World Health Organization

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# Injuries: a call for public health action in Europe

## An update using the 2015 WHO global health estimates

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## An update using the 2015 global health estimates

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**ABSTRACT**
The WHO global health estimates show that 530 000 deaths occurred in the WHO European Region due to injuries and violence in 2015. This represents a decline of 29% from 2000. Injuries account for 5.7% of all deaths and 9.4% of all disability-adjusted life-years lost, and are a leading cause of death in people aged 5–49 years. The three leading causes of injury deaths are self-directed violence (128 000), falls (94 000) and road traffic injuries (80 000). Inequalities in injury deaths exist in the Region, with mortality rates 2.5 times higher in males than in females and 1.7 times higher in middle-income compared to high-income countries. When all ages are considered, there has been a convergence in mortality since 2000 between middle-income and high-income countries, but the gap has widened for children under 15 years. Public health action is needed to reduce inequalities in injuries in the Region.

**KEYWORDS**
VIOLENCE
WOUND AND INJURIES – PREVENTION AND CONTROL
PUBLIC POLICY
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## Key messages

- Unintentional and intentional injuries accounted for 530 000 deaths in the WHO European Region in 2015.
- Injuries are responsible for 5.7% of all deaths and 9.4% of all disability-adjusted life-years lost.
- Injuries cause half of all deaths in young people aged 15–29 years, a third in children of 5–14 years, and a quarter in adults of 30–49 years.
- Overall, injury deaths have declined by 29% since 2000.
- Fifty-seven per cent of injuries are due to self-harm, falls and road traffic injuries.
- Fatal falls have increased in older people of 70 years and over, in whom 58% of fatal falls occur.
- Seventy per cent of injury deaths are in males.
- Mortality rates due to injuries are 2.5 times higher in males than in females.
- Injury mortality rates in middle-income countries are 1.7 times higher than in high-income countries.
- Male injury mortality rates in middle-income countries are 2.2 times higher than in high-income countries; there is no difference in females.
- Inequalities in injury deaths in children under 15 years have widened between middle-income and high-income countries.
- Public health action is needed for this preventable cause of death and disability.

## Background

Injuries and violence are leading causes of death and disability in the WHO European Region *(1,2)*. They represent a profound drain on health and societal resources and pose a threat to economic and social development in the Region *(2–5)*. The 2030 Agenda for Sustainable Development has given renewed attention to the health and developmental threat of injuries. Several goals and targets for violence and injury prevention have been included in the Sustainable Development Goals (SDGs), which provide a governance framework for intersectoral preventive action *(6)*.

WHO's latest global, regional and country-level cause-specific mortality estimates for the years 2000, 2005, 2010 and 2015 (referred to as the 2015 global health estimates) provide a comprehensive assessment of mortality and loss of health due to diseases and injuries *(1)*. The estimates are essential for informing public health decision-making and provide an opportunity to assess the burden of injuries and argue for preventive action *(2–5)*.

## Aim

This briefing aims to inform policy-makers and practitioners on the significance of intentional and unintentional injury deaths and burden in the WHO European Region. It provides an overview of mortality and inequalities due to different mechanisms of injuries by age, sex, geography and income groups, and emphasizes the continued need for prevention programmes.

## Methods

The primary source of data is the 2015 global health estimates for the Region, which spans 53 countries *(1,7)*.[1] Data on absolute numbers and mortality rates for different injury mechanisms were obtained for the Region. Comparisons for middle-income countries (MICs)[2] and high-income countries (HICs)[3] used individual country data from the 2015 global health estimates. Disability-adjusted life-years (DALYs), or years of healthy life lost due to premature death or disability, were used for burden of injuries. The 2015 global health estimates are comparable for four

1 Member States of the WHO European Region are: Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, the Netherlands, Norway, Poland, Portugal, the Republic of Moldova, Romania, the Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, the United Kingdom and Uzbekistan.

2 MICs with gross national income of US$ 1026–12 475 in 2016 (World Bank Atlas Method classification) are: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, the Republic of Moldova, Romania, the Russian Federation, Serbia, Tajikistan, the former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine and Uzbekistan.

3 HICs with gross national income greater than US$ 12 476 in 2016 are: Andorra, Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

points in time – 2000, 2005, 2010 and 2015 *(1)* – but not with previously published global health estimates *(7–11)*.

## What are injuries and violence?

Injuries can be unintentional, such as those caused by road traffic injuries, poisonings, falls, burns or scalds, drowning or submersion, or intentional. Intentional injuries can be self-directed (suicide or self-harm), interpersonal (intimate-partner violence, youth violence, child maltreatment or elder abuse), collective (war), or perpetrated through legal intervention. The injury categories used in the 2015 global health estimates are described in Table 1 *(4)*.

Violence is defined as an intentional threat or use of physical force against oneself, another person or a community that results in injury, death, mental harm, maldevelopment or deprivation.

## Leading causes of injuries in the WHO European Region, 2015

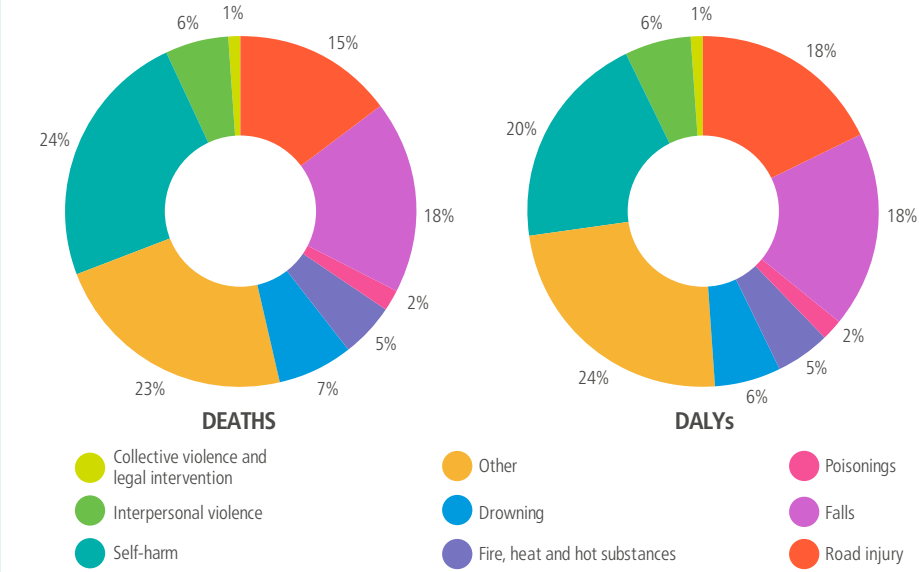
Injuries led to 530 000 deaths in 2015, representing 5.7% of all deaths occurring in the Region. The three most prevalent causes of injury-related mortality were self-directed injuries (128 000), falls (94 000) and road traffic injuries (80 000), constituting 57% of all injury deaths in the Region (Fig. 1). Other unintentional injuries, including accidental threats to breathing (suffocation, strangulation and choking), contact with venomous animals and plants, and complications of medical and surgical care, accounted for 23% of injury-related mortality in 2015.

