

Fact sheet: Prevention of Injuries due to Burns, Fire & Flames among Elderly

Elderly Safety-Focus on Accidental Injuries

Accidental Injuries among Elderly People

Fire, flames and burns comprise <5% of the total burden of injury among elderly, but they are the most disfiguring ones.

Evidence based good practices show that it is possible to reduce burn injuries in elderly people by relatively cost effective methods. These pertain to behavior modification measures such as training and structural modification such as environmental changes and regulations. Among them installation of smoke detectors and recommendations for avoiding smoking while in the bedroom are of prime importance.



"invite elderly to a safer and better life"

FACTS

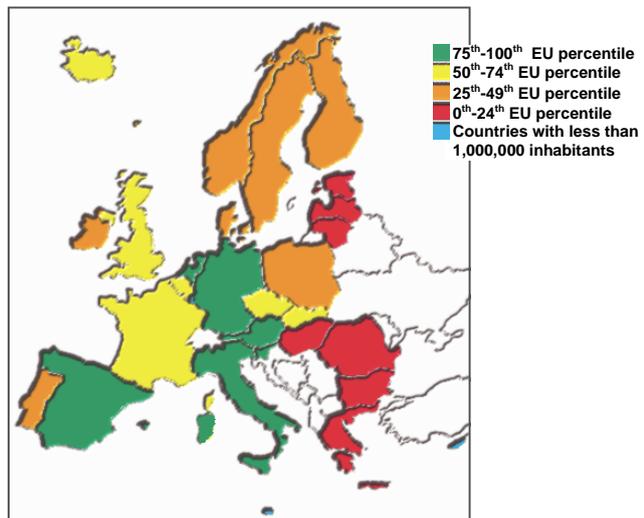
All injuries

- ◆ Senior citizens in the EU-27 and the EEA account for an appalling toll of about 105,000 fatal injury cases per year out of which 85,000 are categorized as unintentional and 20,000 as intentional¹⁻³
- ◆ Elderly people are involved in 40% of fatal injuries in the EU¹
- ◆ In the EU-27 there is a 4-fold variability in the frequency of injury death among elderly. Hungary has the highest mortality rate followed by the Czech Republic, France, Finland and Denmark whereas Bulgaria, Greece, Spain, UK and Germany have the lowest rates³
- ◆ Deaths due to injuries are only the tip of the iceberg. In the EU every day 15,000 elderly sustain an injury severe enough to seek medical care, out of whom 5,500 are ending up in a hospital and 275 eventually die, whereas several hundred never get back home as they enter a nursing home.
- ◆ The proportion of elderly people in the EU population is steadily increasing, which will have immediate impact on the burden of injuries in this age group

Injuries among elderly due to burns, fire and flames

- ◆ Injuries due to burns, fire and flames are the fourth leading cause of injury death among people 65 and older accounting for <5% of all types of injuries.^{3,5} There are nearly 2,000 deaths from this type of injuries among elderly in the EU-27 Region^{2,3}
- ◆ The inter-member states variation of the mortality rates is higher than 15-fold with Netherlands and Slovenia having the lowest rates (< 1) and Latvia and Estonia the highest (> 15). This discrepancy shows the high potential for prevention
- ◆ A vast majority of the EU-27 and EEA countries seem to enjoy during the last decade decreasing annual rates from burns, fire and flames of about 3%^{5,6}

