

Wet and dry

Dr Cheryl Cherpitel discusses issues of culture, control, consent and country-to-country consumption raised by her project 'Cross-National Analysis of Alcohol and Injury'

To date, you have gathered data from 96 emergency room sites in 29 countries. Have you identified any common trends in alcohol-related injuries?

In all of our studies we have found that both self-reported consumption prior to injury and blood alcohol concentration (BAC) are associated with the likelihood of injury, but self-reporting demonstrates a stronger association, and patients are more likely to report drinking prior to injury than to be positive for estimated BAC. The association also varies by individual-level pattern of consumption, as well as societal-level consumption, such as per capita consumption and rates of abstinence. Those societies in which alcohol is more integrated in the culture, those considered 'wet' (exhibiting the Mediterranean drinking pattern of frequent but light drinking) show a smaller association of alcohol with injury than those societies considered 'dry' (exhibiting more infrequent but heavier drinking episodes).

How do you select the patients to participate in your study? How many participants have you surveyed to date and have you used controls to ensure the scientific validity of your research?

In most studies we select only injured patients who arrive at the emergency room (ER) within six hours of the event, to minimise recall bias and increase accuracy of breath analysis for determining alcohol's involvement in the injury event. To date, we have about 32,000 injured and 12,000 non-injured ER patients. In the first studies, we sampled both injured and non-injured patients, as control subjects, and without regard to the six-hour time limit for arrival. In those studies in which we have interviewed only injured patients, we have



used the case-crossover analytic technique, in which patients serve as their own controls in comparing their alcohol consumption within six hours prior to the injury event with their consumption during the same six-hour period the previous day or the previous week. Consumption prior to injury can also be compared to that expected based on their usual quantity and frequency of drinking during the last year. A few of these studies have also sampled individuals in the general population and obtained data on drinking within a six-hour period which mirrors the time period prior to injury for ER-matched patients. We are presently obtaining general population data for almost all of these ER studies, to provide a background context for our ER findings in relation to demographic characteristics and drinking patterns.

In your analysis you have sampled patients aged 18 and over at each site. Given the rise in underage drinking in some nations, is there any desire to investigate those with

injuries under the age of 18? Are there any legal implications in doing so?

While it would be desirable to sample patients under the age of 18, we have generally sampled only patients of 18 years and older, although some countries have included those of 15 years and above. In the U.S. and some other countries, the inclusion of patients under the age of 18 requires parental consent, as well as the consent of the patient, and this can become problematic when a parent is not available. While underage drinking is certainly becoming more prevalent in some countries and may carry legal implications, patients' responses are never linked to individuals, so patients cannot be identified.

Alcohol abuse can often lead to the use of other substances or the onset of disease. What progress have you made in improving estimates of the attributable fraction of alcohol to injury to inform the global burden of disease estimates?

We have obtained valid estimates of alcohol-involved injuries based on self-reported consumption prior to injury and BAC, and have been refining methods of determining the most valid controls for estimating relative risk of injury due to drinking. These relative risk estimates are then used in calculating the alcohol attributable fraction (AAF) for injury morbidity. Additionally, we will be able to use the contextual data (socio-cultural and policy) we have collected from each country, as well as aggregate-level data on drinking patterns and demographic characteristics from the general population of a country, to develop profiles for assigning AAFs for injury for countries for which we do not have ER data but for which general population datasets are available.

Dangerous drinking

An ambitious research programme led by the California-based **Alcohol Research Group** and joined by collaborators from around the world is providing new insights into the link between alcohol and injury

IT HAS ALWAYS been assumed that alcohol is an important factor in injury occurrence, but thorough epidemiologic studies documenting the association have generally not been attempted. Although injury is a relatively rare occurrence in the general population and the best place to study injuries is the ER, this has often been thought a difficult environment in which to collect data from patients.

There are a number of factors affecting the magnitude of alcohol's association with injury. At the individual level, the number of drinks consumed prior to the injury event (based on the patient's self-report of drinking prior to injury, or on estimated blood alcohol concentration at the time of admission to the ER) is important. The patient's usual drinking pattern is also significant, with both episodic heavy and frequent heavy drinkers at highest risk of an alcohol-related injury. At the socio-cultural level, the level of detrimental drinking pattern (DDP) is important. This was developed by the World Health Organization (WHO) as a measure of the degree to which alcohol is integrated in a society, and categorises countries by the postulated level of alcohol-related harm at the same level of consumption. Also important are environmental factors, such as the context, including activities in which the individual was engaged at the time and where the injury occurred, alcohol control policy – for example, that relate to drinking and driving and access to alcohol.

TROUBLING STATISTICS

'Cross-National Analysis of Alcohol and Injury' is an international research project coordinated by the Alcohol Research Group (ARG), based at the Public Health Institute in Emeryville, California. The primary aim of the project is to better understand alcohol's association with injury from a global perspective, and factors affecting this association. These include individual-level factors as well as socio-cultural and environmental ones, such as the alcohol control policies in a given region or country.

Dr Cheryl Cherpitel, lead researcher on the project, is Senior Scientist at the ARG and Associate Director of the National Alcohol Research Center. "Violence-related injuries are, by far, the most common cause of injuries associated with alcohol," outlines Cherpitel. "Risk of a violence-related injury has been found to be 22 times greater for those drinking prior to the event compared to those not drinking, while risk for a non-intentional injury is four times greater for those who had been drinking compared to those not drinking." The project's ER studies on non-intentional injuries also reveal that 7 per cent of falls, 6 per cent of poisonings and 3 per cent of burn accidents are alcohol-related.

