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E.Th. Petridou, E. Germeni, A. Ntinapogias



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THE EUROPEAN CODE AGAINST INJURIES

Simple messages to make your daily life safer

This code contains a series of messages to keep you safe from accidental injury. Following these messages could save your life, or the lives of those around you.

The code is based on what is known to help you prevent injuries. It may require you to think and act differently. The benefit can be more years of healthy living for yourself and others.

Accidental injury is a major risk to your health and well-being in everyday life, regardless of your age, whether working, travelling, going out or at home. Most injuries are preventable, they are not caused by bad luck or chance events that are outside of your control.

There is a lot you can do to make your life safer. You can promote safety for yourself and those you care for, by knowing more about how injuries happen, learning how to manage risks, and adopting safe behavior in everyday life.

1

>> be a safe driver

Fact: Driving needs your full attention; distractions and lapses in concentration can be killers.

WHAT YOU CAN DO

- Minimize distractions while driving; avoid using a mobile phone, drinking, smoking, or eating.
- Drinking and driving don't mix. After drinking alcohol, use public transport or have a designated driver. If you go out with others, decide beforehand who will drink non-alcoholic beverages and make sure everyone gets home safely.
- Bear in mind that fatigue and lack of sleep slow your reactions and increase your risk of injury. On long trips, take regular breaks, at least a 15-minute break every two hours.
- Follow road traffic rules, adapt your speed to given circumstances and maintain a safe distance from the vehicle in front of you. Remember that you are in charge of a powerful machine that can injure and kill vulnerable road users.
- Stay calm and don't let yourself be provoked by other road users, don't drive aggressively.
- Adapt your driving to the road and weather conditions.
- If you are a new driver, consider taking a more experienced driver with you.

3

>> prevent falls

a. Prevention of falls in elderly people

Fact: Falls are a major killer, especially for older people, but they can be prevented by exercise programmes, safer use of medicines, regular eye tests, and by creating a safer home.

WHAT YOU CAN DO

- Reduce your risk of falls at home, e.g. by having good lighting; handrails on both sides of the stairs and in the bathroom; non-slip bath mats, and rugs that don't slip on the floor. Move obstacles away from walking areas and store things within easy reach.
- Have a home safety assessment from a safety specialist and make the changes they recommend to improve your home safety.
- Wear shoes with firm non-slip soles and avoid loose-fitting footwear that could cause you to trip.
- Exercise regularly to keep yourself fit and help you to reduce the risk of falling. Consider taking formal strength and balance exercises to maintain muscle and bone strength and to improve your balance and flexibility; bear in mind that these exercises can be tailored to your specific needs.

2

>> be a safe road user

Fact: You can minimize everyone's risks; you can help other road users, as well as yourself to avoid injury.

WHAT YOU CAN DO

- Make sure you know and follow all road traffic rules.
- Wear your seat belt on all trips, including short trips. Make sure that everyone wears a seat belt in your car, both in the front and rear seats, and remember that seat belts must be used even if your vehicle has airbags.
- Always put children in the back. Learn the regulations applying to children; they need an age and size – appropriate car restraint or booster seat that is properly fitted in the vehicle. Read the instructions provided by the manufacturer.
- Wear light coloured fluorescent or reflective clothing when you ride a motorcycle, bike or horse. Use your lights to be seen as well as to see.
- Always wear a helmet when you ride a motorcycle, bike, or horse. Make sure that it meets safety standards. Helmets might be useless if they are not the correct size and worn in the correct position. Make sure your children's helmets are properly adjusted.
- As a pedestrian, try also to be visible. Walk on pavements and use zebra / pelican crossings if available. Face oncoming traffic when walking on the side of the road.
- Teach your children how to cross the road safely and practice with them in real life situations. Bear in mind that you are a model for your children.

Have periodic reviews of your medication and follow your health care provider's instructions; remember that some medications can increase your risk of falls.

Have regular eye tests and correct your vision if needed.

b. Prevention of falls in children

Fact: Falls are one of the leading causes of unintentional injury for children.

Reduce hazards in the home by using window locks and safety gates or both barriers at the top and bottom of stairs. Keep chairs, cribs and other furniture away from the windows. Remember baby walkers can be dangerous and are not recommended. Use safety straps on high chairs, changing tables and all products when supplied.

Always supervise children when using playground equipment; make sure they play on appropriate surfaces and with age-appropriate equipment.

4

>> guard against accidental poisoning

Fact: Accidental poisoning is much more common than many people think; it kills or injures thousands of people every year, yet is easily prevented.

WHAT YOU CAN DO

Keep dangerous substances away from children; use child resistant closures, but remember none of these is 100% child-proof. Store products safely, either locked away or out of reach of children.

Remember that many products can be potentially dangerous, e.g. household detergents, medicines, and garage items, like antifreeze and pesticides. Store these products in their original containers.

Store food and non-food products separately. Always read the use and storage directions of products. In case of poisoning, read the labels on product containers, which often give important first-aid information.

Make sure you have an emergency number next to the telephone in case of a suspected poisoning.

7

>> play sports safely

Fact: Sport injuries are increasing so rapidly that they may soon be the most common hospital treated injury.

WHAT YOU CAN DO

Make sure you and/or your child use sport appropriate protective equipment; check the condition of the protective equipment and the sports area.

Be aware of sport specific recommendations and regulations and follow them. Make sure that other participants do the same.

Warm-up muscles for a minimum of five minutes, before participating in sports.

Be realistic about your own physical performance and exercise within your limits.

Encourage your child to participate in organized sports where there are certified coaches, trained in the prevention, recognition and immediate care of injuries.

5

>> know the dangers of fire

Fact: 80% of fire-related deaths are due to house fires; learn how to prevent them.

WHAT YOU CAN DO

Install a smoke detector in your house and regularly test it.

Avoid smoking in the bedroom or other areas of the home when sleepy and after having a few drinks.

Store matches, lighters and other flammable materials out of reach of children.

Get a fire extinguisher and learn how to use it. Tackle only the smallest fires yourself; your first thought should always be to call the fire brigade.

Make and practice a fire escape plan so that everyone in the household knows how to get out and where to meet in the event of a fire.

8

>> use safer products

Fact: Most products meet high standards of safety, but there are some deadly exceptions on the market.

WHAT YOU CAN DO

Use products for their intended use and age groups and respond to product recalls and warnings.

Select products that meet safety standards; read and follow the safety recommendations on labels and in the manual.

When selecting toys, consider the child's age and development. Avoid small toys or toys with small removable parts, which can be a deadly suffocation risk to children under three years of age.

Teach older children to keep their toys away from younger brothers and sisters.

Inspect toys regularly for damage and potential hazards, such as sharp edges. Discard broken toys immediately, making sure children cannot get hold of them.

6

>> be safe near water

Fact: Learning to swim is important but it is not enough; comply with water safety practices and actively supervise your children.

WHAT YOU CAN DO

Learn to swim – make sure that children are taught how to swim from an early age by a qualified instructor.

Wear appropriate flotation devices for all water sports undertaken in open water.

Be aware that many children drown in shallow water, including wading pools, bathtubs, buckets and toilet bowls.

Teach your child how to be safe in and around the water. Actively supervise your child. Do not delegate supervision of your children to older children.

Keep in mind that swimming pools can be dangerous if they don't have a climb-resistant fence with a self-closing and locking gate. Insist on the same standards for any private pool used by your children.

Take a course to learn how to revive a victim of drowning.

9

>> be safe at work

Fact: Most people are well protected by legislation at work but you still need to be aware of your rights and actively participate to improve workplace safety.

WHAT YOU CAN DO

Read all safety information supplied by your employer and follow the safety rules. Know the risks so that you can avoid potential harm.

Protect yourself and others by using the necessary safety procedures, tools and devices. Read the guidelines and the instructions for use.

Actively participate in all relevant education and training for safety at your work.

Wear the necessary personal protective equipment properly: eye-protection, special clothing, including gloves, harnesses, belts, helmets, shoes or whatever is required by your work that could minimize any injury if an accident occurs.

Take an active part in eliminating risks from the workplace. If you discover a new hazard or safety measures that do not work properly, report them to your employer.

10

>> know the risks of alcohol, drugs & medication

Fact: Alcohol, drugs and medicines affect judgment and increase your risk of accident and injury.

WHAT YOU CAN DO

Be realistic about how long alcohol remains in your body. Even low levels of alcohol can increase the risk of all types of injury and can also impair child supervision. If you have been drinking, try to avoid activities that could result in potential harm.

Apply the same safety rules as for alcohol to prescribed or over-the-counter medicines as well as for drugs that may alter your perception and increase your injury risk. Do not mix alcohol with any medicines, even over-the-counter ones.

Excessive drinking can cause alcohol poisoning which can be deadly. Avoid binge drinking and keep within the recommended amounts of alcohol.

EDITORIAL ΑΡΘΡΟ ΣΥΝΤΑΞΗΣ

..... **The European Code Against Injuries (ECAI)**

Fifteen years after the European Commission's recognition of injuries as a priority area for action in the field of public health, injuries continue to pose one of the most significant and costly public health problems in the European Union (EU) Region.¹ Each year, injuries claim the lives of more than 235,000 EU citizens, constituting the fourth most common cause of death after diseases of the circulatory system, neoplasms and diseases of the respiratory system, and the first regarding potential years of life lost.² With regard to their intent, about two-thirds of annual injury deaths are being reported as "accidental", namely unintentional.

The historically rooted notion supporting that unintentional injuries are caused by random occurrences or chance events, which cannot be controlled by individuals, has contributed to a substantial fragmentation of preventive efforts.³ Nowadays, however, it has been recognized that most unintentional injuries can be both understood and predicted, thus are largely preventable. Unintentional injury prevention has seen over the years prominent examples of effective practices, stemming mainly from the field of road traffic safety. Mandatory seat belt use, for instance, has been one of the greatest success stories of unintentional injury prevention. First introduced as optional features in new cars in the 1960's, seat belts soon proved so effective in reducing fatal and serious injuries that, in 1971, the state of Victoria, Australia, introduced mandatory legislation requiring their presence and use in all cars. By the end of that year, the rate of car occupant deaths declined by 18%.⁴

Although effective practices for the reduction of injuries do exist, the wide variation in both preventive measures' usage rates and unintentional injury mortality rates across different EU Member States suggests that there is still scope for prevention.⁵ Based on the above mentioned example, although the protective effect of seat belts is now established

and seat belt use is mandatory in all EU countries, seat belt wearing rates among the general population range from 97% (France) to 40% (Greece) in front seats, and from 90% (Germany) to 15% (Greece) in rear seats.⁶ To this end, the ultimate goal of the European Community Action Plan was to promote injury prevention initiatives in order to reduce injury mortality and morbidity and to ensure that the Community becomes a safer place to live in.⁷

In contrast to other causes of disease or premature death, injuries can be prevented not only by making the living environments and the used products safer, but also by involving people to actively participate in this effort by adopting safer behaviors. In the light of this approach, the European Code Against Injuries (ECAI) was developed in the context of the EU co-funded project APOLLO ("Strategies and Best Practices for the Reduction of Injuries"), which is coordinated by the Center for Research and Prevention of Injuries (CEREPRI), Athens University Medical School, aiming to provide an awareness raising tool for injury prevention and safety promotion. Following the successful example of the European Code Against Cancer,^{8,9} ECAI consists of 60 evidence based messages regarding preventive measures that have shown to be effective in reducing the injury death toll. The messages, having the form of simple and comprehensive recommendations targeting the general public, are customized in a way to reflect the EU diversity, while are divided into nine prioritized categories of unintentional injuries, notably road traffic injuries, falls, poisoning, burns, drowning, sport injuries, product-related injuries, occupational injuries and alcohol-related injuries.

In the present Supplement, we pleasantly introduce ECAI and present the scientific evidence used for the development of its messages. The Supplement comprises nine different papers, each one focusing on one of the injury types included in ECAI. The papers, written by a panel of international injury prevention experts, provide the reader with information regarding the definition and burden of each injury type, common risk factors and evidence based effective practices.

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E.Th. Petridou,^{1,2} E. Germeni,¹ A. Ntinapogias¹

¹Center for Research and Prevention of Injuries (CEREPRI), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School

²Department of Epidemiology, Harvard School of Public Health, Boston, Massachusetts, USA

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1. MORRISON A, STONE DH AND THE EURORISC WORKING GROUP. Injury mor-

REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 1: “Be a safe driver”

Message 2: “Be a safe road user”

Road traffic accidents constitute the first cause of unintentional injury death in the European Union (EU). In EU-25, an estimated 43,000 people die every year due to motor vehicle crashes. Nevertheless, road traffic injuries can be prevented and their consequences can be alleviated if the appropriate practices, policies, strategies and road safety regulations are adopted. This paper aims: (a) to describe the magnitude and the socio-economic burden of road traffic injuries in the countries of the EU, (b) to outline underlying risk factors and, (c) to present evidence based preventive practices that reduce the likelihood of road traffic injuries occurrence. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention.

1. DEFINITION

According to the World Health Organisation (WHO), a road traffic injury (RTI) is any injury due to crashes, originating terminating or involving a vehicle partially or fully on a public highway.¹ Specifically injury due to motor vehicle car crashes is always associated with a sudden exchange of mechanical energy reaching people at rates that involve forces in excess of their injury thresholds.²

2. MAGNITUDE OF THE PROBLEM

Worldwide, an estimated 1.2 million people are killed in road traffic accidents (RTA) and approximately 50 million get injured every year.¹ Projections indicate that these

figures are likely to increase by about 65% over the next 20 years unless there is a change in traffic related injury prevention (Table 1).¹ In EU-25, 43,000 lives are lost due to RTA.³ This corresponds to 21% of the total deaths due to injuries in Europe, placing RTA as the second, after suicide, cause of death due to external injuries in EU. Moreover, 1.8 million people were injured in these crashes, representing an estimated cost of 160 billion Euros, which is the consequence of the 1.25 million of accidents that occur at the European roads.³

People aged between 15–24 years are at higher risk for road traffic mortality compared to people aged between 25–44 years old. The World report on road traffic injury prevention indicates that there are notable differences in

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2008, 25(Συμπλ 1):11–18

M. Segui-Gomez,^{1,2}
F.J. Lopez-Valdes,¹
A. Tsirigoti,³
A. Ntinapogias³

¹European Center for Injury Prevention, Department of Preventive Medicine and Public Health, Medical School, University of Navarra, Pamplona, Spain

²Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, US

³Center for Research and Prevention of Injuries (CEREPRI), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School

Μήνυμα 1: «Οδηγείτε με ασφάλεια»
και «Φροντίστε για την ασφάλειά
σας ως χρήστης του δρόμου»

Περίληψη στο τέλος του άρθρου

Key words:

Drivers
European Code Against Injuries
Pedestrians
Prevention
Road safety
Road traffic injuries
Vulnerable road users

Table 1. Predicted road traffic fatalities by region (in thousands), adjusted for underreporting, 1990-2020.³

Region	Countries (N)	1990 (N)	2000 (N)	2010 (N)	2020 (N)	% Change 2000–2020	Fatality Rate (deaths/100,000 persons)	
							2000	2020
East Asia and Pacific	15	112	188	278	337	79	10.9	16.8
East Europe and Central Asia	9	30	32	36	38	19	19.0	21.2
Latin American and Caribbean	31	90	122	154	180	48	26.1	31.0
Middle East and North Africa	13	41	56	73	94	68	19.2	22.3
South Asia	7	87	135	212	330	144	10.2	18.9
Sub-Saharan Africa	46	59	80	109	144	80	12.3	14.9
Sub-total	121	419	613	862	1123	83	13.3	19.0
High-income countries	35	123	110	95	80	-27	11.8	7.8
Total	156	542	723	957	1203	67	13.0	17.4

the way users are affected by road traffic collisions.¹ More than half of all road traffic deaths globally occur among youngsters and adults aged 15 to 44 years old with 73% of all road traffic fatalities affecting males. Vulnerable road users – pedestrians, cyclists and motorcyclists – account for a much greater proportion of RTA in low-income and middle-income countries.⁴ In addition vulnerable road users, children and older people, are at high risk to die from RTA.⁵ Approximately 34,000 of those people involved in RTA are aged 0–14 or above 60 years old, representing about 5% of the total estimated deaths from RTI every year.

Pedestrians and cyclists represent 33% of victims of road crashes, which accounts for about 40,000 deaths per year. Pedestrians, cyclists and motorcyclists usually suffer the most severe injuries as a result of a RTA, and report more frequently remaining health problems that require further assistance. On average, pedestrians and cyclists account for about 20% of people involved in serious accidents in the WHO European Region, but they are at disproportionate risk of death or injury compared to car users.

The European Association for Injury Prevention and Safety Promotion⁶ reports more than 56,000 deaths in EU-27 associated with RTA. Hospital admissions (860,000), hospital outpatients (1,800,000) and patients requiring other types of medical treatment (1,200,000) make road traffic related injuries to account for approximately 6.5% of all the medical treated cases in the EU-27.⁶

The decreasing trend in road traffic injuries and fatalities that have been observed during the last years in the EU-25 (Figure 1),¹ gives an encouraging message about the exiting preventive initiatives. Yet, the diversity in the estimations of deaths and injuries in Europe due to different types of existing data sources (some sources analyze

traffic injuries as a system whereas some others as a health issue) makes the development of an integrated system that allows precise estimation of the burden of RTI in Europe, as an issue of high priority.

3. RISK FACTORS

In the late 60's, Haddon proposed a framework to categorize risk factors according to two different criteria: the temporal stage of the crash combined with the classical epidemiologic model for infectious diseases (vehicle-subject-environment).² This matrix has been used since then to identify different injury risk factors along with strategies aiming to prevent the occurrence of injury.¹ An example of such a matrix specified for the case of RTI is presented in Table 2.

3.1. Demographic risk factors

Worldwide, road traffic deaths occur more frequently among males with males accounting for approximately 73% of the road traffic deaths and 70% of DALYs lost.⁷ Although the number of fatalities between males is strongly associated with age, this is not actually the case for females. According to Figure 2, younger men die more frequently due to RTI and this trend seems to decrease with increasing age.¹

The highest death rates are observed in the age group of 15–29 in high-income countries, and in people over 60 years in low and middle-income countries. Children in low and middle-income countries have much higher death rates due to RTI, than children in high-income countries.⁷ According to the transport mode, a person on a two-wheel motorized vehicle is 20 times more likely to be killed for each kilometer traveled, whereas a pedestrian is 9 times

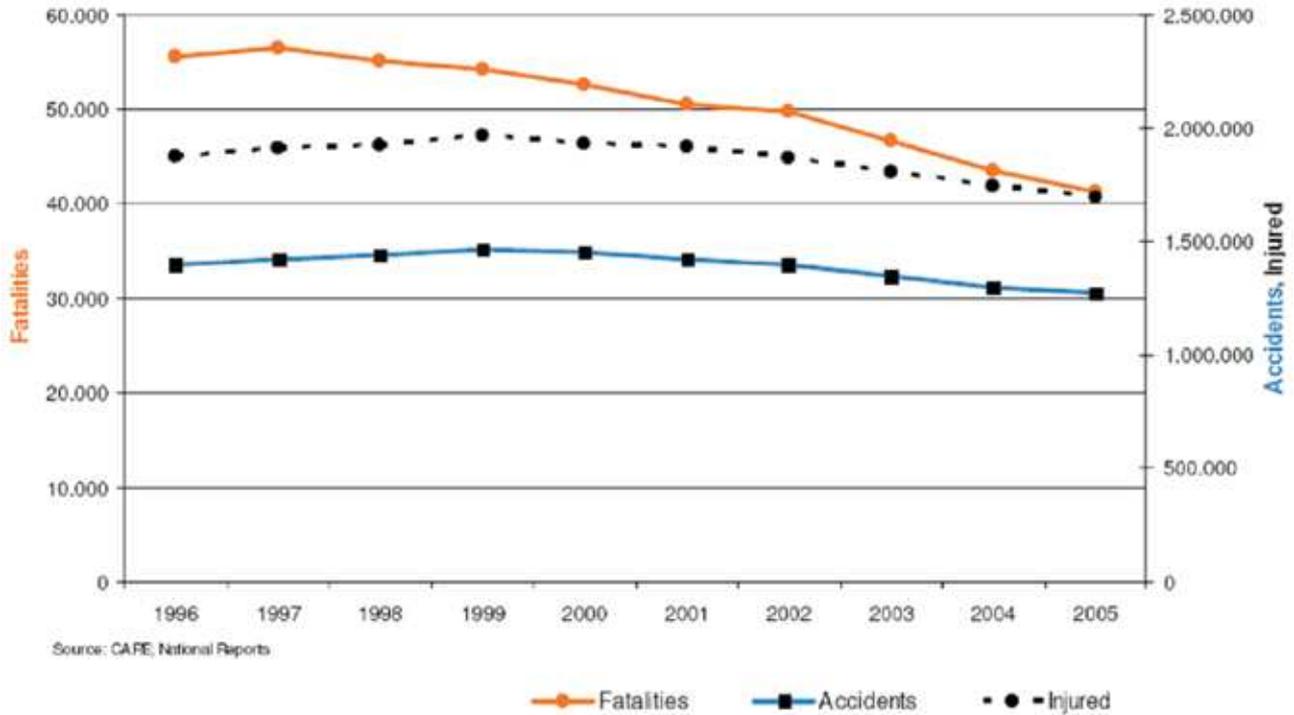


Figure 1. Annual figures of fatalities, injury accidents and injured people (EU-25), 1996-2005.³

Table 2. The Haddon Matrix.^{1,2}

Phase	Factors	Vehicle	Environment
Pre-crash	Information	Roadworthiness	Speed management
	Attitudes	Lighting	Police enforcement
	Impairment	Braking	Pedestrian-friendly design facilities
		Handling	Road layout
Crash	Use of restraints	Restraints (seatbelt, airbag, CRS)	Hazards removal
	Gender and age influence on injury tolerance levels	Helmet use	Road design
	Impairment	Crashworthiness	Barriers
Post-crash	First aid skills	Ease of access	Rescue facilities
	Access to medics	Fire risk	Traffic management to ease the access

more likely and a person riding on a bicycle is 8 times more likely, all compared to a person in a car. Other means of transport like rail or air seems to be safer.⁸ Relevant data are shown in Table 3.