The burden due to injuries resulted in a loss of 28 million DALYs in 2015, which represents 9.4% of all DALYs lost. Self-harm, road traffic injury and falls accounted for 56% of injury-related DALYs (Fig. 1). Younger people (aged 15–49 years) had a greater proportion of

**Table 1.** Major cause of injuries

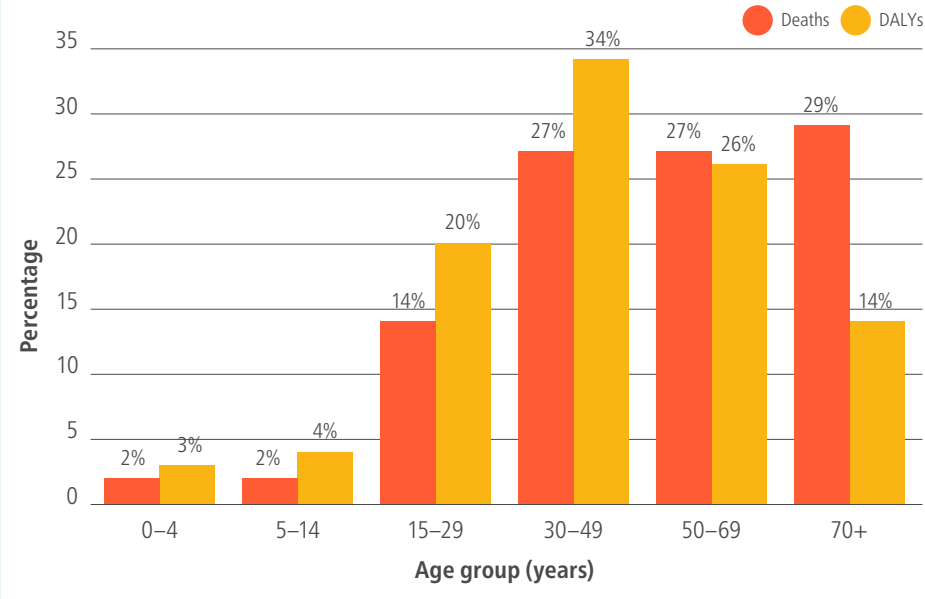
| Unintentional Injuries | Intentional Injuries |
|---|---|
| Road traffic injuries | Self-harm |
| Poisonings | Interpersonal violence |
| Falls | Collective violence and legal intervention |
| Fire, heat and hot substances | |
| Drowning | |
| Other unintentional injuries | |

**Fig. 1.** Proportion of injury deaths and DALYs lost in the WHO European Region by cause, 2015




*Source:* WHO (*1*).

**Fig. 2.** Age distribution (percentage) of deaths and DALYs lost from all injuries



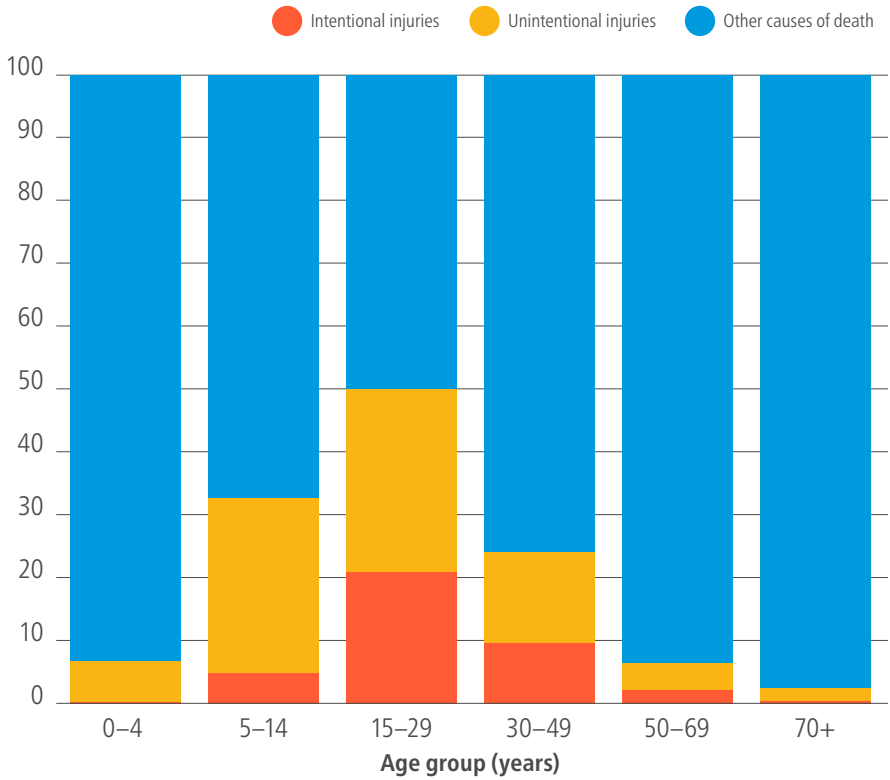

*Source:* WHO (*1*).

DALYs lost from injuries as opposed to deaths than older people (Fig. 2).

When compared to all other causes, injuries are a leading cause of death in young people aged 5–49 years (Fig. 3). Injuries cause half of all deaths in young people aged 15–29, a third in children of 5–14, and a quarter in adults of 30–49 years.

Most injury-related deaths – 73% – are unintentional; intentional injuries account for 27%. Ninety-six per cent of all injury deaths in children aged 0–4 years are due to unintentional injury; the proportion is 85% in children of 5–14 and 58% in young people aged 15–29 years. The highest proportion of intentional injury deaths (42%) occur in those aged 15–29.

**Fig. 3.** Proportion of deaths from unintentional and intentional injuries and all other disease causes by age group in the WHO European Region, 2015




*Source:* WHO (1).

