



EUROPEAN ALCOHOL POLICY CONFERENCE BUILDING CAPACITY FOR ACTION

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REDUCING ALCOHOL-RELATED INJURIES AND INTERPERSONAL VIOLENCE

Headline message

Reductions in societal alcohol consumption will reduce alcohol-related injuries and interpersonal violence; if an individual drinks less than 20g alcohol (two drinks) on an occasion, their lifetime risk of dying from an alcohol-related injury is less than 1 in a 100.

Summary

Alcohol is a cause of a wide range of accidents and injuries, whose risk increases with the number of drinking occasions and the amount drunk per occasion in a dose dependent manner. If an individual drinks less than 20g alcohol (two drinks) on an occasion, their lifetime risk of dying from an alcohol-related injury is less than 1 in a 100. Death rates from alcohol-related injuries go up and down in a society in parallel with changes in overall alcohol consumption. Two fifths of alcohol-related ill-health and premature death in the European Union is due to accidents and injuries, at a likely social cost of at least €50bn per year. Alcohol-related accidents and injuries are a prominent cause of health inequalities within the European Union, in particular between the three Baltic States and the rest of the Union. Regulating the economic and physical availability of alcohol can impact on the incidence of alcohol-related accidents and injuries. There is limited evidence for the impact of strategies that manage the drinking environment, except when mandatory and supported by community programmes. There is evidence that educational initiatives at the best can only have very limited impact, but there is evidence that brief advice programmes delivered in accident and emergency departments can reduce subsequent alcohol-related injuries.

1. Definition

Alcohol-related injuries include those for which there is epidemiological evidence of an association with use. Alcohol use has been associated with increased risk of injury in a wide variety of settings, including road traffic accidents (involving vehicles, bicycles and pedestrians), falls, fires, injuries related to sports and recreational activities, including drowning, self-inflicted injuries, including poisoning and suicide, and injuries resulting from interpersonal violence, including homicide¹. There is also some evidence that the presence of alcohol in the 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 the Table.

Attributable alcohol fractions of acute alcohol-related health effects in the adult general population

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

Source: Ridolfo & Stevenson²

2. Alcohol as a causal role

2.1 Traffic injuries

More than 1 in 3 road traffic fatalities in European Union are due to alcohol, annually representing at least 17,000 deaths. The risk of crashes and injuries to others from drinking increases with both the volume of alcohol consumption and the number of heavy drinking occasions. Alcohol impairs driving-related skills, including decreased vigilance, increased drowsiness, and impaired vision, psychomotor skills, information processing, and divided attention skills. Impairment in driving skills begins with any departure from a zero blood alcohol concentration level (BAC). There is a 38% increased risk of accidents at a BAC of 0.5g/L. The use of alcohol increases both the possibility of being admitted to hospital from drink-drive injuries, and the severity of the injuries.

2.2 Non-traffic injuries

Alcohol contributes to many unintentional injuries, including drownings, falls, fires, poisonings, as well as work place and recreational injuries. Between 20% and up to 80% of emergency room admissions can be alcohol-related. Studies show that increasing volume of alcohol consumption increases the risk of fatal injury and there is no evidence that tolerance to alcohol lowers the risk of fatal injuries among frequent heavy drinkers. People who usually drink alcohol at lower levels, but who engage periodically in drinking large quantities of alcohol, are at particular risk, as alcohol impairs vision and psychomotor skills and is also responsible for decreased vigilance, slow information processing and impaired decision making. Alcohol also complicates assessment and management of injured patients.

2.3 Inter-personal violence

Interpersonal violence causes about 73,000 deaths per year in Europe and alcohol is involved in up to 40% of cases. The volume of alcohol consumption and the frequency of drinking independently increase the risk of violence. The relationship between alcohol consumption and the risk of

involvement in violence (also as a recipient of violence) is stronger for episodic heavy drinking than for overall consumption. Generally the higher the level of alcohol consumption, the more serious the violence. Alcohol is related to aggression in both men and women, with some evidence that it has a greater effect on male than on female aggression. Many studies suggest that alcohol increases the likelihood of violence by reducing inhibitions, clouding judgement and impairing an individual's ability to interpret cues.

