INJURIES and VIOLENCE
THE FACTS

World Health Organization

The magnitude and causes of injuries

Every 5 seconds someone in the world dies as a result of an injury

Every day the lives of over 15 000 people are cut short as a result of an injury. Among the causes of injury are acts of violence against others or oneself, road traffic crashes, burns, drowning, falls, and poisonings. The deaths caused by injuries have an immeasurable impact on the families and communities affected, whose lives are often changed irrevocably by these tragedies.

Injuries and violence have been neglected from the global health agenda for many years, despite being predictable and largely preventable. Evidence from many countries shows that dramatic successes in preventing injuries and violence can be achieved through concerted efforts that involve, but are not limited to, the health sector. The international community needs to work with governments and civil society around the world to implement these proven measures and reduce the unnecessary loss of life that occurs each day as a result of injuries and violence.

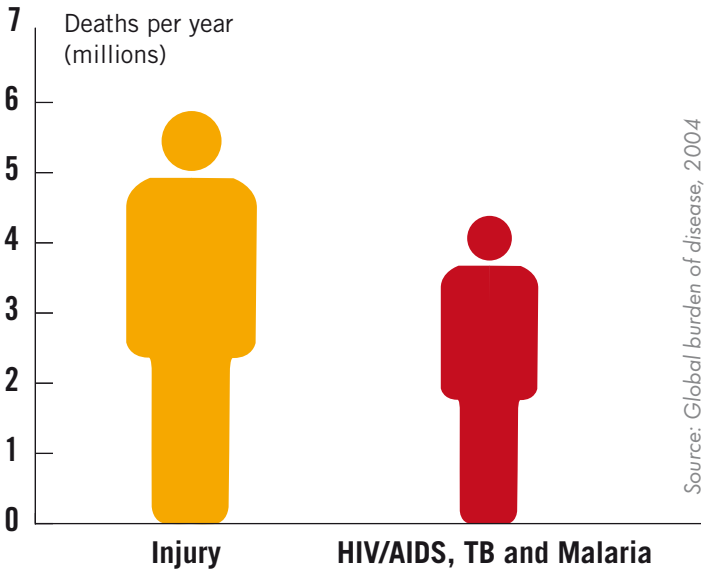
Injuries are a global public health problem

About 5.8 million people die each year as a result of injuries. This accounts for 10% of the world's deaths, 32% more than the number of fatalities that result from malaria, tuberculosis, and HIV/AIDS combined (see Figure 1).

Figure 1:

The scale of the problem

Injury deaths compared to other leading causes of mortality.

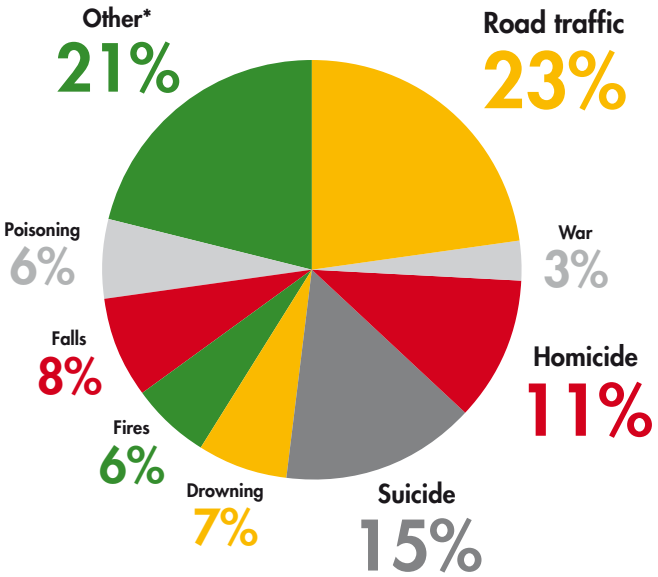


Approximately a quarter of the 5.8 million deaths from injuries are the result of suicide and homicide, while road traffic injuries account for another quarter. Other main causes of death from injuries are falls, drowning, burns, poisoning and war (see Figure 2).

Figure 2:

How injuries claim lives

Causes of injury deaths, World, 2004.



Source: Global burden of disease, 2004

**'Other' includes smothering, asphyxiation, choking, animal and venomous bites, hypothermia and hyperthermia, as well as natural disasters.*

3 times more people die each year from homicide than from war-related injury

Injuries are a growing problem: the three leading causes of death globally from injuries – road traffic crashes, homicide and suicide – are all predicted to rise in rank compared to other causes of death, placing them among the top 20 leading causes of death in the world by 2030. As can be seen in Table 1, road traffic crashes are predicted to become the fifth leading cause of death by 2030, with suicide and homicide rising to become the 12th and 18th leading causes of death respectively.

Table 1:

Injury deaths rise in rank

Leading causes of death, 2004 and 2030 compared.