## Comparison between 2000 and 2015

Deaths from injury fell from 745 000 in 2000 to 530 000 in 2015 – a reduction of 29% (Table 2). The burden due to injuries fell by 33% during this 15-year period, from 42 million DALYs in 2000 to 28 million in 2015.

Injury deaths in the European Region accounted for 7.9% of all deaths in 2000, falling to 5.7% in 2015. A relatively greater reduction in intentional injury deaths (36%) than unintentional (25%) was seen: among these, the largest decreases occurred in poisoning (58%) and interpersonal violence (57%). Road traffic injury deaths (32.9%) saw a larger reduction than deaths due to falls (8.9%), which in 2015 was the leading cause of injury death after self-harm.

## Inequalities in injury mortality by age and sex

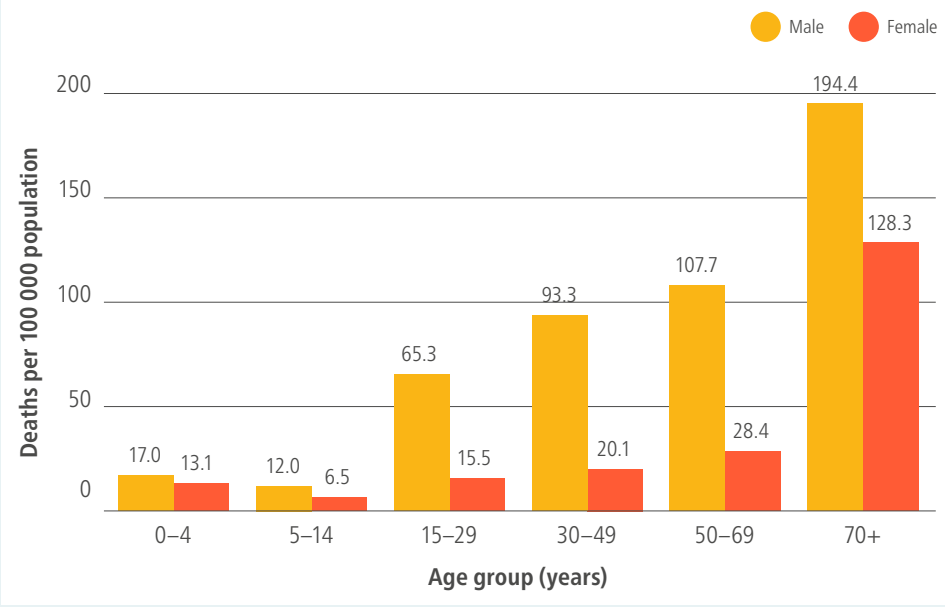
A J-shaped curve describes age- and sex-specific injury mortality, with the lowest rates in children aged 5–14 years, slightly higher rates in those under 5 years, and increasing rates with age; the highest for both sexes occur in people aged 70 years and over (Fig. 4).

**Table 2.** Deaths due to injuries in the WHO European Region, 2000–2015

| Cause of death | 2000 (deaths) | 2015 (deaths) | Change % (2000–2015) |
|---|---|---|---|
| Injury | 744 805 | 530 296 | –28.8 |
| Unintentional injuries | 492 792 | 367 754 | –25.4 |
| Road injury | 119 757 | 80 369 | –32.9 |
| Poisonings | 21 909 | 9 124 | –58.4 |
| Falls | 103 555 | 94 347 | –8.9 |
| Fire, heat and hot substances | 50 626 | 26 272 | –48.1 |
| Drowning | 72 561 | 35 707 | –50.8 |
| Other | 124 385 | 121 933 | –1.9 |
| Intentional injuries | 252 013 | 162 543 | –35.5 |
| Self-harm | 172 986 | 127 882 | –26.1 |
| Interpersonal violence | 70 199 | 30 037 | –57.2 |
| Collective violence and legal intervention | 8 832 | 4 623 | –47.7 |

*Source: WHO (1).*

**Fig. 4.** Age- and gender-specific injury mortality rates in the WHO European Region, 2015




*Source:* WHO (*1*).

Seventy per cent of all injury deaths are in males, despite males having a slightly larger fall in the absolute number of deaths between 2000 and 2015 (32%, from 550 000 to 374 000, as opposed to 26% (196 000 to 157 000) for females).

People across the age groups are at varying degrees of risk for different mechanisms of injury. Table 3 ranks the number of deaths by age by different causes, with injury mechanisms in colour. Road traffic injuries are the second leading cause of death in young people aged 5–29 years. Drowning is one of the leading causes of death in those under 30, interpersonal violence is very significant for people between 15 and 49, and self-harm is among the top 15 causes of death in people of 5–69.

The leading causes of death for children aged 5–14 include road traffic injury, drowning, other unintentional injury and self-harm. For young people aged 15–29, self-harm, road traffic injury, other unintentional injuries, drowning, interpersonal violence, falls and exposure to mechanical forces were among the top 15 causes of death in 2015. Self-harm, road traffic injuries, interpersonal violence and other unintentional injuries ranked high as frequent causes of death in young adults aged 30–49 years.

