

## 14.5 – Alcohol and Injuries: India

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### Background

Alcohol has been identified as an important risk factor in injury occurrence. The problem of alcohol-related injuries is particularly alarming in developing countries, like India, where increasing rates of alcohol consumption are coupled with hazardous patterns of drinking, injury rates are extremely high, and appropriate public health policies have not been implemented.

### The Burden of Injuries in India

An examination of 'years of potential life lost' in India, indicated that injuries are the second most common cause of death after the age of 5 years (Mohan and Anderson 2000). Data estimated for the year 2005 suggested that injuries contributed to nearly 850 000 deaths, and nearly 17 000 000 persons were hospitalized. Further, nearly 42 500 000 persons had minor injuries, incapacitating them for shorter or longer periods. Nearly 70% of these deaths and injuries occurred among men 15–44 years of age. Eighty per cent of these deaths and injuries occurred in rural areas, where health care is poor and deficient. One-third of disabilities were due to injuries with an estimated 7 million persons suffering from various disabilities. If no systematic efforts are introduced and implemented, it is estimated that the number of deaths due to injuries is likely to increase to 1.1 million by 2010 and 1.2 million by 2015 (Gururaj, 2005).

### Patterns of Alcohol Use in India

India is generally regarded as a traditional 'dry' or 'abstaining' culture. The prevalence of alcohol use is low; estimated at 21% among adult males (Ray et al, 2004), and less than 5% among women (Benegal et al, 2005). The per capita consumption is 2 litres of absolute alcohol equivalent per adult per year, and adjusting for undocumented consumption (illicit beverages and tax evaded products account for 45-50% of total consumption), this is likely to reach 4 litres (Benegal et al, 2003; Singh, 1986).

'Dry' cultures are known to predispose to deviant, unacceptable and anti-social behavior related to alcohol use as, well as chronic disabling alcoholism (Blum and Blum, 1969). Repeated observations have documented that more than 50% of all drinkers in India satisfy criteria for hazardous drinking. The typical consumption pattern is one of heavy solitary drinking, involving predominantly spirits and usually more than 5 standard drinks per occasion (Gaunekar et al, 2004). Among drinkers there is surprisingly little difference between amounts consumed by men and women. A large proportion of drinkers of both genders drink daily or almost daily. The dominant drinking expectancies favor drinking to intoxication, and alcohol use is strongly associated with expectations of disinhibition, especially among males, which 'legitimizes' male drunkenness and violence (Benegal et al, 2005; Gupta et al, 2003). Needless-to-say, this translates into substantial rates of alcohol-related morbidity involving a high social cost. Alcohol-related problems account for over a fifth of hospital

admissions in India, but are under recognized by primary care physicians. Alcohol misuse has a disproportionately high association with deliberate self-harm, high-risk sexual behavior, HIV infection, tuberculosis, esophageal cancer, liver disease and duodenal ulcer, and alcohol consumption has been implicated in over 20% of traumatic brain injuries (Benegal, 2005).

The impact of globalization and economic liberalization (exposure to satellite television, rapid socioeconomic transition and growing disposable income) has influenced a widespread attitudinal shift to greater normalization of alcohol use which is reflected in a steady rise in alcohol beverage sales over the last 20 years, with an annual growth rate of 8-10% for spirits and 35% for beer. This has opened a vast emerging market for trans-national alcohol companies. Concurrently, there has been a significant lowering of age at initiation of drinking, with a drop from a mean of 28 years to 20 years, between the birth cohorts of 1920-30 and 1980-1990 (Benegal, 2005).

The preoccupation with prohibition-centric alcohol policies and the general public perception of India as a 'dry' culture, has worked against a rational and more balanced examination of the impact of alcohol-related health consequences on public health. The focus has been on supply reduction, brief attempts at prohibition, and volume-based taxation encouraging spirits consumption relative to beer. The dependence of most state governments on alcohol taxes, which provide 20% of their annual tax income, makes a mockery of most attempts at supply limitation.

The Indian Motor Vehicle Act mandates a legal limit of 30 mg / 100 ml and recommends fines and/or imprisonment for transgression. Implementation is poor, however, and the little enforcement that takes place is non-random in geographical coverage, non-visible, and non-uniform. There has been very little attention given to the aspect of early detection and brief intervention at the level of primary health care providers, emergency room personnel or the police.

Attempts at modifying individual behavior by increasing public awareness through media campaigns, are often non-systematic, with minimal scientific input, are poorly focused, and have not been evaluated systematically. There have been few estimates of the contribution of alcohol to injury causation in India. The WHO Collaborative Study on Alcohol and Injuries assumes special significance, in this regard, since it has been the first systematic assessment of the impact of alcohol on emergency department (ED) attendees in the country.

