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J Psychopharmacol published online 17 September 2011

DOI: 10.1177/0269881111414751

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Popular intoxicants: what lessons can be learned from the last 40 years of alcohol and cannabis regulation?

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Journal of Psychopharmacology

0(0) 1–8

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DOI: 10.1177/0269881111414751

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Abstract

In this paper we discuss the relative physical, psychological and social harms of the two most frequently used intoxicant drugs in the UK, namely cannabis and alcohol. Over the past 40 years, the use of both drugs has risen significantly with differential consequences. It is argued that increased policing of cannabis use under the current drug classification system will lead to increased criminalization of young people, but is unlikely to significantly reduce the rates of schizophrenia and psychosis. In comparison, increases in alcohol drinking are related to significant increases in liver cirrhosis hospital admissions and mortality, at a time when mortality rates from other major causes are on the decline. A recent expert-led comparison of the health and social harms to the user and to others caused by the most commonly used drugs in the UK showed alcohol to be more than twice as harmful as cannabis to users, and five times as harmful as cannabis to others. The findings underline the need for a coherent, evidence-based drugs policy that enables individuals to make informed decisions about the consequences of their drug use.

Keywords

Alcohol, cannabis, drug harms, drug policy

Introduction

In the ongoing debate about the legal classification of psychoactive drugs, public and media attention has been drawn to the question of the classification of cannabis as a Class B or Class C drug and, more recently, to the decisions to classify substances appearing on the recreational drugs market – such as mephedrone and naphyrone – under the 1971 Misuse of Drugs Act (UK Home Office, 1971), without due consideration of the appropriate evidence on the pharmacological action and abuse potential of these drugs. At the same time alcohol use – for centuries tolerated and in many social groups actively encouraged – imposes a significant and growing burden on individuals' physical and psychological health, as well as public health spending, yet remains largely unregulated, with restrictions in place only at the point of sale.

In this piece we share an estimate of the relative physical, psychological and social harms of cannabis and alcohol, the two most widely used intoxicant drugs. Our results highlight the need for a move away from moralizing and prejudiced arguments about the dangers of illicit drugs towards a balanced and evidence-based debate about drug harms, and support the view that we need a new classification system that is able to provide reliable and up-to-date information to drug users.

Cannabis use in the UK

Cannabis is by far the most widely used drug classified under the UK 1971 Misuse of Drugs Act. The most recent evidence based

on the 2008/09 British Crime Survey (Hoare, 2009) suggests a 13-fold increase in cannabis use since the 1970s, with over 10 million 16–59 year-olds in England and Wales having used cannabis in their lifetime (Figure 1). Rates are particularly high amongst young people, nearly a fifth of whom report having used cannabis during the previous year. Since 2000, there has been a steady and statistically significant downward trend in the level of self-reported cannabis use for all age groups (Hoare, 2009). This trend has continued through the downgrading of cannabis from Class B to Class C in 2004, and the government's decision to reinstate the original classification in January 2009.

Under the current classification, the possession of cannabis carries with it a maximum of 5 years' imprisonment, extending to 14 years for supplying, dealing and producing it (Misuse of Drugs Act 1971). Possession of cannabis has been an arrestable offence (typically dealt with through the magistrates' courts) since the introduction of the 2003 Criminal Justice Act (UK Home Office, 2003), so that the