Total 2004		Total 2030	
1	Ischaemic heart disease	1	Ischaemic heart disease
2	Cerebrovascular disease	2	Cerebrovascular disease
3	Lower respiratory infections	3	Chronic obstructive pulmonary disease
4	Chronic obstructive pulmonary disease	4	Lower respiratory infections
5	Diarrhoeal diseases	5	Road traffic crashes
6	HIV/AIDS	6	Trachea, bronchus, lung cancers
7	Tuberculosis	7	Diabetes mellitus
8	Trachea, bronchus, lung cancers	8	Hypertensive heart disease
9	Road traffic crashes	9	Stomach cancer
10	Prematurity and low birth weight	10	HIV/AIDS
11	Neonatal infections and other	11	Nephritis and nephrosis
12	Diabetes mellitus	12	Suicide
13	Malaria	13	Liver cancer
14	Hypertensive heart disease	14	Colon and rectum cancer
15	Birth asphyxia and birth trauma	15	Oesuphagus cancer
16	Suicide	16	Homicide
17	Stomach cancer	17	Alzheimer and other dementias
18	Cirrhosis of the liver	18	Cirrhosis of the liver
19	Nephritis and nephrosis	19	Breast cancer
20	Colon and rectum cancers	20	Tuberculosis
22	Homicide		

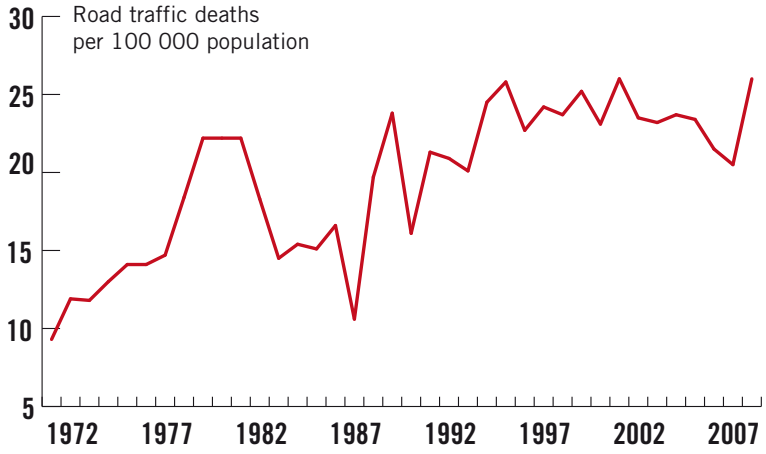
Source: World health statistics 2008 (www.who.int/whosis/whostat/2008/en/index.html)

Injury deaths have been steadily increasing in many low- and middle-income countries, especially deaths from road traffic crashes and homicide. Figure 3 shows the dramatic increase in road traffic deaths in El Salvador and Cambodia over recent years – a pattern that is seen in many countries where motorization has not been accompanied sufficiently by improved road safety strategies and land use planning. Likewise, Figure 4 shows rising homicide rates in Venezuela and Guatemala – in part a result of rapid economic growth leading to increasing social and economic disparities.

Figure 3:

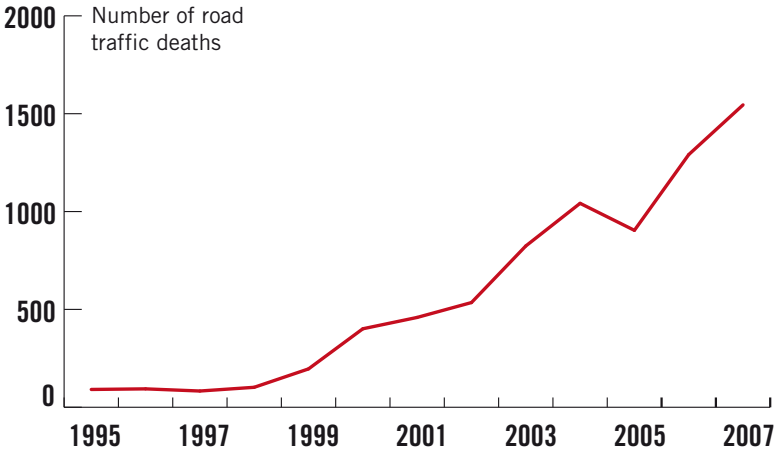
Rising road traffic fatalities

Trends in El Salvador.



Source: Global status report on road safety, WHO, 2009

Trends in Cambodia.