**Table 3.** Number and rank of 15 leading causes of death for both genders in the WHO European Region, 2015

| Rank | 0–4 years | 5–14 years | 15–29 years | 30–49 years | 50–69 years | 70+ years |
|---|---|---|---|---|---|---|
| 1 | Preterm birth complications (29 249 deaths) | Lower respiratory infections (2 860) | Self-harm (22 966) | Ischaemic heart disease (74 973) | Ischaemic heart disease (512 036) | Ischaemic heart disease (1 836 502) |
| 2 | Congenital heart anomalies (13 104) | Road injury (2 284) | Road injury (18 850) | Self-harm (42 388) | Stroke (207 310) | Stroke (897 854) |
| 3 | Lower respiratory infections (12 917) | Drowning (2 260) | Drug-use disorders (7 930) | HIV/AIDS (36 626) | Trachea, bronchus, lung cancers (197 916) | Alzheimer's disease and other dementias (405 133) |
| 4 | Birth asphyxia and birth trauma (12 835) | Other unintentional injuries (1 585) | Other unintentional injuries (7 100) | Stroke (29 333) | Colon and rectum cancers (82 611) | Chronic obstructive pulmonary disease (264 044) |
| 5 | Other congenital anomalies (12 300) | Other neurological conditions (1 473) | Lower respiratory infections (6 021) | Cardiomyopathy, myocarditis, endocarditis (29 017) | Breast cancer (63 612) | Other circulatory diseases (261 074) |
| 6 | Other neonatal conditions (6 170) | Epilepsy (1 379) | Drowning (5 973) | Road injury (26 436) | Chronic obstructive pulmonary disease (63 333) | Trachea, bronchus, lung cancers (196 876) |
| 7 | Neonatal sepsis and infections (5 981) | Leukaemia (1 342) | Interpersonal violence (5 810) | Lower respiratory infections (21 553) | Cirrhosis of the liver (57 811) | Lower respiratory infections (176 843) |
| 8 | Diarrhoeal diseases (4 403) | Congenital heart anomalies (1 335) | Ischaemic heart disease (4 934) | Drug-use disorders (20 094) | Stomach cancer (52 965) | Colon and rectum cancers (168 125) |
| 9 | Sudden infant death syndrome (2 459) | Brain and nervous system cancers (1 189) | HIV/AIDS (4 659) | Other unintentional injuries (18 513) | Other circulatory diseases (52 555) | Diabetes mellitus (129 292) |
| 10 | Other unintentional injuries (2 408) | Self-harm (965) | Cardiomyopathy, myocarditis, endocarditis (4 448) | Cirrhosis of the liver (18 511) | Cardiomyopathy, myocarditis, endocarditis (52 479) | Hypertensive heart disease (118 063) |
| 11 | Other endocrine, blood and immune disorders (1 621) | Other congenital anomalies (862) | Falls (3 821) | Alcohol-use disorders (18 432) | Other malignant neoplasms (48 192) | Kidney diseases (108 499) |
| 12 | Other infectious diseases (1 430) | Other endocrine, blood and immune disorders (814) | Exposure to mechanical forces (3 195) | Trachea, bronchus, lung cancers (17 339) | Pancreas cancer (45 123) | Prostate cancer (96 837) |
| 13 | Drowning (1 420) | Other malignant neoplasms (787) | Stroke (3 100) | Tuberculosis (16 764) | Lower respiratory infections (42 262) | Cardiomyopathy, myocarditis, endocarditis (85 272) |
| 14 | Neural tube defects (1 310) | Exposure to mechanical forces (783) | Tuberculosis (3 015) | Breast cancer (16 391) | Diabetes mellitus (39 786) | Breast cancer (81 143) |
| 15 | Other chromosomal anomalies (1 174) | Other infectious diseases (694) | Other malignant neoplasms (2 683) | Interpersonal violence (13 212) | Self-harm (38 345) | Stomach cancer (75 819) |

*Source:* WHO (1).

## Changes in rank of leading causes of death in people aged 5–49 years from 2000 to 2015

Table 4 shows the change in rank between 2000 and 2015 of the 15 leading causes of death in age bands from 5–49 years. Injury remained among the leading causes of mortality. The rankings for falls, drowning and interpersonal violence reduced compared to 2000, but no such change was seen for self-harm and road traffic injury. People aged 30–49 had some improvement in rank for road traffic injury and interpersonal violence since 2000, but none for self-harm.

## Higher injury death rates in males compared to females

Males are 2.5 times more likely to die from injury than females (Fig. 5). The highest mortality-rate ratios for males versus females are for drowning and self-harm, with ratios of 5.1 and 3.7 respectively. The lowest are for falls (1.6) and poisonings (1.9).

## Increase in deaths from falls in older people over time

The combination of low birth rates and high life expectancy in the Region has led to a transition towards an older population, dramatically altering the population pyramid *(12)*. It is expected that this trend will continue, with the number of working-age people declining steadily and the proportion of older people increasing: estimates suggest, for example, that the number of people aged 85 years and older in the European Union (EU) will increase from 14 million to 19 million by 2020, and to 40 million by 2050 *(12)*.

Age is a key determinant in whether falls are fatal or not, and fatality is highest in elderly people *(13)*. Despite a reduction in overall mortality from falls in people of all ages in the Region between 2000 and 2015, the rate in people aged 70 years and over increased by 19%. Fifty-eight per cent of all deaths from falls in the Region were among people aged 70 and older, and they were more common in men.

## Inequalities in injury deaths by geography in the Region

The WHO European Region covers 53 countries, from high-income to lower middle-income and with vastly differing social, economic, commercial, physical, climactic, environmental, geographical and political determinants. This results in inequalities in injuries between and within countries (*14,15*).

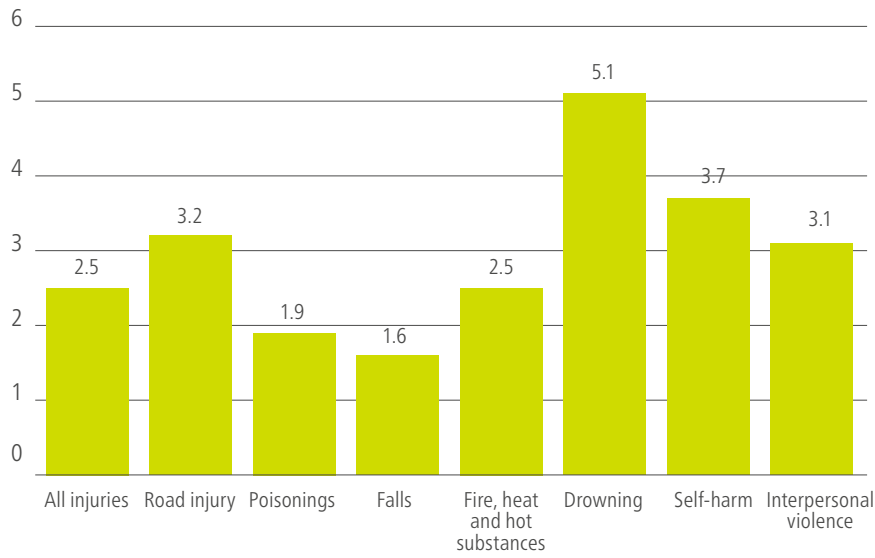
An overall decline in injury mortality and burden has been seen across the entire Region in recent decades, with reduced inequalities between different parts (Fig. 6). The standardized death rate (SDR) in the Region in 1990 of 74.7 per 100 000 population had decreased to 52.7 by 2013 *(16)*. Peaks in injury mortality were seen in 1994 and