### **The WHO Collaborative Study on Alcohol and Injuries – India**

The India site for the WHO Collaborative Study on Alcohol and Injuries was in the ED of Victoria hospital, located in the city of Bangalore in the state of Karnataka in southern India. Victoria hospital is the largest general hospital in the state and serves a large catchment area comprising the city market, the city railway station and several densely populated working class neighborhoods. Referrals, especially in case of accidents and injuries, are also received from the entire urban agglomeration of Bangalore city (which has a population of 5 686 844) and its rural hinterland. In the calendar year Jan – Dec 2000, 32 485 patients were seen in the ED, of which 42% were referrals treated for injuries of various kinds.

The objectives of the study were threefold: 1) describe the prevalence of alcohol-related injury; 2.) test the validity of the Y91, ICD-10 code, by comparing observational ratings of ED personnel with breath alcohol measurements, and 3) explore the feasibility of using the ICD-10 alcohol codes as a credible and valid alcohol-related injury data source. Subjects with injuries presenting to the Victoria hospital ED were surveyed continuously from May to July 2001. ED attendees were assessed, by trained study personnel, for the impact of alcohol on their injuries using the WHO questionnaire, and a breathalyser to estimate breath alcohol levels, following an observational rating of alcohol intoxication by the casualty medical officer on duty at the ED.

### **High Proportion of Alcohol-Related Injuries**

A very high proportion of the 658 injuries seen during the study period were alcohol-related. Almost a fourth (24%) of all persons presenting with injuries to the ED (30% of male injured and 4% of female injured) had consumed alcohol within six hours prior to the occurrence of their injury. A further 12.8% of the injured (14% of male injured and 10% of female injured) definitely implicated alcohol use by another person as a contributing cause of their injuries (alcohol use by the perpetrator of the injury and not by the injured patient). "Possible" alcohol use by the perpetrator of the injury was recorded in 22.5% of the injured (20% of male injured and 29% of female injured); here the information about alcohol intoxication in the perpetrator was given by secondary sources (relatives, bystanders etc.) and not by the primary injured patient (who was often afraid of indicting a close family member). Pooling the injuries 'primarily linked' to alcohol use (injuries resulting from the patient's own alcohol use) and the injuries 'secondarily linked' to alcohol (those resulting from someone else's alcohol use) raised the proportion of alcohol-related injuries to 59% of all the injuries (64% of male injured patients and 43% of female injured patients) treated at the ED over two calendar months.

This is somewhat higher than that reported in previous international studies, where between 10% and 35% of injury cases were found to be alcohol-related (although these figures were based on only those injuries 'primarily linked' to alcohol) (Cherpitel, 1993; Maio et al. 2000; Pickett et al. 1998), but similar to figures from some low-income countries (Cherpitel et al, 2005). The high rate of injuries attributable to alcohol, as recorded in this study, supplements previous observations from India on the inordinately high association between alcohol use and health consequences in studies from general hospitals (Sri et al, 1997), road traffic accidents and suicide (Gururaj, 2005).

### **Hazardous Patterns of Alcohol Use in ED Attendees**

The patterns of drinking observed among the ED population reflected the prevailing pattern in the general population. A low prevalence of alcohol use in both males and especially in females was found, contrasted with frequent heavy use in a large proportion of users with harmful consequences of drinking. Drinking was restricted to spirits (rather than beer), marked by bingeing (>5 drinks per drinking occasion) and one out of two alcohol users scored above the cut-off for hazardous drinking on the AUDIT. In this study the current alcohol-related injury was in most cases not an aberration caused by an occasional binge; similar amounts of alcohol had been consumed during the same time period the week before, which was typical of the patient's pattern of consumption. Almost a tenth of the regular alcohol users had prior ED visits for an injury during the last year.

### **Spectrum of Injuries**

The largest proportion of injuries consisted of violent and intentional injuries (including various forms of assault), and accounted for a third of all injuries and more than half of all alcohol-related injuries. Road traffic accidents accounted for less than 20% of all injuries and only 12% of alcohol-related injuries. While much attention has been paid to driving while intoxicated in other countries, in India, and probably in other developing countries as well, the spectrum of alcohol-related injuries is different. Various socio-cultural and economic phenomena likely account for these differences. For example, factors like overcrowding, poverty and unemployment, coupled with the keen competition for scarce resources (all of which are persistent in most developing economies), often provide a catalyst for interpersonal violence. This is not to suggest that adopting anti-drinking and driving measures is not an urgent concern, but, overall, as a means of reducing the burden of preventable injury, this focus will clearly not be enough. The problem foci of interventions will need to be much wider.