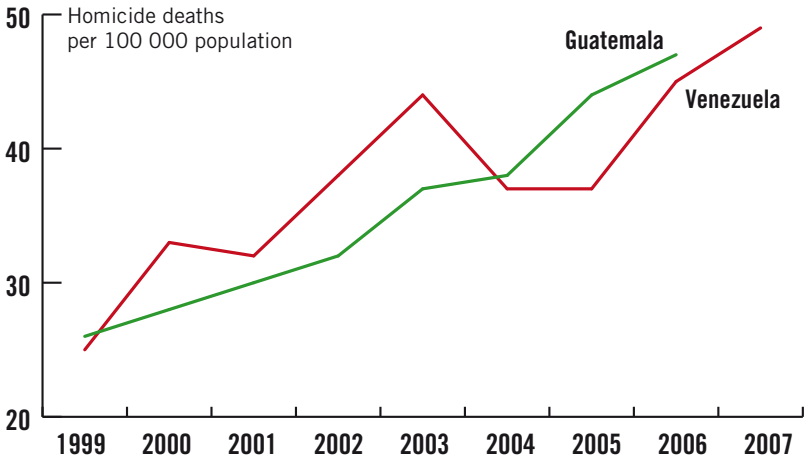


Source: Global status report on road safety, WHO, 2009

Figure 4:

Rising homicides

Rates per 100 000 in Venezuela and Guatemala, 1999-2007.



Source: WHO mortality database

The non-fatal consequences of injuries and violence

The millions of deaths that result from injuries represent only a small fraction of those injured. Tens of millions of people suffer injuries that lead to hospitalization, emergency department or general practitioner treatment, or treatment that does not involve formal medical care. The relative numbers of fatal and non-fatal injuries are often graphically depicted in the form of a pyramid, as shown in Figure 5. In addition to the severity of an injury, there are a number of factors that vary by country and that determine the "shape" of the pyramid, such as access to health care services, or the quality of the data available.

Many of those who survive acts of violence, road traffic crashes, or other causes of injury are left with temporary or permanent disabilities – 16% of all disabilities globally are caused by injury. All causes of injury, but particularly child maltreatment, intimate partner and sexual violence, have been shown to have a range of other health consequences. They contribute significantly to depression, sexually transmitted diseases and unwanted pregnancies, while also increasing the likelihood of engaging in risky behaviours, such as smoking and the harmful use of alcohol and drugs. Via these behaviours they can lead to cancers, cardiovascular diseases, diabetes, liver disease and other chronic diseases. The many health consequences of injuries and violence are depicted in Figure 6.

Figure 5:

Injury pyramid

Graphic representation of the demand on the health sector caused by injuries.

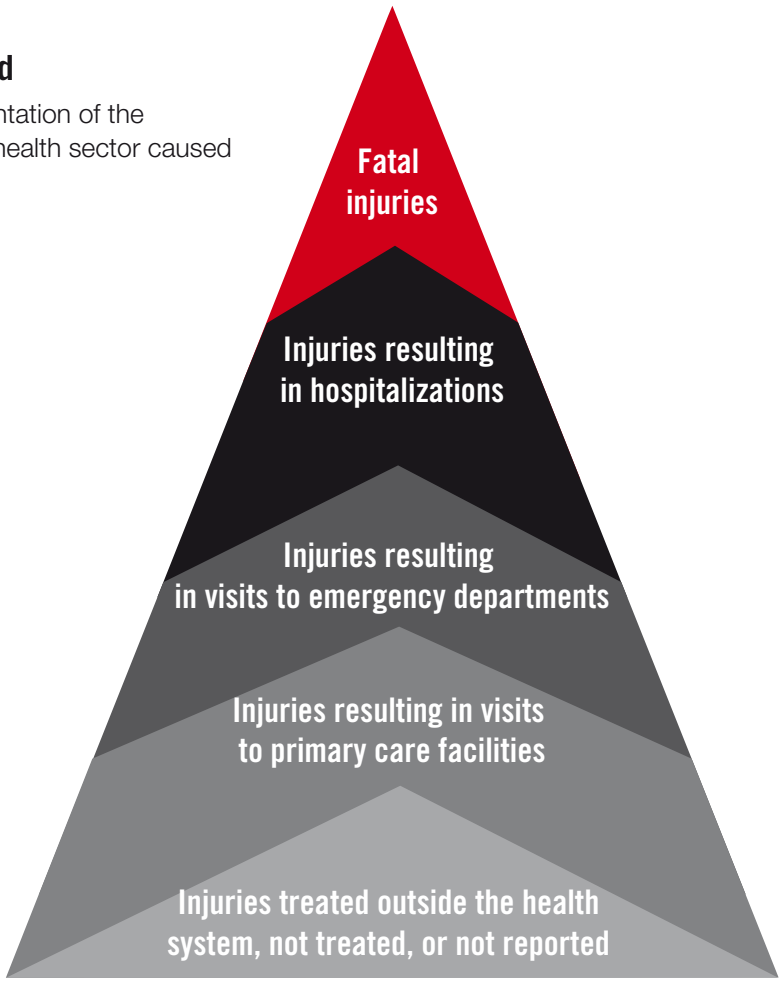
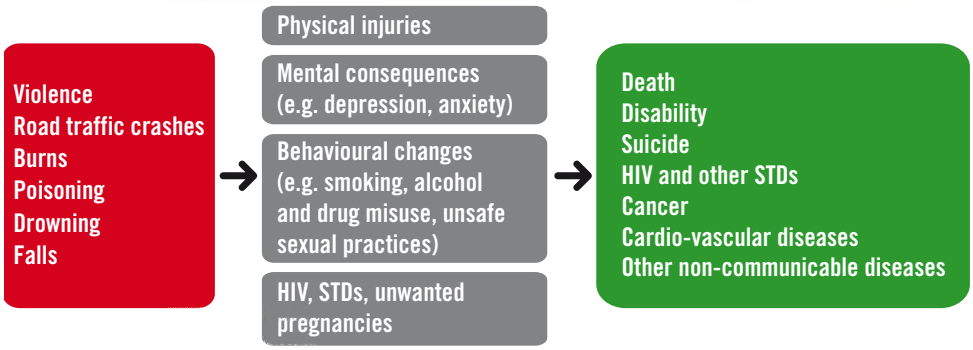