**Table 4.** Changes in leading causes of death in people aged 5–49 years in the WHO European Region, from 2000 to 2015

| | 5–14 years | | 15–29 years | | 30–49 years | |
|---|---|---|---|---|---|---|
| | 2000 | 2015 | 2000 | 2015 | 2000 | 2015 |
| 1 | Drowning | Lower respiratory infections | Self-harm | Self-harm | Ischaemic heart disease | Ischaemic heart disease |
| 2 | Road injury | Road injury | Road injury | Road injury | Self-harm | Self-harm |
| 3 | Lower respiratory infections | Drowning | Drowning | Drug-use disorders | Stroke | HIV/AIDS |
| 4 | Other unintentional injuries | Other unintentional injuries | Interpersonal violence | Other unintentional injuries | Road injury | Stroke |
| 5 | Leukaemia | Other neurological conditions | Other unintentional injuries | Lower respiratory infections | Alcohol-use disorders | Cardiomyopathy, myocarditis, endocarditis |
| 6 | Congenital heart anomalies | Epilepsy | Drug-use disorders | Drowning | Tuberculosis | Road injury |
| 7 | Epilepsy | Leukaemia | Ischaemic heart disease | Interpersonal violence | Interpersonal violence | Lower respiratory infections |
| 8 | Other neurological conditions | Congenital heart anomalies | Falls | Ischaemic heart disease | Cardiomyopathy, myocarditis, endocarditis | Drug-use disorders |
| 9 | Self-harm | Brain and nervous system cancers | Tuberculosis | HIV/AIDS | Drowning | Other unintentional injuries |
| 10 | Meningitis | Self-harm | Exposure to mechanical forces | Cardiomyopathy, myocarditis, endocarditis | Trachea, bronchus, lung cancers | Cirrhosis of the liver |
| 11 | Exposure to mechanical forces | Other congenital anomalies | Lower respiratory infections | Falls | Cirrhosis of the liver | Alcohol-use disorders |
| 12 | Falls | Other endocrine, blood and immune disorders | Cardiomyopathy, myocarditis, endocarditis | Exposure to mechanical forces | Lower respiratory infections | Trachea, bronchus, lung cancers |
| 13 | Brain and nervous system cancers | Other malignant neoplasms | Fire, heat and hot substances | Stroke | Other unintentional injuries | Tuberculosis |
| 14 | Fire, heat and hot substances | Exposure to mechanical forces | Alcohol-use disorders | Tuberculosis | Falls | Breast cancer |
| 15 | Stroke | Other infectious diseases | Stroke | Other malignant neoplasms | Breast cancer | Interpersonal violence |

*Source:* WHO (1).

**Fig. 5.** Male-to-female mortality rate ratios of injury deaths in the WHO European Region, 2015




*Source:* WHO *(1)*.

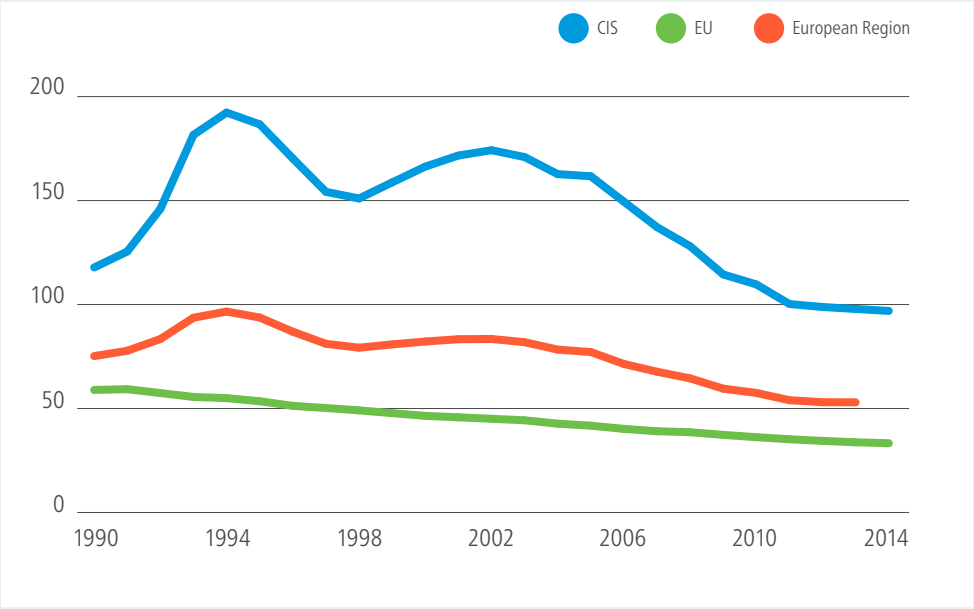
2002 during periods of political, economic and social transition in the Commonwealth of Independent States (CIS). Mortality rates from injuries have been in steady decline in CIS countries since 2004, but while there has been some convergence, rates remain considerably higher than in other parts of the Region. EU countries fare better, with an overall steady decline from a SDR of 58.6 per 100 000 in 1990 to 33.1 in 2014 *(16)*. Large discrepancies remain within the Region: the death rate from injuries in the CIS in 2014 (96 per 100 000) was three times higher than in the EU (Fig. 6).

The map of SDRs from injuries (Fig. 7) highlights inequality in the Region. Mortality is far higher in the eastern part, where most countries have death rates from injuries that are in the upper fifth of highest SDRs. There is a six-fold difference between countries with the highest and lowest mortality rates *(16)*.

