ALCOHOL KNOWLEDGE CENTRE

BRIEFING

IAS Institute of Alcohol Studies

ALCOHOL-RELATED ACCIDENTS AND INJURIES

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This briefing contains the following chapters:

- Alcohol-related accidents and injuries

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Alcohol-related accidents and injuries

Summary

- Alcohol has a range of psychomotor and cognitive effects that increase accident risk
- Alcohol consumption is closely regulated in relation to the operation of transport systems and other safety sensitive environments and activities
- Research has found that the severity of both limb and head injury correlate directly with blood alcohol concentration
- Alcohol-related accidents that occur within the home can often have fatal outcomes, the increase risk of injury extends beyond the home too
- Alcohol affects a person's likelihood to be both a victim of, and to perpetrate, injury through violence
- Accidents due to alcohol (including drink-driving accidents) are the leading cause of death among young adults

Introduction

Alcohol-related health harm is not just limited to chronic disease or physical illness. The presence of alcohol in the body has also been shown to increase the severity of injuries from accidents.[1]

[1] Fuller MG, 'Alcohol use and injury severity in trauma patients', Journal of Addictive Diseases (1995), 14, pp. 47–54

Alcohol-related accidents and injuries

Alcohol has a range of psychomotor and cognitive effects that increase accident risk on reaction times, cognitive processing, coordination, vigilance, vision and hearing, even at low blood alcohol levels. For these reasons alcohol consumption is normally closely regulated in relation to the operation of transport systems and other safety sensitive environments and activities.

Adverse effects on vision have been found at blood alcohol concentrations of 30mg ethanol per 100ml blood, and the psychomotor skills required for driving have been found to show impairment from 40mg/100ml (in the UK the legal blood alcohol limit for drivers is 80mg/100ml). Raised risk of accident can also remain for some time after drinking, as skills and faculties do not necessarily return to normal immediately even once all alcohol has left the body. Drink-driving vehicles in general is a dangerous activity, as the number of alcohol-related serious injuries and deaths on Great Britain's roads demonstrates. Since 2010, 4% – 5% of all reported road traffic accidents involved at least one driver over the drink drive limit have accounted for around. Between 13% – 16% of all deaths on GB roads over the same period did so too.[1]

Impairment of faculties can also have a dangerous effect on the control of aircraft. In a study of airline pilots who had to perform routine tasks in a simulator under three alcohol test conditions, it was found that:

- before the ingestion of any alcohol, 10% of them could not perform all the operations correctly;
- after reaching a blood alcohol concentration of 100mg/dl, 89% could not perform all the operations correctly;
- and 14 hours later, after all the alcohol had left their systems, 68% still could not perform all the operations correctly.[2]

A study published in the *Emergency Medicine Journal* investigating the relationship between the pattern and severity of injury sustained during falls among 351 patients found a positive correlation between with blood alcohol concentration. Not only were alcohol-related falls more often associated with severe craniofacial injury, but the severity of both limb and head injury correlated directly with blood alcohol concentration.[3]

Alcohol-related accidents that occur within the home can often have fatal outcomes. In 2008, the London Fire Brigade estimated that almost a third of accidental fire deaths in the capital were alcohol-related.[4] At a conservative estimate, it is believed that a total of 400 people die in alcohol-related home accidents every year.[5] Indeed, in a survey of emergency responders in England, almost nine in ten (88%) of firefighters saw alcohol as having a large impact on the risk of fire and related injuries.[6]

Alcohol's ability to increase the risk of danger extends beyond the home too: according to Alcoholics Anonymous, a quarter of accidents at work are drink-related.[7] An Institute of Alcohol Studies report on the cost of workplace hangovers found that:[8]

> **A number of studies (though not all)[9] indicate that drinking can impair people's performance at work – unsurprising, given that alcohol has a negative effect on cognitive and motor skills long after it has been**

consumed.[10] Heavier drinkers tend to report lower productivity, lower quality work and are more likely to get into arguments or accidents.[11]