Figure 6:

Consequences of injuries and violence



Some groups are more vulnerable to injuries and violence than others

Injuries and violence are a significant cause of death and ill health in all countries, but they are not evenly distributed around the world or within countries – some people are more vulnerable than others. The magnitude of the problem of injuries and violence varies considerably by age, sex, region and income group. For example, in low- and middle-income countries in the Western Pacific, the leading injury-related causes of death are road traffic injuries and homicide, while in the low- and middle-income countries of Europe, the leading causes are suicide and poisoning. In the high-income countries of the Americas, the leading cause of death among people aged 15–29 is road traffic injury, while in the low- and middle-income countries of the same region it is homicide.

Injuries are a leading cause of death among young people

Injuries affect all age groups but have a particular impact on young people. For people between the ages of 5 and 44 years, injuries are one of the top three causes of death (see Table 2).

Table 2:

Injuries a leading killer of youth

Leading causes of death by age group, both sexes, World, 2004.

Rank	0-4	5-14	15-29	30-44
1	Perinatal causes 3 180 174	Lower respiratory infections 224 308	Road traffic injuries 335 805	HIV/AIDS 958 851
2	Lower respiratory infections 1 755 385	Road traffic injuries 109 905	HIV/AIDS 333 953	Tuberculosis 367 837
3	Diarrhoeal diseases 1 716 410	Malaria 103 738	Tuberculosis 249 023	Road traffic injuries 329 142
4	Malaria 828 666	Drowning 77 117	Homicide 238 003	Ischaemic heart disease 255 842
5	Measles 396 072	Meningitis 63 755	Suicide 230 979	Suicide 219 557
6	Congenital anomalies 370 785	Diarrhoeal diseases 57 716	Lower respiratory infections 122 707	Homicide 179 916
7	HIV/AIDS 258 861	HIV/AIDS 43 118	Drowning 89 434	Lower respiratory infections 154 950
8	Whooping cough 254 314	Tuberculosis 38 074	Fire-related burns 84 983	Cerebrovascular disease 147 224
9	Meningitis 156 304	Protein-energy malnutrition 36 232	War-related injuries 66 319	Cirrhosis of the liver 101 593
10	Tetanus 144 325	Fire-related burns 26 703	Maternal haemorrhage 65 077	Poisoning 87 576
11	Protein-energy malnutrition 135 517	Measles 24 202	Ischaemic heart disease 59 102	Maternal haemorrhage 71 774
12	Syphilis 63 875	Leukaemia 20 861	Poisoning 55 139	Fire-related burns 67 338
13	Drowning 58 467	Congenital anomalies 19942	Abortion 46 335	Nephritis and nephrosis 66 145
14	Road traffic injuries 56 778	Trypanosomiasis 18 583	Leukaemia 44 388	Drowning 62 683
15	Fire-related burns 46 656	Falls 17 862	Cerebrovascular disease 40 827	Breast cancer 57 370