2.4 Self-inflicted injury

Heavy drinking is a major risk factor for suicide and suicidal behaviour among both young people and adults. The 10,000 alcohol-related deaths from suicide annually represent more than 1 in every 6 suicides, a toll that is greater for men. There is a direct relationship between alcohol consumption and the risk of suicide and attempted suicide, which is stronger for episodic heavy drinking than for overall consumption. Alcohol can act as a precipitator for suicidal behaviour; it increases impulsivity and aggression and leads to impaired decision making. It can function also as a vulnerability factor; heavy drinking strengthening other risk factors for suicide, including social isolation, depression and psychical illness.

2.5 Violent injuries and homicide

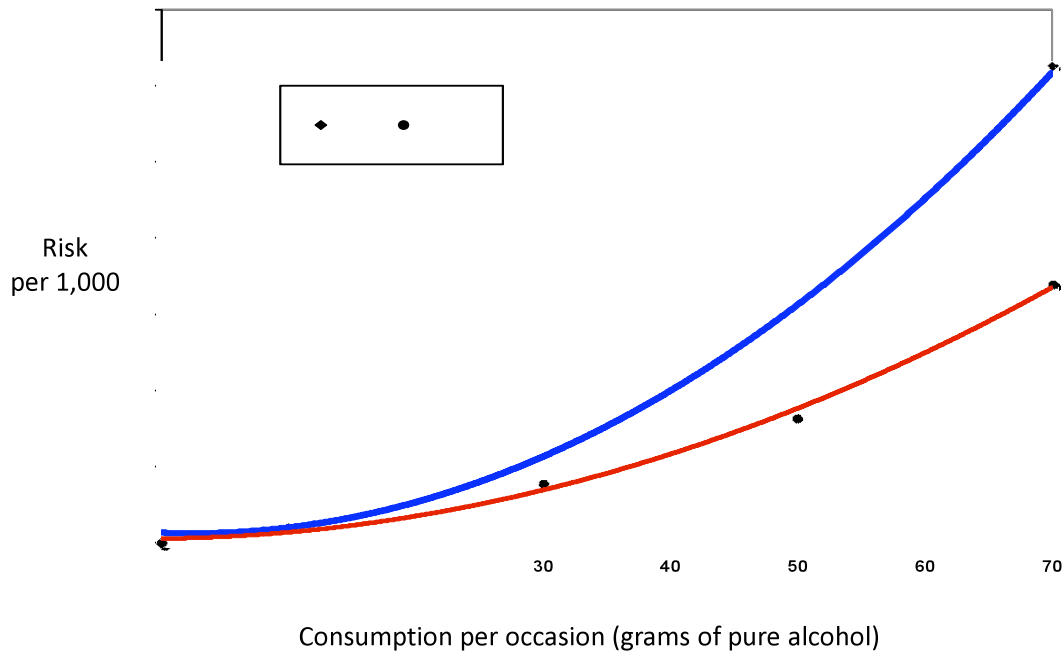
In the European Union, there are 25%-85% of violent crimes related to alcohol, the proportion varying across countries and cultures. Over 2,000 homicide deaths per year are attributable to alcohol, 4 of every 10 homicides. Systematic reviews have suggested that alcohol is a cause of child abuse in 16% of cases and that one third of intimate partner violence occurs when the perpetrator is under the influence of alcohol. Alcohol-related sexual assaults by strangers are importantly associated with alcohol consumption of both the offender and the recipient. The violence-related effects of alcohol include increased emotional liability and focus on the present, less self-awareness, decreased ability to consider consequences or reduced ability to solve problems and impaired self-control.

3. Behavioural risk factors

3.1 The use of alcohol

Alcohol consumption is the most important behavioural risk factor for the risk of an alcohol-related accident and injury and for the severity of the injury. The lifetime risk of death from an alcohol-related accident or injury increases exponentially with alcohol consumption, and, using the example of a UK drinker who, on average drinks every other day between the ages of 18 and 70 years is 50 in 1000 for a man and 25 in 1000 for a woman if they drink 60g alcohol per occasion¹.