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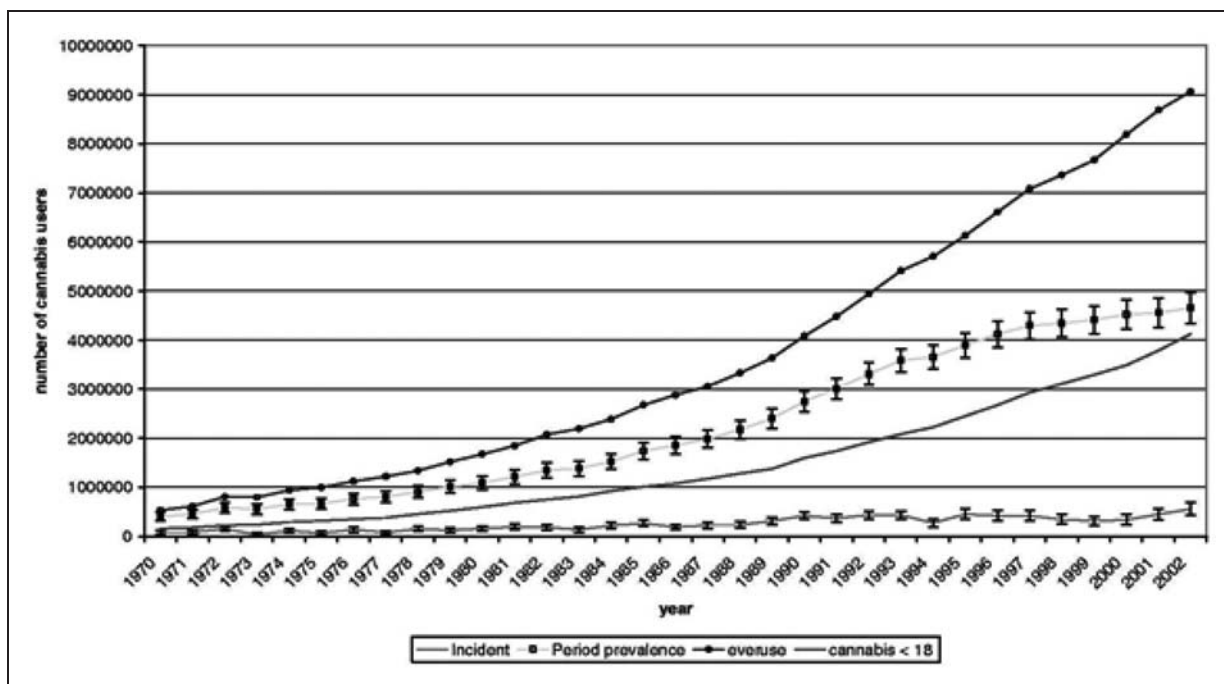


Figure 1. Rise in incidence and prevalence of cannabis use since 1970 in England and Wales (Reprinted from Hickman et al., 2007 with permission from Wiley-Blackwell).

classification of the drug as a Class B or Class C drug has meant little change for the sentencing of cannabis offences over the last decade.

However, more rigorous enforcement of cannabis-possession offences has led to a near doubling of individuals convicted, from 88,000 in 2004/5 to 158,000 in 2007/8. Over the same period of time, the number of street warnings given by the police for first-time cannabis possession has also increased dramatically, from 40,000 to 104,000, confirming that the number of individuals coming into contact with the police for cannabis possession offences is on the rise (Lloyd and McKeganey, 2010).

The chairman of the Association of Chief Police Officers' drugs committee has recently questioned this practice of enhanced enforcement as disproportionate criminalization of young people, which diverts resources away from the policing of organized drug-related crime (*The Guardian*, 18 September 2010). Whether this clampdown has been responsible for the reduction in use is not clear, but even if it were, the criminalization of young people for engaging in a relatively harmless activity must be a cause for concern. Taken together, these findings draw a picture of constantly changing cannabis policies, yet cannabis use appears to be independent of the policing and sentencing practices in place at any time.

Harms associated with using cannabis

In the wake of the 2009 upgrading of cannabis to a Class B drug, the government's committee of experts on drugs, the Advisory Council on the Misuse of Drugs (ACMD), published a report outlining the short- and long-term physical and mental health risks of the drug. The report concluded that although cannabis can cause harm, particularly to vulnerable

individuals, it is less harmful than other Class B drugs (such as amphetamines and barbiturates), and that the evidence supporting a causal link between cannabis use and psychosis in particular should be regarded with caution (ACMD, 2008).

Cannabis effects on the circulatory system are thought to be unlikely to pose a risk to healthy individuals, although they may be harmful to those with existing cardiovascular problems. The effects of smoking cannabis on the respiratory system include long-term damage to the respiratory tract and lungs, with an increased risk of chronic bronchitis and lung cancer. However, due to the more transient nature of cannabis use and the lower burning temperature, it may be less likely to cause harm to the lungs than tobacco smoking. The short-term mental health effects of cannabis include psychotic symptoms and impaired motor performance; these are generally easily reversed and are thought to have no major lasting effects (ACMD, 2008).