## Inequalities in injury mortality due to country income in the Region

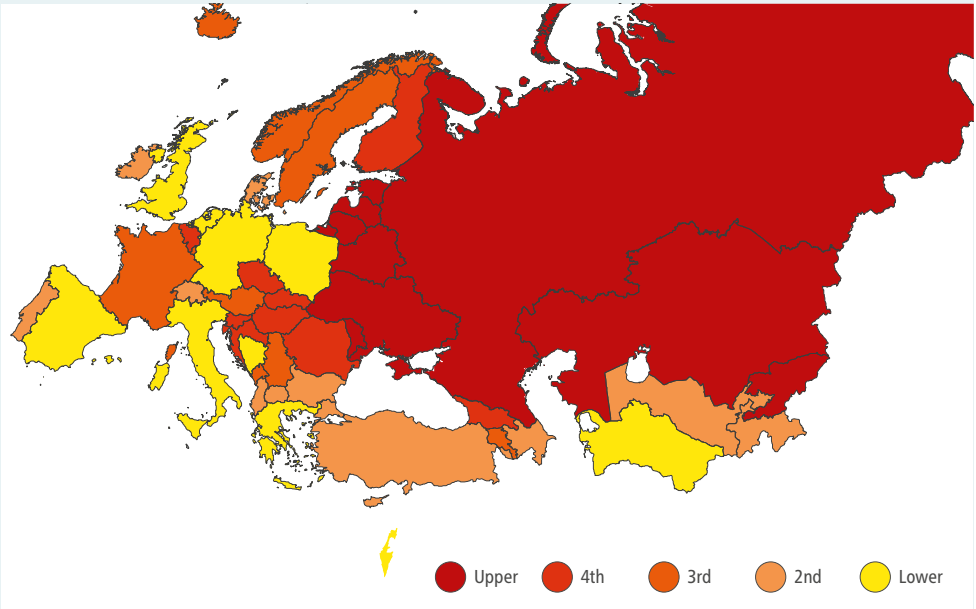
Fifty-one per cent of the population of the WHO European Region in 2015 resided in countries classified as MICs, which is similar to the 53% recorded in 2000. Injury-related deaths in MICs decreased from 498 000 in 2000 to 310 000 in 2015, a decline of 38%. In contrast, the total number of injury deaths in HICs decreased by 11%, from 246 000 to

**Fig. 6.** Trends in SDRs for all injuries in the WHO European Region, the EU and the CIS




*Source:* WHO *(1)*.

**Fig. 7.** SDRs per 100 000 from all injuries in the WHO European Region (quintiles)[a]




[a] Data represent 2014 or nearest year. *Source:* WHO Regional Office for Europe *(16)*.

220 000. A proportionately greater decline has therefore occurred in MICs, suggesting some convergence between country-income groups.

MICs have a mortality rate that is 1.7 times higher than HICs for all injuries. The greatest discrepancy between income groups is for fire, heat and hot substances, which is 8.1 times higher in MICs. Mortality-rate ratios are also high for drowning (6.8), interpersonal violence (5.7), poisoning (3.8) and road traffic injuries (2.6) (Table 5). When compared separately, the MIC-to-HIC mortality-rate ratios are much higher for men than women, suggesting that much of the excess mortality is in men in MICs. Mortality rates for all injuries in MICs and HICs converged over the 15-year period between 2000 and 2015. Mortality-rate ratios in MICs to HICs have correspondingly decreased from 2.4 to 1.7, with the biggest reductions being seen in deaths from poisoning, interpersonal violence and self-directed violence (Fig. 8).

Mortality-rate ratios between MICs and HICs reduced for all specific causes of injury

**Table 5.** SDRs per 100 000 and rate ratios from all injuries by gender in MICs and HICs in the WHO European Region, 2015

| | Male | | Female | | MIC:HIC rate ratios | | |
|---|---|---|---|---|---|---|---|
| | MIC | HIC | MIC | HIC | Male | Female | Total |
| **All causes** | 1 198.4 | 971.6 | 991.9 | 952.2 | 1.2 | 1.0 | 1.1 |
| Injuries | 121.9 | 55.3 | 33.7 | 33.1 | 2.2 | 1.0 | 1.7 |
| **Unintentional injuries** | 84.8 | 33.7 | 24.5 | 26.2 | 2.5 | 0.9 | 1.8 |
| Road injury | 21.1 | 7.6 | 6.3 | 2.7 | 2.8 | 2.3 | 2.6 |
| Poisonings | 2.5 | 0.4 | 0.9 | 0.5 | 6.3 | 1.9 | 3.8 |
| Falls | 15.1 | 10.9 | 4.9 | 10.7 | 1.4 | 0.5 | 0.9 |
| Fire, heat and hot substances | 8.3 | 0.9 | 3.1 | 0.5 | 9.6 | 6.1 | 8.1 |
| Drowning | 12.9 | 1.7 | 2.3 | 0.5 | 7.7 | 4.4 | 6.8 |
| Other unintentional injuries | 24.8 | 12.2 | 6.9 | 11.3 | 2.0 | 0.6 | 1.3 |
| **Intentional injuries** | 37.1 | 21.6 | 9.1 | 6.9 | 1.7 | 1.3 | 1.6 |
| Self-harm | 25.6 | 20.1 | 5.9 | 6.3 | 1.3 | 0.9 | 1.2 |
| Interpersonal violence | 9.6 | 1.5 | 2.8 | 0.7 | 6.6 | 4.1 | 5.7 |

*Source:* WHO (1).

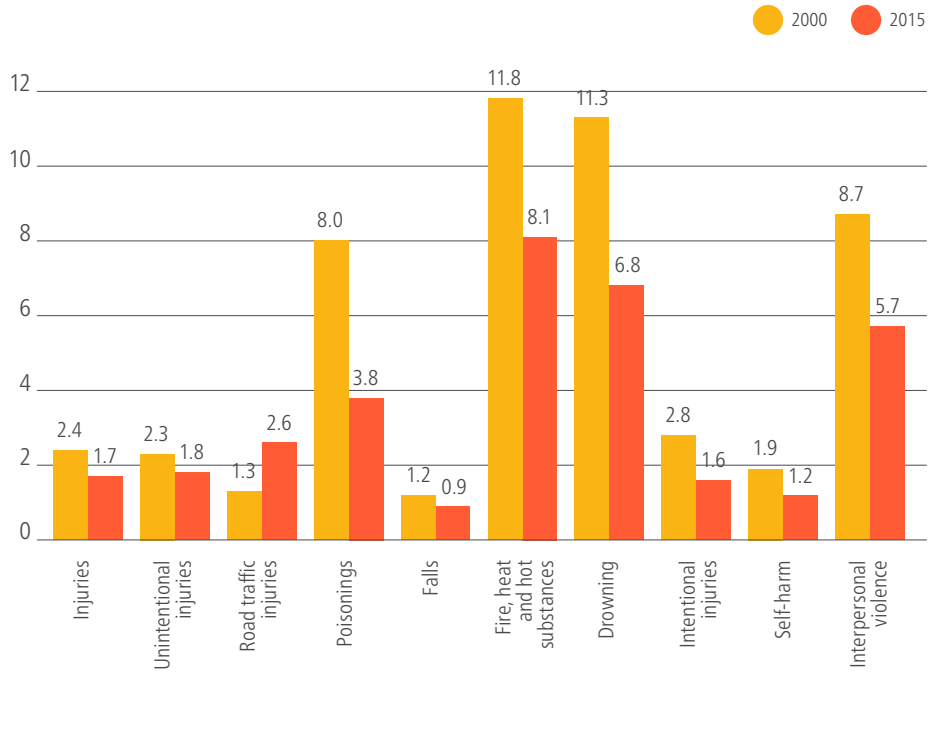
between 2000 and 2015 except for road traffic injuries, where the ratio increased from 1.3 to 2.6. This probably reflects increased motorization in MICs and inadequate policy responses through road-safety strategies, resulting in a slower decline in road traffic injury mortality compared to HICs *(2,17,18)*.

