

MORTALITY IN CHILDREN AND ADOLESCENTS FROM UNINTENTIONAL INJURIES (FALLS, DROWNING, FIRES AND POISONING)

FACT SHEET 2.2 • December 2009 • CODE: RPG2_Hous_E1

Cause-specific child mortality rates per 100 000 population for unintentional injuries not related to traffic accidents

This fact sheet reports on mortality following unintentional injury in children and adolescents from falls, drowning, poisoning and fires in the 53 countries of the WHO European Region. Data are drawn from the WHO revised global burden of disease 2004 estimates (1) and the WHO European health for all mortality database (2). These data are interpreted taking the public health, environmental and policy contexts into account, followed by an assessment of the situation in the WHO European Region.

KEY MESSAGE

☺ Drowning, poisoning, falls, and fires are some of the leading causes of death following unintentional injury in children and adolescents in the Region. Cause-specific rates vary greatly across the Region and are generally lowest in western Europe and highest in some eastern European countries and members of the Commonwealth of Independent States (CIS). Importantly, evidence-supported means exist to reduce this burden, and a combination of legislation, enforcement, environmental modification and educational approaches is desirable.

RATIONALE

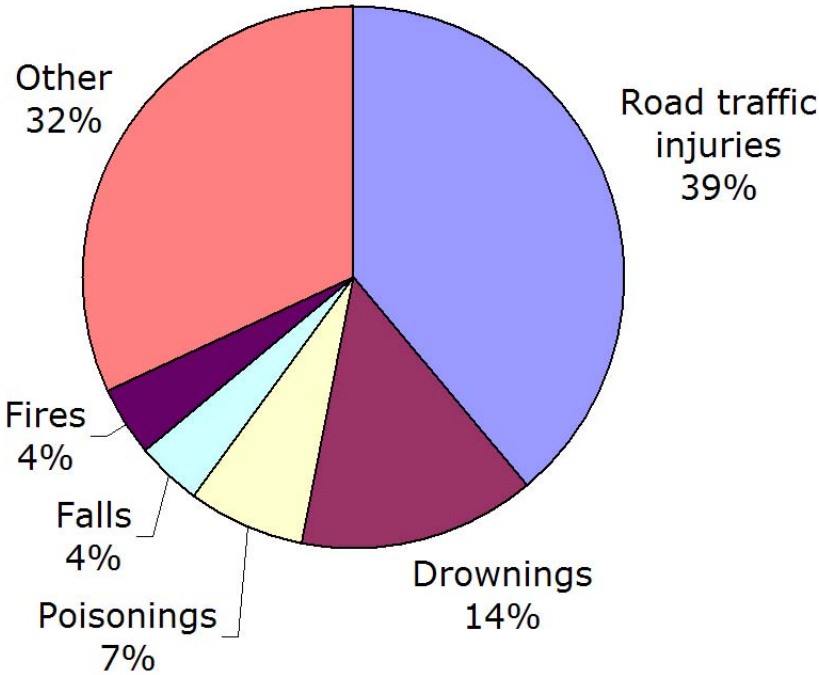
A clear picture of the current situation would enable decision-makers at European and national levels to develop evidence-based policies, plan effective interventions and monitor programmes in order to improve the protection of children and adolescents from injuries in settings at and around their homes, playgrounds, schools and workplaces. The ultimate aim would be to monitor progress towards regional priority goal II (RPG II) of the Children's Health and Environment Action Plan for Europe (CEHAPE) on reducing childhood mortality from unintentional injuries (3).

PRESENTATION OF DATA

Fig. 1 shows the proportion of deaths attributable to various causes of unintentional injury in children and adolescents aged 0–19 years in the Region. The chart reveals the leading causes of unintentional injuries to be road traffic injuries (see fact sheet 2.1 (4); this topic is not covered further here), falls, drowning, fires and poisoning.

Fig. 2A–2D show European countries with more than one million inhabitants ranked by age-standardized death rate (SDR) for specific causes of unintentional injury in children for 2003 (or latest available year). They show that a cluster of countries from the CIS and the Baltic region report the highest mortality rates for cause-specific unintentional injuries.