There is clear evidence that the long-term mental health effects of cannabis can be linked to a worsening of the symptoms of pre-established schizophrenia and increased likelihood of relapse (Linszen et al., 1994; Mathers and Ghodse, 1992). Recent reviews of population-based longitudinal studies lay claim that these provide evidence for a causal relationship between cannabis use and psychotic disorders, including schizophrenia (Arseneault et al., 2004; Henquet et al., 2005; Moore et al., 2007; Semple et al., 2005; Smit et al., 2004). Although it has reliably been shown that cannabis and psychosis occur together more often than would be expected by chance (McLaren et al., 2010), the causality of this relationship is far from clear as many studies suffer from lack of control over other contributing factors, such as social and family risk factors, alcohol and other drug use, as well as methodological heterogeneity. For example, when childhood

psychotic symptoms are controlled for, cannabis use no longer predicts the development of schizophreniform disorder (Arseneault et al., 2002).

As the proportion of the population exposed to cannabis has grown so substantially over the past 40 years, a direct causal relationship between cannabis use and schizophrenia would also imply significant increases in schizophrenia diagnoses (Hickman et al., 2007). Model projections assuming an association between cannabis and schizophrenia predict increases in the incidence and prevalence of schizophrenia of 29% and 12% respectively in men between 1990 and 2010 (Hickman et al., 2007). Yet a retrospective analysis of the General Practice Research Database from the (albeit more restricted) period between 1996 and 2005 shows the incidence and prevalence of schizophrenia and psychosis in the UK to be either stable or declining (Frisher et al., 2009; Figure 2).

Another way of examining the causal relationship between cannabis and schizophrenia is to estimate the number of users who would have to be prevented in order to prevent one case of schizophrenia. Based on estimates of schizophrenia incidences and rates of light and heavy cannabis use, it has been shown that only a minority of cannabis users will go on to develop a psychotic illness, and that in order to prevent one case of schizophrenia in the highest risk category (adult males aged 20–24 years), 2800 heavy cannabis users would have to be prevented, rising to over 10,000 for light users. These numbers more than double for women in the same age range (Hickman et al., 2009).

Based on this evidence, it seems unlikely that more stringent policing and enforcement of cannabis possession under a Class B drug schedule would have an impact on the incidence and rates of schizophrenia and psychosis in the UK, while at the same time it would divert police resources away from higher-level crimes.

Recent psychopharmacological and clinical studies have highlighted the importance of taking into account the increases in potency of cannabis available in the UK (Di Forti et al., 2009; Morgan and Curran, 2008; Morgan et al., 2010a). Until the early 2000s, the most commonly used form of cannabis available on the UK market was cannabis resin, typically containing 2–4% of the main psychoactive ingredient Δ^9 -tetrahydrocannabinol (THC). Recently, the market has shifted towards using a more potent preparation in the form of sensemilla ('skunk'), containing between 12% and 18% of THC (Potter et al., 2008). While it is unclear whether this rise in potency has changed cannabis use at a population level (King and Corkery, 2010), and epidemiological studies examining the effects on incidence and prevalence rates of schizophrenia and psychosis are not yet available, this is clearly an issue that merits further attention.

Alcohol consumption in the UK

During the 40-year period within which cannabis use has become more widespread the amount of alcohol consumed in the UK has also risen steadily. HM Revenue and Customs (HMRC) last year released the equivalent of just

