one of the significant causes of morbidity and mortality. Each year, approximately 28% - 35% of community-dwelling elders aged 65 and above fall. The proportions rise to 32% - 42% for those over 70 years of age.[2] Although most falls result in minor or moderate injuries (such as superficial cuts and abrasions, bruises and sprains), 10% - 15% of the fallers would sustain serious injuries, e.g., traumatic head injuries and fractures (2% - 6%).[2,3] Fracture of the hip, for example, can result in immobility as well as decline in self-care ability and subsequent institutionalisation among community-dwelling elders. The long-term nursing home admission after hospitalisation for a fall-related hip fracture/injury is three times as likely than that of a non-fall-related hospitalisation.[4] Falls can also have psychological and social impacts on elders, including loss of confidence, diminished self-esteem, cutting down on daily activities or withdrawing from social activities for fear of another fall. Population-based studies show that about half to two-third of the community-dwelling elders had fear of fall, and among which 40% - 66% had self-imposed restriction in their daily activities.[5-7] In fact, death rates from falls are highest among adults over the age of 60 years in all regions of the world.[1]

With ageing populations worldwide, the prevalence of fall-related problems in the elderly is likely to increase.[2] In the U.S., the number of fall-related hospitalizations in people aged 65 and above increased 50% from 2001 to 2008.[8] Similarly, the annual number of hospitalizations due to fall-related traumatic head injuries among Dutch population aged 65 and above had also increased from 932 in 1986 to 3 010 in 2008 (223% increase).[9] In mainland China, the 25 million falls suffered annually by the estimated 20 million elderly population exacted direct medical costs of about 5 billion yuan and social costs of 60-80 billion yuan.[10] Preventing falls and minimising their harmful effects in older populations is thus an important global public health objective.