3.2. Environmental risk factors

There is a variety of environmental risk factors that can lead to RTI such as road design, correct maintenance, type and conditions of the road. Driving at excess speed reduces driver’s reaction, can produce loss of vehicle control and at the same time increases the kinetic energy involved in

the crash. Thus, roadsides should be designed to avoid an excessive amount of energy being transmitted to the occupant in case of a crash. Special attention must be paid to the diversity of road users and their needs, since effective measures suitable to protect a specific group of road users can be extremely harmful to others.⁹

Pedestrian and cyclist friendly infrastructure designs should be always considered when a new road is designed. Vulnerable road users’ limited conspicuity (also applicable to powered two-wheelers) as well as poor lighting conditions have been identified as factors contributing to RTA.⁹

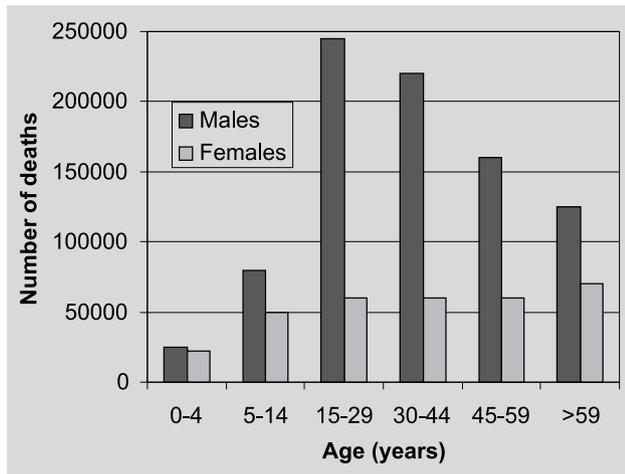


Figure 2. Road traffic deaths by gender and age group. World, 2002. Source: adapted from.⁷

3.3. Behavioral risk factors

Alcohol consumption increases the likelihood for both the occurrence of a crash and the causation of severe injuries or even death. A number of studies showing these effects have been reported.⁷ Drivers with Blood Alcohol Levels around 0.02–0.05 g/100 ml were found to be 3 times more likely to be killed in a single vehicle crash than drivers who have not consumed alcohol. Interestingly when alcohol levels reach 0.08–0.10 g/100 ml, notably three cans of beer, especially among males 16–20 years old, then the chances to have a RTI increase to 52.¹⁰ Medicines for somatic illnesses do not seem to be associated with increase in crash

Table 3. Deaths per 100 million passenger-kilometers versus passenger-travel hours in European Union countries for the period 2001–2002.⁷

	Deaths per 100 million passenger-kilometers ^a	Deaths per 100 million passenger-travel hours ^b
Roads (total)	0.95	28
Powered two-wheelers	13.8	440
Foot	6.4	75
Cycle	5.4	25
Car	0.7	25
Bus and coach	0.07	2
Ferry	0.25	16
Air (civil aviation)	0.035	8
Rail	0.035	2

^a Passenger-kilometers is the total distance covered by all the individuals travelling on that mode.

^b Passenger-travel hours is the total time spent by all the individuals travelling on that mode.

involvement although medicines intake for the treatment of mental illnesses and narcotics were found to increase the likelihood of involvement in a crash.⁹

4. EFFECTIVE PREVENTIVE PRACTICES

Reduction in the number of RTA can be achieved through the prevention of risk factors contributing to crashes in four different stages:⁷

- Exposure: the amount of movement, or travel, within the system by different users or a given population density.
- Decreasing the probability of a crash, given a particular exposure.
- Diminishing the probability of injury, given a crash.
- Reducing the severity of injury and the eventual impairment.

According to Haddon,¹¹ there is no logical reason why the most effective countermeasures must parallel the sequence of causes contributing to injuries. This is particularly true for RTI since the most effective practices were those focusing on reducing the likelihood of injury occurrence and/or injury severity. A review of the literature suggests that the most effective and cost-effective interventions to prevent RTI are those countermeasures that combine both engineering and enforcing policies. Nevertheless, recent investigations are suggesting that the protective effectiveness of these interventions is increased only when behavioral aspects of the driver/road user are also taken into consideration.¹²

The following recommendations have been proposed by WHO⁷ and are strongly supported by scientific evidence. Though there are many other effective interventions to reduce RTI (such as safer road and traffic management designs, enforcement and regulation done by the Authority), these recommendations have not been included here. We have limited ourselves to describe good practices that can be put in place by every user of the road traffic system.

- Helmets

Helmets are intended to protect against head injuries or reduce the severity of such injuries since riders of motorcycles and mopeds as well as cyclists are exposed to a higher risk of death due to traffic crashes.⁷ The effectiveness of this countermeasure is shown to be high as helmets reduce the number of head injuries amongst moped-riders and motorcyclists by approximately 45%. This effect is even larger for more serious injuries. There

is evidence that the enforcement of the use of helmets prevents the increase of fatalities.⁹

Bicycle helmets: Bicycle helmets prevent serious injuries and even death.^{13,14} State helmet laws significantly increase helmet use by children and play an important part in any comprehensive effort designed to achieve this goal.¹⁵ The most cost-effective approach for increasing helmet use is legislation, combined with community education and helmet promotion campaigns.^{16,17}

Motorcycle helmets: Motorcycle helmet use appears to reduce the risk of mortality leading to an estimated 72% reduction of head injuries.¹⁸

- Seat belts and airbags

Seat belts protect people travelling in cars from colliding with the interior of the vehicle and from being thrown out of the vehicle. In other words, seat belt helps the management of the mechanical energy that is transmitted to the occupants in case of impact. Most of the newer vehicles are also equipped with frontal airbags for driver and front passenger. The combination of seat belt and airbag is even more effective for preventing serious injuries. The effectiveness of seat belts is completely unquestionable regardless sitting in the front or in the rear seats of the vehicle: the use of seat belts reduces the probability of being killed almost by 40–50% for drivers and passengers in the front seat and by 25% for rear seat occupants. They also show an important effect in the prevention of serious injuries (with similar estimations of protection) and slightly lower effect in the protection against less severe injuries (though always significant).⁹

All the occupants in the vehicle must have the seatbelt appropriately fastened. It has been reported that a rear passenger not wearing the seatbelt can increase 5 times the probability of death for frontal occupants.¹⁹ A systematic review²⁰ found strong evidence for the effectiveness of safety belt laws in general and for the incremental effectiveness of primary safety belt laws relative to secondary laws. Strong evidence for the effectiveness of enhanced enforcement programs for safety belt laws was also found.^{21,22}

Airbags in vehicles: A cohort study found that the average risk of driver death was reduced by 8% (95% CI: 4% – 12%) by an air bag.²³ Benefit was similar for belted and unbelted drivers and was slightly greater for women. However, seat belts offered much more protection than air bags.

- Child restraint systems

Child restraint systems work in the same way with seatbelts; however they are specifically designed to meet the different requirements in terms of size and injury tolerance of children. Children are always better protected in the rear seat and they must use the adequate restraint system according to their size. For children in the age group 0–4 years, the correct use of child seats reduces the probability of injury by around 50% for forward facing seats and around 80% for rearward facing seats.⁹

There is strong evidence that child safety seat laws reduce fatal and nonfatal injuries and increase child safety seat use.^{20,24} Rear seating is recommended for children under the age of 13 years as the use of age-appropriate restraints, including child safety seats and belt-positioning booster seats is an evidence based effective measure.²⁵ Multifaceted community booster seat education campaigns can significantly increase the use of child booster seats.^{26–29}

- Improving visibility of road users

Seeing and being seen are fundamental prerequisites for the safety of all road users. A great deal of studies have shown that fluorescent materials in yellow, red and orange colours improve detection and recognition in the daytime, while during night-time visibility, lamps, flashing lights and retro reflective materials in red and yellow colours are recommended.^{30–32} Retro reflective materials arranged in a 'biomotion' configuration also enhance recognition. Increasing the use of reflective or fluorescent clothing, white or light coloured helmets, and daytime headlights³³ are simple, cheap interventions that could considerably reduce motorcycle crash related injury and death.⁹

- Drinking and driving

Impairment by alcohol is an important factor influencing both the risk of RTIs, as well as the severity of those injuries. The scientific literature and national road safety programmes concur that a package of effective measures is necessary to reduce alcohol related accidents and injuries.¹ Blood alcohol limits of 0.05 g/dl for the general driving population and 0.02 g/dl for young drivers are generally considered to be the best practice at present. Laws that establish a lower legal limit for blood alcohol content for younger or inexperienced drivers than for older, more experienced drivers is also recommended.³³ There is a statistically significant reduction of 9% in the number of fatal crashes where these policies are implemented and of

7% in all kind of accidents. Alcohol not only increases the chances to be involved in a crash but also the probability of sustaining more severe injuries.

- Speeding

There is strong evidence showing that people exceeding the speed limits have more chances to be involved in severe road traffic crashes. There is a statistically significant increase in the number of fatal crashes of about 26% (CI: 24% – 28%) with a mean change of 15 km/h in the speed limit. Speed limits are an indicator of the adequate speed to negotiate a particular segment of the road.⁹

The control of vehicle speed via speed detection devices can prevent crashes. In recent years, speed cameras have been extensively introduced for speed enforcement, since they create the perception that police can be everywhere. Speed cameras, radars and laser devices are effective interventions in reducing road traffic collisions and related casualties.³⁴ As far as the use of mobile speed cameras,³⁵ it was found that the route-based method is the best way to measure effectiveness at distances up to 500 meters and this method demonstrates a 51% reduction in injurious crashes.

Information and education of road users can improve knowledge about the rules of the road, the purchase of safer vehicles and equipment, as resulted from the implementation of community or school based related programs.³⁶⁻³⁹

According to available scientific evidence⁴⁰ pedestrian safety education can result to improvement of children's knowledge and can enhance observed road crossing behavior; still it is unknown whether this approach reduces also the risk of pedestrian motor vehicle collisions and injury occurrence. Moreover, there is evidence that safety knowledge and observed behavior declines with time, suggesting that safety education must be repeated at regular time intervals. In general, most programs providing highway safety education do not work in isolation – they need to be linked or used in combination with other measures.

5. CONCLUSION

RTI constitute the first cause of unintentional injury death in the European Union (EU). Nevertheless, research has shown that a large number of effective measures aiming to reduce the risk of RTI, implemented not only at a national or community level but also at an individual level, already exist. Some of the practices that according to the literature are found to be effective and therefore strongly

recommended are the following:

- For drivers

- Minimize distractions while driving: avoid using a mobile phone, drinking, smoking, or eating.
- Drinking and driving don't mix. After drinking alcohol, use public transport or have a designated driver. If you go out with others, decide beforehand who will drink non-alcoholic beverages and make sure everyone gets home safely.
- Bear in mind that fatigue and lack of sleep slow your reactions and increase your risk of injury. On long trips, take regular breaks, at least a 15-minute break every two hours.
- Follow road traffic rules, adapt your speed to given circumstances and maintain a safe distance from the vehicle in front of you. Remember that you are in charge of a powerful machine that can injure and kill vulnerable road users (e.g. pedestrians, motorcyclists, cyclists, horse riders).
- Stay calm and don't let yourself be provoked by other road users, don't drive aggressively.
- Adapt your driving to the road and weather conditions.
- If you are a new driver, consider taking a more experienced driver with you.

- For road users

- Make sure you know and follow all road traffic rules.
- Wear your seat belt on all trips, including short trips. Make sure that everyone wears a seat belt in your car, both in the front and rear seats and remember that seat belts must be used even if your vehicle has airbags.
- Always put children in the back. Learn the regulations applying to children – they need an age- and size-appropriate car restraint or booster seat that is properly fitted in the vehicle – read the instructions provided by the manufacturer.
- Always wear a helmet when you ride a motorcycle, bike, or horse. Make sure that it meets safety standards. Helmets might be useless if they are not the correct size and worn in the correct position. Make sure your children's helmets are properly adjusted.
- Wear light coloured, fluorescent or reflective clothing

when you ride a motorcycle, bike or horse. Use your lights to be seen as well as to see.

- As a pedestrian, try also to be visible. Walk on pavements and use zebra/pelican crossings if available. Face oncom-

ing traffic when walking on the side of the road.

- Teach your children how to cross the road safely and practice with them in real life situations. Bear in mind that you are a model for your children.

ΠΕΡΙΛΗΨΗ

Μήνυμα 1: «Οδηγείτε με ασφάλεια»

Μήνυμα 2: «Φροντίστε για την ασφάλειά σας ως χρήστης του δρόμου»

M. SEGUI-GOMEZ,^{1,2} F.J. LOPEZ-VALDES,¹ A. ΤΣΙΡΙΓΩΤΗ,³ Α. ΝΤΙΝΑΠΟΓΙΑΣ³

¹European Center for Injury Prevention, Department of Preventive Medicine and Public Health, Medical School, University of Navarra, Pamplona, Spain, ²Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, US, ³Κέντρο Έρευνας και Πρόληψης Ατυχημάτων (ΚΕΠΑ), Εργαστήριο Υγιεινής, Επιδημιολογίας και Ιατρικής Στατιστικής, Ιατρική Σχολή Πανεπιστημίου Αθηνών

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Τα τροχαία ατυχήματα αποτελούν την πρώτη αιτία θανάτου από ακούσιο τραυματισμό στην Ευρωπαϊκή Ένωση. Στην Ευρώπη των 25, περίπου 43.000 άτομα πεθαίνουν ετησίως από τροχαία ατυχήματα. Παρόλ' αυτά, τα τροχαία καθώς και οι συνέπειες αυτών μπορούν να προληφθούν εάν υιοθετηθούν κατάλληλες πρακτικές, πολιτικές, στρατηγικές και κανόνες οδικής ασφάλειας. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των τροχαίων ατυχημάτων στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα τροχαίων ατυχημάτων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών.

Λέξεις ευρητηρίου: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, τροχαία ατυχήματα, οδηγοί, πεζοί, ευάλωτοι χρήστες του δρόμου, πρόληψη, οδική ασφάλεια

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41. *Corresponding author:*
 Maria Segui-Gomez, European Center for Injury Prevention, Department of Preventive Medicine and Public Health, Medical School, University of Navarra, Irunlarrea 1, despacho 2500, 31080 Pamplona, Navarra, Spain
 e-mail: msegui@unav.es

REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 3: “Prevent falls”

Older people as well as young children below the age of four are the two most vulnerable age groups for falls, particularly inside and around the house. The consequences of an accidental fall injury range from a single fracture to death, but even a single fracture, may cause lifetime disability and require lengthy and costly rehabilitation. This paper aims: (a) to describe the magnitude and the socio-economic burden of falls related injuries in the countries of EU, (b) to outline underlying risk factors and (c) to present evidence-based preventive practices that reduce the likelihood of falls occurrence. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention. The major focus of the respective ECAI section is dedicated to older people and children's safety given that these two groups are the most vulnerable for falls injuries.

1. DEFINITION

The Prevention of Falls Network Europe Consensus defined a fall as “an unexpected event in which the participant comes to rest on the ground, floor, or lower level”.¹ This definition is broader than the one previously suggested by the Kellogg International Work Group on the Prevention of Falls by the Elderly, that explicitly excluded consequences of violent blows, loss of consciousness, sudden onset of paralysis such as in stroke or an epileptic seizure.²

PREVENTING FALLS AMONG OLDER PEOPLE

2. MAGNITUDE OF THE PROBLEM

Approximately 30% of persons 65 years of age and above experience one or more falls every year while for persons aged 80 year or more, this percentage rises to 50%. About 20% of these falls require medical intervention, and 5% of them result in a fracture or require hospitalization.³ Treatment of hip or other fractures as well as of the remaining potential consequences of unintentional falls in older people has a heavy economic impact on health services.⁴ Among community-dwelling older people, falls are a strong predictor of subsequent nursing home admission.⁵ Half of deaths due to injury in older people are a consequence of a fall,⁶ resulting in about 40,000 fatalities each year in

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E. Negri

*Istituto di Ricerche Farmacologiche
'Mario Negri'*

Μήνυμα 3: «Προλάβετε
τις πτώσεις»

Περίληψη στο τέλος του άρθρου

Key words:

Accidental falls
Children
European Code Against Injuries
Frail older people
Injury Prevention

the EU. Moreover, even if a fall does not result in injury, it can have important psychological consequences, inducing fear of falling and further reduction of daily activities and quality of life in older people.

There are large differences in falls mortality within EU countries, with a 10-fold variation between the highest rates observed in Hungary and the Czech Republic, and the lowest rates in Bulgaria, Spain and Greece.⁷

3. RISK FACTORS

The majority of falls in older people are not due to a single well-identified cause, but rather to the combination of several interacting factors.⁸ The ability to cope with the challenges posed by the environment depends on the subject's physical abilities. In those individuals with particularly poor physical abilities, a fall can occur even in absence of a clearly identifiable environmental challenge. On the contrary, in subjects with good physical abilities, only extreme environmental challenges generally result in a fall.^{9,10} Several risk factors for falls have been identified and they have been broadly classified in intrinsic and extrinsic.¹¹⁻¹⁴

(a) Intrinsic risk factors include:

- psycho-social and demographic factors (e.g. history of

Age adjusted mortality rates due to fall injuries per 100,000 among elderly in the EU-27 and EEA³
(data for Cyprus and Liechtenstein are not available)

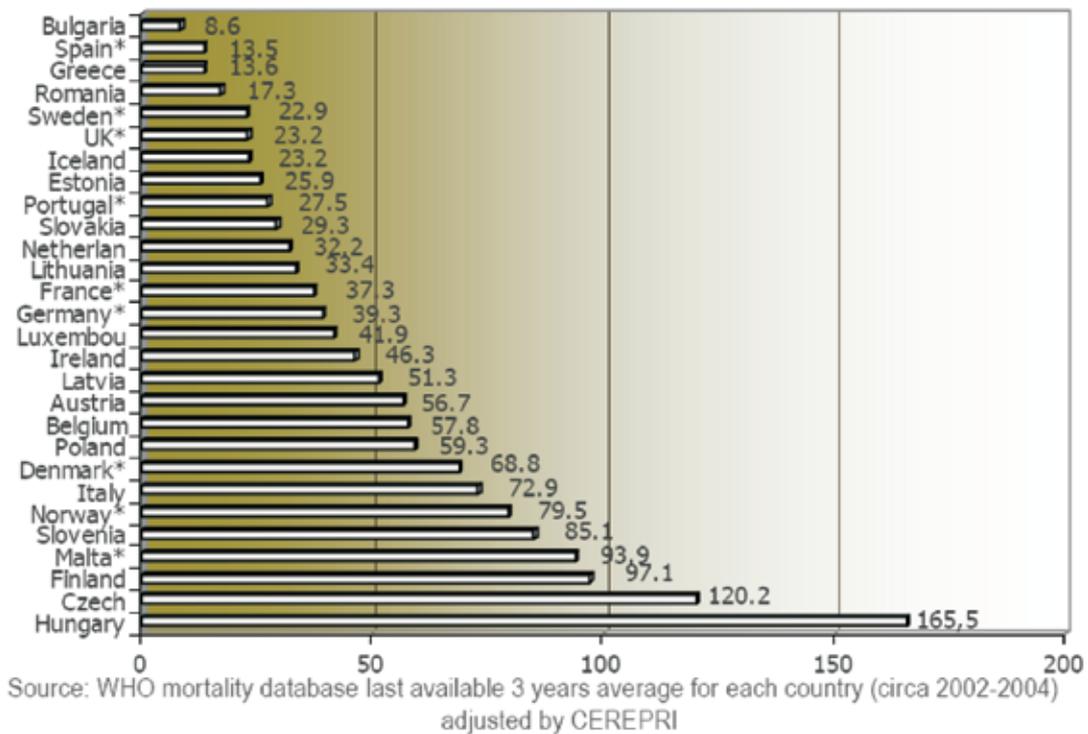


Figure 1. Falls mortality rates among elderly have been declining between the early 1990's and the early 2000's (Petridou et al, 2008).⁶

falls, older age, disability and functional impairment, living alone, inactivity)

- balance and mobility factors (e.g. impaired stability, inadequate response to external perturbation, impaired gait and mobility)
- sensory and neuromuscular factors (e.g. visual impairment, muscle weakness, low reaction time, hearing impairment)
- medical factors (e.g. impaired cognition, depression, cerebrovascular diseases, urinary incontinence, rheumatic disease, leg problems, osteoporosis, dizziness and vertigo, blood pressure problems, respiratory diseases, malnutrition, diabetes, cardiac diseases)
- use of medications (e.g. use of multiple medications, psychoactive drugs such as benzodiazepines, hypnotics, antipsychotic, and antidepressants, antihypertensive drugs)

(b) Extrinsic risk factors include:

- environmental hazards (poor lighting, slippery floors, uneven surfaces, loose rugs etc.)

- inappropriate footwear or clothes
- inappropriate visual correction
- lack or inappropriate walking aids

The risk of falling depends also on how much a person decides to be exposed to environmental challenges, e.g choice to practice certain types of physical activity or not.¹⁴

4. EFFECTIVE PREVENTIVE PRACTICES

Several randomized controlled trials on the prevention of falls have been conducted testing the efficacy of many different countermeasures. In 2003 a review conducted by the Cochrane Collaboration systematically evaluated the evidence of effectiveness of these interventions.¹⁵ Given the multifaceted etiology of falls it is not surprising that the most effective interventions are multifactorial interventions aimed at eliminating or reducing exposure to several risk factors simultaneously^{12, 15-19}

A history of falls is a strong predictor of future falls.^{12,13} An older person - particularly if he/she experiences a fall or is a recurrent faller - should undergo a comprehensive

evaluation in order to identify, and, where possible, to eliminate existing risk factors.

- Modification of the home environment

Many falls among older people occur within the home. Several home hazards have been identified that may increase the risk of falling. Modification of the home environment can render the home a safer place. Changes may include improvement of indoor lighting, removal of doormats and loose rugs, correction of slippery floors, installation of handrails on stairs and in the bathroom, changes to the furniture disposition, changes to the kitchen workplace etc. Intervention programs aiming at eliminating hazards in the home environment have shown to be effective in high-risk groups, e.g. subjects with a history of falls, with limited mobility or visual impairment or as a component of multi factorial interventions.^{10,15,20}

- Footwear characteristics

Studies have shown that going barefoot, wearing socks or slippers are all directly associated with the risk of falling, as well as wearing shoes with high heels, small contact area or no fixation.²¹⁻²⁴

- Exercise

Regular exercise and improvement in cardiopulmonary fitness is recommended for all age groups to prevent overweight, obesity and cardiovascular diseases. In older people, programs aimed at improving muscle strength and balance retraining and Tai Chi exercises have been shown to reduce falls.^{15,25} An exercise component has been recommended as part of a multi-factorial intervention to reduce falls.¹² Although untargeted exercise may have other health benefits, for the prevention of falls individually targeted strength and balance training appears to be the most effective type of exercise.¹⁵ Yet, there seems to be some indication that single exercise programs have also some beneficial effect.