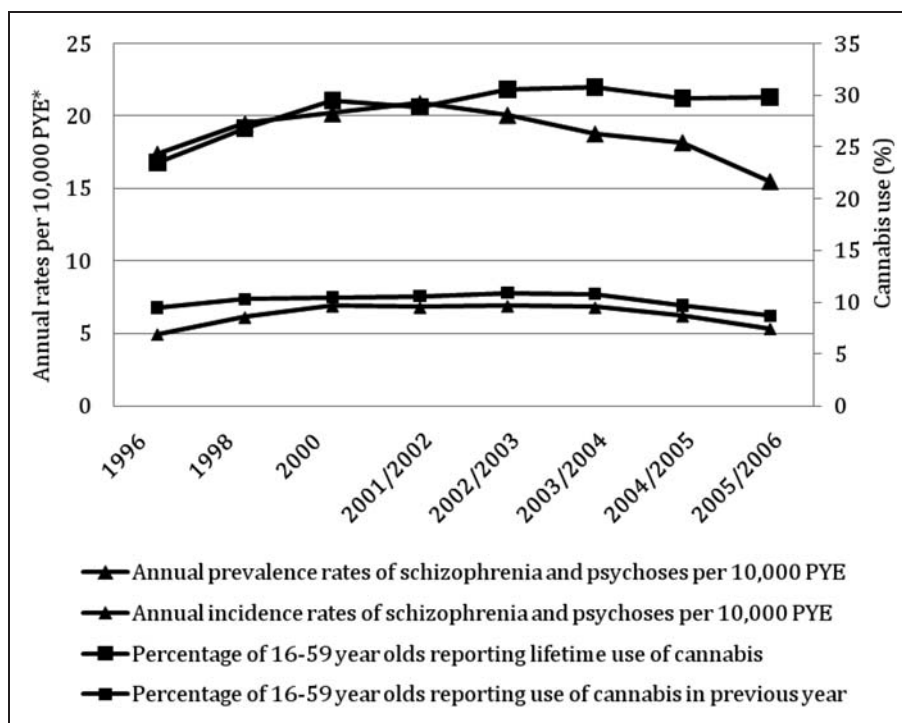


Figure 2. Increased cannabis use does not lead to increased rates of prevalence/incidence of schizophrenia and psychoses in England, 1996 to 2005/06. (Source: Hoare 2009; Frisher et al., 2009). *PYE = patient years of exposure.

over one litre of pure alcohol more per adult than it did 20 years ago (HMRC, 2010). This increase can be attributed to a number of factors, including greater affordability of alcohol (Institute of Alcohol Studies, 2008), new high-strength lagers and beers, supermarket sales, particularly as 'loss leaders', and a greater emphasis on advertising, especially that targeted at young people (Anderson et al., 2009; Figure 3).

Harms associated with alcohol consumption

When calculating alcohol harms in terms of the years of life lost and disability associated with disease, alcohol use was held responsible for 4.6% of the total global disease burden in 2004, with the figure rising to an alarming 11.6% in European countries (Rehm et al., 2009).

Alcohol is a toxic substance that in overdose kills about three people a week from direct poisoning (NHS Information Centre, 2010), often as a consequence of drinking games and birthday 'celebrations', and contributes significantly to deaths from other sedatives especially heroin, methadone and benzodiazepines (Oliver, 2007; Tanaka 2002). Moreover, ten or more people a week die from accidents due to intoxication, especially road traffic accidents often with multiple passengers dying as well (Department for Transport, 2009). Alcohol is also the major factor in vulnerability to 'date-rape' (ACMD, 2007). In 2009/10 the number of alcohol-related hospital admissions passed the one million mark for the first time (NHS, 2011).

The consequences of alcohol drinking for public health are best expressed in terms of the total amount of alcohol

consumed at a population level. Rises in total alcohol intake have consistently been linked to significant increases in liver cirrhosis, alcohol-induced liver disease and alcohol-related deaths in Europe, the USA and Canada (Norström et al., 2002; Ramstedt, 2001, 2003). Since over 70% of cirrhosis deaths are caused by alcohol, cirrhosis rates are regarded as an appropriate indicator of the public health burden caused by alcohol.

Compelling evidence comes from what remains to date the most comprehensive study of the link between alcohol and harm at a population level, namely the European Comparative Alcohol Study (ECAS) (Norström et al., 2002). Estimations of alcohol effects were made for 14 Western European Union member states between 1950 and 1995, and were expressed as the relative change in mortality following an increase of per-capita consumption of 1 litre of 100% alcohol. On average, for all countries included in the study, a 1-litre increase in per-capita consumption was associated with a statistically significant increase in liver cirrhosis mortality of 12% in men and 8% in women (Ramstedt, 2001).