Alcohol consumption affects a person's likelihood to be both a victim of, and to perpetrate, injury through violence. For victims in particular, cognitive effects of alcohol may reduce 'ability to recognise warning signs in potentially violent situations' while for perpetrators, alcohol consumption may affect self-control.[12] In 2017/18 in England and Wales, in 561,000 violent incidents – around two fifths (39%) of violent crimes – and around a third (31%) of incidents of domestic violence, the perpetrator was thought to be under the influence of alcohol.[13] Figures from 2013/14 suggested that of all those aged 16 to 59 years in England and Wales who had ever experienced a serious sexual assault since the age of 16, more than a third (36%) believed the perpetrator to be under the influence of alcohol.[14]

A significant proportion of avoidable deaths and hospital admissions each year are particularly attributable to the alcohol consumption of young people.[15] A government white paper on public health published in 2010 emphasised the danger of alcohol misuse to young people's lives, stating that accidents due to alcohol (including drink-driving accidents) are the leading cause of death among 16–24-year-olds.[16]

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[1] Gov.uk, 'Road accidents and safety statistics', Department for Transport <https://www.gov.uk/government/collections/road-accidents-and-safety-statistics>
[2] Modell and Mountz, 'The problem of alcohol use by pilots', New England Journal of Medicine (1990)
[3] Johnston JJE, McGovern SJ (2004), 'Alcohol related falls: an interesting pattern of injuries', *Emergency Medicine Journal* 2004; **21:** 185-188 <https://emj.bmj.com/content/21/2/185>
[4] London Fire Brigade (2008), 'Almost a third of accidental fire deaths in London are alcohol-related'; 'The fire dangers of alcohol,' <http://www.london-fire.gov.uk/FeatureFireRiskAndAlcohol.asp>
[5] Consumer & Competition Policy Directorate (2002), 'Research on the proportion of home accidents involving product fault or contributory behaviour', p. 28
[6] The Institute of Alcohol Studies, (2017) 'Alcohol's impact on emergency services', London
[7] Alcoholics Anonymous Great Britain, 'Interesting Statistics' <http://www.alcoholics-anonymous.org.uk/professionals/?PageID=83#_blank>
[8] The Institute of Alcohol Studies (June 2019), 'Financial headache: The cost of workplace hangovers and intoxication to the UK economy', p. 8 <http://www.ias.org.uk/uploads/pdf/IAS%20reports/rp35062019.pdf>
[9] Blum, T.C. et al (1993), Alcohol consumption and work performance, *Journal of Studies on Alcohol* 54:1, pp. 61-70.
[10] Gunn, C. et al (2018), A systematic review of the next-day effects of heavy alcohol consumption on cognitive performance, *Addiction* 113:12, pp. 2,182-93.
[11] Ames, G.M. et al (1997), The relationship of drinking and hangovers to workplace problems: an empirical study, *Journal of Studies on Alcohol* 58:1, pp37–47; Holden, L et al (2011), Health-related productivity losses increase when the health condition is co-morbid with psychological distress: findings from a large cross-sectional sample of working Australians, *BMC Public Health* 11, pp. 417–426; Mangione, T. et al (1999), Employee Drinking Practices and Work Performance, *Journal of Studies on Alcohol* 60:2, pp. 261-70.
[12] World Health Organization (2006), 'Interpersonal violence and alcohol', World Health Organization; Geneva, p. 2
[13] Office for National Statistics (2019) 'The nature of violent crime in England and Wales: year ending March 2018'; Table 10: Proportion of violent incidents where the victim believed the offender(s) to be under the influence of alcohol or drugs, by offence type and violence type, year ending March 2018 CSEW, in Office for National Statistics (2019) 'The nature of violent crime in England and Wales: year ending March 2018' <http://bit.ly/2N17mRV>
[14] Appendix table 4.16: Influence of alcohol and drugs in incidents of serious sexual assault2 experienced by adults aged 16 to 59 since the age of 16, by sex, 2013/14 CSEW, in Office for National Statistics (2015), 'Violent Crime and Sexual Offences - Alcohol-Related Violence' <https://bit.ly/2PCEOQN>
[15] Jones L, Bellis M, Dedman D, et al (June 2008)., 'Alcohol-attributable Fractions for England: Alcohol-attributable Mortality and Hospital Admissions', Centre for Public Health Faculty of Health and Applied Social Sciences Liverpool John Moores University, page viii
[16] The Secretary of State for Health (November 2010), 'Healthy Lives, Healthy People: Our strategy for public health in England', p. 19 <http://tinyurl.com/nh5tcmc>