- Medication review

It has been shown that older people who receive multiple medications are at higher risk of falls with the risk increasing with an increasing number of medication used.^{11,13} On one hand, intake of several drugs by itself is an indicator of poorer health, which is *per se* a risk factor for falls.²⁶ On the other hand, side effects or interactions of these drugs may also increase the risk of falling.¹¹ Psy-

choactive drugs (sedative/hypnotics, antidepressant, anti-psychotics) were associated with risk of falling in several studies,²⁷ as well as certain cardiovascular medications.²⁸ Frequently the benefits of these medications outweigh the risks. However, it is not uncommon for older people to take unnecessary medications, often without informing their health provider. Periodical review of medications used by the health provider is strongly recommended as a means to reduce fall risk.

- Visual correction

Impaired vision is an independent risk factor for falls and fractures.²⁹ Wearing inappropriate or multifocal glasses has been associated with an increase in fall risk.³⁰ This is the reason why, an eye examination and visual correction has been included in several multi factorial interventions for falls prevention.¹⁵ It has also been shown that eye cataract surgery improves visual disability and reduces the rate of falling.³¹

PREVENTING FALLS AMONG CHILDREN

2. MAGNITUDE OF THE PROBLEM

Within the Global Burden of Disease Project, it was estimated that in 2002 approximately 37,000 children died in the world as a consequence of a fall.³² Falls were among the 24 diseases with the largest environmental fraction, estimated around 26% in developed countries.³³ Although in developed countries falls comparatively do not cause a high number of fatalities, they are the leading cause of hospital visits and admissions among children.³⁴

3. RISK FACTORS

A variety of factors that interact dynamically contribute to the occurrence of fall-related injuries in children, which are generally classified into the following major categories:

- Falls from heights (beds, windows, roof, balconies)

The majority of fall-related deaths are associated with falls from heights, mostly from three stories or higher, while falls from one or two stories are generally non fatal, but may cause serious injuries. Smaller children tend to fall from windows, while older ones from dangerous playground areas, such as rooftops and fire escapes.

Falls from beds represent a non-negligible source of injuries. A high proportion of injuries derived from a fall

from bed occur in children below the age of 6 years. For this reason it has been recommended to avoid placing younger children in the upper bunk. Injuries may occur during sleep or leisure activities. Falls from bunk beds have more serious consequences than falls from conventional beds. Use of side rails and removal of bed ladder from bunk beds when not in use may reduce the risk of falls.³⁵⁻³⁷

Narrowly spaced railings on balconies, installation of window guards (preferably operable ones that can be removed in case of fire), avoidance of placing furniture near windows and discouraging children from playing in dangerous areas can prevent falls from heights.³⁸ An intervention aimed to reduce falls from windows, including mass media and individualized counseling and free distribution of window guards in high risk areas of the US, reported a 35% decrease in mortality due to falls and a 31% decrease in reported falls compared to the period before the intervention.³⁹

- Falls associated with baby walkers

Baby walkers are widely used in Europe⁴⁰ although there is evidence that they increase the risk of injuries, including falls, poisoning and burns.⁴¹⁻⁴⁴ Falls from heights, and stairs in particular, are the most frequent cause of baby walker-related injuries.⁴² Baby walkers do not provide developmental benefits. If anything, some studies reported a delay in the onset of walking in children using baby walkers.⁴⁵ For these reasons, a ban on baby walkers' manufacture and sale has been recommended.^{44,46} In many cases, care takers of injured children were not aware of the dangers of baby walkers. A cluster randomized controlled trial conducted in the UK showed that an educational package delivered by midwives and health visitors was effective in reducing baby walkers' possession and use.⁴⁷

- Falls from nursery furniture

Another important cause of fall-related injuries in infants are falls from nursery furniture such as high chairs, bouncy chairs, cribs and cradles, push chairs and changing tables.⁴⁸⁻⁵⁴ Lack of availability or use of child restraints are frequently causes of falls. High chairs, bouncy chairs, push chairs and changing tables should have pre-installed appropriate child restraints. These should always be used and correctly fastened in all products providing them.^{48,49} For bouncy chairs (or car seats used in the same way), most injuries are caused by fall of the chair from elevated surfaces (e.g. tables, kitchen worktops or other furniture). For this reason, bouncy chairs should not be placed on

raised surfaces.⁵²

- Falls from playground equipment

Falls and other injuries from public and private playground equipment frequently result in injuries among children.^{53,55} Climbing equipments, trampolines, swings and slides for younger children, have been identified as particularly dangerous.^{56,57} Height of the equipment and inappropriate (non impact-absorbing) surfaces are the major identified risk factors⁵⁸⁻⁶¹ along with suboptimal supervision.⁵⁵

A study from Greece estimated that 50% of playground injuries could be avoided by structural and equipment changes, and further reduction could be achieved by closer supervision and the adoption of a few other simple measures.⁵⁵ In Cardiff, a partnership between health services and local authority led to environmental changes in playgrounds, including improvement of surfaces and substitution of monkey bars with other climbing equipments. The injury rate decreased from 0.72 in the period before the changes to 0.30 after the changes were adopted.⁶² Similarly, an intervention aimed at replacing unsafe playground equipment from elementary schools in Toronto⁶³ led to a 30% (95% CI: 22%-38%) reduction in children's injury rates.

In New Zealand an intervention to encourage implementation of playground safety standards through engineer visits and support in implementing changes led to a reduction of observed hazards in playgrounds, while no general reduction was observed in control schools where only a baseline check and information were provided.⁶⁴ Educational interventions aimed at parents, teachers or children led to improvements in safety standards,⁶⁵ children supervision,⁶⁶ or decreases in children's risk taking behaviors.^{67, 68}

4. EFFECTIVE PREVENTIVE PRACTICES

Preventing falls in children requires the use of a variety of strategies. Numerous interventions aimed to improve home safety or reduce childhood injuries in general included measures directed to the prevention of falls-related injuries. A systematic review evaluating the effectiveness of interventions on home safety education and provision of safety equipment in increasing home safety practices or reducing child injury rates⁶⁹ found that home safety education was effective in increasing the proportion of families with fitted stair gates, and there was some evidence of effectiveness in reducing use or possession of baby walkers.

Supervision is one of the strongest protective factors

for many injuries within the home environments and outdoors. Dedoukou et al⁵⁴ pointed out that young children need to be supervised carefully by adults, who can choose the appropriate/safe pieces of equipment and realize all necessary changes for the safety of infants. Considerable success has been reported with modification of the physical environment⁷⁰ according to recommendations for prevention of injuries associated with falls from tables, benches, and counters and include the following: (a) installation of corner protectors on sharp edges on tables, benches, and counters, (b) check of glass topped tables to ensure that they are made of safety glass of sufficient strength to resist a fall by an adult, (c) placing of furniture in appropriate locations considering traffic flow within rooms, (d) avoidance of placing youth on benches in bouncers in particular and (e) discouragement of climbing onto tables and benches.

Moreover, because most of the severest and fatal fall-related injuries among children are falls from heights, in particular falls out of windows, window locks are shown to be an effective preventive strategy.⁴¹ For example Barlow et al⁷¹ reported a 96% reduction in fall admissions after the regulation in 1979 that required window bars. Child safety stair gates at the top and bottom of stairs are a useful intervention against stair falls for infants and toddlers.⁷² Gates can also be used to prevent children from entering particularly hazardous areas, such as the kitchen area.

5. CONCLUSION

Reducing fall injuries among older people and children living in the European Union to incidence rate of the member state with the lowest rate could prevent thousands of deaths. As most of the accidental injuries due to falls occur in predictable ways, they can be easily prevented, especially if the practices address specific risk factors such as age, gender, social characteristics and geography.

- Effective practices for older people include a combination of practices. More specifically the following practices are strongly recommended:

- Reduce your risk of falls at home, e.g. by having good lighting; handrails on both sides of the stairs and in the bathroom; non-slip bath mats, and rugs that don't slip on the floor. Move obstacles away from walking areas and store things within easy reach.
- Have a home safety assessment from a safety specialist and make the recommended changes to improve your home safety.
- Wear shoes with firm non-slip soles and avoid loose-fitting footwear that could cause you to trip.
- Exercise regularly to keep yourself fit and help you to reduce the risk of falling. Consider taking formal strength and balance exercises to maintain muscle and bone strength and to improve your balance and flexibility; bear in mind that these exercises can be tailored to your specific needs.
- Have periodic reviews of your medication and follow your health care provider's instructions; remember that some medications can increase your risk of falls.
- Have regular eye tests and correct your vision if needed.

For children the most important preventive measure is parental education which includes recommendations for attentive child supervision and several home modification practices such as window locks, safety straps and stairs' barriers etc. More specifically parents should:

- Reduce hazards in the home by using window locks and safety gates or other barriers at the top and bottom of stairs. Keep chairs, cribs and other furniture away from windows. Remember baby walkers can be dangerous and are not recommended. Use safety straps on high chairs, changing tables and all products when supplied.
- Always supervise children when using playground equipment; Make sure they play on appropriate surfaces and with the age-appropriate equipment.

ΠΕΡΙΛΗΨΗ

Μήνυμα 3: «Προλάβετε τις πτώσεις»

E. NEGRI

Istituto di Ricerche Farmacologiche 'Mario Negri'

Αρχεία Ελληνικής Ιατρικής 2008, 25(Συμπλ 1):19–26

Οι ηλικιωμένοι καθώς επίσης και τα παιδιά κάτω των τεσσάρων ετών είναι οι δύο πιο ευπαθείς ομάδες στους τραυματισμούς από πτώσεις κυρίως μέσα ή γύρω από το σπίτι. Οι συνέπειες των ακούσιων τραυματισμών από πτώσεις μπορεί να κυμανθούν από ένα κάταγμα μέχρι και τον θάνατο. Αλλά ακόμα και ένα κάταγμα μπορεί να προκαλέσει δια βίου αναπηρία ή να χρειαστεί εκτενή και ακριβή αποκατάσταση. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των ατυχημάτων που προκαλούνται από πτώση στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα πτώσεων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών. Κύρια έμφαση του σχετικού πεδίου του Ευρωπαϊκού Κώδικα Κατά των Ατυχημάτων έχει δοθεί στους ηλικιωμένους και στα παιδιά δεδομένου ότι οι δύο αυτές κατηγορίες είναι οι πιο ευπαθείς για ατυχήματα που οφείλονται σε πτώση.

Λέξεις κλειδιά: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, ακούσιες πτώσεις, Ευπαθείς ηλικιωμένοι, Παιδιά, Πρόληψη ατυχημάτων

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Corresponding author:

E. Negri, Istituto di Ricerche Farmacologiche 'Mario Negri', Via Eritrea 62, I-20157 Milan, Italy, Tel: +39 02 390141
 Fax: +39 02 3546277
 e-mail: evanegri@marionegri.it

REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 4: “Guard against accidental poisoning”

Poisoning is the third commonest cause of unintentional injury death in the European Union. In 2000, an estimated 315 000 people worldwide died as a result of unintentional poisoning. This paper presents (a) the magnitude and the socio-economic burden of this epidemic in the countries of the European Union (EU) Region, (b) the risk factors that are associated with this type of injuries and (c) the evidence based preventive practices that reduce the likelihood of poisoning occurrence. Some of these measures are therefore included in the European Code Against Injuries aiming to raise public awareness regarding injury prevention. Although poisoning involves all age groups, children under the age of 5 and older people above the age of 65 are at greater risk; thus a particular attention has been given to these two age groups.

DEFINITION AND BURDEN OF POISONING

The World Health Organization defines poisonous substances as: “substances which, when ingested, inhaled, or absorbed, or when applied to, injected into, or developed within the body in relatively small amounts may, by their chemical action, cause damage to structure or disturbance of function.”¹ The European Code Against Injuries focuses on acute unintentional poisonings in childhood and late adulthood. Food poisoning, allergic reactions, chronic poisonings such as lead poisoning and those undertaken as a deliberate act of self-harm are excluded.

Within the European Union, medicinal products are responsible for the majority of poisonings in childhood.²⁻⁶ Household products, are the second most common group of agents responsible for childhood poisoning.²⁻⁶ Other agents such as plants, alcohol and carbon monoxide are rarer causes of childhood poisoning.²⁻⁵ The agents most commonly involved in medicinal poisoning are analgesics, anxiolytics and antidepressants,²⁻⁴ whilst those most commonly involved in poisoning from household products are detergents, petroleum products and pesticides.²⁻⁶

MAGNITUDE OF THE PROBLEM

There is likely to be considerable under reporting of poisoning mortality and morbidity. This may arise through

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2008, 25(Συμπλ 1):27-33

D. Kendrick

*Institute of Clinical Research, University
of Nottingham, UK*

Μήνυμα 4: «Προφυλαχθείτε
από τις δηλητηριάσεις»

Περίληψη στο τέλος του άρθρου

Key words:

European Code Against Injuries;
drowning;
prevention

difficulty in ascertaining the intent of poisoning, lack of access to medical care, attribution of symptoms to other causes or variable levels of recording mortality and morbidity data in different countries.

Poisoning in the WHO European region accounted for approximately 107,000 deaths in 2000, which comprised one third of all poisoning deaths worldwide. 2.3 million DALYs were lost due to poisoning in the WHO European region in 2000, comprising 28% of the total DALYs lost worldwide due to poisoning.⁷ Poisoning is the sixth commonest cause of unintentional injury death for children aged under 15 years in Europe.⁸

Poisoning is a particular problem in low and middle income countries, since more than 94% of poisoning deaths worldwide occur in low and middle income countries.⁷ In the WHO European Region the death rate from poisoning in low and middle income countries (21.5/100,000 population in 2000) is almost seventeen times higher than that in high income countries (1.3/100,000 population in 2000).⁷ Males in the low and middle income countries of the WHO European Region account for the highest number of DALYs lost due to poisoning worldwide.⁷

The importance of poisoning as a cause of mortality and morbidity varies by age. In low and middle income countries in the WHO European region it is the 9th most common cause of death in children aged 0-4 years and the

5th in children aged 5-14 years. Poisoning is not amongst the 15 most common causes of death in childhood in high income countries in the European region.⁷ In terms of burden of disease, poisoning is responsible for the 12th greatest loss of DALYs for all causes in children aged 0-4 years in low income countries in the European region. In high income countries poisoning does not fall within the top 15 causes of DALYs lost for any age group.⁷

Poisoning mortality rates vary considerably between countries in the European Union, as shown in figure 1 which presents poisoning mortality rates for children aged 0-14 years for the 27 members of the European Union per 100,000 population for the latest 3 years for which data were available.

HEALTH SERVICE USE

Poisoning accounts for considerable health service utilisation. In the UK in 2002 more than 31,000 children aged 0-14 years attended Emergency Departments following a poisoning.⁹ In the UK approximately one third of childhood poisoning attendances result in admission to hospital.⁵ Data from Spain suggest that 15% of Emergency Department

attendances result in hospital admission and 1.5% result in admission to intensive care units.⁴ There is evidence that the number of Emergency Department attendances and hospital admission rates for poisoning amongst children are reducing in the UK.^{5,10} Such declines may represent a reduction in the incidence of poisoning, but may also reflect changes in medical management, hospital admission policies or increased availability of community based services providing advice following poisoning incidents.

FINANCIAL BURDEN

There are little data available regarding the financial burden of poisoning. Data from the USA estimated a cost per case for poison-related hospitalisations of \$4968 in 1995,¹¹ the total medical costs of poisoning to be \$2236 million and the lost productivity costs to be \$23,707 million in the USA for the year 2000.¹²

RISK FACTORS

Demographic risk factors

Poisoning is predominantly a problem in young

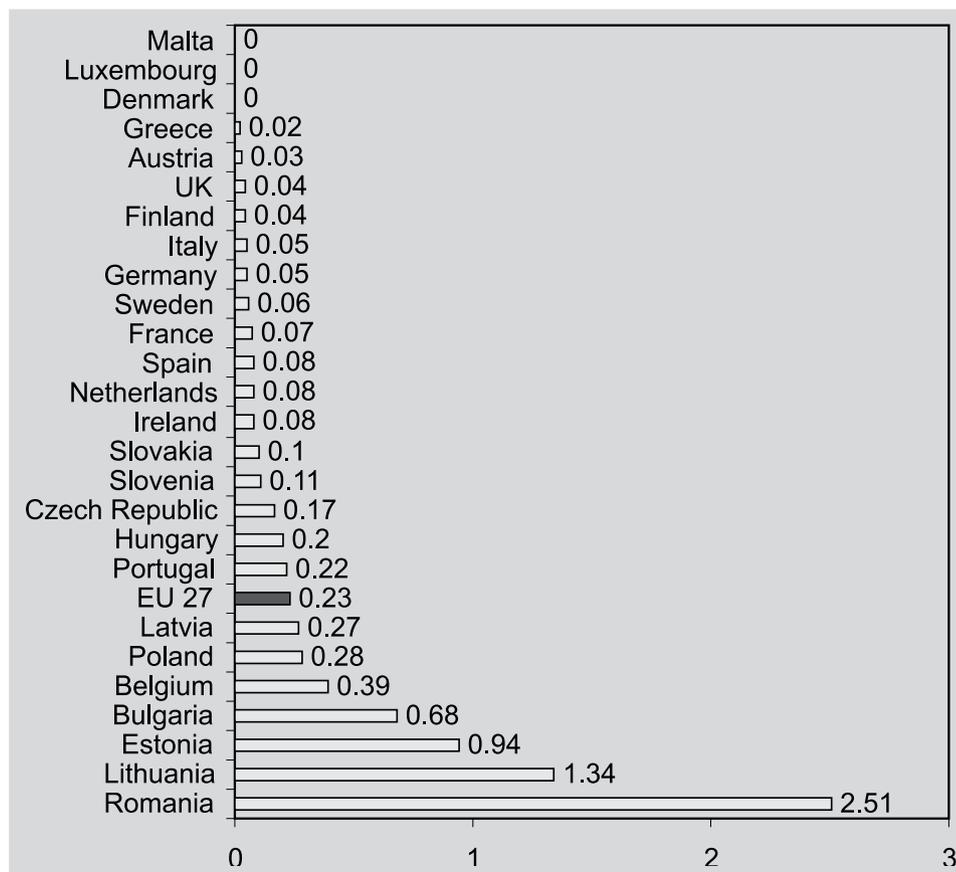


Figure 1. Mortality rates due to poisoning for children aged 0-14 years (per 100,000 population) for the latest 3 years for which data are available (circa 2002-2004) in the European Union (EU-27)*.

*Data for Cyprus are not available.

children.^{4,6,13,14} The majority of medically attended poisonings occur between the ages of 1 and 4 years, with the peak incidence in the second year of life.^{4,6,14} Boys have higher mortality rates than girls in the WHO European Region, with a greater differential in gender mortality rates between older children (5 to 14 years) than younger children (0–4 years).⁷ Boys also have higher hospital admission rates during childhood than girls.^{2,6,10}

A range of social factors have been associated with increased risk of childhood poisoning. These include social deprivation,^{2,13,15} parental unemployment,¹⁶ single parenthood,¹⁷ young maternal age,¹⁷ lower parental educational level,¹⁵ and recent house moves.¹⁸ Work from Canada suggests that pregnancy increases the risk of iron poisoning, with a doubling of the risk of hospital admission for iron poisoning in the six months before and after the birth of a sibling.¹⁹

In terms of rurality, there is little work comparing the incidence of poisoning between urban and rural areas in Europe. Data from Australia suggests poisoning rates are higher amongst children aged 0–4 years residing in rural and remote areas than those for children in metropolitan areas.^{20,21}

Environmental risk factors

Numerous studies have demonstrated that children are exposed to unsafe storage of possible poisonous products in the home.^{6,22–25} Transferring products from original containers,^{6,15,26} not returning substances to their usual storage place after use,^{27,28} use of non child resistant containers²⁶ and improper closure of child resistant containers²⁶ have all been associated with childhood poisoning. Children's exposure to medicines within the home is also increased by failure to dispose of expired or unused medicines.^{29,30} Recent qualitative work suggests that parents' choice of poison prevention strategies often occurs in response to the child's behaviour and interests, making the child vulnerable to poisonings through changes in the home environment, their stage of development or changes in parental supervision.³¹

Behavioural risk factors

Depression, stress or distress in mother or family is associated with an increased risk of childhood poisoning,^{17,18,32,33} as those situations affect child behaviour.^{17,25,33} Imitative child behaviour, curiosity and the ability to open child resistant containers have been identified as antecedents to poisoning.^{25,26} Absence of a caregiver has also been as-

sociated with childhood poisoning.^{27,34}

EFFECTIVE PRACTICES FOR POISONING PREVENTION

Primary prevention of poisoning: legislation on packaging

Legislation requiring the use of child resistant closures on containers for medicines has been found to be effective in reducing childhood poisoning deaths^{35,36} and hospital admissions for poisoning in childhood.³⁷ Legislation requiring the use of blister packs or strips has been associated with a significant reduction in poison control centre calls and with mortality for iron ingestion in children younger than six years old.³⁸ One study from South Africa found a lower incidence of kerosene ingestion in areas that had received free child resistant kerosene containers, than in a control area without a kerosene container distribution programme.³⁹ The cost effectiveness of child resistant containers for kerosene in low and middle income countries has been estimated at between \$61 (3% discounting rate) and \$96 (6% discounting rate) per DALY.⁴⁰

However child resistant packaging is not always child-proof. Some CRCs are difficult for adults to open, and for this reason they may either not be closed properly or products may be transferred to containers without child resistant closures. Even when child resistant closures have been properly closed, some children can still open them.²⁶ It is possible that the effectiveness of child resistant packaging could be further increased by improved design in order to facilitate easier opening for adults and by storing products in child resistant packaging out of reach of children.²⁸ Further evaluation of the impact of such strategies is required.