	45-59	60-69	70-79	80+	All ages
	Ischaemic heart disease 1 101 400	Ischaemic heart disease 1 524 131	Ischaemic heart disease 2 174 957	Ischaemic heart disease 2 072 949	Ischaemic heart disease 7 198 257
	Cerebrovascular disease 678 971	Cerebrovascular disease 1 099 231	Cerebrovascular disease 1 860 743	Cerebrovascular disease 1 864 012	Cerebrovascular disease 5 712 241
	HIV/AIDS 395 052	Chronic obstructive pulmonary disease 631 369	Chronic obstructive pulmonary disease 1 060 089	Chronic obstructive pulmonary disease 960 598	Lower respiratory infections 4 109 354
	Tuberculosis 359 282	Lower respiratory infections 397 922	Lower respiratory infections 548 203	Lower respiratory infections 674 079	Perinatal causes 3 180 421
	Chronic obstructive pulmonary disease 332 183	Trachea, bronchus, lung cancers 382 816	Trachea, bronchus, lung cancers 421 150	Alzheimer and other dementias 318 868	Chronic obstructive pulmonary disease 3 024 912
	Trachea, bronchus, lung cancers 279 897	Diabetes mellitus 274 630	Diabetes mellitus 342 482	Hypertensive heart disease 311 973	Diarrhoeal diseases 2 127 154
	Cirrhosis of the liver 261 132	Tuberculosis 215 416	Hypertensive heart disease 300 088	Diabetes mellitus 246 218	HIV/AIDS 2 039 727
	Road traffic injuries 238 852	Hypertensive heart disease 193 316	Stomach cancer 231 723	Trachea, bronchus, lung cancers 185 916	Tuberculosis 1 463 792
	Lower respiratory infections 231 801	Stomach cancer 192 172	Colon and rectum cancers 190 792	Nephritis and nephrosis 172 709	Trachea, bronchus, lung cancers 1 323 218
	Diabetes mellitus 207 605	Cirrhosis of the liver 170 763	Nephritis and nephrosis 170 653	Colon and rectum cancers 162 987	Road traffic injuries 1 274 845
	Suicide 183 582	Liver cancer 155 697	Liver cancer 157 901	Stomach cancer 148 299	Diabetes mellitus 1 140 881
	Stomach cancer 176 110	Oesophagus cancer 147 747	Oesophagus cancer 146 484	Inflammatory heart diseases 122 263	Malaria 1 021 028
	Liver cancer 166 012	Colon and rectum cancers 137 515	Tuberculosis 142 380	Prostate cancer 109 217	Hypertensive heart disease 986 560
	Breast cancer 163 505	Nephritis and nephrosis 134 522	Alzheimer and other dementias 138 409	Falls 100 954	Suicide 844 460
	Hypertensive heart disease 136 806	Breast cancer 113 698	Cirrhosis of the liver 131 267	Breast cancer 80 322	Stomach cancer 803 095

Source: Global burden of disease, 2004 update.

Road traffic injuries are the leading cause of death worldwide among those aged 15–29 years

Road traffic injuries are the leading cause of death for those aged between 15 and 29 years, with homicide and suicide the fourth and fifth leading causes of death respectively among this group. Among the elderly, falls are the most common cause of injury death.

Poorer people are more at risk of an injury

More than 90% of deaths that result from injury occur in low- and middle-income countries. Injury death rates – a better indicator of risk as they take into consideration the size of the population – are higher in poorer countries in all regions of the world than in higher income countries (see Table 3).

Table 3:

Poor European countries are worst affected

Injury death rates by WHO region and income.

WHO Region	Injury deaths per 100 000 population	
	High-income countries	Low- and middle-income countries
African	-	98.8
Americas	55.4	74.1
Eastern Mediterranean	60.1	95.4
European	45.6	126.8
South-East Asia	-	116.6
Western Pacific	58.2	70.2

Source: Global burden of disease, 2004

For information on WHO regions www.who.int/occupational_health/regions

Even within countries, injuries show strong social class gradients. This means that people from poorer economic backgrounds have higher rates of death from injury and non-fatal injuries than wealthier people.

- A study in Rio de Janeiro, Brazil, found that homicide rates in the poorer areas were three times higher than those in wealthier areas.
- This relationship is true not just in low- and middle-income countries, but holds true for more affluent countries too. For instance, a child from the lowest social class in the United Kingdom is 16 times more likely to die in a house fire than one from a wealthy family.
- This uneven distribution of injuries that makes them more prevalent among the less advantaged is related to a number of factors such as living, working and travelling in less safe conditions, less focus on prevention efforts in poorer areas, and poorer access to quality emergency trauma care and rehabilitation services.
- As well as being at increased risk, disadvantaged families are hardest hit by the financial pressure resulting from injuries. Poor families are less likely to have the financial resources to pay the direct costs (e.g. medical bills) as well as the indirect costs (e.g. lost wages) related to injuries.

Injury death rates are 2.5 times higher in poorer European countries than in wealthier ones

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Injuries and violence are unevenly distributed between males and females

Almost twice as many men as women die as a result of injuries and violence each year. The three leading causes of death from injuries for men are road traffic injuries, suicide and homicide, while leading causes for women are road traffic injuries, suicide, and fire-related burns.

For each type of injury (except those resulting from fires), death rates are higher for men than for women (see Figure 7).