Recent analyses of UK mortality data have shown significant increases in cirrhosis mortality rates across the country. The greatest increases occurred in the 1990s, when rates in men more than doubled in Scotland (104% increase) and rose by over two-thirds in England and Wales (69% increase). For women, mortality increased by almost one-half (46% in Scotland and 44% in England and Wales). These increases were observed across age groups, and stand in stark contrast to declining cirrhosis mortality rates seen in other European countries, particularly in Southern Europe and France (Leon and McCambridge, 2006; Figure 4).

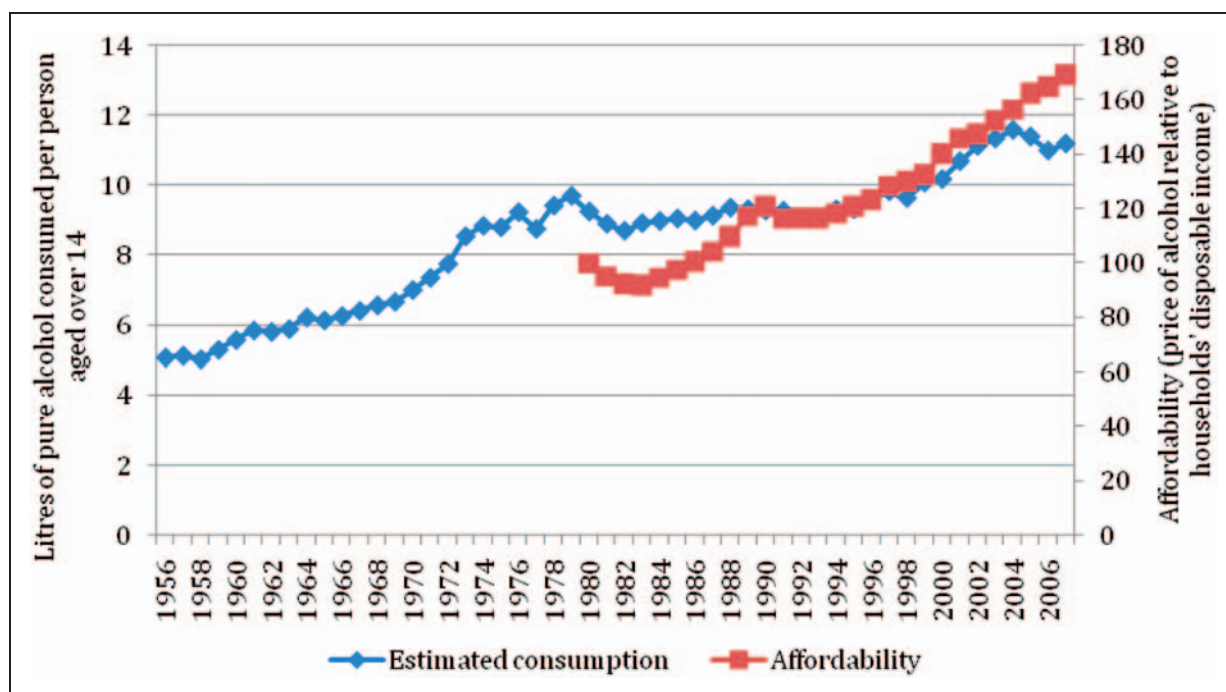


Figure 3. Increases in estimated alcohol drinking and affordability (Sources: British Beer and Pub Association Statistical Handbook 2008; Institute of Alcohol Studies (2008) Factsheet 'Trends in the affordability of alcohol in the UK').

It is also important to note that liver disease is the only major cause of death that is still increasing year-on-year. While mortality rates for all other major diseases have fallen over the past 40 years, those for liver disease have increased by over 250% during that time (British Liver Trust, 2009; Figure 5).

Analyses of hospital admissions and mortality rates specifically for alcohol-induced liver disease in England and Wales have shown that total hospital admissions for the disease more than doubled in both men and women between 1990 and 2003. The largest percentage changes were seen in middle-aged men and women, with increases of nearly 150% in the 45–54 year age groups (Thomson et al., 2008).

