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Editorial

Escalation of Binge Drinking and Its Consequences

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Abstract

Aims: To make the case that the binge drinking pattern of drinking is escalating particularly in the young and the consequences in terms of acute and chronic disease.

Methods: A review of recent literature was conducted with particular reference to current prevalence figures, the different definitions used and the distinct complications and associations of binge drinking.

Results: Evidence from several countries including the US and mainland Europe is consistent with the view that the binge pattern of drinking is being increasingly favoured by younger age groups. An association between the binge drinking pattern and use of illegal drugs adds to the high risks of unsafe drinking practices, crime and anti-social behaviour. Medical consequences of binge drinking include acute alcoholic poisoning, sudden cardiac death and an increased risk of myocardial infarction and stroke although the overlap with chronic heavy drinking can make interpretations of clinical differences difficult. Binge drinking when started during adolescence is a risk factor for continued alcohol abuse and alcohol dependence in adulthood.

Conclusion: Measures to control the escalation in frequency of binge drinking require the specific targeting of vulnerable groups such as the school children and students at college.

Keywords: Binge drinking; Cardiovascular; Cerebral consequences; Crime and unsafe sex; Escalating frequency

Introduction

The aim of this editorial is to highlight an escalation in the binge drinking pattern of alcohol consumption and its consequences as compared with those who are drinking regularly. A clear distinction cannot be expected because of an inevitable overlap as the amount consumed on some days by regular heavy drinkers is likely to come within the binge drinking category. Furthermore, there is considerable divergence in what is considered to be a binge drinking pattern and definitions vary in different counties. In the UK, more than eight units of alcohol daily for a man and for a woman, more than six units daily are used as a proxy measure of binge drinking [1]. Whereas in the US, the National Institute on Alcohol Abuse and Alcoholism defines a 'binge' as consumption of alcohol that brings blood alcohol concentration to 0.08 gram percent or above, corresponding to the consumption of 5 or more drinks in a male, or 4 or more drinks in a female, in over 2 hours [2]. These definitions take no account of frequency or of periods of abstinence in between, and so do not give a complete picture of total alcohol consumption. Indeed a person may binge at weekends and yet remain within the accepted weekly safe levels in the UK of 21 units for men and 14 for women. What has been clearly demonstrated is that the binge drinking pattern is strongly associated with alcohol dependence and the severity of alcohol dependence can be related to the number of binge drinking episodes [3].

As to the evidence that the binge drinking pattern of drinking is escalating, in the US binge drinking episodes per person increased by 35% between 1995 and 2001 with the highest rates among those aged 18 to 25 years. Overall, 47% of binge-drinking episodes were in otherwise moderate drinkers [4]. This was also the conclusion in a recent publication of drinking patterns in US counties from 2002 to 2012. Nationally 18.3% of people were considered to be binge drinkers in 2012 [5]. In the UK a survey in 2012 showed that 27% of young people in the UK aged 16-24 were likely to have drunk very heavily (more than 12 units for men and 9 units for women) at least once during the week, with similar percentages for men and women [1]. Most European countries exhibit the same trend towards an increase in binge drinking. In one French 17-year old population cohort, binge drinking episodes occurred over the previous month, on one, three, or ten occasions in 48%, 17.9%, and 2.2% of cases respectively [6].

As might be expected, family upbringing has been shown to have a major influence on the likelihood of early drinking and adoption of a binge drinking pattern. The variables most predictive in one study were having a single parent, sipping or tasting alcohol by age 10, having parents who also started drinking at an early age, and parental drinking frequency [7]. The association between drinking heavily and attending college may also be larger than previously estimated [8].

Use of other drugs and energy drinks

Typically binge drinking occurs in conjunction with the use of other drugs, such as tobacco, ecstasy, cocaine, amphetamine and marijuana. Many alcohol related deaths involve drugs in doses that cause respiratory depression such as the opiates, sedatives and most recently mephedrone [9]. A new hazard relates to the ingestion of energy drinks along with alcohol which result in a decreased awareness of the physical and mental impairments caused by the alcohol. In one study, the consumption of energy drinks was associated with an increase in heavy episodic drinking with twice as many episodes of drunkenness each week. Those students who reported consuming energy drinks had a significantly higher prevalence of alcohol related consequences such as being taken

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advantage of sexually, or of taking advantage of another sexually, or riding with an intoxicated driver and of being physically hurt or injured [10].