Risk over lifetime that death in UK is due to alcohol-related injury assuming 10,000 drinking occasions between 18-70 years (every other day)



As blood alcohol concentration increases cognitive function and psychomotor performance decrease rapidly. Less than 20g alcohol may result in cognitive and psychomotor effects that increase the risk of injury, such as effects on reaction time, cognitive processing, coordination and vigilance. Alcohol consumption increases the likelihood and extent of aggressive behaviours, increasing the chance that a conflict or dispute will not be resolved peacefully by verbal means. 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 be different between the sexes. Alcohol is a significant contributor to between-partner violence.

3.2 Personality characteristics

Alcohol also appears to interact with personality characteristics and other factors related to a personal propensity for violence, such as impulsivity³. 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 peers. A meta-analysis found that the effects of alcohol were greater in situations characterized by greater anxiety, inhibition conflict and frustration, while differences between sober and intoxicated persons were smaller in situations involving high provocation or self-focused attention⁸. Further, given sufficient disincentives for aggression the effects of alcohol on aggression can be reduced or even eliminated altogether.

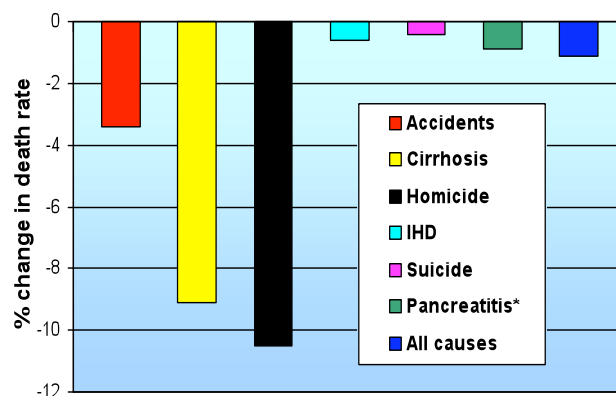
3.3 Drinking establishments

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 place⁹. The environment for alcohol-related aggression is also not independent of drinking. Although a few incidents that occur in bars involve interpersonal conflict between friends or couples

that might have occurred in another setting, almost all incidents of aggression that occur in bars are unplanned, emerge from the social interaction in the bar and often involve strangers. The Comparative Risk Assessment study of the World Health Organization concluded that it seems 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 drinking¹⁰.

3.4 Population drinking

The connection between changes in population drinking and mortality has been comprehensively investigated within the European Comparative Alcohol Study (ECAS)¹¹, using time-series analysis in 14 European countries for the years 1950 to 1995. This technique analyses the relationship between yearly changes in consumption and harm, and estimates 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.



Percentage reduction in male death rate when per capita alcohol consumption is reduced by 1L per year. Medium consuming European countries. **Source:** (Norström et al. 2001)¹¹. **Key:** *Both men and women.

4. Overall burden

4.1 Health burden

One way of assessing the scale of alcohol as a public health problem is to examine the whole burden of illness and disease, looking at years of healthy life. The WHO uses a measure called Disability-Adjusted Life Years (DALYs) to estimate the number of healthy years of life lost due to each risk factor. For example, while a year of perfect health will count as 1 and a year of death will be 0, a year of damaged health that significantly affects Quality of Life will be somewhere in between. DALYs measure a gap in health between the current position and what could be achieved. Alcohol is responsible for the loss of over 4.5 million DALYs every year in the EU, 7.4% of all DALYs. 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.

4.2 Economic burden

Based on the results of 21 European studies, the total tangible cost of alcohol to the European Union has been estimated to be €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 normal sense of the term and cannot be compared to, for example, GDP (nor can it be simply added to the tangible cost, given that they both include estimated values for lost life but the estimates are done in different ways). However, this cost offers a more accurate estimate of the full economic and human cost of alcohol to the European union. It is not possible to specifically break this down by disease group, but given that two-fifths of alcohol-related DALYS are due to unintentional and intentional injuries, it could be considered that the tangible costs of alcohol-related injuries to the European Union is on the order of €50bn per year.