Data on mortality rates in England and Wales are available from 1979, and with alcohol-induced liver disease confirmed as the major contributor to liver disease deaths, a six-fold increase was recorded in men and a five-fold increase in women in the period to 2005. The greatest percentage change in alcohol-related liver disease mortality rates was seen in the younger age range: a greater than 8-fold increase in 25–34 year olds (Thomson et al., 2008).

Relating self-reported alcohol consumption to mortality data, White et al. (2004) confirmed earlier reports of a possible protective effect of alcohol on ischaemic heart disease. However, alcohol consumption above the level of lowest risk accounted for 2.8% of all deaths in men and 1.2% of all deaths in women, while 12.6% and 6% of person-years of life were lost, respectively, by drinking more than the level of alcohol carrying the lowest risk (White et al., 2004).

The majority of patients with severe alcohol-induced liver disease do not show symptoms of alcohol dependence.

Instead, their relatively controlled – although heavy – drinking patterns may cause few disruptions to their daily lives, and patients will remain unaware of an underlying disease until they present with significant liver disease. At this point, their liver will have been damaged to such an extent that the 1-year fatality rate is high at 38% (Roberts et al., 2005), and only 30% of individuals are long-term survivors (Bell et al., 2004; Sorensen et al., 2003). The aim to prevent alcohol problems through focusing on early signs of alcohol dependence as detailed in a recent Prime Minister's Strategy Unit report (PMSU, 2004) is therefore likely to miss the non-dependent heavy drinkers who will later die from alcohol-induced liver disease; instead, screening programmes targeted to identify early liver damage may reduce alcohol-induced mortality more effectively (Smith et al., 2006).

In addition to the individual health risks associated with excessive alcohol use, the wider economic costs of alcohol misuse are significant. A Cabinet Office Strategy Unit report from September 2003 estimated the health, crime and work-related costs of alcohol to exceed £20bn, indicating that alcohol misuse generates greater economic and social costs than the misuse of Class A drugs, which was estimated at £15bn in 2003/4 (Gordon et al., 2006).

As patients with chronic liver disease often require intensive treatment in critical care environments, hospital admissions incur considerable costs to the health services. In a Portuguese study, liver disease accounted for 1.8% of hospital admissions, but the treatment of these patients accounted for 2.4% of healthcare expenses (Cortez-Pinto et al., 2004). Time-series studies of male Swedish and Norwegian employees have shown that a 1-litre annual increase in per-capita alcohol consumption led to a 13% increase in sick days taken at the