## Inequalities in injury deaths in childhood by country income

While mortality rates in MICs and HICs have seen a convergence, progress is unequal at all ages, and the mortality gap between HICs and MICs in children under 15 years has widened.

Rate ratios for all unintentional injuries increased from 4.9 in 2000 to 6.8 in 2015, and those for road traffic injuries (4.2) and falls (10.1) also widened due to a greater proportionate improvement in HICs between the two time points (Fig. 9). This increase in inequalities has been reported *(2,19)*.

**Fig. 8.** Mortality-rate ratios of MICs versus HICs for specific cause of injury in the WHO European Region, 2000 and 2015




*Source*: WHO *(1)*.

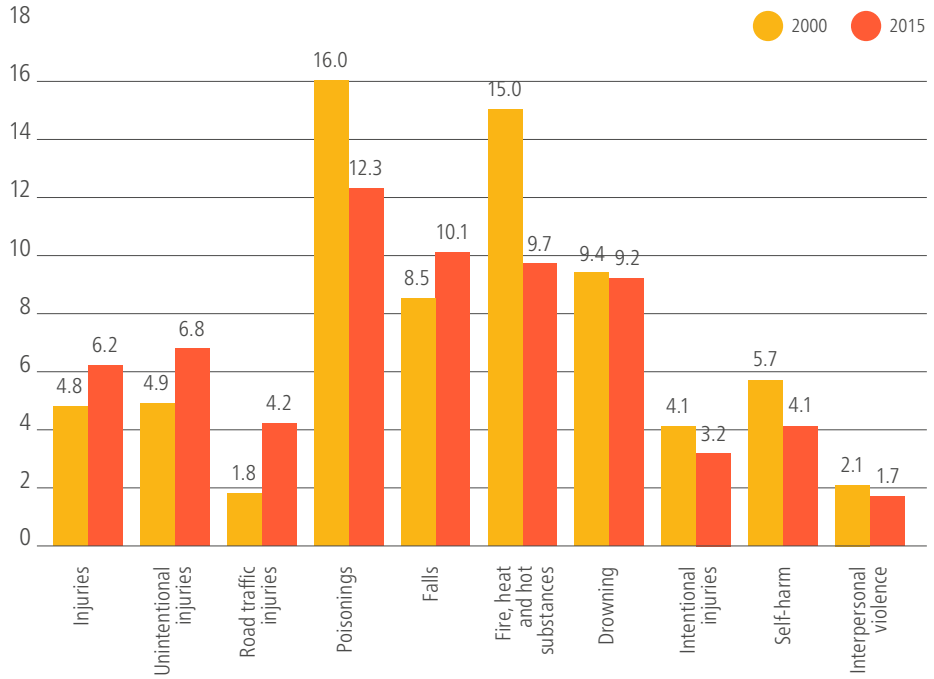
## Injury-related health burden

Deaths from injury are only the tip of the iceberg of the injury burden. It is estimated that there are 23 hospital admissions and 163 emergency department attendances for every death *(20)*. Extrapolating this to the whole Region suggests that in addition to 530 000 deaths, there are about 12 million hospital admissions and 86 million hospital attendances as a consequence of injury (Fig. 10).

## Policy framework

The high human and societal costs of injuries have caused an increase in policy attention to injuries and violence over the last 15 years. Injuries and violence are included as goals and targets in the United Nations 2030 Agenda for Sustainable Development (Table 6), as they pose a threat to sustainable development. Unlike the Millennium Development Goals, which did not include injury-specific targets *(21)*, the SDGs provide a governance framework

**Fig. 9.** Death-rate ratios in MICs compared with HICs in children under 15 years for all types of injury mechanism, 2000 and 2015

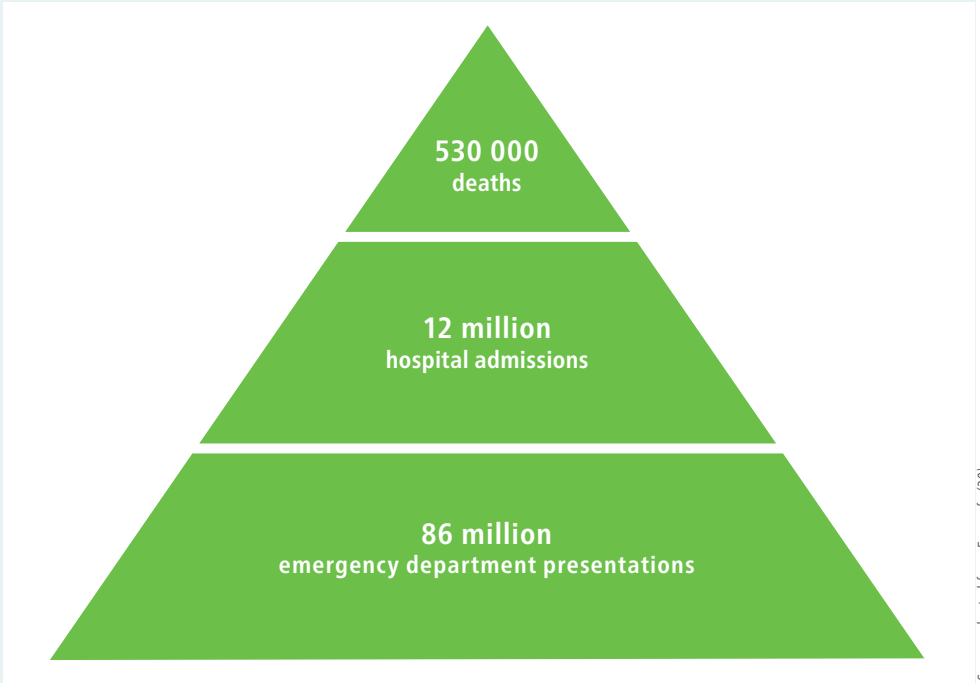



*Source*: WHO *(1)*.

for intersectoral action and a whole-of-society approach for injury prevention *(5)*.