4.3 Inequalities between and within countries

Fatal injuries are amongst the underlying phenomena of the health gap between the Eastern and the Western parts of the European Union. Injury mortality is an enormous preventable public health problem (135,000 deaths in 2002 - 14% of overall mortality in EU). In Europe, there are three clear strata of fatal injuries mortality: EU3¹ - the Baltic States, where deaths from injuries constitute one fourth of whole premature mortality (25%), EU7² (10%) and EU15³ (5%). A proximate cause leading to a very high level of fatal injuries mortality is alcohol. In European Union in 2002 over 40,000 of injuries deaths were attributed to alcohol. This constituted 31% of all mortality from non-medical causes. A striking peculiarity in the health status of the European population is the fact that fatal injury is the most important cause of premature mortality of young and middle-aged adults (ages 20-64) in the Baltic States (mortality rates 324/100,000), exceeding even cardiovascular diseases (315/100,000). Thus, in the Baltic States, injury mortality rates have reached one of the highest levels in Europe. This situation poses a particular contrast to some other EU countries, such as the Netherlands (37/100,000) or the UK (45/100,000), which have some of the lowest levels of fatal injury in the world. Premature deaths from injuries were responsible for 46% (3.5 years) of the health gap between the EU3 and the EU15 in men and 33% (0.7 years) in women. In the gap between the EU7 and EU15 countries injuries constituted 22% (0.9 years) in men and 9% (0.1 years) in women.

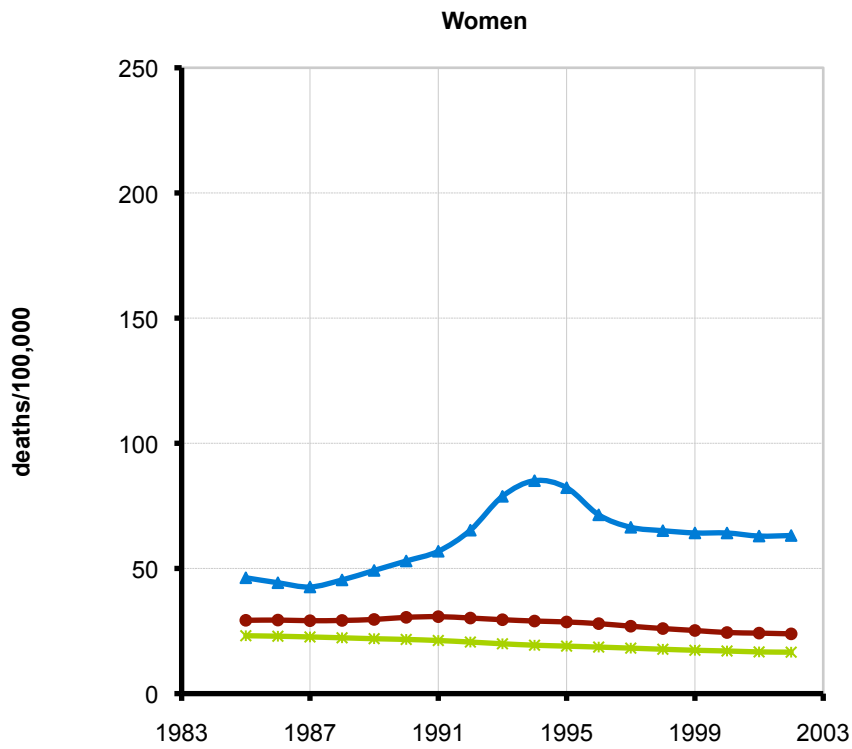
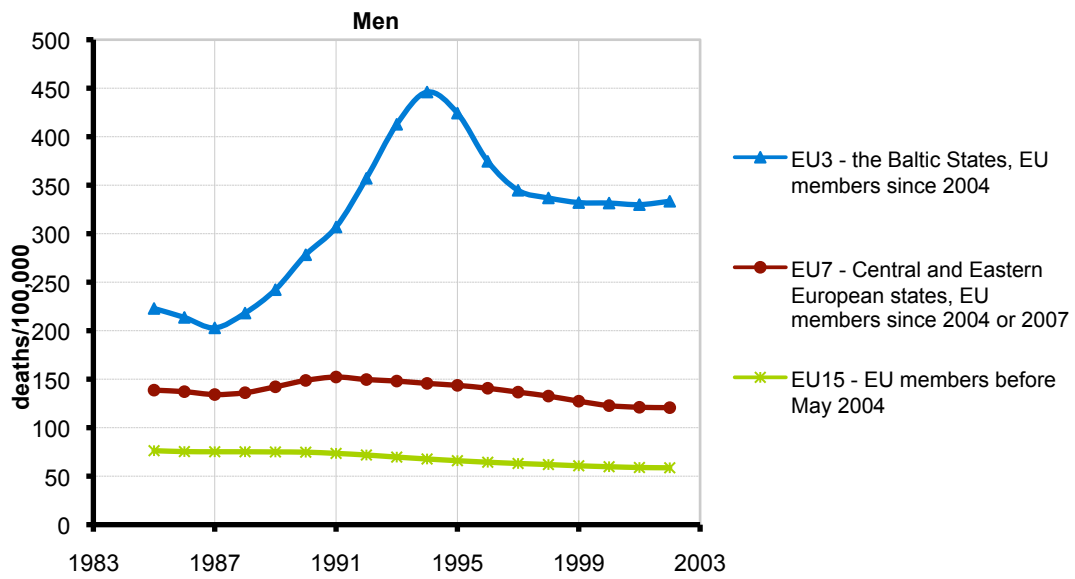
4.4 Time trends