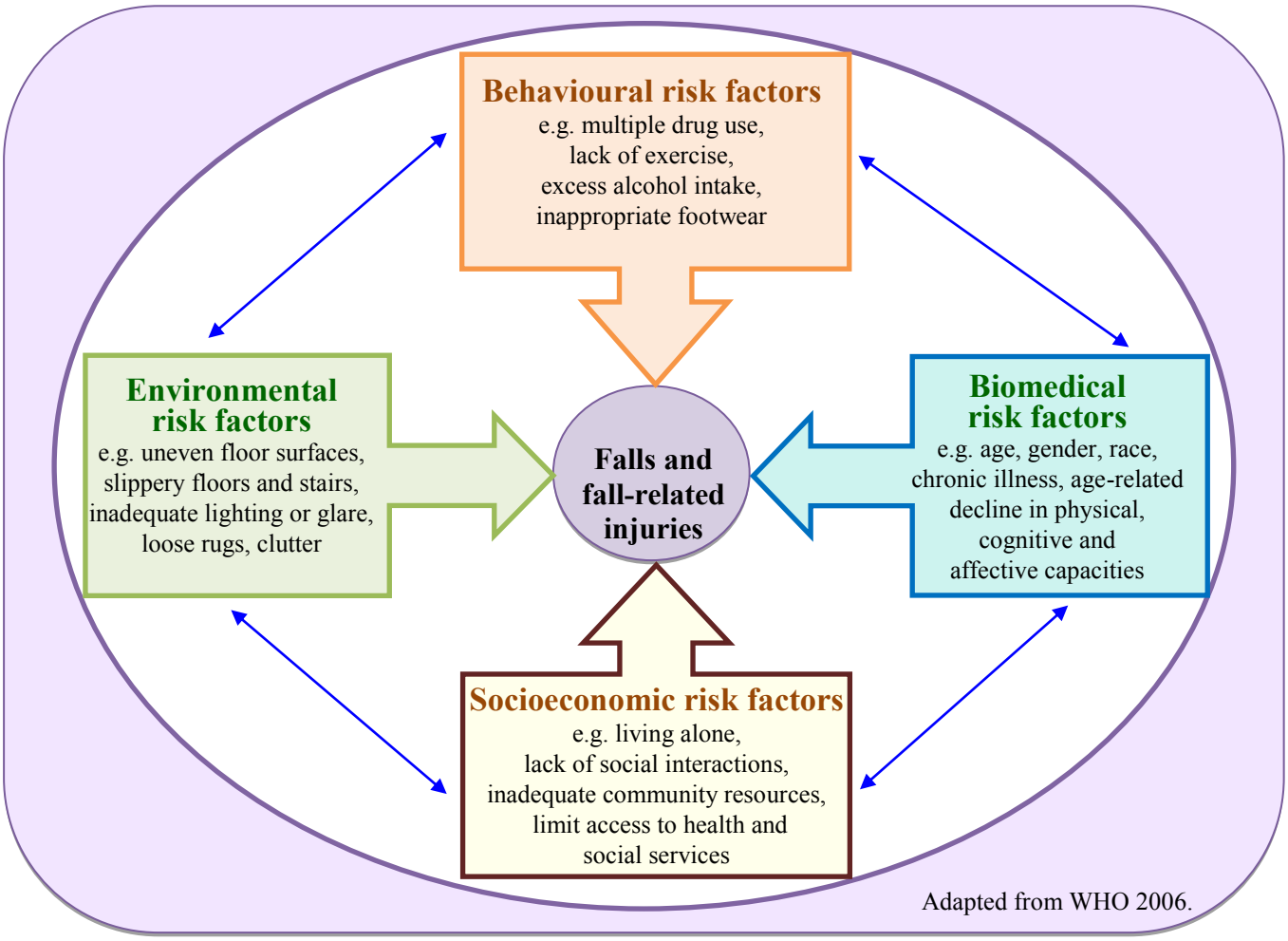
Risk Factors of Falls in Older Age

Falls do not "just happen", but very often occur as a result of a complex interaction of risk factors involving the fallers and the environment (Figure 1).[2]

Biomedical Risk Factors

A recent systematic review and meta-analysis of prospective studies (mainly from the United States and Europe) examined 31 common risk factors of falls (including socio-demographic, medical, psychological, mobility, sensory and medication use) in community-dwelling older people. Results showed that the risk of falls increased by 12% for a 5-year increase in age, and female sex was associated with a 30% increased risk of falling. Having a history of fall, dizziness and vertigo, Parkinson's disease or cognitive impairment and gait problems were associated with around 2 - 3 times more likely to have a fall. Other risk factors included disability in instrumental activities of daily living, depression, history of stroke, urinary incontinence, rheumatic disease, diabetes and pain conditions with fall risk increased by about 25% - 65%.[11]

Figure 1: Risk factors associated with falls in the elderly



Behavioural Risk Factors

Many elders use walking aids to assist balance and mobility as well as take multiple medications to treat various chronic illnesses. However, improper use of walking aids and medications may increase the risk of fall. Systematic review and meta-analysis showed that use of walking aid [due to improper use, fragility of the users or other reasons] was associated with about twice the risk of fall. Number of medications (for one-drug increase), use of sedatives and anti-hypertensives were associated with increased fall risk by about 5% - 38%.[11]

Environmental Risk Factors

In many elderly falls, physical environment also plays a significant role. Among community-dwelling elders, home hazards were associated with a 38% increased risk of falls.[12] Examples of home hazards include slippery floors; loose and uneven rugs; absence of night lights; lack of grab bars or handrails; appliance cords or other obstacles in walking routes; and items stored in high cupboards.[13]

Of note, the risk of falls increases with the number of risk factors. A study showed that the 1-year risk of falls among elderly persons living in the community increased with each additional factor, starting from 8% with none and reaching 78% with 4 or more risk factors.[14] Although some risk factors (such as advancing age and cognitive impairments) are not modifiable, many factors are preventable or potentially modifiable through behavioural change, home and other environmental modifications, proper management of underlying medical problems and health promoting policies.[2]

Local Situation

In Hong Kong, falls are the principal cause of injury (50%) in older people.[15] Among community-dwelling Chinese elders, local studies reported an annual incidence of falls about 18% - 20%.[16-18] The corresponding rates for two or more falls were about 5% to 6%.[16,18] While 75% of community-dwelling elderly person sustained an injury after falls, 7% and 6% of fallers had serious injuries and fractures respectively.[16] In 2012, people aged 65 and above accounted for 19 939 (6 102 for males; 13 837 for females) episodes of in-patient discharges and deaths in public and private hospitals due to falls.[19] Of 187 registered deaths due to falls among people aged 65 and above in 2012, males accounted for about two-thirds of all registered deaths due to falls; over two-fifths of the fatal falls happened at home (Table 1).[20]

For Chinese elders, the risk factors for falls were generally similar to those reported in Caucasian populations.[21] A local study on falls and fall-related injuries among community-dwelling elderly persons found that environmental risk factors (including slippery floors, uneven floors, curbs and obstacles) were reported by 57% of the fallers at the time of the fall. Loose or slippery shoes were also possible factors for falls in 27% of fallers.[16] Elders who did not have a morning walk habit would have a 40% increased risk of falls than those who practised at least twice a week.[17]