International policy developments, such as World Health Assembly and United Nations General Assembly resolutions, have emphasized the importance of responses to violence and injury by societies in general and health systems in particular. These include: World Health Assembly resolutions WHA67.15 on strengthening the role of the health system in addressing violence, in particular against women and girls, and against children *(22)*, WHA69.9 on the global plan of action on violence *(23)*, WHA69.7 on addressing the challenges of the United Nations Decade of Action for Road Safety (2011–2020) *(24)* and WHA64.27 on child injury prevention *(25)*. Also relevant are United Nations General Assembly resolutions 70/260 on improving global road safety *(26)*, 71/170 on intensification of efforts to prevent and eliminate all forms of violence against women and girls: domestic violence *(27)*, and 71/195 on combating intolerance, negative stereotyping, stigmatization, discrimination, incitement to violence and violence against persons, based on religion or belief *(28)*.

**Fig. 10.** Injury pyramid in the WHO European Region




*Source*: adapted from Eurosafe *(20)*.

**Table 6.** SDGs specific to injury prevention or targeting risk factors of injury and violence

| Injury mechanism | Injury-specific targets | Risk factors and related goals and targets |
|---|---|---|
| Self-harm<br>Road traffic injuries<br>Poisoning<br>Drowning<br>Falls<br>Fires | **3. Ensure healthy lives and promote well-being for all at all ages**<br>3.4. By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being<br>3.6. By 2020, halve the number of global deaths and injuries from road traffic accidents<br>3.9. By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination<br>**11. Make cities and human settlements inclusive, safe, resilient and sustainable**<br>11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport … . | **1. End poverty in all its forms everywhere**<br>3.2 Reduce under-5 child mortality<br>3.5 Reduce alcohol-related harm<br>3.7 Access to sexual and reproductive health-care services<br>3.8 Achieve universal health coverage<br>**4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**<br>**8. Promote sustained, inclusive, sustainable economic growth, full and productive employment and decent work for all**<br>**10. Reduce inequality within and among countries**<br>**11. Make cities and human settlements inclusive, safe, resilient and sustainable**<br>11.1 Adequate, safe and affordable housing and basic services and upgrade slums<br>11.7 Safe, inclusive and accessible, green and public spaces |
| Interpersonal violence | **5. Achieve gender equality and empower all women and girls**<br>5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation<br>5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation | |
| Interpersonal violence | **16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**<br>16.1 Significantly reduce all forms of violence and related death rates everywhere<br>16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children | |


*Source:* United Nations (6).

Injury prevention has also received policy priority in the WHO European Region through Regional Committee resolution EUR/RC55/R9 on preventing injuries in the European Region *(29),* the European Council recommendation on the prevention of injury and promotion of safety *(30),* the European child maltreatment prevention action plan *(31),* resolution EUR/RC64/R6 on investing in children: the European child and adolescent health strategy and the European child maltreatment prevention action plan 2015–2020 *(32),* the strategy on women's health and well-being in the Region *(33),* the strategy and action plan for healthy ageing in Europe for 2012–2020 *(34),* the European policy for health and well-being, Health 2020 *(35),* and the Minsk Declaration on the Life-course Approach *(36).*

Many of these initiatives correspond with the overarching policy framework for Europe, Health 2020 *(35),* which focuses on four priority areas: investing in health through a life-course approach and empowering people; tackling Europe's major health challenges; strengthening people-centred health systems; and creating resilient communities and supportive environments. The initiatives emphasize injuries and violence as public health priorities, providing a policy platform from which a more systematic and coordinated approach towards injury prevention can be implemented at national and local levels.

## Interventions to prevent violence and injuries

Prevention can only be achieved if evidence-based interventions are implemented effectively through systematic and organized approaches. Evidence has systematically been collated in a series of European and world reports on preventing injuries and violence *(4,17,18,37–44).* Sustained investments in safe environments (such as road and housing design) and products (like childproof lighters and packaging for medications), together with the use of legislation, regulation, enforcement and education for behaviour modification and skills development, has allowed many countries in the Region to continue to reduce injury-related deaths.

Effective prevention strategies for intentional injuries, particularly those due to interpersonal violence, include developing safe, stable and nurturing relationships between children and their parents, developing life skills in children and adolescents, reducing the availability and harmful use of alcohol, reducing access to guns, knives and pesticides, promoting gender equality to prevent violence against women, changing cultural and social norms that support violence, and ensuring victim identification, care and support programmes *(40,41).* Many of these initiatives have proven cost–effective compared to the cost of doing nothing (Table 7).

The development of the SDGs and subsequent Region-wide agreement to adopt the 17 goals and 168 targets have provided a useful framework that countries can use to prevent injuries and violence. The SDGs highlight the importance to prevention of intersectoral collaboration to modify the social, economic, environmental and political determinants and risk factors for injuries. It is imperative that countries developing a prevention strategy do so through this whole-of-society approach *(5,29)*. Implementation of evidence-informed strategies has been unequally distributed across the Region in previous years, as testified by the inequalities in injury mortality and burden highlighted in this briefing. The SDGs can provide practitioners and policy-makers with a renewed impetus to take forward injury prevention through developing policies and programmes.

**Table 7.** Financial savings for selected injury-prevention interventions

| €1 invested in: | Savings (€) |
|---|---|
| Smoke alarms | 69 |
| Random breath-testing of drivers for alcohol | 36 |
| Child safety seats | 32 |
| Bicycle helmets | 29 |
| Home visits and parent education against child abuse | 19 |
| Upgrading marked pedestrian crossings | 14 |
| Road lighting | 11 |
| Alcohol limit of less than 0.02 g/dl for novice drivers | 11 |
| Prevention counselling by paediatricians | 10 |
| Driving-license suspension for drink–driving | 9 |
| Speed cameras | 9 |
| Poison-control services | 7 |
| Use of day-time driving lights | 4 |
| Road safety improvements | 3 |

*Source:* Sethi et al. *(3)*; Sethi et al *(4)*; Peden et al. *(42)*; Sethi *(43)*; Sethi et al. *(44)*.

The evidence presented in this policy briefing shows that while progress is being made, the burden of death and disability from injuries in the Region remains high, and inequalities between MICs and HICs have widened for children. This calls for stronger public health action. An opportunity for exchanging expertise between Member States to facilitate implementation of evidence-based prevention programmes now exists.

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