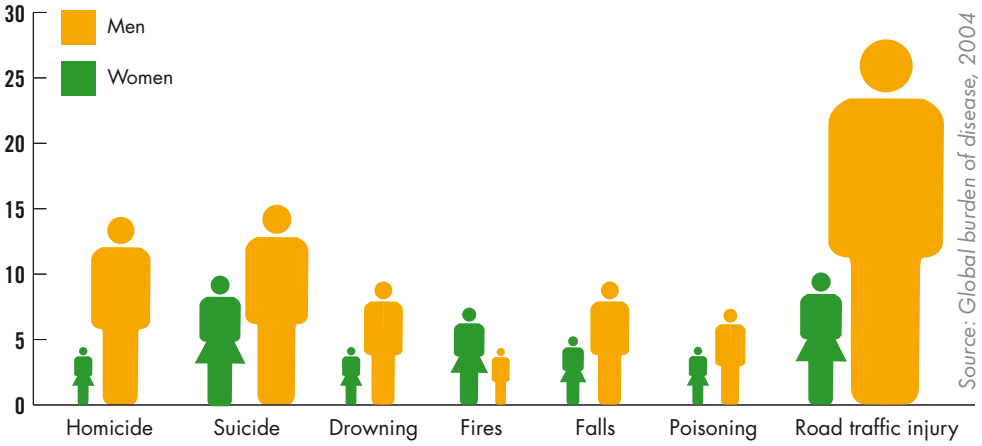
Nonetheless, it is important to note that some types of injuries predominantly affect women. For example, child sexual abuse is more common in girls than boys: an estimated 20% of girls are sexually abused at some point in their childhood, relative to between 5–10% of boys. Similarly, intimate partner violence and sexual violence are more common against women than men. Females have a higher rate of injuries resulting from burns than males, with this difference particularly pronounced among adolescents aged 15–19 in the low- and middle-income countries of South-East Asia Region and the Eastern Mediterranean Region. Women over the age of 65 also have much higher rates of fall injuries than men – possibly related to osteoporosis and other underlying chronic conditions.

Twice as many men as women die each year as a result of an injury

Figure 7:

Injury and violence kill more men than women

Death rates per 100 000 population, by different cause of injury and sex, World, 2004.



Injuries and violence impose heavy costs on individuals and on society

As well as the huge emotional toll that injuries and violence exact on those affected, they also cause considerable economic losses to victims, their families, and to nations as a whole. These losses arise from the cost of treatment (including rehabilitation and incident investigation) as well as reduced/lost productivity (e.g. in wages) for those killed or disabled by their injuries, and for family members who need to take time off work to care for the injured.

There are few global estimates of the costs of injury, but the following examples illustrate the financial impact of injuries on national economies and individual families.

- The economic cost of road traffic crashes globally has been estimated at US$ 518 billion. Road traffic crashes cost most countries between 1–2% of their gross national product, although this can reach up to 5% (for example, in the cases of Malawi and Viet Nam).
- Estimates on the economic costs of homicide and suicide showed that these were equivalent to 1.2% of GDP in Brazil, 4% of GDP in Jamaica, and 0.4% of GDP in Thailand.
- The extent of the effects of injury-related costs on the financial and overall well-being of injury victims and their families has been documented in detail in several countries. One study conducted in Ghana found that over 40% of families of injury victims reported a decline in family income as a result of the injury, with about 20% forced to borrow money and incur debt to pay for medical treatment. A quarter of families reported a decline in their food consumption as a result of the injury.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Injury and violence prevention is possible

Despite the magnitude of the problem, attention to injury and violence prevention and control among policy–makers and those funding global public health remains disproportionately low. This is particularly alarming given that many injuries and much violence can be prevented: there are a broad range of strategies based on sound scientific evidence that have been shown to be effective at reducing injuries and violence, and these strategies need to be more widely implemented.

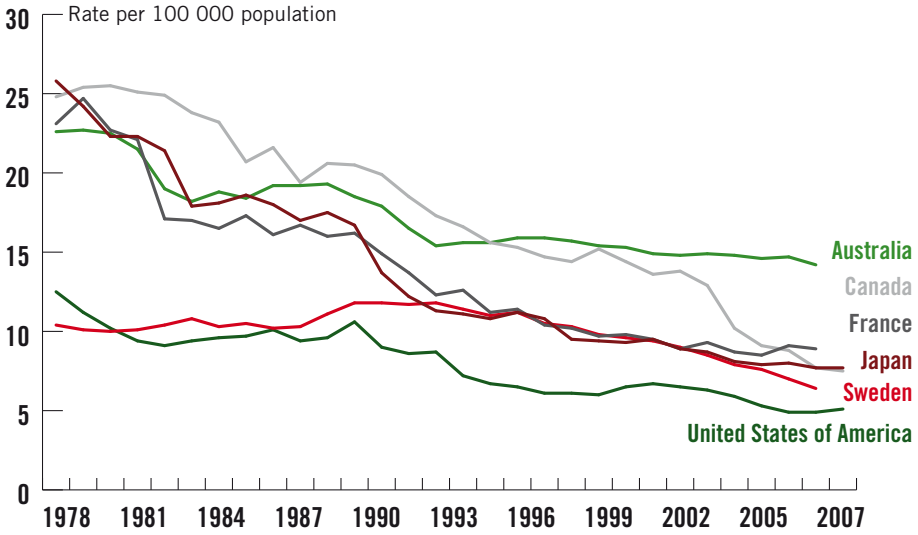
Declines in injuries have been seen mainly in high-income countries, many of which have steadily decreased the burden of injury by applying proven prevention and treatment strategies. For example, Sweden has successfully managed to reduce the rate of child injuries over the past few decades by about 80% among boys, and about 75% among girls. Similarly, covering wells and reducing exposure to large bodies of water (for example, by building safe bridges, or by putting fences around swimming pools) have been effective ways of reducing drowning rates in a number of countries.