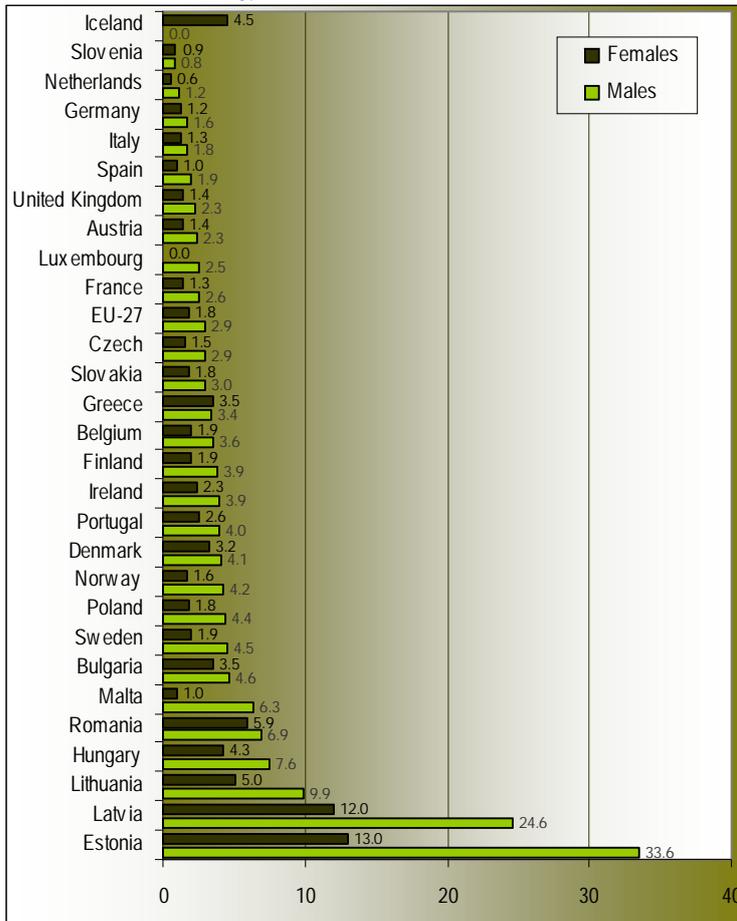
Geographic distribution of EU-27 and EEA mortality rate due to fire and flames (circa 2003) among elderly³



Source: WHO mortality database last available 3 years average for each country (circa 2002-2004) adjusted by CEREPRI

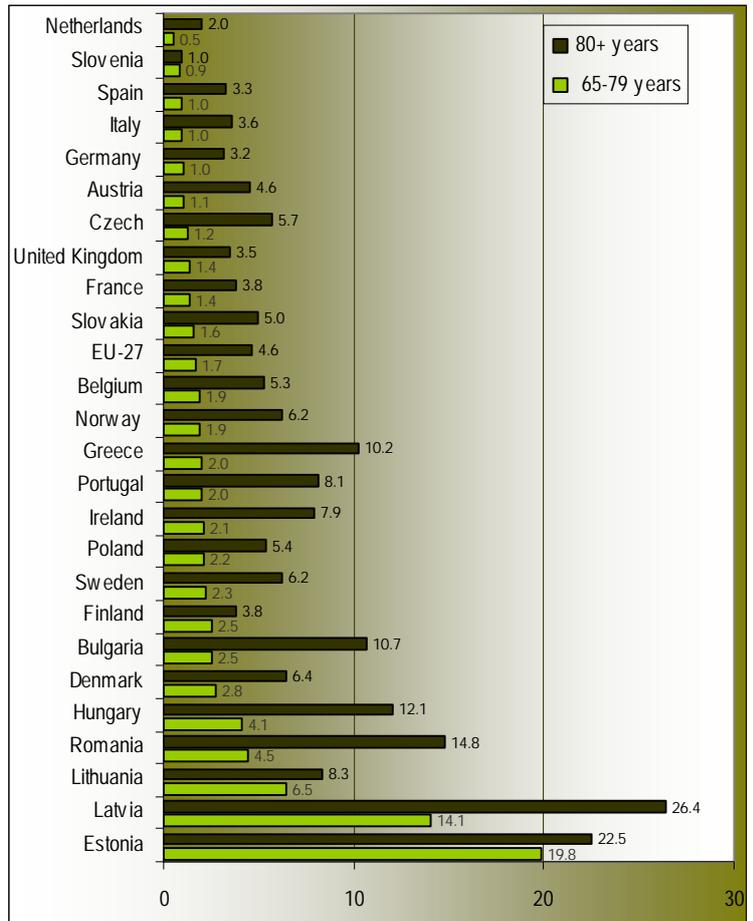
Age adjusted mortality rate due to fire and flames per 100,000 among elderly in the EU-27 and the EEA by gender³

(data for Cyprus and Liechtenstein are not available)



Age adjusted mortality rate due to fire and flames per 100,000 among elderly in the EU-27 by age group³

(data for Cyprus and Liechtenstein are not available)