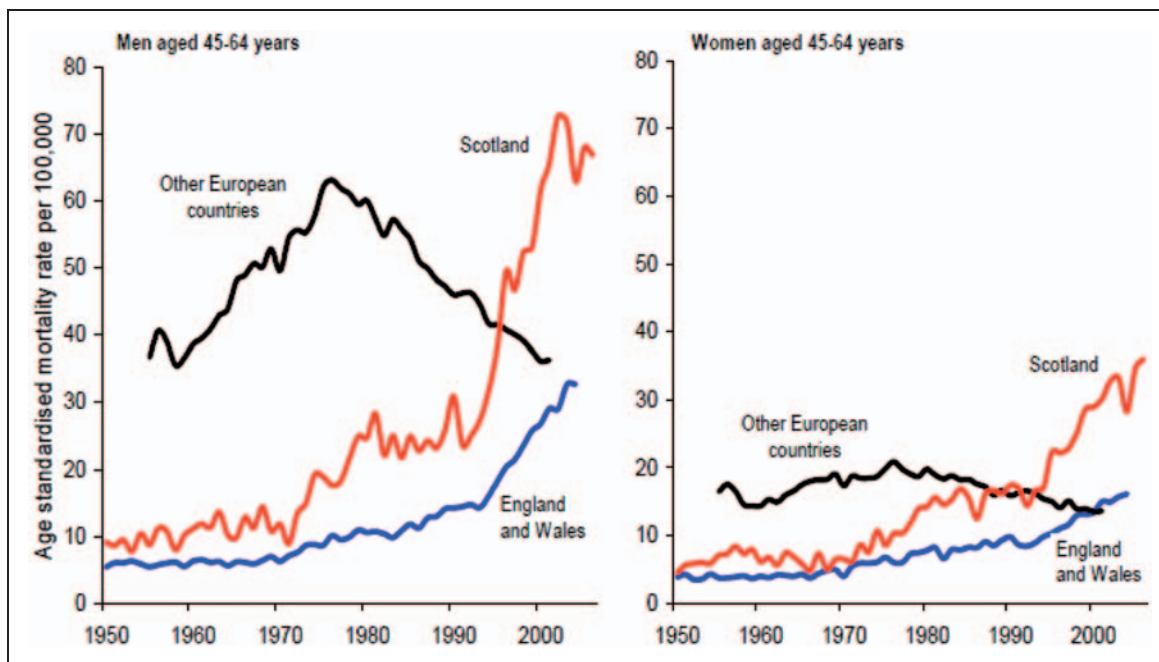


Figure 4. Chronic liver disease and cirrhosis mortality rates per 100,000 population, 1950–2006 (Reprinted from Leon and McCambridge, 2006 with permission from Elsevier).

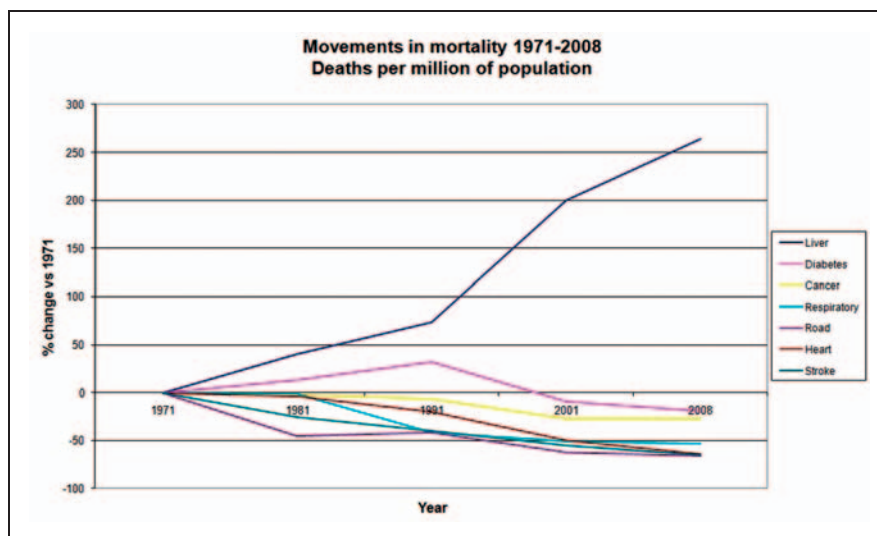


Figure 5. Deaths from liver disease are on the rise while deaths from all other major causes are decreasing. (Reprinted from British Liver Trust analysis of official mortality statistics covering all deaths related to liver dysfunction covering ICD K70-76 and other codes including C22-24 (liver cancer), and B15-B19 (viral hepatitis), December 2009 with permission from the Institute of Alcohol Studies).

workplace, confirming that absence from work due to sickness should be added to the list of indicators of alcohol-related harms (Norström and Moan, 2009).

Thus, rises in alcohol intake have consistently been shown to lead to increasing detrimental health for the individual, and increasing public health and economic costs.

Assessing and comparing the relative harms of alcohol and cannabis

The comparison of some of the long-term health effects of two drugs, one classified under the UK 1971 Misuse of Drugs Act, one not, supports the notion that the current UK drug classification system does not reflect the actual harms caused by drug use. A means for assessing the harmfulness of drugs, both to the individual and to wider society, that is evidence-based and able to provide policy makers with greater clarity on the physiological, psychological and social harms of misused substances has already been developed and assessed (Morgan et al., 2010b; Nutt et al., 2007, 2010).