Reducing the attractiveness of products

There is little, but conflicting evidence evaluating the effect of changing the design of packaging and labels on the attractiveness of products to children.^{41,42} There is also some evidence that changing the colour of products, to prevent confusion with drinks, has been associated with a reduction in kerosene poisonings in Australia.⁴³

Safe storage of potentially poisonous products

Although unsafe storage of products has been identified as a risk factor for poisoning in many studies, few studies have examined the effect of safe storage of products on

the incidence of poisoning. A recent systematic review and meta-analysis of randomized controlled trials, non-randomized controlled trials and controlled before-and after studies found only 3 studies which measured the incidence of poisoning. All 3 studies provided poison prevention education and 2 provided cupboard or drawer locks. There was a lack of evidence that the interventions were effective in reducing rates of poisonings (OR: 1.03; 95% CI: 0.78-1.36), but the analysis was underpowered due to the small number of studies and the small number of person years.⁴⁴

The same systematic review and meta-analysis found strong evidence that home safety education which in some cases included the provision of cupboard, drawer or cabinet locks, was effective in increasing safe storage of medicines (OR: 1.57; 95% CI 1.22-2.02) and cleaning products (OR: 1.63; 95% CI 1.22-2.17). Providing free or subsidised safety equipment with education tended to produce a greater effect than providing education alone. The number needed to treat to result in one additional family storing medicines safely was 14 (95% CI: 10-29) and storing cleaning products safely was 9 (95% CI 6-21).⁴⁴

Safe disposal of unused or out-of-date medicines

Many families keep unused or out-of-date medicines at home²⁹ and many dispose of such medicines either by throwing them out in household waste or by putting them down the sink or toilet.^{29,30,45} In recent years there has been increasing concern about the effect of such disposal of medicines on the environment.⁴⁵⁻⁴⁷ Safe disposal schemes such as returning medicines to pharmacies^{48,49} have been established, but their impact on childhood poisoning requires evaluation.

Increasing poison prevention knowledge

Several studies have demonstrated that school-based educational sessions can improve children's poison prevention knowledge.^{50,51} However, the extent to which such knowledge translates into poison prevention practices or reduces the incidence of poisoning is unclear.

Effective child supervision

Although absence of a care-giver has been associated with childhood poisoning,^{27,34} there are no evaluations of the impact of interventions aimed at improving supervision on childhood poisoning.

Secondary prevention of poisoning: emetic agents

Agents such as syrup of ipecac have been recommended to induce vomiting following poisoning in childhood. However, recent work from the USA suggests it does not reduce Emergency Department use post poisoning or improve other outcomes⁵² and its use is no longer recommended by the American Academy of Pediatrics.⁵³

Bittering agents

Bitter tasting agents have been recommended as additions to household products of mild or moderate toxicity to reduce the quantity of substance ingested by children.⁵⁴ The impact of their use requires further evaluation.^{55,56}

Poison control centres

Poison control centres have been operational in the USA since the 1950s. They provide free telephone advice from toxicology professionals. Callers receive immediate information and treatment advice regarding suspected toxic exposures to drugs, chemicals, plants, and other substances.⁵⁷ They have been demonstrated to be cost-effective in terms of reducing health care resource use in both rural and urban areas.⁵⁷⁻⁵⁹ A cost-benefit analysis from the USA found that poison control centers reduced the number of patients who were medically treated but not hospitalized for poisoning by 24% and the number of hospitalizations by 12% and the average call to a poison control center prevented \$175 in other medical spending (based on costs in 1992).⁵⁷

A recent systematic review and meta-analysis demonstrated that education was effective in increasing the proportion of families who had the Poison Control Centre number accessible (OR: 3.67; 95% CI: 1.84-7.33), and the number needed to treat to result in one additional family having the Poison Control Centre number accessible was only 3 (95% CI: 2-7).⁴⁴

CONCLUSION

Accidental poisoning accounts for approximately 10,000 deaths in the European Union most of them involving young children and older people.⁶⁰ Nevertheless poisoning is preventable and can be avoided. Evidence shows that there are several prevention measures, which are capable to reduce the poisoning incidence especially among children. In brief those measures consist of approaches that combine education, environmental modifications and passive safety

measures in order to prevent the occurrence of poisoning or measures that can be adopted in order to eliminate injury severity or even death in case of accidental poisoning. More specifically the following preventive measures are strongly recommended:

- Keep dangerous substances away from children: use child resistant closures, but remember none of these is 100% child-proof. Store products safely, either locked away or out of reach of children.
- Remember that many products can be potentially dangerous, e.g. household detergents, medicines, and garage items like antifreeze and pesticides. Store these products in their original containers.
- Store food and non-food products separately. Always read the use and storage directions of products. In case of poisoning, read the labels on product containers, which often give important first-aid information.
- Make sure you have an emergency number next to the telephone in case of a suspected poisoning.

ΠΕΡΙΛΗΨΗ

Μήνυμα 4: «Προφυλαχθείτε από τις δηλητηριάσεις»

D. KENDRICK

Institute of Clinical Research, University of Nottingham, UK

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Οι δηλητηριάσεις είναι η τρίτη αιτία θανάτου από ακούσιο τραυματισμό στην Ευρωπαϊκή Ένωση. Το 2000, περίπου 315,000 θάνατοι παγκοσμίως αποδόθηκαν σε δηλητηριάσεις. Αυτή η εργασία παρουσιάζει: (α) την έκταση και τις κοινωνικο-οικονομικές επιπτώσεις που έχουν οι ακούσιες δηλητηριάσεις στις χώρες της Ευρωπαϊκής ένωσης, (β) τους παράγοντες κινδύνου που σχετίζονται με αυτό τον τύπο ατυχήματος και (γ) τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν αποτελεσματικά την πιθανότητα δηλητηριάσεων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων ώστε το κοινό να ενημερωθεί σχετικά με την πρόληψη ατυχημάτων. Παρόλο που οι δηλητηριάσεις αφορούν όλες τις ηλικιακές ομάδες, τα παιδιά ηλικίας κάτω των 5 ετών και τα άτομα ηλικίας άνω των 65 ετών είναι σε μεγαλύτερο κίνδυνο· συνεπώς ιδιαίτερη έμφαση έχει δοθεί σε αυτές τις δυο ηλικιακές ομάδες.

Λέξεις κλειδιά: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, δηλητηριάσεις, πρόληψη

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Corresponding author:

Dr. D. Kendrick, Division of Primary Care, Floor 13, Tower Building, University Park, Nottingham NG7 2RD, UK
e-mail: denise.kendrick@nottingham.ac.uk

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REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 5: “Know the dangers of fire”

Injuries due to burns, fire and flames are one of the leading causes of injury and death among children and older people over the age of 65. Although the most severe outcome of burns is death, accounting for a large proportion of mortality rates in the European Union (EU), burns can also cause permanent physical and psychological disabilities. Thus, raising the public awareness about the relevant risk factors and informing people about proper ways to behave in fire situations may reduce the severity or even the incidence of burn injuries. This paper aims: (a) to describe the magnitude and the socio-economic burden of fire related injuries in the countries of the EU, (b) to outline underlying risk factors and (c) to present evidence based preventive practices that reduce the likelihood of injury due to fire. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention.

1. DEFINITION

According to the International Society for Burn Injuries and the World Health Organization, burns or thermal injuries are defined as the distraction of some or all different layers of cells which form the human skin, which is provoked by close contact with hot liquids resulting in scalds, hot solids resulting in contact burns or flames resulting in flame burns.¹ Respiratory insults resulting from smoke inhalation, are also considered burn injuries.¹ The more recent ICD classification (ICD-10) considers burns and corrosions of external body surface as the result of contact with electrical heating appliances, electricity, flame, friction, hot air/hot gases, hot objects, lighting, radiation, including ultraviolet radiation and chemical substances.²

The severity of burns depends on several factors including age, depth and surface area of the lesion, body region, simultaneous smoke inhalation and previous health-conditions; temperature of the causing factor (flame, hot liquid or solid) and duration of exposure.¹ According to their severity, burns are classified as first degree (erythema), second degree (blisters) or third degree (deep necrosis of

underlying tissue).² In general, the higher the temperature and the duration of the exposure the more severe the skin damage.

The present review focuses on effective prevention measures related to residential burns due to fire and flames as this is the most common type of morbidity and mortality due to burn injuries.^{3,4}

2. MAGNITUDE OF THE PROBLEM

Fire related injuries account for 6% of injury deaths and are responsible for approximately 240,000 fatalities worldwide each year.⁵ Data from the Injury Statistics Portal, a user friendly database providing updated estimates on death data based on WHO statistics, show that approximately 4,500 citizens lose their lives annually due to a fire/flame injury, in the EU-27.⁶ In the USA the annual toll amounts to 2,900⁴ lives, namely mortality rates. Across the EU-27 member states, however, mortality rates for burns vary significantly with low and middle-income countries reporting over 30 times higher mortality rates

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M.E. Bényi¹,
E.G. Manti²

¹National Centre for Healthcare Audit and Inspection, Hungary,

²Center for Research and Prevention of Injuries (CEREPRI), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School

Μήνυμα 5: «Ενημερωθείτε για τους κινδύνους της φωτιάς»

Περίληψη στο τέλος του άρθρου

Key words:

Accident
Burn
European Code Against Injuries
Fire
Injury
Practice
Prevention
Scalds

than those in the high income ones (Figure 1)^{4,5} Indeed, three of the new member states, namely, Estonia, Latvia and Lithuania present the highest mortality rates due to fire and burns, whereas the Netherlands, Luxemburg and Italy the lowest.⁶

Burns are the most disfiguring type of injury and one of the most physically and psychologically devastating forms of trauma.⁷ In many cases the healing process can cause hypertrophic scars and contractures that may lead to functional disabilities.⁸ It has been estimated that fire related burns account for approximately 10 million Disability Adjusted Life Years lost globally each year.⁵

The overall societal costs from injuries due to fires and burns are especially high given that the lesions themselves constitute one of the most expensive types of injuries not

only because of high hospitalization costs but also due to costs resulting from properties' demolition.⁹ According to the American Burn Association approximately 40,000 burn injuries require hospitalization annually, and more than 60% of hospitalized burn patients are admitted to a specialized burn unit.¹⁰ The annual total cost of the damages provoked by residential fires in USA was estimated at \$5 billion.⁴

3. RISK FACTORS

3.1. Demographic risk factors

Age, gender and socio economic status are closely associated with fire related injuries. The age groups mostly suffering burns are children under the age of 5 and older

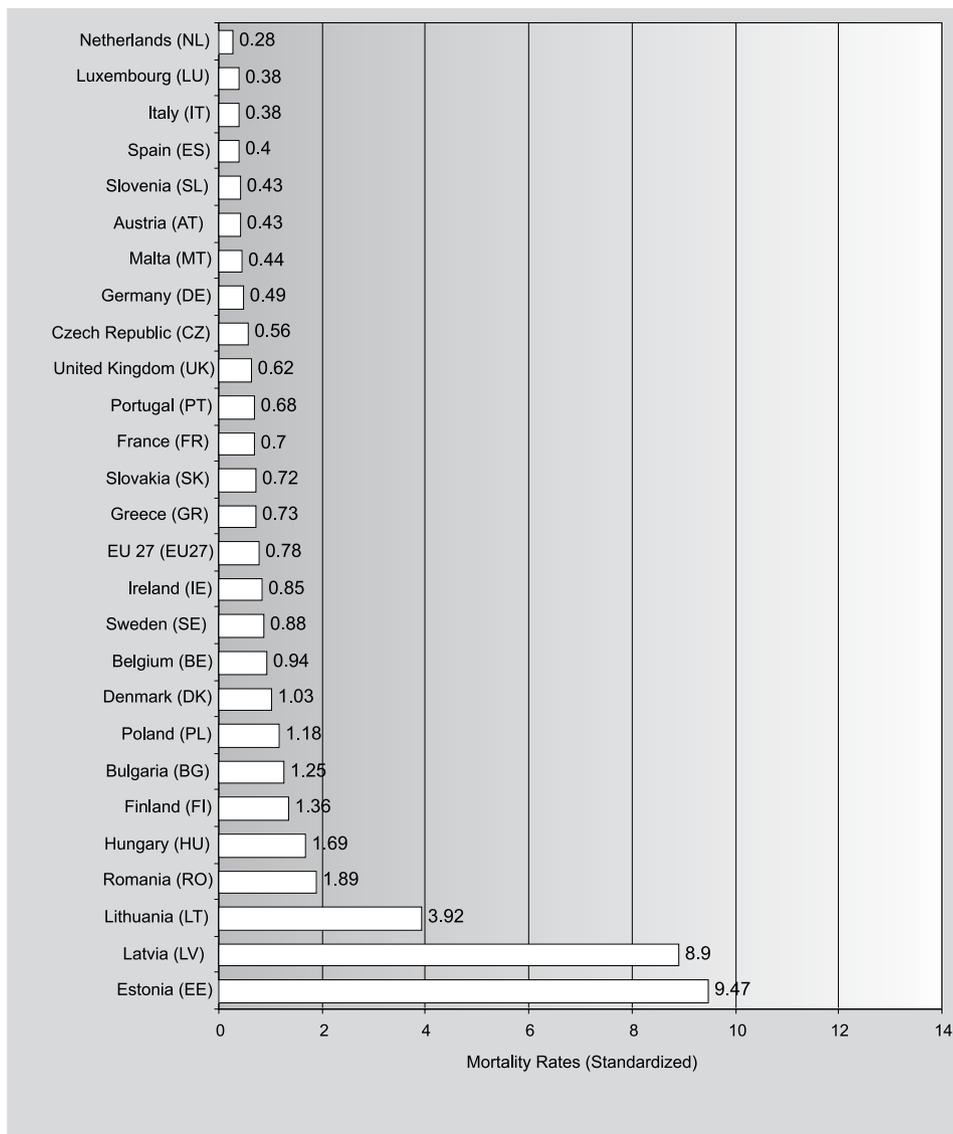


Figure 1. Mortality rates due to fire and burns per 100,000 people by EU member state; average of the last available three years (circa 2002-2004) (Source: WHO mortality database, adjusted by CEREPRI).

people over the age of 65, in particular those over 80 year old, with same age distribution observed in both developed and developing countries (Figure 2).^{6, 11, 12-16} Burns and scalds in Europe are the fifth leading cause of injury death for children¹³ and the fourth leading cause of injury death for people aged over 65 years, accounting approximately for 5% of all types of injuries.⁶ Male gender is the second strongest predictor of high mortality and morbidity due to fires; indeed, more than 60% of fire related injuries occurring among males.^{5,6,15} This might be attributed to the fact that boys tend to explore the environment with less sense of danger and fear. Lastly, socioeconomic adverse conditions such as poverty and segregation are frequently encountered among burn injury victims.¹⁷ Likewise, residing in rural areas and belonging to minority groups are positive predictors of both high morbidity and mortality rates due to fires.^{4,5,15,18,19}

3.2. Behavioural risk factors

Given the dependence of children upon their caretakers, the increased incidence of fire related injuries observed among young children can be possibly attributed to inadequate parental supervision; fire play with matches and lighters was found to account for 42% of all injuries and 62% of deaths in children 0–4 years.^{1,20,21} Serious burn-related injuries occur among children aged 10–14, due to the fireworks, whereas contemporary lifestyles may

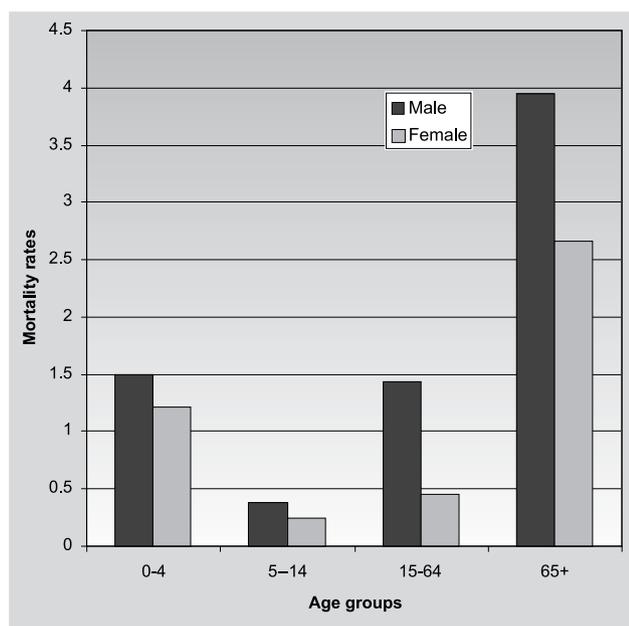


Figure 2. Mortality rates due to fire and burns per 100,000 people in the EU-27, by year and gender (Source: WHO mortality database, adjusted by CEREPRI).

account for several types of burn injuries, as those related to motorcycle exhaust pipes.^{22, 23}

Among elderly, disability and/or cognitive impairment can lead to severe injuries from fire or hot equipments given the reduced sensory and cognitive abilities in this age group, not allowing prompt reaction.¹¹ The risk of death is higher in those households involving alcohol impaired people; alcohol use contributes to an estimated 40% of residential fire deaths.^{4,15,16,24} Smoking is an underestimated risk factor for fatal injuries especially when in the bedroom.¹⁸

3.3. Environmental risk factors

Home is the principal environment where burns and fire-related injuries occur.⁴ There is evidence that the most common modifiable risk factors for residential fires are the place of residence, mobile homes and homes with few or no safety features such as smoke detectors or telephone.^{15,23} In addition, estimations show that residential fires usually occur at night and during the winter^{24,25} especially in poorest countries where people still use traditional heaters (fireplace, stove).¹⁷ Other environmental risk factors that have been identified include lack of water supply, storage of flammable substances at home, cooking equipments in the kitchen that are reachable from children, and housing that is located in slums and congested areas.²⁶

4. EFFECTIVE PRACTICES FOR BURN PREVENTION

The best manner to address the problem of burn injuries is to prevent them. A significant number of burn accidents could have been prevented⁸, as there is evidence to show that prevention programs for domestic accidents had the potential to prevent up to 70% of children's deaths caused by burns.²⁷ A few of the most effective practices for the prevention of fire and burns are the following:

4.1. Smoke detector

Smoke alarms are particularly effective at preventing fire-related death and injury.^{4,10,15,16,28,29} The chances of a fatal injury occurring in a residential fire are reduced to half when a smoke alarm is used.^{16,30} Moreover, there is evidence to show that smoke detectors have contributed in reducing residential fires by 71%.²⁴ However, installation of smoke alarms on each level of the house building is an effective strategy provided that it is maintained properly.^{24,27} More specifically, smoke detectors should be regularly tested according to the manufacturer's instructions, replaced at least every 10 years and its batteries should be replaced at least

annually and should not be used for other devices.³⁷

4.2. Fire extinguisher

Given that a vast majority of residential fires start from the kitchen, a portable fire extinguisher can save both human lives as well as property by putting out at least the small fires.³²⁻³⁵ Nevertheless, if the fire cannot be extinguished within one minute, the residence should be evacuated, as the rapid accumulation of heat and smoke can be particularly dangerous.³³

4.3. Avoid Smoking in the bedroom

Evidence shows that the use of cigarettes and smoking materials in general is the leading cause of fire deaths both in the U.S and Europe.^{15,24,36} Fatal home smoking-related fires are more likely to start in the living room or in the bedroom and 39% of those fires are related to the fact that the smoker fell asleep.³⁶ Moreover, a significant number of smoking-material fire deaths involve victims with a prior consumption of alcohol or drugs or had some degree of physical or mental impairment due to old age.^{36,37} Older adults are at the highest risk of death or injury from smoking-material fires despite the fact that they are less likely to smoke than younger adults. This is why it is strongly recommended that smoking should be avoided inside the bedroom, burning cigarettes should never be left unattended, and cigarette ends should always be checked to make sure they are completely extinguished.³⁶⁻³⁹ Moreover, in order to prevent cigarette fires it is preferable that if an individual is drowsy, drunk, or has taken any medication or other drugs does not smoke inside the house.^{37,39}

4.4. Make and practice fire escape plans

Fire can spread rapidly leaving little or no time to plan a safe escape. Thus the ability of residents to get out depends on advance warning from smoke alarms, and advance planning of a home fire escape plan.^{14,34} For this reason, it is suggested that occupants should develop escape plans

that include the identification of two exits from each living area and should practice exit drills regularly.^{30,32-34}

4.5. Store matches out of reach of children

Children should be taught from a young age that matches and lighters are not toys to play with. Matches, lighters, gasoline and all other flammable materials should always be stored out of the reach of young children, preferably in locked cabinets, high off the ground. Moreover, matches or lighters should never be left in the bedroom or any other place where children may enter without adult supervision.^{14,32,40}

5. CONCLUSION

The majority of severe and fatal burn injuries result from residential fires. In addition to resulting fatalities numerous victims result hospitalized, impaired, or disabled, while others suffer disfigurement and long-term psychological effects. There are a number of practices that can reduce the risk of burns mainly at home. Proper use of functional smoke detectors, along with good knowledge and effective practice of fire escape mechanisms and other safety measures can prevent from many deaths, disabilities, impairments and hospitalizations from residential fires and burns. More specifically it is recommended to:

- Install a smoke detector in your house and regularly test it.
- Avoid smoking in the bedroom or other areas of the home when sleepy and after having a few drinks.
- Store matches, lighters and other flammable materials out of reach of children.
- Get a fire extinguisher and learn how to use it. Tackle only the smallest fires yourself: make your first thought always to call the fire brigade.
- Make and practice a fire escape plan so that everyone in the household knows how to get out and where to meet outside in the eventuality of a fire.

ΠΕΡΙΛΗΨΗ

Μήνυμα 5: «Ενημερωθείτε για τους κινδύνους της φωτιάς»

M.E. ΒÉΝΥΙ¹, E.G. ΜΑΝΤΗ²

¹ National Centre for Healthcare Audit and Inspection, Hungary, ²Κέντρο Έρευνας και Πρόληψης Ατυχημάτων (ΚΕΠΑ), Εργαστήριο Υγιεινής, Επιδημιολογίας και Ιατρικής Στατιστικής, Ιατρική Σχολή Πανεπιστημίου Αθηνών

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Τα εγκαύματα είναι μία από τις κύριες αιτίες τραυματισμού και θανάτου παιδιών και ηλικιωμένων άνω των 65 ετών. Παρόλο που η πιο σοβαρή έκβαση ενός εγκαύματος είναι ο θάνατος, εξηγώντας ένα μεγάλο ποσοστό θνησιμότητας στην Ευρωπαϊκή Ένωση, τα εγκαύματα μπορούν να προκαλέσουν μόνιμες σωματικές και ψυχολογικές βλάβες. Επομένως, η ενημέρωση του γενικού πληθυσμού σε ό,τι αφορά τους παράγοντες κινδύνου και τους ορθούς τρόπους αντιμετώπισης της φωτιάς μπορεί να έχει θετικά αποτελέσματα στη μείωση της σοβαρότητας ή ακόμα και της συχνότητας των εγκαυμάτων. Αυτή η εργασία στοχεύει να: (α) περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των εγκαυμάτων στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα εγκαυμάτων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών.