Source: WHO mortality database last available 3 years average for each country (circa 2002-2004) adjusted by CEREPRI

- ◆ Each year about 1 out of 10 elderly will be treated by a medical doctor due to an injury, amounting to a total of 8 million injuries in the EU-27 and EEA²
- ◆ Fatal injuries due to burns, fire and flames are 50% higher among elderly men than among elderly women³
- ◆ Elderly aged 80 and over have higher mortality rates due to burn injuries (2.6 fold) compared to elderly 65-79 years old³
- ◆ The vast majority of burn injuries occur inside the house, especially among the very old^{3,7}

PROPORTIONAL INDICATORS DERIVED FROM EMERGENCY DEPARTMENTS

- ◆ The pattern of burn injuries based on data derived from Accident and Emergency Departments in three member states, namely Denmark, France and Greece, shows that burn injuries which sought care in the Emergency Departments are less than 1% of all injuries. Yet, these injuries are more often hospitalized and account for lengthy hospitalization rates. They usually occur inside home, especially the kitchen and the bedroom. It is worth noting that females more frequently sustain a burn in the kitchen, whereas males are injured more frequently in other places inside or around the home^{4,8}

Distribution of burn injuries among elderly by place in 3 MS⁴

Place	Denmark		France		Greece	
	N	%	N	%	N	%
Kitchen	40	35.4	73	41.5	192	60.0
Inside home, other	40	35.4	59	33.5	72	22.5
Around the home	21	18.5	27	15.3	22	6.9
Other	9	8.0	6	3.4	22	6.9
Unspecified	3	2.7	11	6.3	12	3.7
Total	113	100	176	100	320	100

Distribution of burn injuries among elderly by gender in 3 MS⁴

Gender	Denmark		France		Greece	
	N	%	N	%	N	%
Male	48	42.5	86	48.9	118	36.9
Female	65	57.5	90	51.1	202	63.1
Total	113	100	176	100	320	100

OUTCOME

Burns are common injuries in case of explosions and fires. Specifically, thermal burns are caused by contact with sources of high heat, such as flames, hot liquids and hot surfaces, contrary to what happens with chemical and electrical burns. Every year over 1,000 deaths due to burns among elderly are reported in the United States, and an impressive number of up to 10,000 Americans of all age groups die later due to a burn related infection.⁸ Therefore, it is imperative to raise public awareness on how the elderly should behave in fire situations and what the first aid should be.

In particular:

Burn injuries among elderly are comparatively more severe because the elderly are more fragile. This type of injury is responsible for a large proportion of the health expenditure worldwide²

- ◆ Accident and Emergency Department data from Denmark, France and Greece show that follow up of elderly with burns was deemed necessary for ~40% of those who sought care in the outpatient department, whereas the respective hospitalization rates were ~10% and the outcome was more grave among elderly 85+ years (19% and 6 days respectively)⁴
- ◆ Out of control flames, explosion of flammable liquids and products such as camping gas, heating apparatus, cooking oil/butter and hot water are among the main causes of burn⁴

RISK FACTORS FOR BURN INJURIES AMONG ELDERLY PEOPLE

- ◆ The main risk factors for fatal burns among elderly people are:⁹⁻¹²
- ◆ Careless smoking, especially in the bedroom
- ◆ Absence of a smoke detector
- ◆ Winter time
- ◆ Alcohol use in combination with smoking
- ◆ Electrical blanket of poor quality
- ◆ Excessively hot water used when showering or cooking oil or butter used when cooking
- ◆ Elderly are at higher risk for house fire death for a number of reasons:
 - ◆ Reduced sensory and cognitive abilities, such as smell, touch, vision and hearing, and mental diseases such as dementia, Alzheimer and depression leading to slower reaction or complete inactivity
 - ◆ Prescription drugs and alcoholic beverages, alone and especially when combined due to decreased alertness
 - ◆ Mobility impaired, slowing or completely preventing escape
 - ◆ Lack of financial means for environmental improvements aim to reduce risk of fire (portable heaters or heating blankets, older homes, etc.)