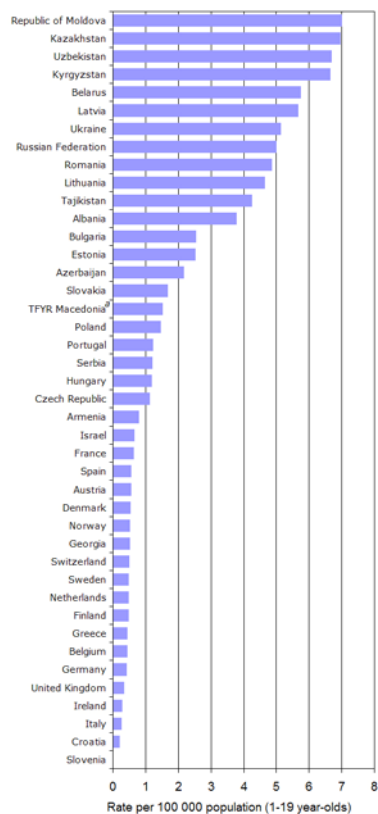
Fig. 1. Deaths from unintentional injuries by cause in the age group 0–19 years, WHO European Region, 2004 (total deaths: 42 000)



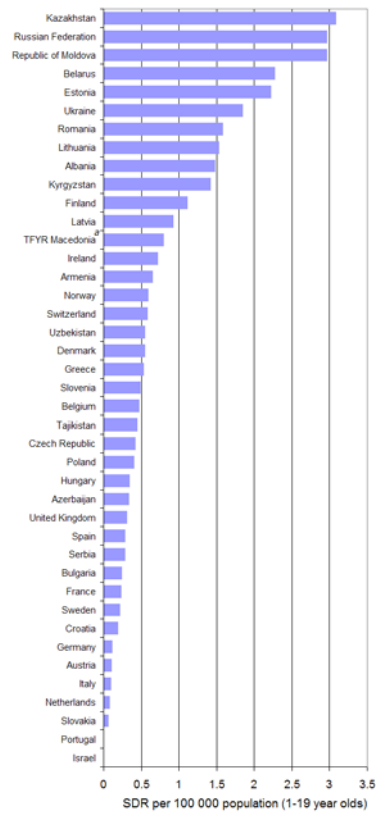
Source: Revised global burden of disease 2004 estimates (1).

Fig. 2. Standardized death rates for cause-specific unintentional injuries in the age group 1–19 years, WHO European Region, 2006 or earlier

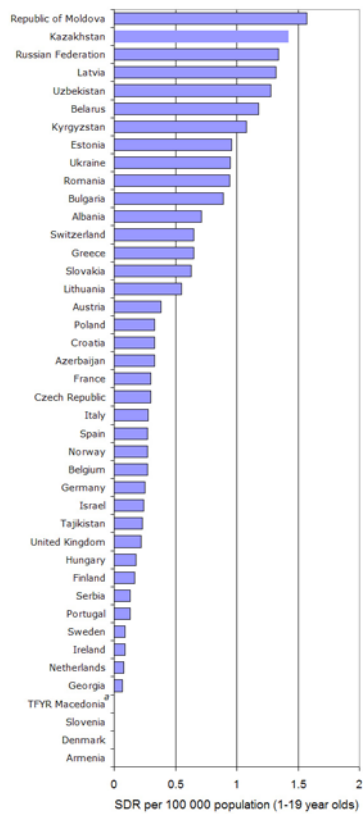
2A. Drowning and submersion



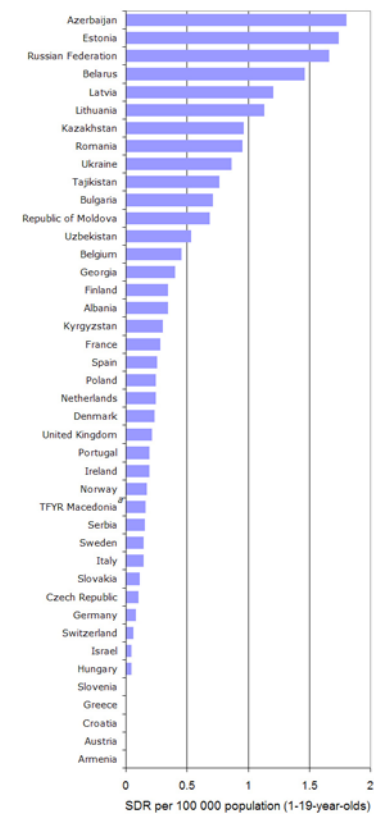
2B. Poisoning



2C. Accidental falls



2D. Exposure to smoke, fire and flames



Note. All rates are standardized by age.
Source: WHO European health for all mortality database (2).