Λέξεις ευρητηρίου: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, φωτιά, κάψιμο, έγκαυμα, τραυματισμός, ατύχημα, πρόληψη, πρακτική

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- Corresponding author:*
- M.E. Bényi, National Centre for Healthcare Audit and Inspection, 1097 Budapest, Gyáli út 2-6, 1096 Budapest, Hungary, Tel: +36 14 766404
e-mail: benyi.maria@oszmk.antsz.hu

REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 6: “Be safe near water”

Drowning is the fifth commonest cause of unintentional injury death in the European Union. As it constitutes the most fatal type of injury, drowning has been ranked by European Union experts as one of the top priorities for action. Based on the most recent Global Burden of Disease data, the global mortality rate from drowning is 6.8 per 100,000 people, which translates to about 400,000 deaths per year. This paper presents (a) the magnitude and the socio-economic burden of this epidemic in the countries of the EU Region, (b) the risk factors that are associated with this type of injury and (c) the evidence based preventive practices that reduce the likelihood of drowning occurrence. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention. Given that drowning represents the second leading cause of unintentional injury death among children, the primary age group of concern in this review is the age group 0–14 years old.

1. DEFINITION

The definition of drowning incidents has been for many years a source of confusion, leading to a limited scope for prevention. A recent systematic review of definitions for drowning incidents identified 33 different definitions, 20 for drowning and 13 for near drowning, along with approximately 20 different outcome measures.¹ In 2002, the need for a uniform approach of drowning led to the adoption of a simple and internationally accepted definition: “Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes can be classified as: death, morbidity, and no morbidity”² Implicit in this new definition is that a liquid/air interface is present at the entrance of the victim’s airway, preventing the victim from breathing air. After this process, the victim may live or die, but whatever the outcome, he/she has sustained a drowning incident.¹

2. MAGNITUDE OF THE PROBLEM

Among all types of injury, drowning constitutes the

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E. Germeni¹,
A. Terzidis¹,
E. Th. Petridou^{1,2}

¹ Center for Research and Prevention of Injuries (CEREPR), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School

² Department of Epidemiology, Harvard School of Public Health, Boston, Massachusetts 02115, USA

Μήνυμα 6: «Φροντίστε για την ασφάλειά σας όταν βρίσκεστε κοντά σε νερό»

Περίληψη στο τέλος του άρθρου

Key words:

European Code Against Injuries;
drowning;
prevention

most fatal. Based on the most recent Global Burden of Disease data, the global mortality rate from drowning is 6.8 per 100,000 people, which translates to about 400,000 deaths per year.³ This places drowning as the second leading cause of unintentional injury death worldwide. Drowning affects all age groups, but certain groups are particularly vulnerable. Thus, over half of the global mortality occurs among children less than fifteen years of age, whereas 97% of all deaths from drowning occur in low- and middle-income countries.³

But drowning also impacts on morbidity; it has been estimated that, for each fatal childhood drowning, there are 1 to 4 nonfatal submersions serious enough to result in hospitalization.⁴

Within the European Union (EU), more than 700 children younger than fifteen years old lose their lives every year due to accidental drowning. Half of them are aged less than four years.⁵ Figure 1 presents childhood drowning mortality rates in the EU Region during the period 1994–2004. Although the occurrence of drowning has taken a downward trend during the last years, there is still much potential for prevention. It is not clear, however, whether this decrease

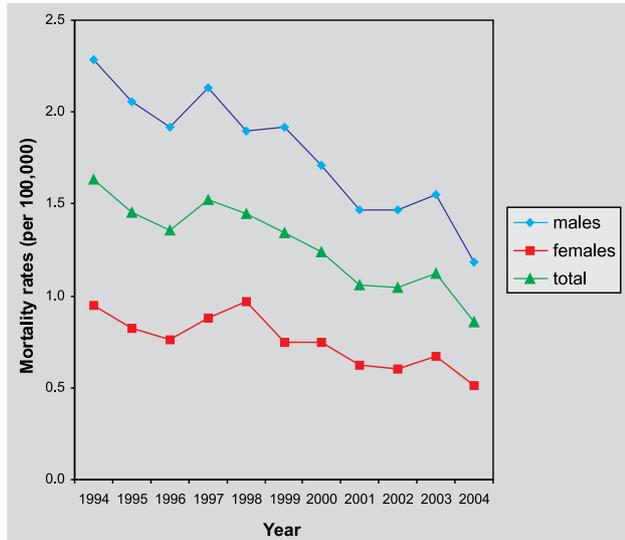


Figure 1. Drowning mortality rates per 100,000 children aged 0–14 in the EU-27, by year and gender* (Source: WHO mortality database, adjusted by CEREPRI).

*Data for Cyprus are not available.

is due to medical intervention, better Emergency Medical Systems, more knowledge of cardiopulmonary resuscitation (CPR), increased number of risk reduction programs in general or whether it represents an actual decrease in exposure or in severe submersion episodes.

As shown in figure 2, the mortality rates for EU countries range greatly from 0.2/100,000 (United Kingdom) to 7.2/100,000 (Latvia) and so do the underlying causes. Nevertheless, this wide variation also indicates the vast potential for reduction of this type of injury across EU member states.

There are no readily available cost data for the EU, regarding the financial burden of drowning. Given that most of those dying from this type of injury are children, with a subsequent extensive loss of economically productive life years, the overall societal costs should be especially high. The annual cost of drowning injury in Australia was estimated at US\$ 85.5 million for the period 1995–1996, while for coastal drowning only in the United States amounted to over US\$ 273 million in direct and indirect costs,³ though the methods and definitions used in each study may differ.

3. RISK FACTORS

3.1. Demographic risk factors

Overall, males are more likely to die due to drowning than females. The global male to female ratio is about

2:1 and the ratio has been estimated even higher (4:1) in the European Region.³ This significant difference between the sexes has been mainly attributed to males' increased exposure to aquatic environments and to riskier behaviour, such as swimming alone, drinking alcohol before swimming and boating.⁶ Children under five years of age appear to be at greatest risk, with drowning accounting for a high proportion of injury-related deaths in this age group.

Environmental risk factors

Drowning occurs from a variety of activities and in a variety of places depending on the country. One could speculate that drowning incidents occurring in salt water are more prevalent in places with easy access to seawater, especially among individuals who practice recreational aquatic activities, e.g. diving, water skiing, jet skis and young tourists who are engaged with unfamiliar activities in unfamiliar settings. This seems to be the case for Greece, where it has been estimated that 76% of drownings and near-drownings occur in salt water.⁷ In other EU countries, like France or Denmark, most cases of childhood drowning occur in swimming pools, either public or private, while in the United Kingdom, for instance, drowning mortality is highest in fresh water (rivers, canals and lakes).^{8–10} Furthermore, most drowning incidents in low- and middle-income countries are associated with everyday activities near bodies of water and not with recreation or leisure, as is commonly the case in high-income countries.¹¹

3.3. Behavioural risk factors

Several surveys indicate that drowning and near-drowning in young children is often associated with a lapse in parental supervision. Most adolescent and adult drowning incidents are associated with alcohol consumption,^{12,13} whereas other behavioral risk factors relate to parents not having children wear a life jacket or lack of CPR knowledge.

4. EFFECTIVE PREVENTIG PRACTICES

- Swimming pool fencing

Preventive measures aiming to reduce childhood drownings and near-drownings have mainly relied on passive protection, such as swimming pool fencing. Adequate fencing, that is, four-sided fencing that isolates the pool from the rest of the yard and the house, prevents a child from having access to the pool when a responsible adult is absent, and has been promoted as an effective environmental strategy. Several studies have documented the efficacy of pool fencing in preventing childhood drowning;

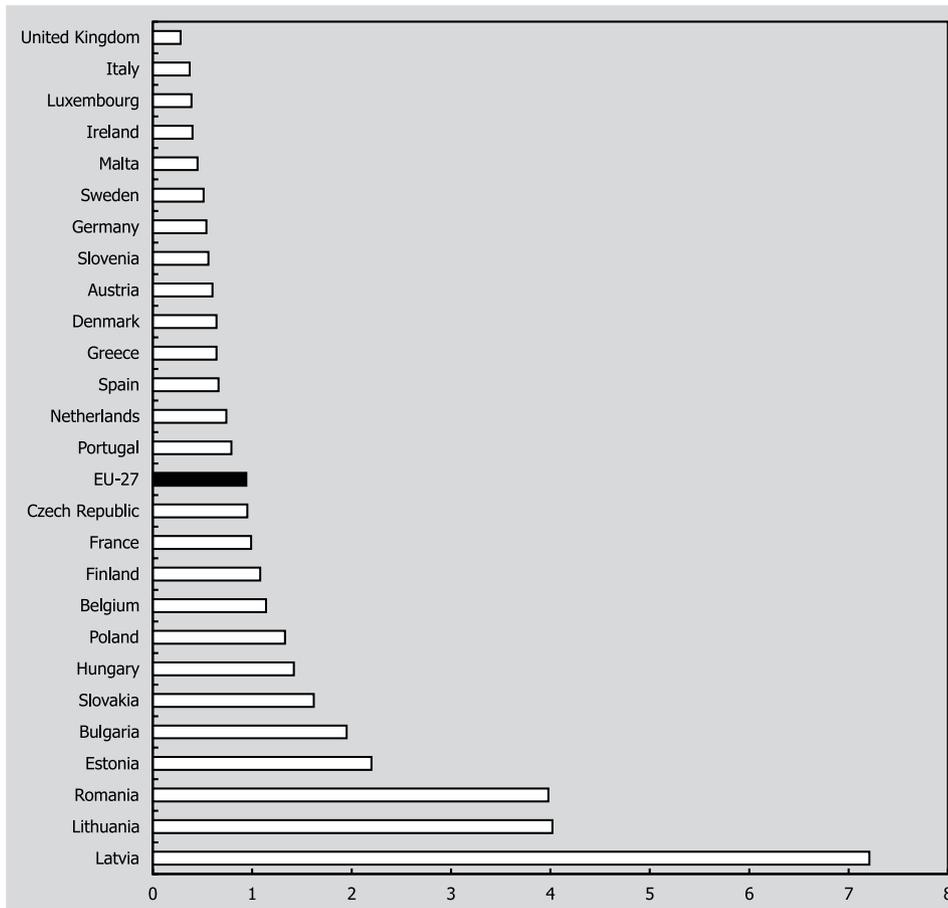


Figure 2. Drowning mortality rates per 100,000 children aged 0–14 by EU member state; average of the last available three years (circa 2002–2004)* (Source: WHO mortality database, adjusted by CEREPRI).

*Data for Cyprus are not available.

the risk of drowning or near-drowning has been estimated to be 3.76 times higher for unfenced than fenced pools, whereas a protection exceeding 75% has been suggested for four-sided versus three-sided fencing.^{14–18} A study that was conducted in the United States of America in 1994 estimated that 88 pool-related drowning among children less than 5 years of age might have been prevented if all residential swimming pools were properly fenced.¹⁹ Similarly, the Arizona Child Fatality Review Program concluded that the combination of pool fencing and adequate child supervision could have prevented 90% of child drowning in Arizona.²⁰

- Child supervision

Despite effective methods of environmental protection, childhood drowning prevention also requires an adequate level of parental supervision, at least to make sure that barriers are secured.²¹ For some high-risk situations (e.g. protecting an infant while in the bathtub), proper adult supervision is probably the only factor that can protect against childhood drowning. But what constitutes adequate child supervision? A useful definition has been suggested

by Morrongiello: “Supervision refers to behaviors that index attention (watching and listening) in interaction with those that reflect state of readiness to intervene (touching/within arm’s reach/beyond arm’s reach), with both types of behaviors judged over time to index continuity in attention and proximity (constant/intermittent/not at all).”²² This means that if a parent is within an arm’s reach of the child, the parent can constantly watch it, know and predict its actions and, therefore, be ready to prevent an injury from occurring.

Although it is difficult to assess the effectiveness of adult supervision in preventing childhood drowning, a substantial body of work has underlined its importance.^{23–27} Yet, results from several studies suggest that young children are often inadequately supervised by their parents or caregivers. A recent study that sought to determine reported levels of children supervision while in the bathtub, found out that 31% of the caregivers left their child unsupervised for some period of time. Parent activities when leaving the child alone in the bathtub often included getting a towel or diapers, answering the phone, and cooking.²⁸ Moreover, a 20-year review of autopsied cases involving bathtub drowning in Canada showed that nearly 90% of

the cases were associated with inadequate adult supervision.²⁹ Similar were the findings of Kemp & Sibert who studied cases of children drowned or nearly drowned in the United Kingdom.¹⁰ Further studies need to be done concerning the protective effect conferred in beaches and other swimming areas by lifeguarding, although swimming in unsupervised areas seems to be a major problem in countries with extensive coast lines.

- *Swimming lessons*

Surprisingly, there is no clear evidence available from the literature demonstrating that swimming lessons decrease the risk of drowning.³⁰⁻³¹ Reports from Australia suggest that swimming lessons for children may be associated with a reduction in drowning rates, as a more than 50% reduction in drowning rates in Victoria was observed following the introduction of school-based swimming and water safety training for children aged 5–14 years old.³² Furthermore, a number of studies have shown that swimming lessons improve swimming ability and safety skills of children, what is evident even in 2-year-old infants.³³⁻³⁵ Nevertheless, it has also been suggested that increased swimming ability may lead to increased exposure to water and, consequently, to an increased risk of drowning. Or that acquisition of swimming skills by children may give parents a false sense of security leading to children being left unattended.

- *Personal flotation devices*

The use of an approved personal flotation device (PFD), when boating or participating in water sports, appears to decrease drowning morbidity and mortality rates in both children and adults. A study aiming to determine the effectiveness of PFDs in preventing drowning and near-drowning of individuals involved in personal watercraft crashes in Arkansas, estimated that PFDs saved the lives of 38 people who could have been drowned.³⁶ Also, a study conducted in Denmark between 1989 and 1993 found out that almost half of people who drowned during leisure boating did not wear a PFD and suggested that they could have been saved if wearing one.⁸

- *Cardiopulmonary resuscitation*

With regard to secondary prevention, CPR skills seem to be one of the most important means of drowning prevention. A case-control study sought to determine the effect of immediate resuscitative efforts on the neurologi-

cal outcome of children with submersion injury, indicated that those with good outcome were five-fold more likely to have a history of immediate resuscitation than children with a poor outcome.³⁷ Nevertheless, there is evidence to suggest that the vast majority of parents do not know how to perform CPR on an infant or a child.³⁸

5. CONCLUSION

Accidental drowning accounts for about half a million deaths worldwide, most of them involving young children and older people. In the EU member states this figure amounts to an average of 7,500 deaths per year, out of which almost 10% among children aged 0–14.⁵ Nevertheless, drowning is preventable and foreseeable despite the variable underlying causes among the EU member states. Evidence shows that effective prevention programs do exist, notably those addressing passive prevention as well as those entailing educational components to reduce drowning, especially among children. ECAI messages could be one piece of a comprehensive strategy that needs to be developed to prevent future drowning and disability due to near drowning. To this end, the following preventive messages could make a difference were they to be adopted by children, parents and the society at large:

- Learn to swim – make sure that children are taught how to swim from an early age by a qualified instructor.
- Wear appropriate flotation devices for all water sports undertaken in open water.
- Be aware that many children are drown in shallow water, including wading pools, bathtubs, buckets and toilet bowls.
- Teach your child how to be safe in and around the water. Actively supervise your child. Do not delegate supervision of your child to older children.
- Keep in mind that swimming pools can be dangerous if they don't have a climb-resistant fence with a self-closing and locking gate. Insist on the same standards for any private pool used by your children.
- Take a course to learn how to revive a victim of drowning.

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ΠΕΡΙΛΗΨΗ

Μήνυμα 6: «Φροντίστε για την ασφάλειά σας όταν βρίσκεστε κοντά σε νερό»

Ε. ΓΕΡΜΕΝΗ,¹ Α. ΤΕΡΖΙΔΗΣ,¹ Ε. Θ. ΠΕΤΡΙΔΟΥ^{1,2}

¹Κέντρο Έρευνας και Πρόληψης Ατυχημάτων (ΚΕΠΑ), Εργαστήριο Υγιεινής, Επιδημιολογίας και Ιατρικής Στατιστικής, Ιατρική Σχολή, Πανεπιστημίου Αθηνών, ²Τμήμα Επιδημιολογίας, Σχολή Δημόσιας Υγείας Πανεπιστημίου Harvard, Βοστόνη, Μασαχουσέτη 02115, ΗΠΑ

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Οι πνιγμοί είναι η πέμπτη αιτία θανάτου από ακούσιο τραυματισμό στην Ευρωπαϊκή Ένωση. Δεδομένου ότι πρόκειται για τον πιο θανατηφόρο τύπο ατυχήματος, οι πνιγμοί έχουν ταξινομηθεί από τους ειδικούς της Ευρωπαϊκής Ένωσης ως μία από τις πιο άμεσες προτεραιότητες για δράση. Σύμφωνα με τα στοιχεία της Global Burden of Disease Data, η παγκόσμια επίπτωση θνησιμότητας από πνιγμούς εκτιμάται στους 6,8 ανά 100.000 ανθρώπους, το οποίο μεταφράζεται σε περίπου 400.000 θανάτους ανά έτος. Αυτή η εργασία παρουσιάζει: (α) την έκταση και τις κοινωνικοοικονομικές επιπτώσεις που έχουν οι ακούσιοι πνιγμοί στην περιοχή της Ευρωπαϊκής Ένωσης, (β) τους παράγοντες κινδύνου που σχετίζονται με αυτό τον τύπο ατυχήματος, (γ) τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα πνιγμού. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων ώστε το κοινό να ενημερωθεί σχετικά με την πρόληψη ατυχημάτων. Δεδομένου ότι οι πνιγμοί αντιπροσωπεύουν τη δεύτερη αιτία θανάτου από ακούσιους τραυματισμούς στα παιδιά, η βασική ηλικιακή ομάδα στην οποία αναφέρεται η εργασία είναι αυτή των παιδιών ηλικίας 0-14 ετών.

Λέξεις ευρητήριο: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, πνιγμός, πρόληψη

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Correspondence:

Eleni Th. Petridou MD, MPH., Center for Research and Prevention of Injuries (CEREPR), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School, 75, Mikras Asias street, GR-11527 Athens, Greece, e-mail: epetrid@med.uoa.gr

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REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 7: “Play sports safely”

Sports constitute a major part of everyday activities, especially in younger individuals. Since sport injuries account for about 20% of all home and leisure injuries and can lead to substantial morbidity and disability, the existence of adequate epidemiological information is essential for the development of sound preventive strategies among the countries of the European Union (EU). This paper aims: (a) to describe the magnitude and the socio-economic burden of sport injuries in the countries of the EU, (b) to outline underlying risk factors and (c) to present evidence based preventive practices that reduce the likelihood of sports injury occurrence. This information has been used in the development of messages comprising the European Code Against Injuries (ECAI).

1. DEFINITION

Participation in athletic activities has been traditionally considered a major contributor towards a healthy lifestyle and has become of prime importance in the contemporary era due to sedentary patterns of living. By definition, sport refers to physical activity, requiring muscle use of significant intensity and/or duration. Any sport activity results in physiological metabolic adaptations occurring at both the acute (exercise) and chronic (training) phase of the activity. These conditions are clearly distinguished from the adverse effects (sport injuries) resulting from extreme (trauma) or improper athletic activity (overtraining-repetitive stress). Although adverse effects may have an impact on the body function, musculoskeletal elements i.e. muscles, bones, tendons and ligament tissues are the predominantly affected system. The exact site and nature of injury varies according to the sport type, athlete's age and conditions of the competition. Sport injuries among professionals are not distinguished from those occurring among amateurs

according to the definition above, because the potential mechanism of injury and the proposed preventive measures are largely of similar nature.¹⁻⁴

2. MAGNITUDE OF THE PROBLEM

Existing ICD codification did not allow, at least until recently, separation of sport related deaths among all causes of death reported in the WHOSIS database. Ad hoc research show, however, that sport injuries are common spanning across all age groups, given the large proportion of the population involved in athletic activities, either in schools, organized sport centers, outdoor or even at home. In fact, sport activities account for about 20% of all “home and leisure accidents”. Preferred sport activities vary with age, body type, time devoted to sports and resources available. Injuries are the same end result, however, owing to a combination of intrinsic and extrinsic factors, the former of which are related to the health and fitness status of those practicing sports, whereas the latter to the nature of the

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2008, 25(Συμπλ 1):46-51

G. Lavranos¹,
N. Skenderis²,
V. Kalampoki¹,
G. Masanotti³,
E.Th. Petridou¹

¹ Center for Research and Prevention of Injuries (CEREPRI), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School

² Department of Pediatrics, School of Medicine, University of Thessalia

³ Department of Medical-Surgery Speciality and Public Health, University of Perugia

Μήνυμα 7: «Αθληθείτε
με ασφάλεια»

Περίληψη στο τέλος του άρθρου

Key words:

European Code Against Injuries
Prevention
Sports

athletic activity practiced, the conditions of the environment and the equipment used.