All of the ER studies use probability samples of patients where each shift is equally represented for each day of the week, which is important in

obtaining true prevalence estimates of alcohol's association with injury. The researchers have developed a questionnaire to ascertain alcohol's involvement in the injury event by asking patients, among other things, whether they had been drinking within six hours prior to the injury event, the amount consumed during this time, whether they were feeling drunk at the time of the event, and whether they felt the injury would have occurred if they had not been drinking (causal attribution of the injury to drinking). The studies also obtain an estimate of BAC at the time of ER admission.

A CHALLENGING ENVIRONMENT

It is not always easy research, and the logistical difficulties of collecting data from ER patients is not lost on Cherpitel: "The greatest challenge has probably been to obtain probability samples of ER patients, which requires us to determine a central point in each ER where all patients (both those who walk in and those arriving by ambulance) can be identified, for applying a pre-determined sampling frame, depending on the patient flow through the ER," she reveals.

Once patients are sampled, it can also prove difficult to obtain good response rates, for a number of reasons other than patients refusing to participate. These include inability to locate the patient, the patient being subsequently too ill to participate, language barriers, the patients



being in police custody where anonymity cannot be maintained in the presence of a police officer, and patients leaving the ER before completing the interview.

To date, the team's analysis has revealed that socio-cultural and alcohol control policies are both significant predictors of alcohol-related injuries, although some of the socio-cultural influences, such as the level of DDP, become less important when the individual-level drinking pattern is taken into account. Alcohol control policies continue to be important, however – for example, those related to drinking and driving and access to alcohol. There is a wide variation between countries, depending on whether policies are in place, and whether they are enforced; some countries having very little in the way of control policy while others have policies which are strictly enforced.

INCREASING AWARENESS

Cherpitel believes that the greatest success of the research so far has been to increase awareness of alcohol's association with injury, globally. Based on the team's earlier studies from the Emergency Room Collaborative Alcohol Analysis Project (ERCAAP), WHO conducted the 12-country 'Collaborative Study on Alcohol and Injury', using the same methodology and instrumentation, and in 2009 published a book entitled Alcohol and Injuries: Emergency Department Studies in an International Perspective. WHO also co-sponsored an international conference on alcohol and injury along with the U.S. National Institute of Alcohol Abuse and Alcoholism (NIAAA) and the U.S. Center for Disease Control and Prevention, where findings from ER studies were presented and directions for future research discussed. The Pan American Health Organization (PAHO) has recently supported similar studies in five Latin American countries and is planning a book on alcohol and injuries in the Americas, and NIAAA

has also recently supported and/or provided technical assistance to several Asian countries for conducting ER studies.

Of perhaps lasting significance is that the research has led to an increased awareness of the high prevalence of alcohol problems among both injured and non-injured patients in the ER, and the need for screening, brief intervention and referral to treatment in this setting. This high prevalence of problem drinking has led the team to develop a brief screening instrument for identifying alcohol use disorders in the emergency room, called the Rapid Alcohol Problems Screen (RAPS4), which had been found to perform well across different countries and cultures.

TRACKING GLOBAL TRENDS

There is potential for future studies to address regions that are currently under-represented – for example, Scandinavia, Western Europe and South America – to provide a broader base for calculating alcohol attributable fraction, which in turn will help inform the Global Burden of Disease due to injury morbidity. This project should assist countries which are developing surveillance systems for alcohol-involved injured and non-injured patients in the ER, in order to track trends in the burden alcohol places on emergency care systems.

"An area of research which needs more attention is an in-depth analysis of alcohol by the type and cause of injury, taking into account the context of drinking, environmental factors and alcohol control policy, as well as the selection of appropriate controls," explains Cherpitel. "Additionally, very little has been done on alcohol combined with other drug use and risk of injury, although alcohol in combination with other drugs may have interactive effects leading to an even greater risk of injury than for either substance used alone."

INTELLIGENCE

CROSS-NATIONAL ANALYSIS OF ALCOHOL & INJURY

OBJECTIVES

The objectives of the Emergency Room Collaborative Alcohol Analysis Project is to improve our understanding of the association of alcohol consumption (both drinking in the injury event and usual drinking patterns and problems) with risk of injury, and the influence of social-cultural contextual variables, including alcohol control policy, on this association across countries and cultures.

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FUNDING

NIH – NIAAA

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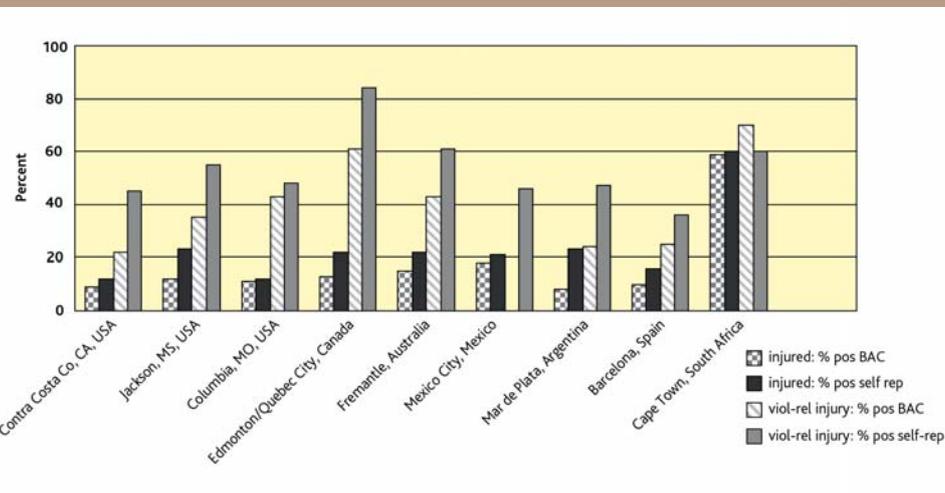
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