Consequences of Binge Drinking

Acute alcoholic poisoning

Deaths from alcohol poisoning occur most often when relatively inexperienced drinkers consume very large amounts of alcohol in a short time, as in the binge drinking pattern. Blood alcohol levels of > 300-400 mg per 100 ml are found with consumption of 150-200 g of alcohol (equal to 6-8 pints of strong lager or two thirds of a bottle of vodka) and carry a high risk of death in the naïve drinker. The online game Neknominate in which people film themselves drinking potentially lethal quantities of alcohol and nominate a friend to outdo them has been responsible for deaths from acute alcohol poisoning. Seven out of 10 visits to hospital accident & emergency departments at weekends between midnight and 5 am are drink-related, mostly of the binge pattern [11]. Binge drinking has been estimated to account for approximately one half of alcohol-attributable deaths, two thirds of years of potential life lost, and three fourths of economic costs [12].

Road traffic accidents and criminal behaviour

In the US during the period 1993-2002, over 80% of total alcohol-impaired driving episodes in each study year were reported by people who also reported binge drinking [13]. Another recent study showed persistently high rates during 1996-2007 for being involved in an alcohol related crash with figures for women increasing to those for underage men [14]. As to criminal/disorderly behavior, one review found that during the 12 months prior to interview, 39% of binge drinkers admitted to having committed an offence and 60% to criminal and/or disorderly behavior during or after drinking alcohol. Furthermore, among the 18-24 year olds who took drugs as well as binged, there was a much higher incidence of violent crime, criminal damage, and fighting in a public place [15].

Unwanted/unsafe sexual activity

Around 40% of 13 and 14 year olds in Scotland reported being 'drunk or stoned' when experiencing their first sexual intercourse [16]. After binge drinking, according to the Health Education Authority report, one in seven 16-24 year olds had unprotected sex, one in five had sex they later regretted and one in ten have been unable to remember if they had sex the night before [17]. In a US study, binge drinkers were also twice as likely as non-binge drinkers to engage in HIV risk behaviour, including injection drug use, exchange of sex for money/drugs and anal sex without a condom, and the risk increases with the number of binge drinking episodes [18]. Another recent study showed that men who have sex with men and who binge drink, were more likely than non-binge drinkers to engage in condomless sex [19].

Cardiovascular effects

The binge drinking pattern may be especially risky for middle aged and older adults due to age related comorbidities. Those between 55 and 65 years old who binge drink have double the risk of dying within 20 years than moderate drinkers [20]. The frequency and mortality of ischemic, not haemorrhagic stroke, has also been shown to be increased [21] and alcohol intake and drinking frequency are known to be associated with an increase in blood pressure and cardiovascular mortality [22,23]. In the prospective epidemiological study of myocardial infarction a binge drinking pattern was associated with increases in systolic blood pressure and higher risk of myocardial infarction on the days following episodes of binge drinking [24]. The mechanism may relate to an increase in monocyte adhesion to endothelial cells related to the very high levels of acetaldehyde found in the blood after binge drinking [25]. Finally, it is important to note that the cardio-protective effect of a light to moderate daily alcohol consumption disappears when mixed with occasions of heavy drinking [26].

Brain damage

The brain damage, which can occur with a binge drinking pattern of drinking, shows distinct biochemical and neurotransmitter changes. An excessive amount of glutamate is released into specific brain regions during binge drinking in excess of 4- to 5-fold of the normal basal concentration, not evident in chronic alcohol abusers [27]. In a group of university students, binge drinking was associated with poorer verbal declarative memory consistent with the vulnerability of the adolescent hippocampus to the neurotoxic effects of alcohol [28]. In another recent study cerebellar volumes were shown to be smaller in binge drinking adolescents [29], and anomalies in the neural activity involved in attention/working memory processes have been reported to increase after 2 years of binge drinking [30]. A recent review of the effects of alcohol intake during adolescence also showed changes in brain development and impairment of neurocognitive performance [31].

Occurrence of cirrhosis

Over a 10 to13 year follow-up period, cirrhosis was found to have developed in 7.5% and 16.1% of binge and daily drinkers respectively [32]. Similarly, a Danish survey found that the risk of developing cirrhosis was lower in periodical binge drinkers compared to daily drinkers [33]. The apparent lower frequency of cirrhosis with binge drinking may be explainable on a lower total amount of alcohol consumed over the years consequent on less alcohol consumption in between the episodes of binge drinking. Consistent with this view, is the major study showing that increases in liver deaths in the UK over the past two decades were the result of daily or near daily heavy drinking not episodic drinking and that this regular drinking pattern was often discernible at an early age [34].

Conclusion

There is good evidence that the binge drinking pattern, particularly in the young, is escalating and in attempting to control this vulnerable group, students need to be specifically targeted. Parental based interventions [35] and alcohol abuse prevention programmes [36] have been shown to be effective in reducing high risk drinking amongst college students. Although a binge drinking pattern may not always be associated with overall excess alcohol consumption in terms of the weekly safe alcohol limits, certain consequences appear to be specifically associated with it namely, sudden death, cardiovascular mortality and cerebral events, crime and anti-social behaviour, dangerous driving and sexual related risks. Furthermore, binge drinking is likely to lead to dependency and high alcohol consumption in later life.

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