It has been estimated that about 1.5 million sport injuries are sustained annually among the 7 million high school students in the USA, who actively participate in sports.^{5,6} Similarly, in a recently published Canadian survey, about two thirds of teenage students reported a history of sport injury, while almost half of them required medical supervision and 8% had to be referred to the hospital emergency department for immediate care.⁷ High sport injury rates are also reported for other age groups, including older people. Within the European Union, sport injuries seem to represent a considerable public health problem with an estimated number of over 40,000 injuries per year reported in the Netherlands and over 200 000 in the United Kingdom.⁸

The high incidence of sport injuries in conjunction with the fact that they mainly affect active population segments spanning from the adolescent period to retirement age result in considerable financial loss both in terms of healthcare delivery costs as well as loss of productivity and deterioration in the quality adjusted life expectancy, let aside the social burden due to sport-associated deaths and disabilities. From a public health perspective, sport injuries impose high costs given not only their frequency and hospitalization rates. There is a paucity of publications regarding the magnitude of sport injury in the European Union area. Data deriving from the European Home and Leisure Accident Surveillance System (EHLASS) regarding sport injuries among children were analyzed in six European countries namely Austria, Denmark, France, Greece, The Netherlands, and the United Kingdom and showed that about 4% of all persons injured during sports require hospitalization.⁸

Similar figures have been reported in the USA.⁹ Of those who were hospitalized for a sport injury, other require expensive surgical and/or specialized treatment while several are referred to chronic rehabilitation units. In a recent study conducted in North Carolina, the statewide annual cost from school sport injuries was estimated at about 10 million dollars for medical costs, 45 million for human capital cost and 145 million for comprehensive cost, which corresponds to a mean cost of 709\$, 2223\$ and 10,432\$ per injury, respectively.¹⁰

Increased participation and improved access to organized sport activity in urban environment has led to a rapid increase of sport injuries that has been depicted in a number of nationwide and international comparative studies. For instance, in Finland, a 49% increase has been

reported between 1988 and 2003. It is feared that the increasing trend is so sharp that sport injury will soon be the most common category of hospital-treated injury.^{11,12} Although this is not a universal trend, it is likely that this phenomenon is strongly associated with socio-demographic factors.

3. RISK FACTORS

A variety of factors that interact dynamically contribute to the occurrence of sport injuries, which are generally classified into two major categories:

- a) *Intrinsic* (personal, host) risk factors, which are biological and psychological characteristics predisposing a person to injury and
- b) *Extrinsic* (environmental) risk factors, which are related to the type of sport activity, the manner in which sport is practiced, the environmental conditions and the equipment used.^{13,14}

3.1. Demographic risk factors

The risk for sport injury has been found to increase according to population density, with a minimal risk for the countryside and for the non-Caucasian population. Other positive predictors of sport injury proneness are related to the body type characteristics. Sex and age are also important predictors of sport injury, due to different predominant activity preference. For instance, accidents in "team sports with ball", namely football, are mostly affecting males (80%), aged 5 to 24 years (40%). On the other hand, accidents with "animal sports", namely riding, are mostly affecting females (90%) and the children aged 5 to 14 years.¹⁵⁻¹⁸ Adolescents are at a higher risk to sustain a sport injury due to their frequent involvement with exercise, especially in professional training and competitive sports.

3.2. Environmental risk factors

Some sport activities are by nature of higher injury risk than others, including many popular team sports, such as basketball, football, soccer and snowboarding, although the nature of preferred sport activity varies widely among the EU member states.⁸ In a recent study conducted in Scotland using the Home and Leisure Accident Surveillance System (HASS/LASS), male sport participation in adolescence increased considerably with more than half of the injuries being football-related, both in informal and

organized setting. The most frequent accident mechanisms during play and leisure are falls (53%), collisions (20%) and “crushing, cutting, piercing” (12%). “Team sports with ball”, “sports with racket” (e. g. tennis), and “non-motorized wheel sports” (e. g. bicycling) account for almost 60% of all sports related accidents.

In about half of all sport injuries, a previous relevant medical history has been recorded. This finding indicates both the increased proneness of the recovered tissue for repeated damage and the continued presence of increased risk in the affected population due to its lifestyle, the modification of which should be targeted as a priority of the public health strategies for sport injury prevention. Furthermore, competitive sport related injuries are proportionally more common than those associated with amateur sports. Lack or inadequate use of protective equipment, insufficient training, unsatisfactory type of terrain and adverse weather conditions are all associated with higher sport injury risk. Moreover, bad training practices, such as lack or insufficient warm-up stage may also lead to an injury.

Current understanding of the etiologic of sport injury remains largely vague despite intensive research in recent years. Even the best available models can only justify a minority of the underlying pathophysiologic mechanisms in the different types of sport injuries.¹⁹⁻²⁵

3.3. Behavioural risk factors

Behavioral and psychological parameters have been shown to play a significant role in the determination of sport injury proneness. In particular, men appear to be more accident prone than women in the sports field, a finding consistent with similar observations for other types of injury. This sex-specific differential may even reach a ratio of 3:1. The risk is further enhanced among individuals

with a history of sedentary life, especially when combined with smoking and a more general unhealthy attitude.²⁶⁻²⁹ Illegal behaviour during sport activity is recognized as an independent risk factor for injury, accounting for 0.24 injuries per 1,000 athletic exposures, according to USA statistics. Injuries associated with illegal conduct are more frequently severe, e.g. concussions and head or face trauma. Although illegal activity was reported in only 6% of knee injuries, 20% of these lesions required surgical treatment due to their severity.^{5,21} A comprehensive list including most common risk factors associated with sport injuries is provided in Table 1.

4. EFFECTIVE PREVENTIVE PRACTICES

Injuries occurring during sport activities can be prevented to a high extent by adopting safe measures, which are grossly divided to passive and active ones. Areas that should be considered in order to maximize the anticipated gains when developing an optimal strategy for the prevention of sports injuries include: (a) the level of training – preparatory exercise and proper diet prior to intensive physical activity, (b) the type of sport practiced (e.g. contact or non-contact, team or individual, strength or stamina-based), (c) the playing conditions (environmental adaptations) and (d) the equipment used by the athletes. Basic principles largely accepted as successful elements of sport injury prevention strategies are shown in Table 2. On a theoretical basis, the concept of injury prevention also with regards to sports can be conceived in three levels.³⁰⁻³⁴

- (a) *Primary prevention* aiming to avoid the possibility that an injury will occur. It involves a continuum of passive, active and blended strategies.
- *Passive prevention strategies* require no individual or repetitive action and are generally most effective.

Table 1. Extrinsic and intrinsic factors for sport injury

Extrinsic factors - environment	Intrinsic factors - contestants
Sport type – nature of activity	Co morbidities – co-existing disease
Intensity	Sex
Duration-Frequency	Age
Informal / Competitive setting	Injury History
Organized / Amateur setting	Smoking / Drug / Alcohol Use
Equipment used	Physical Activity History
Training parameters	Body composition - BMI
Weather / Environment / Terrain	Anatomic structure

Table 2. Basic principles of sport injury prevention

Tips for sport injury prevention
Pre-participation examination
Proper hydration and good nutritional status
Adequate methods for training and conditioning
Correct use of equipment
Proper playing conditions (field/surfaces of play)
Paying attention to the environmental conditions
Playing within the rules of the game
Awareness of the overuse injuries

They encompass measures such as providing optimal conditions for the game, in particular scheduling of the game and the competition field. Sample interventions of this type include: break-away bases in baseball and softball, early morning starts in summer road races, and exclusion of athletes who suffer from herpes dermatitis from participation in contact sports. Given that the large majority of sport injuries occur in schools or organized sport facilities measures targeting the conditions of these areas are expected to yield high gains in the improvement of sport injury statistics.³⁵⁻⁴⁰

- *Active prevention strategies* comprise voluntary measures and rely on repetitive, individual action. To this end, they require an athlete to cooperate or to make behavioural changes, such as the adoption of healthy nutrition and exercise habits and avoidance of consumption of harmful substances. There are reports showing a significant decline in the number of sport injuries, when special fitness programs are applied in combination with continuous sport education and use of state of the art equipment.^{40,41}
 - *Blended strategies* require a certain degree of cooperation from the athlete. Respecting the rules of the game is a blended strategy example. Defining standards of conduct for all players and allowing them to expect certain responses to ensure sport safety. Proper use of protective equipment is acknowledged as an essential preventive measure. Identified barriers to the successful implementation of these interventions are the high level of competition in modern sport, as well as the natural impulsive nature of teenagers and young adolescents.
- (b) *Secondary Prevention* aiming to respond and treat a sport injury in the best possible way in order to avoid the occurrence of permanent damage. This strategy is of prime importance for professional athletes who are

expecting to receive optimal treatment in organized centers by skilled health professionals.^{42,43}

- (c) *Tertiary Prevention* aiming to adopt safety measures in order to avoid the repetition of an injury, given that the injured individuals as a rule derive from high-risk groups, which comprise the hard-core segments to behavioural change.

5. CONCLUSION

Sport injury constitutes a frequent type of injury, on the rise in several EU countries during the last decades. Among the *intrinsic* risk and *extrinsic* factors, which may be held responsible for this increase, are the contemporary lifestyles as well as involvement in more high risk sport activities. By contrast, several evidence based practices and measures are nowadays available, which if adopted on individual level can substantially reduce the sport related risk. These can be distinguished in three levels (a) primary including passive, active and blended strategies, (b) secondary and (c) tertiary measures. More specifically the following preventive measures are strongly recommended:

- Make sure you and/or your child use sport appropriate protective equipment; check the condition of the protective equipment and the sports area.
- Be aware of sport specific recommendations and regulations and follow them. Make sure that other participants do the same.
- Warm-up muscles for a minimum of five minutes, before participating in sports.
- Be realistic about your own physical performance and exercise within your limits.
- Encourage your child to participate in organized sports where there are certified coaches, trained in the prevention, recognition and immediate care of injuries.

ΠΕΡΙΛΗΨΗ

Μήνυμα 7: «Αθληθείτε με ασφάλεια»

Γ. ΛΑΒΡΑΝΟΣ¹, Ν. ΣΚΕΝΤΕΡΗΣ², Β. ΚΑΛΑΜΠΟΚΗ¹, Γ. ΜΑΣΑΝΟΤΤΙ³, Ε. Θ. ΠΕΤΡΙΔΟΥ¹

¹ Κέντρο Έρευνας και Πρόληψης Ατυχημάτων (ΚΕΠΑ), Εργαστήριο Υγιεινής, Επιδημιολογίας και Ιατρικής Στατιστικής, Ιατρική Σχολή Πανεπιστημίου Αθηνών, ² Παιδιατρική Κλινική, Ιατρική Σχολή, Πανεπιστήμιο Θεσσαλίας, ³ Department of Medical-Surgery Speciality and Public Health, University of Perugia

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Οι αθλητικές δραστηριότητες είναι σημαντικό τμήμα της καθημερινότητας, ειδικότερα των νέων. Δεδομένου ότι οι τραυματισμοί κατά την άθληση αντιστοιχούν περίπου στο 20% των ατυχημάτων στο σπίτι και κατά τον ελεύθερο χρό-

νο καθώς και ότι αποτελούν σημαντική αιτία νοσηρότητας και αναπηρίας, ιδιαίτέρως σημαντική κρίνεται η ύπαρξη επιδημιολογικής γνώσης που θα συντελέσει στην ανάπτυξη πρακτικών πρόληψης στις χώρες της Ευρωπαϊκής Ένωσης. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των αθλητικών ατυχημάτων στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα αθλητικών ατυχημάτων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών.

Λέξεις ευρητηρίου: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, αθλήματα, πρόληψη

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Corresponding author:

G. Lavranos, Center for Research and Prevention of Injuries (CEREPRI), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School, 75, Mikras Asias str., GR-11527 Athens, Greece, Tel: +30 210 - 7462187, Fax: +30 210 - 7462105
e-mail: glavran@med.uoa.gr

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REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 8: “Use safer products”

The role of consumer products in injury causation is crucial. It has been estimated that about 70% of all unintentional home and leisure injuries in the European Union (EU) are associated with consumer products. Risk groups and risk factors vary in relation to the consumption or use of particular products. Nevertheless, many product-related accidents, especially those concerning toys, can be prevented through the adoption of simple but important practices. This paper aims: (a) to describe the magnitude and the socio-economic burden of product related injuries in the countries of the EU, (b) to outline underlying risk factors and (c) to present evidence based preventive practices that reduce the likelihood of product related injury occurrence. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention. The major focus of the respective ECAI section is dedicated on children’s safety given that children under the age of three comprise the most vulnerable group for product-related injuries.

1. DEFINITION

There are many definitions of a “Safe Product” laid down in legislation across the world. One of the most widely accepted is the one given in the European Union’s Directive 2001/95/EC¹ on general product safety. This defines a “Safe Product” as “Any product which under normal or reasonably foreseeable conditions of use presents no risk or only the minimum risk compatible with the product’s use and which is consistent with a high level of protection for consumers”.

A “product” in this context and as addressed by the European Code Against Injuries is taken to be a manufactured artifact. The definition does not include other items that may be colloquially referred to as products; natural substances such as foodstuffs, pharmaceuticals, features of the natural environment such as trees or plants, air, fire or water, animals or other living organisms. The definition of a “product” when used in legislation and standards goes beyond the product itself and covers: (a) all product characteristics, (b) packaging unique to that product and supplied with it, (c) instructions for assembly, maintenance, use and disposal and (d) labeling and other information provided.¹

The concept of “use of a product” includes the use of

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M. Barrow

Consumer Safety UK

Μήνυμα 8: «Χρησιμοποιείτε ασφαλή προϊόντα»

Περίληψη στο τέλος του άρθρου

Key words:

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Prevention
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the product with other products with which it might be used, either by design or by reasonable expectation. The quality of “Product Safety” is thus extrinsic to the product as well as intrinsic. Categories of consumers at risk, particularly children and older people, are extrinsic factors taken to be part of the product. For example, if a product is intended to be used by children, then this aspect is regarded as contributing towards any judgment of the safety of the product itself.²

Injuries involving products are a huge and diverse group; likewise there are multiple solutions to addressing the issue of product safety. Information on product involvement is widely included in the most typical accident and injury surveillance systems, but it is usually impossible to identify the exact nature of product involvement at the time that details of an injury are collected for subsequent transcription to an injury database. Large numbers of injuries involving products go unreported. Those that do find their way onto some sort of injury database tend to be the more serious, but this is not always the case.³

2. MAGNITUDE OF THE PROBLEM

It has been estimated that about 70% of all unintentional home and leisure injuries in the EU are associated

with consumer products.⁴This indicates around 35,000,000 product related injuries per year to consumers, but it should be noted that this excludes occupational accidents and road traffic accidents. Attempts to address the issue of product injury prevention usually start by classifying consumer products into main categories, and there have been many attempts to do this. Broad brush estimates of total injuries and accidents within the EU can be estimated using the Injury Database (IDB);⁴ this is not a representative sample of the EU as a whole, and at present it serves only to suggest "order of magnitude" estimates of principle accident and injury categories for the EU as a whole.

In the EU there are over 3 million product related accidents each year associated with personal items, including cosmetics, jewellery, and personal electrical items such as hairdryers, curling tongs, toothbrushes, etc.⁴ More specifically, 2,000,000 to 3,000,000 product related accidents are associated with products such as 'do-it-yourself' tools and equipment, household furniture (other than child furniture), and cycles and other vehicles unlicensed for road use. 1,000,000 to 2,000,000 product related accidents per year involve food and drink products as well as sports' equipment whereas 500,000 to 1,000,000 product related accidents per year are caused by kitchen equipment and utensils, clothing and footwear, household furnishings including carpets, wall coverings, containers and packaging, and glass items. Moreover, between 100,000 to 500,000 product related accidents per year involve playthings, toys and games, garden equipment including electrical and non-electrical items, and child products - primarily furniture and child transport e.g. pushchairs. The rest of the product groups are associated with fewer than 100,000 accidents per year. It can be observed that there are very few non-fatal accidents involving smoking materials⁵ and medicinal products, although these products feature prominently in mortality statistics.

Mortality statistics generally do not include details of product involvement.⁶ In the UK there is a recorded product involvement for about 25% of all fatal home and leisure accidents. There are probably around 5,000 annual fatalities in the EU which are associated with consumer products, 80% of which are associated with the major categories of smoking implements and sources of ignition, medical products, heating and ventilation equipment and household furniture accidents. This figure does not include motor vehicle fatalities.⁴

Over the last two decades of the 20th Century and the first years of the 21st century, worldwide initiatives have been taken aiming to improve product safety standards

and legislation. The EU and EU Member States have been in the forefront of this drive for product improvement, and it should be noted that EU standardization was initiated by the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC), which both cover a wider European Region than the enlarged European Union Area of 27 Member States. Cooperation between European and global standards making bodies, notably International Standard Organization (ISO) and International Electrotechnical Commission (IEC), has meant that product safety has been increasingly addressed on a global industrial scale for about three decades.

3. RISK FACTORS

One of the major problems associated with studying product injuries is the huge range of different consumer products. It is estimated that there are more than 200,000 "different" consumer products on the global market of which half are toys, manufactured by millions of different bodies.⁷ ⁸ Many products, especially toys, have a short life cycle; for example it is estimated that for toys alone the average life cycle is 3 years. New products in the market can hide new risks, thus they require a revision of assumptions in order these risks that to be understood. Risk groups and risk factors vary in relation to particular products and different types of products vary with the age of the consumer.

3.1. Demographic risk factors

The principle socio-economic burden of product related accidents and injuries falls upon children, as about 40% of all non-fatal accidents reported to formal accident and injury surveillance systems concerns the age group of 5-14 years.² Children aged less than 3 years are at highest risk for death and injury from mechanical airway obstruction.⁹ This is due to their immature anatomy and developmental stage, as children of this age do not have a fully developed set of teeth for thorough chewing. Moreover they lack the experience and cognitive skills to avoid choking, thus, they forget to eat slowly and to chew well. In addition, those children are at greater risk due to their natural tendency to put everything in their mouth, while they are trying to learn about the world around them by reaching things.⁹

Toy related injuries occur most often among males (65%).¹⁰ Furthermore, about half of all injuries occur above the neck and involve the face (24%), head (12,5%) and mouth (7%); fingers account for 7,5% of injuries, arms, from shoulder to finger, account for 24% of injuries, while the leg and foot area account for 17%.¹¹ For older people,

the scale is reversed with around 40% of fatal accidents occurring to those aged 65 and over.¹²

Numerous studies have identified socio-economic factors particularly such as social deprivation, poverty, poor education and particularly low linguistic skills as factors likely to be associated with increased accident and injury rates where products are involved.¹³ This happens due to the fact that socially deprived groups use mainly older products with intrinsically less safe designs and/or poor maintenance or even second-hand products, which are usually unable to repair or maintain.¹⁴

3.2. Environmental risk factors

The environment is strongly related to risks of safe product use.¹⁵ Among the most prominent environmental factors is the use of products outdoors, such as “Do it yourself” or gardening equipment, related to features of the environment such as lighting and visibility or the security of the footway. Environmental factors are always implicated in some way in product injuries. It seems that the most common reported locations for product related accidents are home, streets, outdoor sport facilities, school/college grounds, parks and the countryside.⁴

Children can swallow, inhale or choke on items such as small toys, peanuts and marbles. Inappropriate foods and other objects in the surroundings also increase the risk of choking. Foods that are round or cylindrical and pliable or most compressible most effectively form an airplug. Such foods are: hot-dogs, nuts, candies, grapes, seeds and eggshells.¹⁵ Of all children’s play products, rubber balloons, small balls and marbles are the leading cause of suffocation deaths and for non-food objects: coins and pills.¹⁶ In addition small household items may be choking hazards.

Moreover, environmental factors, such as distractions during eating, can contribute to the risk of choking. Also poor parental supervision is a high risk factor for product-related injuries among children. Children are more likely to choke when fed by a sibling, as food may not be properly cut or inappropriate foods may be given to the younger child. The presence of older siblings in the household increases the risk for choking, since toys with small parts may be more easily accessible.⁹ In addition, age-appropriate toys or damaged toys with sharp edges, household and child furniture and inappropriate use of sports equipment, are also considerable risk factors for product-related injuries in childhood.¹⁷

Among older people, soft/slick foods are the most common cause of asphyxiation, while in contrast younger

people choke more often on large pieces of foreign material and show a significantly higher rate of blood alcohol concentration.¹⁸ Some other risk factors, mostly related with food asphyxiation are: poor dentition, alcohol consumption, chronic disease, sedation and eating risky foods.¹⁹

3.3. Behavioural risk factors

Behaviour plays a major role in most product related accidents and injuries.²⁰ It is well established that consumers have a wide range of attitudes towards risk, with some being risk averse while others accept high levels of risk. Some consumers rigorously follow safety instructions whilst others either do not read safety instructions or purposely ignore them. Maintenance and repair of consumer products is known to be widely neglected, although there is not enough evidence from data, since these aspects are not generally recorded by injury and accident databases.²¹ Misuse of products may not always have safety implications.

4. EFFECTIVE PREVENTIVE PRACTICES

Many product-related accidents, especially those concerning toys can be avoided through increased awareness, improvements in the home environment and greater product safety. Product safety rules are enacted concerning the details of safe design and often have been proven effective in controlling the risk of injury.^{22,23} Prevention of product related accidents and injuries follow two major routes: (a) Safer products, achieved by regulation and standards and (b) safer use of products through consumer education.

- Regulation and Standards

Standards are the primary route to product safety. Standards go beyond the intrinsic safety of the product itself to include important factors extrinsic to the product such as information, education and user behaviour. They promise the widespread acceptance of best practice over accepted practice, and can deliver the safest product designs possible. To do this, standards draw on the widest possible knowledge base, bringing together the experience and expertise of all related parties. The strength of the standards approach is that it is essentially a knowledge management and knowledge transfer process.

In the EU there is a general duty placed on producers and distributors to place on the market (or supply) only products that are safe in normal or reasonable foreseeable use.⁷ The use of standards is essential to ensuring the safety of consumer products. Although standards are designed for

voluntary use and do not themselves impose any regulations, in law many countries insist that products conform to a standard before they can be offered for sale in that country. Within the EU there are many legal requirements that all products on sale must conform to the standard requirements of a European Directive. Safety professionals from a variety of backgrounds are involved in the various standards making processes, and these professionals always have access to appropriate knowledge bases and data sources (see EUNESE and eventually APOLLO).

Standards may be used as flexible lighter-touch alternatives to regulation.²⁴ Standards can offer many advantages to the manufacturers, ensure that consumer interests are met and technological advances address issues of product safety from the outset. Standards are becoming increasingly effective in improving the safety of established products and also ensuring that any products new to the market are safe. To this end, the standards making process need to be supported by individuals who understand and sensibly apply relevant knowledge.

The effectiveness of standards and legislation has been exhaustively researched. The worldwide standards making process is now a globalised self-feedback process wherein standards are developed, revised in response (inter-alia) to known safety problems, the efficacy of the new standards then being tracked after the new standards have been implemented.²⁴ As all informed inputs are welcome to join this process, there are inbuilt opportunities for anyone wishing to take forward elements or all of the ECAI and to use the APOLLO knowledge base to constructively advance the standardization process. Special mention must be made of improvements in product recall systems, which use manufacturers' own quality control systems as well as public surveillance to identify and remedy breaches of product safety.