The age standardized death rate for external cause, injury and poison declined in the EU15 Member States (before May 2004) from 76/100,000 amongst men in 1985 and 23/100,000 amongst women in 1985 to 58/100,000 and 17/100,000 in 2002 respectively. Similar, but smaller declines have been seen in the EU7 (Member states that joined in 2004 and 2007, excluding the Baltic States) from 139/100,000 amongst men in 1985 and 29/100,00 amongst women in 1985 to 121/100,000 and 24/100,000 in 2002 respectively. Whilst rates have increased in the three Baltic States from 223/100,000 amongst men in 1985 and 46/100,00 amongst women in 1985 to 333/100,000 and 63/100,000 in 2002 respectively. The enormous jump in death rates seen in the Baltic States in the early 1990s coincides with the socio-economic transformation that occurred following the break-up of the Soviet Union.

¹ EU3 – the Baltic States (former Soviet Union countries) – new EU member states

² EU7 – new EU member states from Central and Eastern Europe

³ EU15 – European Union before enlargement in 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK



Age standardized death rate, external cause, injury and poison, all ages per 100,000 population. **Source:** World Health Organization European health for all database.

5. Reducing alcohol-related injuries

5.1 Regulating the availability of alcohol

Price 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 injuries¹².

Minimum legal purchase age A review of 132 studies published between 1960 and 1999 found very strong evidence that changes in minimum drinking age laws can have substantial effects on youth drinking and alcohol-related harm, particularly road traffic accidents, often for well after young people reached the legal drinking age¹³. 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, and that among 9 studies looking at the effects of lowering the MLDA, crash-related outcomes *increased* by a median of 10% within the targeted age groups¹⁴. The full benefits of a higher drinking age are only realized if the law is enforced.

Number of retail outlets/outlet density Finnish studies have found an overall impact on alcohol consumption from 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 get a restaurant license. The number of off-premise sales points increased from 132 to about 17,600, and on-premise sales points grew from 940 to over 4000¹⁵. In the following year, alcohol consumption increased by 46%. In the following five years, arrests for drunkenness increased by 80% for men and 160% for women. 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 groceries 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 falls¹⁶.

Hours and days of retail sale A number of studies have indicated that although changing either hours or days of alcohol sale can redistribute the times at which many alcohol related crashes and violent events related to alcohol take place, it does so at the cost of an overall increase in problems¹⁷. 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%¹⁸.

5.2 Managing drinking environments

Licensed drinking environments are associated with drunkenness, drink-driving and problem behaviours such as aggression and violence, with some licensed premises being associated with a disproportionate amount of harm¹⁹. 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 injury²⁰. Compliance with interventions appears to be a problem; hence mandated interventions may be more likely to show an effect.

5.3 Community programmes

Community based prevention programmes can be effective in reducing drinking and driving, alcohol related traffic fatalities and assault injuries. A review of ten community-based prevention trials which have sought to reduce harm from alcohol found that interventions which showed promise 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 polices²¹. 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 area²².

5.4 Educational initiatives

A recent review analyzed the results of fourteen systematic reviews and found no consistent evidence for the impact of educational initiatives in reducing alcohol-related harm²³. Based on these reviews, 19 classroom-based programmes led by teachers were identified, three only of which demonstrated evidence of reducing alcohol use in the short-term, and one only of which demonstrated 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 labels²⁴ introduced in the United States found significant increases in the likelihood of respondents reporting having taken part in conversations about risks of alcohol consumption from before the introduction of the labels to the year afterwards. No direct impacts of warning labels on consumption or alcohol-related problems have been reported.