HEALTH AND ENVIRONMENT CONTEXT

There is a direct relationship between childhood mortality from drowning, poisoning, falls and fires and the environment. Unsafe environments, whether the home, the playground or recreational waters, are associated with increased risks of drowning, fires and falls.

Specific factors leading to injuries may include unsafe building design in the home and school, unsafe furnishings, unsafe toys and products such as baby-walkers, and unsafe packaging and storage of toxic materials.

A major finding of policy effectiveness assessments is that legislation, enforcement, environmental modification and educational approaches all have a part to play in preventing or reducing childhood injuries, and their interactive effects are encouraging. Nevertheless, there should be closer examination of the effectiveness and cost-effectiveness of interventions across the range of injuries incurred by children, because some areas are under-explored or even unexplored. In this connection, WHO has highlighted key elements for the development of effective home safety strategies in order to create physically safer environments and reduce the number of unintentional injuries in the home (5,6). The evidence base of child injury prevention interventions has recently been summarized in the World report on child injury prevention and the European report on child injury prevention (7,8).

Environmental modification based on evidence of what works could therefore be used as part of a multifaceted programme of interventions to bring down the relentless daily loss of children's lives from unintentional injuries. Behaviour modification may be an essential part of such programmes. Effective interventions that involve environmental modification include installing smoke alarms to reduce the risk of fires and thermostats to control the temperature of hot water, and standards for cigarette lighters to prevent thermal injuries. Proven strategies to prevent falls include modifying unsafe products, requiring window guards and implementing playground standards, together with supportive home visits that may facilitate behavioural or environmental change. Using child-resistant closures on packaging, dispensing medicines in non-lethal quantities, safe storage and reducing the availability of toxic substances are highly effective in reducing the number of children's deaths from poisoning, as is a network of poison control centres. Proven strategies to prevent drowning include removing or covering water hazards, installing four-sided pool fencing, using personal flotation devices and carrying out immediate resuscitation (7,8).

Socioeconomic determinants play an important role in childhood injuries. For example, deprived families are more likely to live in poor neighbourhoods that are unsafe, to resort to unsafe behaviour such as poor supervision of children, to have less access to safety equipment such as fire alarms because of their cost, to be associated with risk factors such as harmful alcohol use, and to have poorer access to good emergency medical services (6).

Deaths due to unintentional injuries are only the tip of the iceberg: for each death in children aged 0–14 years from unintentional injuries at home or at leisure there are estimated to be 160 hospital admissions and 2000 visits to emergency departments (9). Projecting this for drowning, poisoning, falls, fires and other injuries (excluding RTIs) in children aged 0–14 years at the European level suggests that they result in around 3 million hospital admissions and 37 million emergency department visits per year in this age group alone. Further, injuries can have long-term physical and psychological consequences for children, with serious effects on their health in later life (6). Not all countries collect detailed information on the extent, causes and consequences of injuries, and organized efforts need to be made to improve surveillance, especially of non-fatal injuries. Recent attempts include initiatives such as the European Union (EU) injury database (10). Finally, there is need for further work on the cost to society of unintentional injuries so that the cost-effectiveness of action can be adequately assessed.

POLICY RELEVANCE AND CONTEXT

The EU has several policy instruments that address unintentional injuries, ranging from directives to non-legally binding standards and recommendations. These are presented and discussed in greater detail in ENHIS-2 fact sheet 2.6 (11), which also describes the current situation related to the implementation of policies on preventing unintentional injuries in children in some European countries participating in the WHO Environment and Health Information System (ENHIS) project.

In 2004, the Fourth Ministerial Conference on Environment and Health adopted CEHAPE, which includes four regional priority goals to reduce the burden of environment-related diseases in children. One of the goals (RPG II) aims to reduce mortality and morbidity from injuries, including RTIs, and to ensure the provision of safe conditions that also facilitate more physical activity among children (3). Further, in 2005, the WHO Regional Committee for Europe adopted resolution RC55/R9 on the pre-

vention of injuries in the Region (12). In concert with this is the European Council Recommendation on the prevention of injuries and the promotion of safety (13). All these policy initiatives promote intersectoral evidence-based action.