Table 1: Number (Proportion) of registered deaths due to falls among people aged 65 and above by sex and place of occurrence, 2012

	Number (Proportion)
Sex	
Male	125 (66.8%)
Female	62 (33.2%)
Place of occurrence	
Home	83 (44.4%)
Residential institution	27 (14.4%)
Trade and service area	12 (6.4%)
Street and highway	11 (5.9%)
School, other institution and public administrative area	7 (3.7%)
Industrial and construction area	1 (0.5%)
Other specified places	44 (23.5%)
Unspecified places	2 (1.1%)
Total	**187 (100.0%)**

Sources: Department of Health and Census and Statistics Department.

Falls Prevention

Many people mistakenly think falls are a normal part of ageing.[22] In fact, many elderly falls can be prevented through early identification of modifiable risk factors, changing behaviours and adopting a healthy lifestyle, along with targeted multi-disciplinary interventions to reduce the risk of falls.

Identification and Modification of Fall Risk

Falls prevention begins with an awareness and proactive identification of factors known to be associated with an increased risk of falls.[2] Elders who are concerned about falls, feel that they are at risk of falls or have a fall history, could discuss with their family doctors for a fall risk assessment. This may include medical examination and medication review to identify any underlying diseases or conditions likely to increase their risk of falls. Doctors may also use some simple tests for assessing balance and postural control (such as One Leg Balance test which requires the elders to stand unassisted on one leg for 5 seconds ; Timed up and Go Test which involves observing the elders get up from a chair without other's assistance, walks 3 metres, turns around, walks back and returns to a seated position).[23] If indicated, the family doctors can refer the elders at risk to specialists or other health care professionals for further assessments and supportive care. They may include: ophthalmologists for cataract and glaucoma; specialist nurses for continence care; physiotherapists for customised exercises for balance improvement and gait training; occupational therapists for home safety assessment and hazard modifications; podiatrists for foot problems and advice on footwear safety; optometrists for vision screening and advice on appropriate glasses; dietitians for dietary advice; and social workers for psychosocial needs and services assessment. For frail elders with disabilities or cognitive impairments and having care needs, there are a number of social resources available to meet their needs. These include Personal Emergency Link Services, Home Care Services and Day Care Centres etc.

Changing Behaviours and Adoption of a Healthy Lifestyle

Many falls result from personal or lifestyle factors that can be changed. However, many older people incorrectly think that it is too late to change their behaviours and adopt a healthy lifestyle in old age.[2] In fact, it is never too old for 'couch potatoes', unhealthy eaters, smokers and heavy drinkers to change for better health. Healthy lifestyle delays the onset of aged-related functional decline and diseases, and reduces the risk of falls. Here are some changes that elders can adopt:

- ✓ **Be physically active**, and it is the first line of defense against falls. Elders can incorporate physical activity into daily living like walking and climbing stairs. Tai Chi improves muscle strength, balance and coordination, which is particularly helpful in falls prevention.
- ✓ **Eat a balanced diet and have regular meals** to optimize nutritional status and stay strong. As having healthy bones can prevent fall-related hip or other fractures, ensure adequate dietary intake of calcium and vitamin D (to help body absorb calcium) to slow down bone mass lost. Limit salt intake as excessive consumption can lead to calcium loss from bones. Calcium-rich foods include milk, cheese, yoghurt, hard bean curd, Chinese kale, Chinese spinach, and white cabbage. For vitamin D, good sources include oily fish (such as mackerel and salmon) and egg yolks. Sunlight exposure can also facilitate vitamin D production by the skin, but elders need to beware of sunburn.