5.5 Interventions in emergency departments

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 for 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%²⁵. A second meta-analysis of thirteen studies of emergency department interventions revealed that counselling interventions were associated with approximately half the odds of experiencing an alcohol-related injury (odds ratio = 0.59, 95% confidence interval 0.42–0.84) in the 6 or 12 months following their emergency department presentation²⁶.

6. Recommendations

I. Definitions and measurement of alcohol-related injuries and inter-personal violence

Common definitions of alcohol-related injuries and inter-personal violence should be maintained and common methodologies developed and adopted to document paths of causality and attributable fractions across Europe.

II. Reducing alcohol-related drinking and driving

A maximum blood alcohol concentration limit of 0.5 g/L should be introduced throughout Europe; countries with existing lower levels should not increase them. Eventually, a lower limit of 0.2g/L should be introduced for all drivers.

A lower limit of 0.0 g/L should be introduced for young drivers and drivers of public service and heavy goods vehicles.

Unrestricted powers to breath test, using breathalysers of equivalent and agreed standard, should be implemented throughout Europe.

III. Regulating the economic and physical availability of alcohol

Price

Minimum tax rates for all alcoholic beverages should be increased in line with inflation; should be at least proportional to the alcoholic content of all beverages that contain alcohol; and should at least cover the external costs of alcohol as determined by an agreed and standardized methodology.

Member States should retain the flexibility to use taxes to deal with specific problems that may arise with specific alcoholic beverages, such as those that prove to be appealing to young people.

Availability

A minimum system of licensing for the sale of alcoholic products should be implemented throughout Europe, respecting existing licensing systems, where these are stronger.

The sales of alcoholic products to persons under the age set by domestic law, national law or eighteen years, whichever is the higher, should be prohibited and enforced.

Jurisdictions that manage outlets through number and density, location and hours and days of sale should consider not relaxing their regulations; jurisdictions without such regulations or with very limited regulations should analyze the impact of introducing or strengthening them.

A range of increasingly severe penalties against sellers and distributors, such as withdrawal of license or temporary and permanent closures, should be implemented in order to ensure compliance with relevant measures.

IV Creating safer drinking environments and communities

Urban planning, community strategies, licensing regulations and restrictions, transport policies and management of the drinking and surrounding environments should work to minimize the negative effects that result from alcohol intoxication, particularly for local residents.

Effective and appropriate training should be implemented for the hospitality industry and servers of alcohol to reduce the harmful consequences of intoxication and harmful patterns of drinking. Adequate policing and enforcement of alcohol sales and licensing laws should be implemented, targeted at premises associated with a higher level of harm.

Well-resourced community mobilization and intervention projects, involving different sectors and partners should be implemented to create safer drinking environments and to reduce binge drinking.

V. Education

Educational programmes should not be implemented in isolation as an alcohol policy measure, or with the sole purpose of reducing alcohol-related injuries and inter-personal violence, but rather as a measure to reinforce awareness of the problems created by alcohol and to prepare the ground for specific interventions and policy changes.

VI. Health care interventions

Integrated evidence-based guidelines for brief advice to reduce harmful drinking should be developed and implemented in accident and emergency departments upwardly to harmonize the quality and accessibility of care.

Training and support programmes to deliver brief advice to reduce harmful drinking should be developed and implemented in accident and emergency departments upwardly to harmonize the skills of health care providers.

Resources should be made available to ensure the widespread availability and accessibility of identification and advice programmes to reduce harmful drinking.

VII. Creating the evidence base

European infrastructures should be established and financed to undertake collaborative cross country research to reduce alcohol-related injuries and interpersonal-violence.

European infrastructures should be created and financed to review and disseminate all major research outcomes to reduce alcohol-related injuries and interpersonal-violence, for example, registries and databases; the evidence base should be translated into easily understood policies and practices through practical toolkits and guidelines.

A European database of laws and regulations and of effective polices and programmes to reduce alcohol-related injuries and interpersonal-violence at European, Member State and municipal level should be established and maintained.

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Prepared by:

Andrej Marusic and Alenka Tancic, Slovenia
Marta Manczuk, Poland