- Consumer Education

Consumer education can be addressed either to consumers themselves, or to and through third parties who work with consumers such as safety professionals, journalists, teachers, head teachers, voluntary groups, charities, emergency services, academics researching safety including university staff, students and others. Standards making processes are now taking much more seriously the need to inform and educate consumers through instructions, labeling and other related awareness initiatives.

Probably one of the most effective messages relating to product safety is "read and follow the instructions provided

by the supplier of the product, then keep the instructions where you can access them and refer to them as necessary thereafter".²⁵ However, some of the most hazardous consumer products do not typically come with safety instructions, and it is known that instructions are invariably discarded or lost.²⁶

Because children can be injured while using toys designed for an older child, it is essential to use only toys that are appropriate for their age.¹⁷ Labels can help parents to find toys that have been designed to best fit a child's age, abilities and interests. They should take into account the manual and thinking skills required for a child to handle and enjoy the toy and provide an important guide as to whether or not a toy is safe for his/her particular age. Moreover toys should be checked periodically for breakage and loose, small parts, in order to ensure that have not become hazardous, and fix them or throw them away if they are broken.¹⁰

Parents should supervise their children while playing and help them learn how to enjoy toys safely.¹⁷ Furthermore parents or caregivers should demonstrate proper play when a toy is first used and periodically monitor children's play to check for improper use of toys.¹⁰ Thus it is really important to teach children safety rules and teach older children to keep toys and dangerous objects away from their younger siblings.²⁷

5. CONCLUSION

Consumer products are often involved in unintentional home and leisure injuries in the EU. Nevertheless evidence shows that injuries due to misuse or unforeseeable use of products can be prevented if specific safety practices are thoroughly adopted. To this end, ECAI messages could be one piece of a comprehensive strategy that needs to be developed in order to prevent future product related injuries. Preventive messages that could make a difference were they to be adopted by EU citizens are the following:

Use products for their intended use and age group and respond to product recalls and warnings.

Select products that meet safety standards; read and follow the safety recommendations on labels and in the manual.

When selecting toys, consider the child's age and development, avoid small toys or toys with small removable parts which can be a deadly suffocation risk to children under three years of age.

Teach older children to keep their toys away from younger brothers and sisters.

Inspect toys regularly for damage and potential hazards such as sharp edges. Discard broken toys immediately, making sure children cannot get hold of them.

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ΠΕΡΙΛΗΨΗ

Μήνυμα 8: «Χρησιμοποιείτε ασφαλή προϊόντα»

M. BARROW
Consumer Safety UK

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Ο ρόλος της κατανάλωσης ή χρήσης προϊόντων κρίνεται ιδιαίτερα σημαντικός. Έχει εκτιμηθεί ότι περίπου 70 % όλων των ακούσιων τραυματισμών στο σπίτι ή κατά τον ελεύθερο χρόνο, στην Ευρωπαϊκή Ένωση, σχετίζονται με τα καταναλωτικά προϊόντα. Οι ομάδες καθώς και οι παράγοντες κινδύνου ποικίλλουν ανάλογα με το είδος του προϊόντος. Ωστόσο, πολλά από τα ατυχήματα, και ειδικά αυτά που οφείλονται στη χρήση παιχνιδιών, μπορούν να προληφθούν μέσω της υιοθέτησης απλών αλλά πολύ σημαντικών πρακτικών. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των ατυχημάτων που προκαλούνται από την κατανάλωση ή χρήση προϊόντων στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα ατυχημάτων που προέρχονται από κατανάλωση ή χρήση προϊόντων. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών. Κύρια έμφαση του σχετικού πεδίου του Ευρωπαϊκού Κώδικα Κατά των Ατυχημάτων έχει δοθεί στα παιδιά δεδομένου ότι αποτελούν την πιο ευπαθή κατηγορία για ατυχήματα που οφείλονται σε κατανάλωση ή χρήση προϊόντων.

Λέξεις κλειδιά: Ατυχήματα από προϊόντα, Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, πρόληψη, παιδική ασφάλεια

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- Corresponding author:*
- M. Barrow, Consumer Safety UK, Health Drive 34, Potters Bar, Hertfordshire, EN6 1EH, United Kingdom, Tel: +44 (0) 1707 657957
e-mail: consumersafetyuk@btinternet.com
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REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 9: “Be safe at work”

As occupational injuries cause approximately 350,000 deaths per year worldwide and account for more than 10 million Disability Adjusted Life Years (DALYs) in the economically active population, they represent a universal public health issue that calls for effective prevention. Although professional fields such as the field of construction, agriculture, transport and manufacturing present the highest rates of injuries, recent European Union (EU) studies reveal a common downward trend in fatal occupational injury rates in the developed world. Research on potential risk factors, mainly demographic, behavioural and environmental remains inconclusive as different countries report diversified patterns. This paper aims: (a) to describe the magnitude and the socio-economic burden of occupational injuries in the countries of the EU, (b) to outline underlying risk factors and (c) to present evidence based preventive practices that reduce the likelihood of occupational injury occurrence. This information has been used in the development of messages comprising the European Code Against Injuries (ECAI).

1. DEFINITION

Occupational injuries are defined as injuries due to an external cause resulting from an exposure related to the person's work. The definition corresponds to injuries 'that are employment-related and are the result of a traumatic event while a person is on duty.¹ Work-related injuries of workers are commonly separated into three groups: work-road injuries, workplace injuries, and injuries that occur whilst travelling to or from work (commuting injuries).² In most cases the latter are not included in the occupational injury definition and thus are also excluded from most statistics, as rarely are there soundly based estimates for commuting injuries.²

2. MAGNITUDE OF THE PROBLEM

The most recent estimate of global occupational deaths is provided by the WHO Comparative Risk Assessment (CRA) study that aims to assess the global burden of disease from the year 2000 onwards. Their estimate for occupational injury deaths is 312,000² with previous studies

having reached similar conclusions of over 300,000 workers killed each year.^{3,4} Summarizing, the best estimate of the annual number of fatal injury deaths of workers is 350,000, including workplace and work-road deaths and excluding commuting deaths.²

- Morbidity

Unintentional occupational injuries have been estimated to account for more than 10 million DALYs⁵ and among the worldwide economically active population of 2.9 billion workers, approximately 3.5 years of healthy life are lost per 1,000 workers due to exposure in workplaces' injury risks.¹ According to an ESAW report⁶ approximately 4.7 million accidents at work result in more than three days of absence from work occurred in the EU-15 in 2001, which can be translated roughly into a 4% of the workers having been victims of an occupational accident that year.

In 2001 there were approximately 4,900 fatal accidents at work, with one EU worker becoming a victim every five seconds and one worker dying every two hours because of an occupational accident.⁷ The highest rates concern

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I.Th. Vlachantoni,¹
K. Kuhn²

¹Center for Research and Prevention of Injuries (CEREPRI) Department of Hygiene, Epidemiology and Medical Statistics, Athens University, Medical School

²Federal Institute For Occupational Safety & Health Strategy & Principle Affairs (BAUA), Dortmund, DE

Μήνυμα 9: «Φροντίστε
για την ασφάλειά σας
στην εργασία σας»

Περίληψη στο τέλος του άρθρου

Key words:

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accidents in construction, agriculture, transport, individual industries for the manufacture of mineral products, wood products, basic metals, utilities and the manufacture of food products.

- Time trends

Differences in types of injuries, occupational activities, employment characteristics, and implementation of safety measures can explain the existing mortality variability across different countries.⁷ A recent study of the occupational injury rates in five selected EU countries revealed that crude rates have indeed declined, confirming a common downward trend in fatal occupational injury rates in developed countries.⁸ These trends can be possibly explained by factors such as the improvement of workplace environment, changes in the economy and distribution of the workforce in EU countries, shifts within the labour force from dangerous work towards safer work and improvement of emergency services and treatments.⁹ Eurostat reports that fatal occupational injury rates have declined from 6.1 per 100,000 persons in employment in 1994 to 4.8 in 1999 for the EU¹⁰ and more recent data confirm that the incidence rate of fatal accidents at work reduced by 23% in the EU-25 for the period 1998- 2003.¹¹

3. RISK FACTORS

3.1. Demographic risk factors

The value of gender as a potential risk factor in occupational injury represents a debatable issue in the literature.¹² A review of ILO data describing injury deaths at work for 21 countries indicates that males accounted for 91% to 99% of all deaths from injury at work in all countries,

independently of the level of economic development of the country (ILO) and the estimated total number of injury deaths was distributed using proportions of approximately 93:7 (Figure1).

According to EU data, men are around three times more likely to have an accident at work compared to women and eleven times more likely to have a fatal accident at work, which can be attributed to the fact that they are usually working in more high-risk sectors and doing more full-time work,¹⁷ thus the role of gender itself as a risk factor remains unclear.

Opinions diverge largely on the role of education as an occupational injury risk factor. Past research has shown education level (primary school or less) to be a risk factor specifically for back disorders,¹³ whereas more recent studies showed no relationship between education and occupational injury.¹²

Research on the role of age in occupational injuries is inconclusive as different countries present different risk patterns. For example, in the US 35% of fatal injuries occur at the age of 30-44, probably due to factors such as lack of experience.¹⁴ Overall the observed pattern corresponds to a steady rise in the occupational injury incidence from the youngest groups to about 64 years of age.¹

3.2. Behavioural risk factors

Risk-taking behaviours such as alcohol consumption,^{15,16} non-use of seat belts, use of violence, riding a motorcycle, and/or recent history of driving under the influence of alcohol¹² have been suggested as possible risk factors for occupational injury. Also, sleep disorders, smoking, and lack of physical activity have been found to alter health status

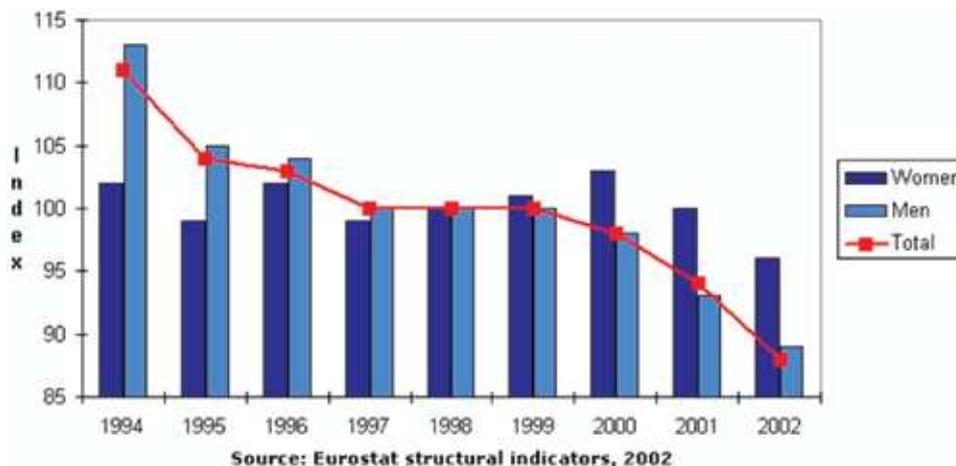


Figure 1. Serious accidents at work by gender EU-15 (1994–2002).

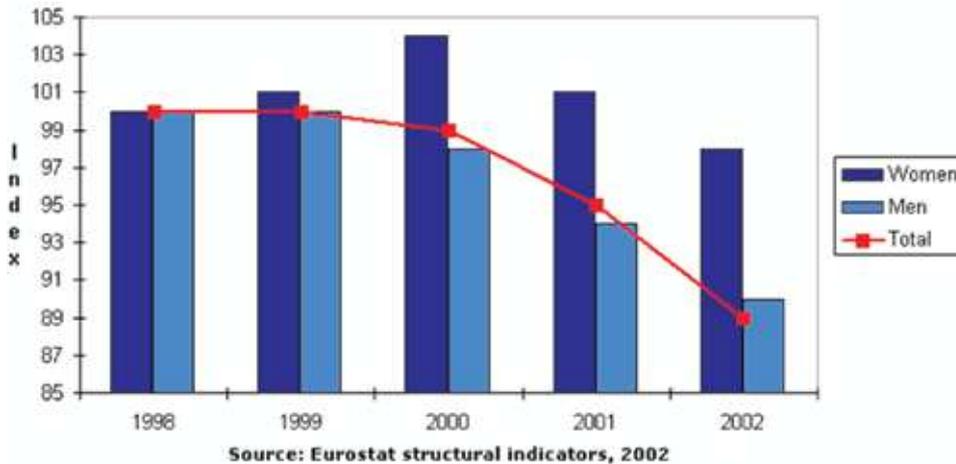


Figure 2. Serious accidents at work by gender EU-25 (1998–2002).

and work ability, thus leading to fatigue and altered risk perception, which increase the likelihood of injuries.¹⁷

3.3. Environmental risk factors

Environmental stressors such as high ambient noise levels,^{18,19} heat,^{20,21} poor lighting,²² high physical effort,^{23,24} overcrowding^{25,26} and need for sustained attention²⁷ may be precipitating factors for occupational injuries. Other important risk factors suggested as injury risk factors are physical effort^{23,24} and climate discomfort.^{20,21} Since workstations are usually overcrowded with high ambient noise levels and bad lighting, workers are often subjected to a multitude of harsh conditions, which can ultimately have a cumulative effect on injury risk.²⁸

4. EFFECTIVE PREVENTIVE PRACTICES

- Training of workers and provision of information

Informing workers on the risks their work discloses and training them on safe practices are some of the most frequently used means of occupational injury prevention. Effective interventions vary with respect to the training material and training patterns, as well as to the recipients of such information and the implementation settings. Interventions concerning nursing staff, such as training on the proper use of lifting equipment²⁹ informative sessions with job-specific content carried out either annually as part of the continuing education programs or as part of the compulsory orientation programs for new employees²⁹ and back school programs³⁰ have been tested and found to reduce significantly injury rates in hospitals and nursing homes. Also, stress and pain management sessions (under the 'Cognitive Behavioral Therapy' term) for nurses over a

6-week period by a clinical psychologist led to reduction in pain intensity scores but at the same time to an increase in stress score, thus proving to be only partially effective.³¹

In the field of construction works, a multiple-use educational intervention for ladder set-up and use,³² safety campaigns using educational brochures, television/radio programs and local press articles containing expert advice have been useful in reducing injury risk in a sustained manner.³³ Additionally, a study evaluating a Decking Fall Prevention System found that providing safety information at daily meetings and during weekly task-specific toolbox talks and training on the proper use of personal protective equipment according to existing regulations and manufacturing instructions ensured a 100% fall protection.³⁴ Finally, 45-minute training sessions over a 4-week period responded successfully to sudden back loading with an effect size of 0.53 SD in office employees in the USA³⁵ and evidence-based prevention programs including educational activities also brought a relative reduction of 27% of work-related skin problems in cleaners at a one-year follow up in a study carried out in Denmark.³⁶

- Personal protective equipment (PPE)

Providing the correct equipment by the employer to the employee and teaching him on its correct use is another recurrent notion among successful injury prevention practices. As examples, the use of air-assisted friction reducing devices for lateral patient transfer by nursing staff was found to be a cost-effective solution recommended over the use of traditional draw sheet method³⁷ and the use of mechanical resident lifting equipment not only decreased the resident handling injury rates but also demonstrated a beneficial effect for all nursing homes and all staff regardless of age or work patterns.^{29,30}

Examples from different professional fields are the replacement of duty uniform pants with shorts that reduced the thermal burden suffered by the firefighters and improved their operational effectiveness.³⁸ In a manufacturing company, a new type of wafer container (pod) with power grip handles proved to be partially effective as it had a significant effect on improved wrist posture but not on the whole body workload. Lastly, providing devices for recapping needles and small-size trays to facilitate one-handed recapping were effective in reducing needle stick and sharp injuries in emergency and labor rooms.³⁹

- Engineering modifications

Working environment represents a constant source of risk for the worker if it does not accommodate his/her needs during working time. Making it and maintaining it safe, as well as reporting newly discovered hazards, can reduce chances of an accident and a subsequent injury. In a study regarding workers' health in hospital and research laboratories, workstation redesign was implemented successfully in order to minimize risk of musculoskeletal injury in laboratory technologists who routinely performed piping tasks. The features addressed were the primary work counter's height, the adjustability of the seat pan and back of the chair, the proper task lighting and overall comfort of the workstation.⁴⁰ Also, in six steel construction sites, engineer modification was realized to prevent construction workers from falling and the proposed fall protection system ensured a 100% fall protection during their work activity.³⁴

In another study carried out in southern Finland, between 1989 and 1994, site visits were realized in wood-processing companies to reinforce an intervention of changes in order to make their work environment safer. The participating companies showed a significant decline in accident rate compared to the control companies. Results indicated that occupational accidents could be prevented by identifying and anticipating hazards and by implementing safety measures pertaining to the work environment.⁴¹

- Legislation and regulations

Regulations concerning injury prevention practices can take the form of specific guidelines issued by the companies or organizations responsible for the workers' health. 'Zero lift policy' guidelines are such an example; they were applied in small rural hospitals in Washington aimed to reduce back injuries among health care workers and found to be effective, as injury claims decreased by

43% in the participating hospitals from 2000 to 2004.⁴² In a similar study, written guidelines 'zero lift policy' were used to prevent nursing staff injuries associated with resident handling and produced a significant improvement, with the largest reductions observed among the more serious injuries that resulted in workers' compensation claims.²⁹

- Risk assessment

Risk assessment has been useful in preventing injuries since it leads to a risk evaluation and recommendations tailored to each different setting and working situation. As an example, at a cleaning services department, a consultative team consisting of representatives from management, employees and the hospital's ergonomist was formulated. The aim was to assess the risk of manual handling in the workplace and to make recommendations in reducing the rate and severity of workers' compensation injury in hospital cleaners. This intervention has been effective since it significantly reduced the numbers and rates of injury, although not the severity of injury. Even so, it was concluded that the recommendation of the consultative team could produce a meaningful and sustained reduction in rates of injury within the risk population.⁴³

- Health and safety management

Frequent inspections of job sites, safety methods and equipment used contribute to a decrease in risks at the workplace. In a construction company, the industry's safety program implementation, focusing mainly on fall prevention practices, was further reinforced with the contribution of a third party (University) intervention, which performed the audit activity, to which the industry responded positively.⁴⁴

5. CONCLUSION

Occupational injuries are largely preventable if improvements are to be made within the working environments. Engineering controls, administrative policies, health and safety information and education are indispensable practices in order to promote safety-conscious attitudes and behaviour at work. The distribution of burden by type of external cause of mortality has allowed developed countries to focus on preventive actions at work, resulting in a reduction of injury rates over time. Such actions are the following:

- Read all safety information supplied by your employer and follow the safety rules. Know the risks so that you

can avoid potential harm.

- Protect yourself and others by using the necessary safety procedures, tools and devices. Read the guidelines and the instructions for use.
- Actively participate in all relevant education and training for safety at your work.
- Wear the necessary personal protective equipment properly: eye-protection, special clothing, including gloves, harnesses, belts, helmets, shoes or whatever is required by your work that could minimize any injury if an accident occurs.
- Take an active part in eliminating risks from the workplace. If you discover a new hazard or safety measures that do not work properly, report them to your employer.

Make sure your employer:

- Possesses assessments of the risks to safety and health at work (including those facing groups of workers exposed to particular risks) and has explained them to you.
- Takes and explains the appropriate protective measures and, if necessary, provides any protective equipment and training required.
- Provides adequate supervision and health and safety training, including induction training for new or inexperienced workers.
- Keeps a list of occupational accidents resulting in a worker being unfit for work for more than three working days and has informed you on the reporting system.
- Draws up reports on occupational accidents suffered by the workers for the responsible authorities and in accordance with national laws and/or practices.

ΠΕΡΙΛΗΨΗ

Μήνυμα 9: “Φροντίστε για την ασφάλειά σας στην εργασία σας”

I. Θ. ΒΛΑΧΑΝΤΩΝΗ,¹ KARL KUHN²

¹Κέντρο Έρευνας και Πρόληψης Ατυχημάτων (ΚΕΠΑ), Εργαστήριο Υγιεινής, Επιδημιολογίας και Ιατρικής Στατιστικής, Ιατρική Σχολή Πανεπιστημίου Αθηνών

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Καθώς τα θανατηφόρα εργατικά ατυχήματα ανέρχονται παγκοσμίως στα 350,000, και εξηγούν πάνω από 10 εκατομμύρια χρόνια χαμένης υγιούς ζωής DALYs του ενεργού οικονομικού πληθυσμού, αντιπροσωπεύουν ένα πάγκοινο πρόβλημα της δημόσιας υγείας το οποίο ζητά επείγοντως αποτελεσματικές παρεμβάσεις. Παρόλο που εργασιακοί τομείς όπως ο κατασκευαστικός τομέας, ο τομέας της γεωργίας, των μεταφορών και της βιομηχανίας παρουσιάζουν μεγάλα ποσοστά ατυχημάτων, πρόσφατες ευρωπαϊκές μελέτες έδειξαν μια κοινή καθοδική πορεία θανατηφόρων εργατικών ατυχημάτων στις ανεπτυγμένες χώρες. Η έρευνα που σχετίζεται με πιθανούς παράγοντες κινδύνου, όπως δημογραφικούς, συμπεριφορικούς και περιβαλλοντικούς παραμένει ακόμα ανεπαρκής καθώς κάθε χώρα αναφέρει και διαφορετικά παραδείγματα. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των εργατικών ατυχημάτων στην Ευρωπαϊκή Ένωση, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν αποτελεσματικά την πιθανότητα των εργατικών ατυχημάτων. Οι πληροφορίες αυτές έχουν χρησιμοποιηθεί στη δημιουργία μηνυμάτων που συμπεριλαμβάνονται στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων.

