Chapter 16

Interventions to Prevent Alcohol-Related Injuries

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16.1. INTRODUCTION

Alcohol, the most commonly used drug among adults and adolescents (Substance Abuse and Mental Health Services Administration [SAMHSA], 2004), is related to many adverse health outcomes, including injuries and deaths (Room, Babor, & Rehm, 2005). In 2001, excessive alcohol use was associated with approximately 75,000 deaths and 2.3 million years of potential life lost (about 30 years of life lost per death) (Centers for Disease Control and Prevention [CDC], 2004). While the magnitude of alcohol-related injury mortality is similar to alcohol-related chronic disease mortality, far more years of life are lost as a result of injuries because the injury deaths occur at a younger age (CDC 2004; Lunetta & Smith 2005). In addition, alcohol use and alcohol-related consequences among adolescents are associated with significant costs to society, as much as $58 billion per year, with the three most costly domains consisting of violent crime ($36 billion), traffic crashes ($18 billion), and suicide attempts ($1.5 billion) (Levy, Stewart, & Wilbur, 1999). Although the magnitude and costs of alcohol-related negative consequences such as injuries and violence have been well defined and described, much less is known about the most effective prevention and intervention efforts for reducing alcohol-related injuries and violence. However, a number of evidence-based prevention efforts are available. Some of the most effective options are increasing alcohol taxes, restricting alcohol availability, and laws and programs to reduce the occurrence of drinking and driving (Room et al., 2005).

This chapter briefly describes the magnitude of alcohol-related injuries in the United States, the mechanisms linking alcohol use and injuries, and the primary and secondary prevention strategies to reduce and prevent alcohol use and alcohol-related injuries. More emphasis will be given to alcohol-related traffic crashes and interventions because there is much more information available in this area.
16.2. ALCOHOL-RELATED INJURIES: MAGNITUDE OF THE PROBLEM

In 2001, there were 40,933 injury deaths associated with excessive alcohol use or binge drinking (CDC, 2004). Binge drinking is typically defined as the consumption of 5 or more alcoholic drinks on a single occasion over a 2-hour period for a man or 4 or more drinks on a single occasion over a 2-hr period for a woman (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2004). Of these, 26,359 were unintentional deaths (13,878 traffic deaths and 12,233 nontraffic deaths) and 14,821 were violence-related (6,995 suicides and 7,826 homicides). In addition to the injury deaths for which alcohol was involved in 2002, an estimated 8 million people were treated in emergency departments for alcohol-related injuries (McDonald, Wang, & Camouge, 2004). Another study indicates that 7% of the 20 million emergency department injury admissions annually are alcohol related (Gentilello, Ebel, Wickizer, Salkever, & Rivara, 2005). A recent case crossover study (in which patients served as their own controls) showed that there is a 9-fold increase in the odds of injury among patients who reported consuming five to six drinks during a 6-hour period before the injury and a 17-fold increase among patients consuming seven or more drinks before the injury (Vinson, Maclure, Reidinger, & Smith, 2003). Moreover, a recent international study of injured patients in emergency departments found that patients with a blood alcohol concentration (BAC) of 0.08 g/dL (the physiologic definition of binge drinking in the United States; NIAAA, 2004) were at least three times more likely to experience a violent injury than an unintentional injury; the study noted a significant dose–response relationship between the amount of alcohol consumed and the risk of violent injury (MacDonald et al., 2005).

16.2.1. Mechanisms of Alcohol and Injury Risk

In a review of alcohol and injury research, Lunetta and Smith (2005) described several ways that alcohol can increase risk of injury. It can have a direct biological effect through the impairment of human performance by slowing the decision-making process, reducing visual acuity and adaptation to brightness and glare, dividing one’s attention, changing perceptions, and increasing reaction time. It may also have indirect effects by increasing the sense of confidence, inhibiting self-control, and reducing the perception of and response to hazards. The link between alcohol use and involvement in violent behavior is seen in the disinhibition of norms and behavior in certain situations and contexts. This plausibly explains why some interpersonal interactions and disputes escalate to violent behavior when alcohol is involved (Parker, 2004). Under the influence of alcohol, people may be more prone to risk taking, which can increase the likelihood of injury and the likelihood that disagreements between people escalate to violent acts. Alcohol may also hamper decision making regarding safety (such as the use of seat belts, flotation devices, child car seats, and helmets) and assessing dangerous situations or places. For example, alcohol may affect judgment, leading swimmers and boaters into more dangerous situations and making it less likely they will wear flotation devices.

Alcohol may impair natural defense against hypothermia in cold climates and water, and depresses the cough reflex, increasing the risk of choking and