ASSESSMENT

This indicator should be interpreted with some caution, as the quality and completeness of the data probably vary between countries. Furthermore, the data refer only to one year, which is not necessarily indicative of the long-term situation. Even so, this indicator, in combination with that on policies to reduce unintentional injuries from drowning, poisoning, falls and fires in children and adolescents (11), is essential for monitoring this important problem in Europe.

In 2004, RTIs were the major cause of death from unintentional injuries in children and adolescents aged 0–19 years (Fig. 1) (4), causing 39% of all deaths from unintentional injuries in the Region.

Drowning is the second most important cause (14%) (Fig. 1), responsible for an estimated 5900 deaths in 2004 (1). The highest mortality rates were evident in the Republic of Moldova, Kazakhstan and Uzbekistan (Fig. 2A), where they are more than twice the European average (2.71 per 100 000 for 1–19-year-olds in 2006 (2)). Rates were considerably lower in countries such as Netherlands, Armenia and Denmark.

Poisoning (Fig. 1) is the third most important cause, implicated in 7% of deaths. Kazakhstan (Fig. 2B) had a rate five times higher than the European average (1.04 per 100 000 for 1–19-year-olds in 2003 (2)). High rates were also evident in the Republic of Moldova and the Russian Federation.

Falls (Fig. 1) were implicated in 4% of deaths; the highest rates were seen in the Republic of Moldova, Kazakhstan and the Russian Federation (Fig. 2C) which are much higher than the European average (0.64 per 100 000).

Exposure to smoke, fire and flames (Fig. 2D) is an important cause of death in children aged 1–19 years, notably in Azerbaijan, Estonia and the Russian Federation, where the rates are more than twice the European average (0.57 deaths per 100 000 for 1–19-year-olds in 2004 (2)). The lowest rates were seen in Austria, Armenia and Greece.

Overall, some of the intercountry differences observed may be due to the different attention paid to safety, different regulatory capacities, variation in the quality of housing and public building stock (particularly in view of the economic downturn experienced in some countries) and the loss of social safety networks in some countries undergoing economic and political transition.

DATA UNDERLYING THE INDICATOR

Data source

1. European health for all mortality database for age-specific and standardized rates (2)
2. Revised global burden of disease 2004 estimates (1).

Description of data

Cause-specific child mortality rates per 100 000 population for unintentional injuries, not related to RTIs, by sex and by age group.

Deaths are reported by countries every year from national registers of births and deaths. The national population estimates used by WHO are those of the United Nations Population Division 2002 revision (14).

Method of calculating the indicator

Numerator: deaths stratified by age, sex, unintentional injuries (ICD-10 codes below or equivalent ICD-9 codes):

- drowning (ICD 9 BTL: E521; ICD 10: W65–W74)
- falls (ICD 9 BTL: E50; ICD 10: W00–W19)
- burns (ICD 9 BTL: E51; ICD 10: X00–X09)
- poisoning (ICD 9 BTL: E48; ICD 10: X40–X49).

Denominator: total resident population stratified by age, sex and socioeconomic status if available.

Data stratification specified in the methodology sheet: by male, female and total in the age groups <1, 1–4, 5–14, 15–24 and 1–19 years.

The SDR is already calculated in the European health for all mortality database released in January 2007, using the direct method and standard European population structure. These rates were calculated by staff of the WHO Regional Office for Europe using the data on deaths by cause, age and sex and mid-year population by age and sex annually reported to WHO by Member States..

Geographical coverage

The European mortality database should provide data for all 53 countries in the Region. Data are, however, missing for Andorra, Bosnia and Herzegovina, Monaco, Montenegro, San Marino, Serbia and Turkey. Turkmenistan reported very old data (before 1998), which have not been considered in this fact sheet.

Period of coverage

For most of the countries in the Region, the time series cover 1997–2004.

Frequency of update

Annually.

Data quality

These data should be interpreted with caution as there may be considerable differences in quality and completeness. Underreporting or deaths attributed to incorrect underlying causes in some countries lead to the size of the problem being underestimated. Further, data presented in this fact sheet refer to only one year, which does not allow for possible annual fluctuations.

The quality and completeness of the data reported are still matters of concern, and improvements appear particularly necessary with respect to non-fatal outcomes of injuries.

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