BURN INJURY PREVENTION

There is still a lack of awareness that house fire injury and death among elderly remain a major public health issue. Numerous community interventions have been introduced, such as:

- ◆ Attitude modification measures such as media campaigns and leaflets
- ◆ Behavior modification measures such as training
- ◆ Structural modification such as environmental changes and regulations

Given that a limited proportion of the literature has evaluated the respective interventions aiming in reducing house fire injuries and deaths, particularly those concerning elderly people, recommended preventive measures are broadly classified into those concerning the whole population and those concerning exclusively elderly people. It seems, however, that a combination of different types of interventions entails strongest positive effects.

FIRE PREVENTION SAFETY TIPS FOR ELDERLY¹³⁻¹⁵

- ◆ Take care with smokers materials, ensure that all cigarette ends are safely extinguished and never smoke in bed
- ◆ Follow the manufacturer's instructions when using electric blankets and have them checked regularly
- ◆ Install a smoke alarm in at least each level of your home; test the alarms monthly and replace its batteries at least once a year
- ◆ Develop an escape plan; choose a meeting place outside and in front of your home where all family members should meet
- ◆ Keep in a visible place the emergency number for your fire department
- ◆ If you see smoke, try another escape route
- ◆ Never go back into a building until the firefighters say it is safe

TIPS FOR CARE GIVERS

As the elderly are at higher risk for house fire death, prevention approaches must be multifaceted:^{2,15}

- ◆ Encouraging the purchase and maintenance of smoke detectors
- ◆ Selecting alarms with a louder signal, and placing the alarm closer to the sleeping area
- ◆ Selecting alarm systems with an alternative inaudible method of indicating smoke
- ◆ Planning escape assistance with household members or neighbors
- ◆ Ensuring the safety of home appliances
- ◆ Providing public home service for elderly to check homes for fire safety each year
- ◆ Using a mobile automatic water extinguishing system targeting at improving fire safety for elderly people with restricted mobility functions who live alone
- ◆ Using older people to educate peers in cooperation with voluntary organizations

TIPS FOR POLICY MAKERS

A variety of interventions concerning legislation, policy strategies, educational programs, communications campaigns and necessary in home modifications is included in this category:^{2,7,10-11,16}

- ◆ Law requiring smoke detectors in all houses; and installation of free fire alarm provided door-to-door
- ◆ Poor maintenance can reduce the effectiveness of smoke detectors. Therefore, in certain high risk areas, giveaway programs must be followed by long term maintenance and inspection programs
- ◆ Wired detectors are more likely to be working than battery-powered detectors; building codes could require detectors to be wired into household current
- ◆ Information material and mass media information campaigns
- ◆ Hot water outlets in homes should have a maximum of 55 degrees Celsius
- ◆ Periodical check of electrical system in the house
- ◆ Standards and regulation for getting only reduced ignition propensity cigarettes
- ◆ To eliminate fire losses, further attention on ignition sources like home heating devices should be paid in order to prevent ignition of residential fires
- ◆ Fire prevention measures should also apply to health care facilities and hospitals

Lack of enforcement of burn prevention initiatives at community level is a major obstacle. Therefore, a coordinated approach involving government, law enforcement, and dedicated community members in order to ensure that fire prevention policy is effective. Apart from the fire department officers, professionals trained in public health and epidemiology can largely contribute to this area, by sharing experience with injury epidemiology and injury surveillance, as well as their expertise in research design and program evaluation.

Policy Recommendations²

- ◆ Each member state in the EU and in the EEA should establish national action plans for prevention of injuries in elderly people.
- ◆ Each member state in the EU and EEA establish health based injury registration systems enabling sound and valid injury statistics to be produced. The EC should ensure that such systems are working.
- ◆ Each member state in the EU and EEA report the fatalities in elderly people according to common coding rules, ensuring that it is possible to compare mortality statistics across Europe. World Health Organisation should increase their efforts to create a common understanding of the coding system and to control the quality of the statistics.
- ◆ Each member state in the EU and EEA, together with the European Parliament and European Council establish one day of the year as a Day for Elderly Safety.
- ◆ Each member state in the EU and EEA build capacity for conducting research on injuries in elderly people: to understand their causes; to develop preventative measures; to plan and implement interventions; and to evaluate interventions for cost-effectiveness.
- ◆ Each member state in the EU and EEA develop networks at central and local levels to promote implementation of evidence-based best practices to reduce injuries in elderly people.

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