A number of countries have also managed to reduce their road traffic fatality rates in recent decades (see Figure 8). However, in some high-income countries the downward trend in road traffic fatalities that began in the 1970s and 1980s has started to plateau, suggesting that extra steps are now needed to reduce these rates further.

Figure 8:

Rich countries reduce road deaths

Trends in road traffic deaths in selected high-income countries.



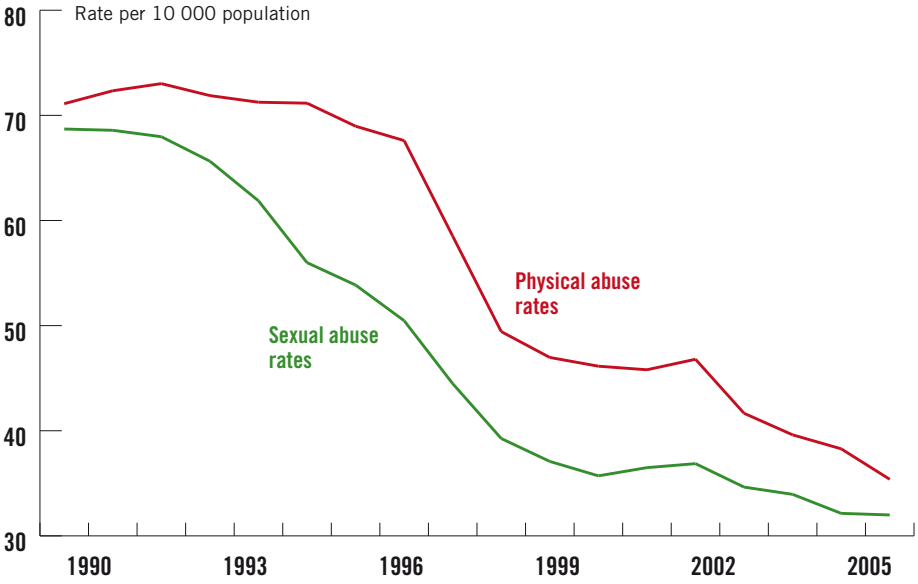
Source: Global status report on road safety, WHO, 2009

In a number of countries, rates of violence have also declined. For instance, Figure 9 shows the decline in child sexual and physical abuse in the USA from 1990.

Figure 9:

USA reduces child abuse

Trends in child sexual and physical abuse in the USA.



Source: NCANDS Finklehor and Jones, 2006

Measures to prevent injuries and violence

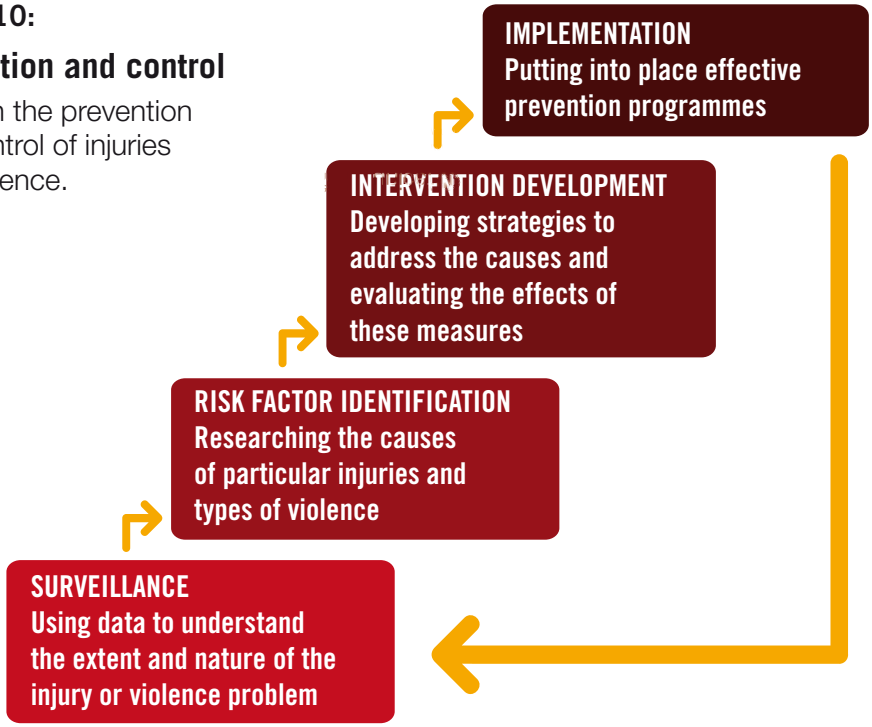
As more governments around the world come to recognize that injuries and violence can and must be prevented, many are trying to get a better understanding of the problem in their countries as a basis for designing, implementing and monitoring effective prevention strategies (see Figure 10). A number of measures that have helped lower the rates of injuries and their consequences have been shown to be effective.