### **Gender and Injuries**

There is an overwhelming male preponderance (30% male, 4% female) among injuries resulting from one's own drinking, which is understandable in the light of the predominantly male usage of alcohol in India. The gender balance shifts dramatically for injuries attributable to others' use of alcohol, however (34% of males injured and 39% of females injured). A strong gender difference in the spectrum of injury is also evident, with injuries due to burns, hanging, poisoning and assault over-represented among women, while road traffic accidents and injuries due to assault were more common among men.

### **Absence of Weekly Variation in Incidence of Alcohol-related Injuries**

No weekly variation was observed in the incidence of injuries reporting to the ED. A high prevalence of alcohol-related injuries on weekends is highlighted in most international reporting on injuries, attributed to the influence of weekend drinking binges. However, the observed pattern in India was one of frequent (nearly every day) heavy drinking, and not weekend bingeing.

### **Detection of Intoxicated Persons**

Medical officers in the ED were able to reliably distinguish intoxicated from non-intoxicated patients, identifying 80% of patients with breath alcohol concentration (BAC) over 30 mg/dL, (the legal limit for driving in India), with a false positive rate of 6%. There was much poorer agreement, however, between the medical officers' clinical assessment ratings of the level of intoxication (using the ICD-10 Y91 categories), and the level of intoxication based on BAC (using the ICD-10 Y90 categories) (kappa around 26%). This validated one objective of the study. With minimal training, it is possible to screen for alcohol-related injuries in primary care settings and emergency departments, without the necessity for costly equipment. However, with this level of training/exposure, it is difficult for ED personnel to clinically differentiate levels of severity of intoxication, which is better achieved using breath-analyzers.

Unfortunately, it has been difficult to convince ED personnel to continue screening for alcohol use, since the only purpose they envisage for this screening is to fulfill forensic and legal requirements. The health and legal system does not have a process which automatically refers those patients screening positive for alcohol to substance abuse treatment services.

### **Impact of the WHO Study in India**

The study received ample coverage in the media, albeit in the English language press. The results were also successfully used to advance public health guidelines for alcohol-related problems, in the Health Policy Document of the State of Karnataka. This was the first time in India that such a policy document recognized alcohol as a public health problem, and measures to address alcohol-related injuries formed an important part of the recommendations. The findings have subsequently influenced three major prevention initiatives in the country: a) the “Suraksha Sanchar”, a multi-sectoral programme against drinking and driving launched in Bangalore during 2000; b) an initiative to reduce drinking and driving in the Indian capital, New Delhi, and several urban centers around the country, by the Indian Association for Alcohol Policy and the Indian Medical Association in 2006; and c) deliberations on strategies for early detection of alcohol problems and brief intervention by primary care and emergency department physicians throughout the country, by the Ministry of Health & Family Welfare, Government of India in 2005.

### **Lessons for Future Initiatives**

The health burden due to injuries in Indian society is very high and a large proportion of that appears to be alcohol-related, however, this is not adequately recognized. The greatest portion of such injuries is unrelated to drinking and driving, but due to violent assault by intoxicated individuals victimizing non-drinkers. Measures aimed only at drinking and driving, while urgently required, will not address the full spectrum of alcohol-related injuries. In this context, emergency departments are a potential window for early detection and appropriate intervention for alcohol-related problems.

There is thus a need to integrate regular screening for alcohol into ED procedures. Health planners in India are becoming aware of the need to institute and legally mandate a requirement that hospital-based injury surveillance systems record the alcohol intoxication status in the injury victim or in the perpetrator of an injury. This could be either a clinical assessment based on a simple checklist, or preferably, a record of breath/blood alcohol levels. Clear protocols need to be instituted to refer patients with alcohol-related injury to relevant treatment providers. This requires training of medical and police personnel regarding alcohol-related harm, early detection and brief intervention. Properly planned public awareness campaigns, backed by stricter implementation of existing drinking and driving laws and regulations relating to alcohol availability, need immediate attention.

The findings from this survey highlight the need to conduct more research on the effect of alcohol use on injuries; opportunities should be explored to do this across the country as well as in urban and rural settings. Data on the social cost of such injuries is likely to be more persuasive for law-makers and policy planners than data on damage. Initial work on social cost of alcohol misuse in India (Benegal et al, 2000) suggests that the cost of treating alcohol-related problems far outweighs the profits that the state accrues from the production, sale and taxation of alcoholic beverages. Above all, the findings from this and similar studies need to be widely publicized in order to influence health policy and planning, so that more effective initiatives are undertaken to reduce preventable injuries and alcohol-related problems in India.

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