- ✓ **Do not smoke**. Smoking causes various chronic diseases, reduces bone mass, affects calcium absorption from the intestine, and upsets the balance of hormones needed for maintaining bone health. Even for those in advanced age, it is never too late to give up smoking for health. In fact, many elders have been able to quit smoking successfully. For free smoking cessation counseling and help, call the Integrated Smoking Cessation Hotline of DH at 1833 183.
- ✓ **Refrain from alcohol use**. Alcohol can affect co-ordination and balance, interact with medications or exaggerate their effects, thereby making a person more likely to slip and fall. Older people are more susceptible to the effects of alcohol.
- ✓ **Manage underlying medical conditions properly**. Take an active part in self-care and follow the treatment plans.
- ✓ **Take medications properly as prescribed by doctors**. As age increases, the effects of some medications or combination of medicines can change. Some of these effects can lead to falls by making a person drowsy or dizzy. So ask your family doctor or a pharmacist to review all medications – both prescribed and over-the-counter medications – to identify medicines that may cause side effects or interactions. Understand what the medications are for; and how and when to take them.
- ✓ **Wear appropriate clothing and footwear**. Avoid wearing trousers that are too long, too loose or too tight. Choose non-slippery shoes. Avoid high heels, thin and hard soles, or other loose-fitting shoes. Avoid wearing slippers or walking in socks only. [2, 3]
- ✓ **Wear suitable spectacles** to optimise vision and prevent vision-related falls. Consult your doctor if you experience visual impairment.
- ✓ **Address hearing problems**. If indicated, ask your doctor or audiologist about appropriate use of hearing aids or other hearing devices to maximize your hearing ability.
- ✓ **Use walking aids properly**, such as walking sticks, quadripods, frames and wheelchairs. Do not rely on an umbrella as walking aid. Seek help from a physiotherapist to choose the right one and learn how to maintain and use them properly.

Ensure Home Safety

For older people who live in the community, most falls occur within their home or immediate home surroundings. To enhance home safety and minimise the risk of falls, elders can take the following measures:

- ✓ **Always keep the walkways clear**. Remove clutters such as boxes, newspapers, electrical cords or phone cords from the walkways.
- ✓ **Repair broken, uneven walking surface**.
- ✓ **Paint sharp colours or put sharp-coloured stickers on doorsills** (enhancing contrast at change of flooring levels).[3]
- ✓ **Maintain adequate lighting**, especially in dark areas. Keep switch positions convenient for elders. Place night lights in bedrooms, bathroom and walkways to avoid falls at night.
- ✓ **Wipe all water or oil spills**.
- ✓ **Avoid using rugs that are movable or damaged**. If needed, use non-slip rugs and repair worn areas. Use rug tape to secure rug edges from curbing up.
- ✓ **Use non-slip mats in bathtub or shower**. Install appropriate grab handles to help get in and out.
- ✓ **Store clothing and other household necessities** (such as food, kitchen supplies and eating utensils) **within easy reach**. Consider keeping items no lower than waist level or no higher than shoulder height to avoid excessive bending, stooping or reaching. Use suitable tools e.g. reaching aids, cleaning rods, long-handle shoehorns etc. when needed.
- ✓ **Select bed with suitable height** to ensure that the feet can reach the floor when sitting. **Use stable chairs** with suitable seat height.

In 2012, the Working Group on Injuries was established under the Steering Committee on Prevention and Control of Non-communicable Diseases to address issues relating to the prevention of injuries in Hong Kong. The Working Group comprised members from the public and private sectors, including community organisations, academia, healthcare professions, social services sector, public agencies and government departments. During the meeting held in January 2013, the Working group identified falls and three other priority areas namely sports injuries, domestic injuries (other than falls) and drowning/ near-drowning as the priority areas to work on. Please stay tuned for the Working Group's recommendations on falls prevention actions.

Besides, more information about healthy ageing or health education resources (such as the DVD on 'Simplified Tai Chi Chuen – 24 Forms for Healthier Body and Mind'; books on healthy ageing, healthy eating or exercise) can be found in the Elderly Health Service website at http://www.elderly.gov.hk, or please call the 24-hour Information Hotline at 2121 8080 (Cantonese only) for details.

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News Bites

A study reported a downward trend in hip fracture incidence among people aged 65 and above in Hong Kong.

The study obtained the annual numbers of hip fracture episodes from the Hospital Authority database and population statistics from the Census and Statistics Department to calculate the incidence and post-fracture mortality from 2001 to 2009 among the population aged 65 and above. Results showed that the age-adjusted incidence of hip fracture among males aged 65 and above decreased from 381.6 per 100 000 population in 2001 to 341.7 per 100 000 population in 2009. Among females aged 65 and above, the hip fracture incidence also decreased from 853.3 per 100 000 population to 703.1 per 100 000 population over the same time period. However, there were no significant changes in post-fracture mortality trends.

The exact reasons for this improvement are unclear. The declining incidence may be a result of establishment of fall prevention services, promotion of physical exercise or Tai Chi, and increased use of drugs for osteoporosis. More studies are needed to identify the underlying factors accounting for these trends.

[Source: Chau PH, Wong M, Lee A, et al. Trends in hip fracture incidence and mortality in Chinese population from Hong Kong 2001-09. Age Ageing 2013; 42(2): 229-33.]

Non-Communicable Diseases (NCD) WATCH *is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.*