Furthermore, analysis of the costs and benefits of a number of selected injury and violence prevention measures show that they give significant value for money, making investment in such measures of great societal benefit. For example, a study in the United States found that every dollar spent on smoke detectors saves $28 dollars in health-related expenditure. However, much of the evidence of effectiveness for these measures comes from high-income countries: there is a need for low- and middle-income countries to adapt and implement these evidence-based strategies to specific circumstances within their environments. By doing so–and by rigorously evaluating the outcomes of these efforts–it will be possible to lower the current, unacceptably high burden of injury globally.

Figure 10:

Prevention and control

Steps in the prevention and control of injuries and violence.



Scientifically-proven measures to reduce key causes of injury-related deaths include the following.

Road traffic crashes

- Setting and enforcing appropriate speed limits based on the type of road.
- Setting and enforcing drink-driving legislation.
- Wearing helmets among motorcyclists and bicyclists, and seat-belts among all occupants.
- Setting and enforcing seat-belt, child restraint and helmet laws.
- Developing safer roadway infrastructure, including separating different types of road users.
- Traffic calming to reduce speeds in urban areas.
- Implementing vehicle and safety equipment standards.
- Setting and enforcing laws on daytime running lights for motorcycles.
- Introducing a graduated driver licensing system for novice drivers.

Burns

- Setting and enforcing laws on smoke alarms.
- Setting and enforcing laws on hot tap water temperatures.
- Developing and implementing a standard for child-resistant lighters.
- Treating burns patients in a dedicated burns centre.

Drowning

- Removing or covering water hazards.
- Requiring isolation fencing (four-sided) around swimming pools.
- Wearing of personal flotation devices.
- Ensuring immediate resuscitation.

Falls

- Setting and enforcing window guard laws for tall buildings.
- Redesigning furniture and other products.
- Establishing standards for playground equipment.

Poisoning

- Setting and enforcing laws for child resistant packaging of medicines and poisons.
- Removing the toxic product.
- Packaging drugs in non-lethal quantities.
- Establishing poison-control centres.

Interpersonal violence

- Developing safe, stable and nurturing relationships between children and their parents or caregivers.
- Developing life skills in children and adolescents.
- Reducing the availability and harmful use of alcohol.
- Reducing access to guns and knives.
- Promoting gender equality to prevent violence against women.
- Changing cultural and social norms that support violence.
- Reducing violence through victim identification, care and support programmes.

Suicide

- Ensuring early detection and effective treatment of mood disorders.
- Behavioural therapy for people experiencing suicidal thoughts and behaviour.
- Restricting access to means (e.g. pesticides, guns, unprotected heights).

Improving trauma care and services

Although the ultimate goal must be to prevent injuries and violence from happening in the first place, much can be done to minimize the disability and ill-health arising from the events that do occur. Providing quality support and care services to victims of violence and injuries can prevent fatalities, reduce the amount of short-term and long-term disability, and help those affected to cope with the impact of the violence or injury on their lives. Improving the organization, planning and access to trauma care systems, including pre-hospital and hospital-based care, can help reduce the effects of injuries. In Mexico, for example, increasing the number of ambulance stations around large cities to allow for a more rapid response from pre-hospital care teams has led to a decrease in mortality among trauma patients, while in Thailand the setting up of a training programme to improve trauma care at hospitals has reduced the number of deaths among patients admitted.

Summary

Injuries and violence are among the most prominent public health problems in the world. As well as being a leading cause of mortality – particularly among children and young adults – many of the millions of non-fatal injuries result in life-long disabilities. Tens of millions more will suffer long-term psychological health effects as a result of an injury or an act of violence.

In some countries, increasing awareness over the past decades that injuries and violence are preventable public health problems has led to the development of preventive strategies and, consequently, a decrease in deaths and disability due to injuries. However, in many countries the issue of injuries is not yet recognized or being addressed. This is particularly unfortunate, since much evidence is available on what needs to be done. Action must be taken now to reverse this trend, and the international community, national governments and civil society all have an important role to play in creating environments that are safe from the risk of injuries and violence.

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