Λέξεις κλειδιά: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, επάγγελμα, εργασία, ατύχημα, πρόληψη

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Corresponding author:

I. Th. Vlachantoni, Center for Research and Prevention of Injuries (CEREPR), Department of Hygiene, Epidemiology and Medical Statistics, Athens University Medical School, 75, Mikras Asias street, GR-11527 Athens, Greece, Tel: +30 210 7462187, Fax: +30 210 7462105
e-mail: irvlach@med.uoa.gr

REVIEW ΑΝΑΣΚΟΠΗΣΗ

Message 10: “Know the risks of alcohol”

Alcohol consumption has been linked to several injuries such as motor vehicle crashes, falls, drowning, fires and burns, and violence. Despite the many efforts and the implementation of health policies at both community and national level, the burden of alcohol-related injuries, especially among young people, is still unacceptably high in many European Union (EU) countries. The identification of effective interventions for the reduction of unintentional injuries due to problem drinking is, therefore, an important public health goal. This paper aims: (a) to describe the magnitude and the socio-economic burden of alcohol-related injuries in the countries of the EU, (b) to outline underlying risk factors and (c) to present evidence-based preventive practices that reduce the likelihood of accidents due to alcohol. Some of these measures are therefore included in the European Code Against Injuries (ECAI) aiming to raise public awareness regarding injury prevention.

1. DEFINITION

Alcohol-related injuries include those injuries for which there is epidemiological evidence of an association with alcohol consumption. Alcohol consumption has been associated with an increased risk of injury in a wide variety of settings, including road traffic accidents, falls, fires, injuries related to sports and recreational activities, self-inflicted injuries, and injuries resulting from interpersonal violence.¹ There is also some evidence that the presence of alcohol in the human body at the time of injury may be associated with a greater severity of injury and a less positive outcome. Attributable fractions for a range of alcohol-related accidents and injuries are summarized in table 1.²

2. MAGNITUDE OF THE PROBLEM

The best estimate suggests that more than 1 in 3 road traffic fatalities in the European Union (EU) are due to alcohol consumption.³ These drink-driving deaths are not equally split between genders, with 15,000 male deaths compared to 2,000 deaths for females. The cost due to alcohol in human lives is even higher for other accidents, with a toll of 27,000 deaths (including alcohol-related drowning, falls, fights, and fires, occupational and recreational injuries). Over 2,000 homicide deaths per year in the

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P. Anderson

Institute of Alcohol Studies, London

Μήνυμα 10: «Ενημερωθείτε
για τους κινδύνους του αλκοόλ»

Περίληψη στο τέλος του άρθρου

Key words:

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Injury
Abuse
Drinking
Prevention

EU are attributable to alcohol. Time-series show that the effect per litre is greater in northern Europe. Nevertheless the higher consumption levels in southern Europe indicate that the estimated share of all homicides, that are due to alcohol, is slightly higher in southern (61% of all homicides) than in northern Europe (50% of all homicides).⁴ Deaths by suicide account for 7%–8% of the total deaths due to alcohol, a toll that is greater for men.

The increasing trends in under-age “binge-drinking”, along with the high frequency of under-age drinking that have been reported in many European countries,⁵ may lead to long-term adverse health and social effects. “Binge-drinking” is a term commonly used to describe a single drinking session that includes consumption above a given cut-off level of alcohol.⁶ Excessive alcohol use and a pattern of binge-drinking are associated with increased risk of negative social consequences, reduced work performance, injuries, drink-driving accidents, brain damage, alcohol dependence, suicide, stroke, irregular heart rhythms, coronary heart disease, sexually transmitted diseases, and premature death.⁵ Binge-drinking needs to be distinguished from alcohol intoxication, which is defined as a condition that follows the administration of alcohol and results in disturbances in the level of consciousness, cognition, perception, judgement, affect, or behaviour, or other psychophysiological functions and responses.⁷

Table 1. Attributable alcohol fractions of acute alcohol-related health effects in the adult general population²

Motor vehicle traffic accidents	0.33	0.11
pedestrians	0.40	0.17
Accidental ethanol and methanol poisoning	1.00	1.00
Accidental fall injuries	0.22	0.14
Arson injuries	0.44	0.44
Accidental drowning	0.34	0.34
Accidental aspiration	1.00	1.00
Occupational and machine injuries	0.07	0.07
Suicide, self-inflicted injuries	0.32	0.29
Victim fight, brawl, rape	0.47	0.47
Victim assault, firearms	0.47	0.47
Victim assault, cutting instrument	0.47	0.47
Victim child battering	0.16	0.16
Victim assault, other	0.47	0.47
Late effects of injuries by another	0.47	0.47

One way of assessing the scale of alcohol use as a public health problem is to examine the entire burden of illness and disease, looking at years of healthy life. The WHO uses Disability-Adjusted Life Years (DALYs) as a measure to estimate the number of healthy years of life lost due to each risk factor. DALYs measure the existing gap in health status between the current position and

what could potentially be achieved. Alcohol is responsible for the loss of over 4.5 million DALYs every year in the EU (7.4% of all DALYs).³ This is principally for men, accounting for 12% of all male ill-health and premature death and a smaller, but still sizeable, 2% of all female ill-health and premature death. Two-fifths of alcohol-related DALYs are due to unintentional and intentional injuries.

Based on the results of 21 European studies, the total tangible cost of alcohol to the EU has been estimated at €125bn (€79bn – €220bn) in 2003, equivalent to 1.3% of GDP (0.9% – 2.4%).³ Aside from the tangible monetary costs, alcohol causes an intangible cost of €152bn – €764bn, which incorporates the value people place on pain, suffering and life itself due to crime and lost healthy life due to alcohol. This intangible cost is not an 'economic loss' in the usual/normal sense of the term and cannot be compared to e.g. GDP (nor can it be simply added to the tangible cost, given that both include estimated values for lost life but the estimates are derived in different ways). However, this cost offers a more accurate estimate of the full economic and human burden of alcohol to the EU.

The age-standardized death rate for external cause, injury and poison declined in the EU from 63/100,000 citizens in 1970 to 43/100,000 in 2005 (fig. 1). The decline has been observed in both member states that joined the Union prior to 2004, and in the states that joined the union in 2004 and in 2007. The decline has been more

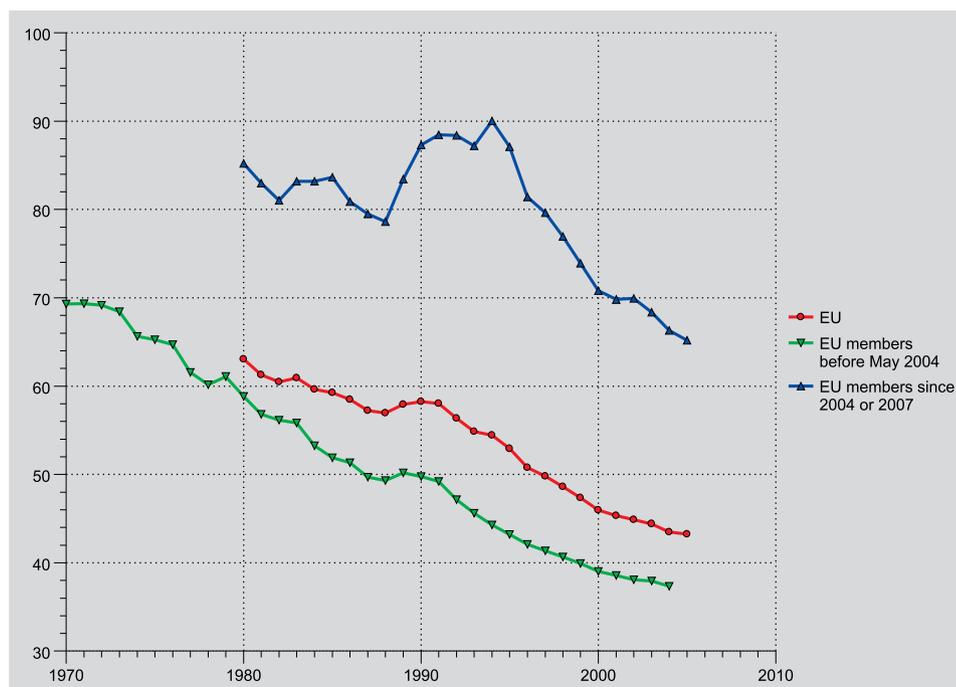


Figure 1. Age standardized death rate (per 100,000 population) due to external cause, injury and poison for all ages (Source: World Health Organization European health for all database)

substantial in the older than in the newer member states, and subsequently the gap between the two has widened over time. The increase in death rates that occurred in the newer member states in the early 1990s coincides with the socio-economic transformation that occurred following the break-up of the Soviet Union.

3. RISK FACTORS

3.1. Demographic risk factors

A higher proportion of deaths due to alcohol is detected in younger people. At an age of death of between 15 and 29 years, 27% of all deaths occurring in men (13,000 deaths) and 11% of all deaths occurring in women (2,000 deaths) are due to alcohol.⁸

3.2. Environmental risk factors

There is a substantial health gap across Europe, with a difference in life expectancy at birth between EU countries of as much as 10 years. Against this background, it is clear that many of the individual conditions that contribute to the health gap are linked to alcohol. For males dying between the ages of 20 and 64 years, injuries are responsible for nearly half (46%) of the difference in life expectancy between the three Baltic states (Estonia, Latvia and Lithuania) and the EU-15, and for one fifth (22%) of the difference between central and eastern Europe (Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria) and the EU-15 (Rehm et al 2006).⁹

Although in the EU-15, alcohol is responsible for 29% of all male injuries and 19% of all female injuries, in the central and eastern European countries, the proportions are 38% and 29%, and in the three Baltic states 48% and 42% respectively. The majority of conditions responsible for health inequalities within countries is strongly linked to alcohol. Research from Finland further suggests that socioeconomic variables act on the collective as well as the individual level. Areas with the most manual workers had 20% higher mortality rates directly attributable to alcohol than areas with the least, even after accounting for the *individual* relationship of occupation to mortality.¹⁰

3.3. Behavioural risk factors

Alcohol consumption is the most important behavioural risk factor for involvement in an accident, as well as for the severity of the injury. The lifetime risk of death from an alcohol-related accident or injury increases exponentially

with alcohol consumption. For a drinker who, on average, drinks every other day between the ages of 18 and 70 years is more than 15 in 100 for a man and 10 in 100 for a woman if they drink more than 60g alcohol per occasion.⁷ Nevertheless, even small amounts of alcohol are found to impair behaviour, judgment, memory, concentration and coordination of movements¹¹, indicating that activities requiring high concentration should not be combined/mixed with alcohol consumption.

As blood alcohol concentration increases, cognitive function and psychomotor performance decrease rapidly. Less than two standard drinks may result in cognitive and psychomotor effects that increase injury risk, such as effects on reaction time, cognitive processing, coordination and vigilance.¹⁰ Alcohol consumption increases also the likelihood and the extent of aggressive behaviour, raising the chance that a conflict or dispute will not be resolved peacefully by verbal means.¹² Injury risk from violence, both physical and sexual, is therefore increased. Alcohol consumption does not always increase aggressive behaviour, probably due to its interaction with personality. Some studies have indicated that the role of alcohol in aggression may differ between the sexes. Additionally, alcohol is a significant contributor to between-partner violence.

Alcohol also appears to interact with personality characteristics and other factors related to a personal propensity for violence, such as impulsivity.³ Injuries from violence may also be more closely linked to alcohol dependence than other types of alcohol-related injury. In addition to alcohol consumption and drinking pattern, the social context of drinking is also important for alcohol-related aggression, especially for young people whose drinking behaviour is influenced strongly by their peers. A meta-analysis found that the effects of alcohol were larger in situations characterized by increased anxiety, inhibition, conflict and frustration, while differences between sober and intoxicated persons were smaller in situations involving high provocation or self-focused attention.¹³ Furthermore, given sufficient disincentives for aggression the effects of alcohol on aggression can be reduced or even eliminated altogether.

Public drinking establishments are high-risk locations for alcohol-related aggression. However, drinking contexts by themselves do not explain the relationship between alcohol and aggression, since the impact of alcohol also acts independently of the context or setting in which drinking is taking place.¹⁴ The environment for alcohol-related aggression is also not independent of drinking. Although a few incidents that occur in bars involve interpersonal

conflict between people that might have occurred even in the absence of facilitating factors, almost all incidents of aggression that occur in bars are sudden, unplanned, emerge from the social interaction and often involve strangers. The Comparative Risk Assessment study of the World Health Organization concluded that it is reasonable to assume that almost all incidents of violence occurring in bars and other environments, where drinking is the main activity, should be considered attributable to alcohol, either directly through the pharmacological effects of alcohol or indirectly through the social norms related to drinking.¹⁵

The connection between changes in population drinking and mortality has been comprehensively investigated within the ECAS study,¹⁶ using time-series analysis in 14 European countries for the years 1950 to 1995. This technique investigates the relationship between yearly changes in consumption and harm, as well as the relative change in mortality for a change in per capita consumption of one litre of pure alcohol. Changes in death rates of accidents, suicide and homicide are strongly related to changes in overall alcohol consumption, (fig. 2).

4. EFFECTIVE PREVENTIVE PRACTICES

Increasing the price of alcohol and beer reduces road traffic accidents and fatalities particularly for younger drivers, intentional and unintentional injuries, rapes and robberies, homicides, crime, violence at universities, and violence-related injuries in general.¹⁷

A review of 132 studies, published between 1960 and 1999, found very strong evidence to support that changes in minimum drinking age laws can have substantial effects

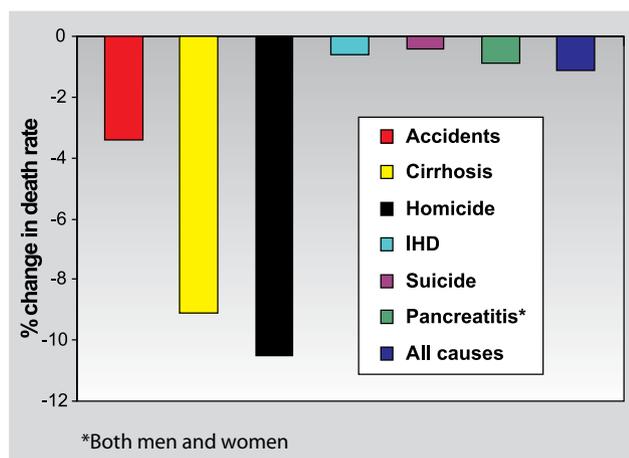


Figure 2. Percentage reduction in male death rate when per capita alcohol consumption is reduced by 1L per year (Source: Norström et al. 2001).¹⁶ Medium consuming European countries.

on youth drinking and alcohol-related harm.¹⁸ A systematic review of minimum legal drinking age (MLDA) laws in the United States found that among 14 studies looking at the effects of raising the MLDA, crash-related outcomes declined a median of 16% for the targeted age groups. On the other hand, among 9 studies looking at the effects of lowering the MLDA, crash-related outcomes increased by a median of 10% within the targeted age groups.¹⁹ The full benefits of a higher drinking age are only realized if the law is enforced.

Finnish studies have found an overall impact on alcohol consumption following changes in the number of outlets. The most dramatic change was observed in 1969, when, beer up to 4.7% alcohol, was allowed to be sold by grocery stores, and it also became easier to obtain a restaurant license. The number of off-premise sales points increased from 132 to about 17,600, and that of on-premise sales from 940 to over 4,000.²⁰ In the following year, alcohol consumption increased by 46%, whereas in the next five years arrests for drunkenness increased by 80% and 160% for men and women respectively. In Sweden, a time-series analysis found that motor vehicle accidents were significantly reduced in three of four age groups, when the right to sell 4.5% beer in grocery stores was retracted; there was a significant fall in hospital admissions for alcohol-specific diagnoses among those aged under 20 years, but no effect on assaults, suicides and falls.²¹

A number of studies have indicated that, although changing the time and day of alcohol availability at stores can redistribute the times at which many alcohol-related crashes and violent events take place, it does so at the cost of an overall increase in problems.²² A study in Western Australia showed that extending opening hours from midnight to 1.00am increased violent incidents at the later night venues by 70%.²³

Licensed drinking environments are associated with drunkenness, drink-driving and problematic behaviours such as aggression and violence, with some licensed premises being associated with a disproportionate amount of harm.²⁴ Aspects of the bar environment that increase the likelihood of alcohol-related problems include serving practices that promote intoxication, an aggressive approach taken to closing time by bar staff and local police, the inability of bar staff to manage problem behaviour, general characteristics of the environment, such as crowding and permissiveness of bar staff, the general type of bar, and physical comfort, the degree of overall 'permissiveness' in the bar, the availability of public transport, and aspects of the ethnic mix of customers. However, a systematic Cochrane review found no reliable evidence that interventions in the alcohol server

setting are effective in reducing injury.²⁵ Compliance with interventions appears to be a problem; hence mandated interventions may be more effective/efficient.

Community-based prevention programmes can be effective in reducing drinking and driving, alcohol-related traffic fatalities and assault injuries. A review of 10 community-based prevention trials, which have sought to reduce harm from alcohol, found that promising interventions were those that paid particular attention to controls on access, included the environmental contexts of where the products are sold and distributed, and involved enforcement of public health polices.²⁶ Since 1996, a multi-component program based on community mobilization, training in responsible beverage service for servers and stricter enforcement of existing alcohol laws has been conducted in Stockholm, Sweden, leading to a 29% reduction in violent crimes in the intervention area, compared with the control area.²⁷

A recent review analyzed the results of 14 systematic reviews and found no consistent evidence for the impact of educational initiatives in reducing alcohol-related harm.²⁸ Based on these reviews, 19 classroom-based programmes led by teachers were identified, with only three of them demonstrating evidence of reducing alcohol use in the short-term, and one only demonstrating evidence of long-term effects on alcohol use. Nine classroom-based programmes were identified that were taught by external contributors, only one of which (a culturally tailored programme for Native American students) demonstrated evidence of medium- to long-term effects. Nineteen school-based programmes, that were delivered outside of the lesson format, were identified including brief intervention programmes, counselling programmes, peer support and teacher training, none of which demonstrated medium to longer term effects. Twelve multicomponent programmes were identified that combined school-based intervention with family, community and/or media components. Three long-term programmes that combined school-based intervention with family and community components showed no consistent effects. Two programmes that combined classroom-based intervention with components targeting parental participation, and focusing on wider problem behaviours, appeared to have more consistent long-term effects.

A systematic review of the evidence of the impact of alcohol warning labels²⁹, introduced in the United States, found significant increases in the likelihood of respondents reporting having taken part in conversations about risks of alcohol consumption, compared to before the introduction of the labels. No direct impacts of warning labels on consumption or alcohol-related problems have been reported.

Brief advice delivered in emergency departments and trauma centres has been shown to be effective in reducing alcohol-related harm. One systematic review of 23 studies found evidence of reduced motor-vehicle crashes and related injuries, falls, suicide attempts, domestic violence, assaults and child abuse, alcohol-related injuries and injury emergency visits, hospitalizations and deaths, with reductions ranging from 27% to 65%.³⁰ A second meta-analysis of 13 studies of emergency department interventions revealed that counselling interventions were associated with approximately half the odds of experiencing an alcohol-related injury (OR: 0.59; 95% CI: 0.42–0.84) in the 6 or 12 months following their emergency department presentation.³¹

5. CONCLUSION

Alcohol, when used responsibly, is a normal and enjoyable aspect of everyday life for most people. Its misuse, however, can lead to a variety of problems, namely many adverse health outcomes, including injuries and deaths. Nevertheless, a considerable body of evidence shows, not only that alcohol policies and interventions targeted at vulnerable populations can prevent alcohol-related harm, but also that policies targeted at the general population can have a protective effect and reduce the overall level of alcohol-related problems. To this end, the following preventive messages could make a difference were they to be adopted by each individual and the society at large:

Be realistic about how long alcohol remains in your body. Even low levels of alcohol can increase the risk of all types of injury and can also impair child supervision. If you have been drinking, try to avoid activities that could result in potential harm.

Apply the same safety rules, as for alcohol, to prescribed or over-the-counter medicines, as well as for drugs that may alter your perception and increase your injury risk. Do not mix alcohol with any medicines, including the over-the-counter ones.

Excessive drinking can cause alcohol poisoning which can be deadly. Avoid binge drinking and keep within the recommended amounts of alcohol consumption.

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I would like to thank Athanasios Ntinapogias, psychologist - researcher of the Center for Research and Prevention of Injuries (CEREPR) for his fruitful comments during the internal review of this paper.

ΠΕΡΙΛΗΨΗ

Μήνυμα 10: «Ενημερωθείτε για τους κινδύνους του αλκοόλ»

P. ANDERSON

Institute of Alcohol Studies, London

Αρχεία Ελληνικής Ιατρικής 2008, 25(Συμπλ 1):65–71

Η κατανάλωση αλκοόλ έχει κατά καιρούς συνδεθεί με αρκετά ατυχήματα όπως για παράδειγμα τροχαία, πτώσεις, πνιγμούς, εγκαύματα και εκδηλώσεις βίας. Παρόλες τις προσπάθειες και τις εφαρμογές πρακτικών τόσο σε κοινοτικό όσο και εθνικό επίπεδο, το μέγεθος των τραυματισμών που οφείλονται σε κατανάλωση αλκοόλ και αφορούν κυρίως νέους, είναι πολύ μεγάλο σε πολλές Ευρωπαϊκές χώρες. Συνεπώς, ο προσδιορισμός αποτελεσματικών πρακτικών που μειώνουν τον κίνδυνο τραυματισμών από κατανάλωση αλκοόλ είναι ένας σημαντικό στόχος για τη δημόσια υγεία. Αυτή η εργασία στοχεύει: (α) να περιγράψει την έκταση του προβλήματος και τις κοινωνικο-οικονομικές επιπτώσεις των ατυχημάτων που προκαλούνται από χρήση αλκοόλ στις χώρες της Ευρωπαϊκής Ένωσης, (β) να επισημάνει τους υποκείμενους παράγοντες κινδύνου, και (γ) να παρουσιάσει τις επιστημονικά αποδεδειγμένες πρακτικές που μειώνουν την πιθανότητα ατυχημάτων από αλκοόλ. Μερικές από αυτές τις πρακτικές έχουν συμπεριληφθεί στον Ευρωπαϊκό Κώδικα Κατά των Ατυχημάτων, προκειμένου το κοινό να ενημερωθεί σχετικά με την πρόληψη των ακούσιων τραυματισμών.

Λέξεις ευρετηρίου: Ευρωπαϊκός Κώδικας Κατά των Ατυχημάτων, αλκοόλ, ατύχημα, κατάχρηση, πόση, πρόληψη

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Corresponding author:

Peter Anderson, MD, MPH, PhD, Institute of Alcohol Studies, Alliance House, 12 Caxton Street, London SW1H 0QS
 e-mail: peteranderson.mail@gmail.com

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