During a meeting of the UK's Advisory Council on the Misuse of Drugs (ACMD) in 2009, 16 criteria of drug harms were identified, including items such as damage to physical and mental health, dependence, mortality, economic cost, loss of relationships and crime – clustered into subgroups of physical, psychological and social harms to the self and to others. In 2010, a panel of experts with specialist knowledge on the pharmacological, psychological, social and legal aspects of drug harms was convened to rate each of the 20 most commonly used drugs in the UK today. A multi-criteria decision approach (MCDA) was used during the rating process, which allowed the panel to take into account *objective* facts about drug harms as well as *subjective* judgements about the relative importance of the different parameters of harm.

Using such an approach has the advantages of being able to consider all the harms of a substance objectively and in comparison with others, and of harms to be weighted according to changing 'values' or importance to the self and others. In the absence of objective data on all of the criteria assessed, discussion amongst a group of experts is the most valid approach to use. Using the MCDA, the rating scale is able to evolve over time and provides a robust framework for assessing both currently used and new psychoactive substances on a constantly developing drugs market. Overall scores of this rating exercise correlated highly with recent findings by a group of Dutch experts employing a similar methodology (van Amsterdam et al., 2010) as well as comparisons of misused drugs based on drug-specific mortality (King and Corkery, 2010) and toxicology alone (Gable, 2004).

Alcohol was confirmed as the most harmful drug to others and the most harmful drug overall (Figure 6). A direct comparison of alcohol and cannabis showed that alcohol was considered to be more than twice as harmful as cannabis to users, and five times as harmful as cannabis to others (Nutt et al., 2010).

Of course, a major reason why alcohol scored so highly on the 'harms to others' scale was the fact that it is very widely consumed, with maybe four times more regular users than cannabis and on average a longer period of lifetime use. It is interesting to speculate what might happen if the roles were reversed, or at least both drugs were equally available. To our knowledge there are no countries where cannabis is both legal and as widely used as alcohol to assist us. However, there are many Islamic countries in which both are illegal. In one such state, Morocco, an epidemiological study found that 2.3% of the population were alcohol dependent and 1.8% were cannabis dependent (Kadri et al., 2007) which helps judge the comparative addiction potential of the two substances. Alcohol appears more addictive despite the fact that Morocco has been a major cannabis-growing region for centuries. As there

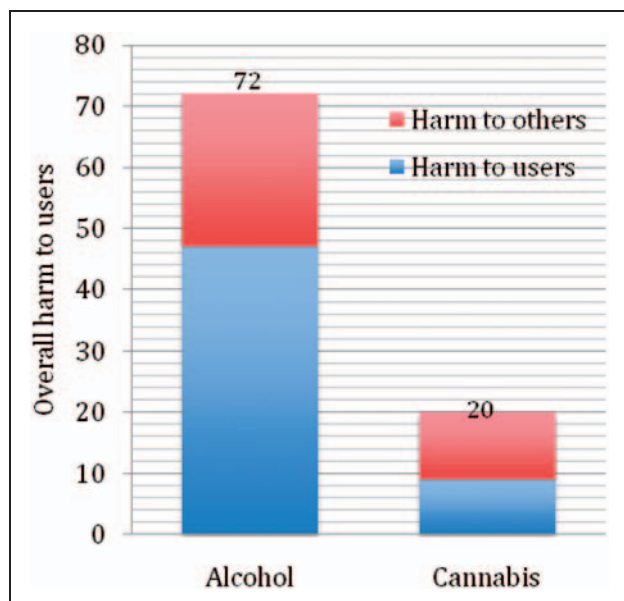


Figure 6. Estimates of total harms caused to users and to others by alcohol and cannabis. (Reprinted from Nutt et al., 2010 with permission from Elsevier).

are few areas of harm that each drug can produce where cannabis scores more highly than alcohol, we suggest that even if there were no legal impediment to cannabis use it would be unlikely to be more harmful than alcohol.

Conclusion

Empirical evidence and expert analysis point strongly towards the need for a more balanced drugs policy that is free from historical, social, political or media influences. An alternative legal classification system to replace the present one which has been in place in its current form for over 40 years should be based on scientific evidence on the physical, psychological and social harms of misused drugs, to ensure that drug users and the public as a whole receive the most up-to-date and unbiased information possible about the consequences of drug use.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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