

Injured Drivers Under The Influence: Attribution Of Injury To Alcohol Involvement

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Abstract

Injury due to an alcohol-related motor vehicle crash (MVC) is a common reason for hospitalization. This hospitalization may present an opportunity to change drinking behaviors of non-alcohol-dependent drinkers involved in such injuries, thereby preventing future injury and death. The purpose of this study was to determine the relationship between alcohol consumption before an injury and attribution of the injury to use of alcohol in non-alcohol-dependent young adults hospitalized for injury due to an alcohol-related MVC. Subjects were recruited from two level one trauma centers. During their hospitalization subjects completed a Health Interview Schedule, which included the question "To what extent do you believe your alcohol consumption was responsible for this injury?" Responses were measured on a 7-point scale ranging from 1 (not at all) to 7 (totally). Results indicated that 37.8% of the subjects responded "not at all," 31.2% responded "somewhat," and 30.9% responded "mostly" or "totally". Spearman rank correlation between attribution of injury to alcohol involvement and blood alcohol concentration at admission was $p = 0.44$ ($P < .001$) In this sample over 60% of subjects attributed their injury in part or totally to their alcohol consumption. Subjects were aware then of the link between their drinking behavior and their injury. This awareness indicates that non-alcohol-dependent drinkers involved in an alcohol-related MVC may be receptive to intervention from health professionals to consider changing their drinking behavior.

Introduction

Alcohol related motor vehicle crashes is a leading cause of death and injury in young adult, with nearly 41% of fatalities due to intoxicated or alcohol impaired drivers (1-3). Despite the well-documented role of alcohol in motor vehicle crashes, health professionals rarely assess and discuss the role alcohol contributed to the patient's current hospitalization for vehicular injury. An important part of the data needed to formulate an intervention strategy is the injured individual's attribution of injury due to alcohol. To the extent an individual attributes their injury to alcohol use, may be an important indicator of the extent to which an individual may be willing to change their drinking behavior that lead to the current injury.

Understanding of the process of attribution of injury and planning interventions to reduce or change drinking behavior, takes on added importance given the role of alcohol in injury and death. Alcohol involvement remains a persistent co-factor in nearly 50% of MVC injuries and deaths (1-3). Moreover, individuals involved in an alcohol-related MVC are more likely to be involved in repeated injuries (4). These individuals are also more likely to be stopped for drinking while driving, have their license restricted, been arrested for DWI, or been admitted to the hospital for any injury. Other links between drinking, driving and injury indicate that young adult drivers arrested for DWI, were 4 times as likely to die in an alcohol-related MVC (5), while drivers over 30 arrested for DWI were 11 times more likely to die in an alcohol-related MVC (6,7).

Window of opportunity

Because of the high incidence of alcohol involvement in MVC and repeated injury, hospitalization for an alcohol-related injury presents a window of opportunity to assess and discuss the consequences of current drinking behaviors with clients. At the time of an alcohol-related injury the relationship between driving under the influence and the injury become more salient, thus patients are more motivated to consider strategies to reduce their alcohol intake. It can be argued then, that to the extent the individual attributes their injury to their alcohol intake at the time of the injury, is the extent to which they may be motivated to change. Assessing their attribution of injury to alcohol use is a critical step in helping the health care provider tailor their intervention strategies to the patient's readiness to change.

Attribution theory

Attribution theory is concerned with the process by which persons assign cause to events (8). When a person examines his or her own behavior, causal attribution (such as why a person succeeds or fails at a task) leads to expectations of reward or censure and thus a decision to persist in or abandon a behavior (9,10). If an individual injured in an alcohol-related MVC attributes their injury in part or totally to use of alcohol, they may see this outcome as censure and seek to abandon this behavior – thus they may be ready to change this behavior. The degree of causal attribution between drinking behavior and injury may indicate the degree of readiness to change their drinking behavior. Advice, at this point, from health care professionals is most likely to be met with receptivity that can lead to changing drinking behavior.

Purpose

The purpose of this study is to determine the relationship between alcohol consumption before an injury and attribution of the injury to use of alcohol in non-alcohol-dependent young adults hospitalized for injury due to an alcohol-related MVC.

Methods

All patients admitted to 2 Level I trauma centers after an alcohol-related MVC were eligible for entry into the study. To determine if alcohol was involved prior to the injury, the admitting BAC blood sample taken at the time of arrival to the emergency department was used. If the admitting BAC was 2.2mmol/L or higher, the injury was considered alcohol-related. Other inclusion criteria were (1) age between 18-45 years, (2) ability to speak English, (3) intact cognition as judged by nurse clinicians upon physical assessment and chart review, (4) injury from an MVC that required hospitalization, and (5) BAC of 2.2mmol/L or greater. Subjects were screened for

alcohol dependence and were excluded and referred for further assessment if they met one or more of the following criteria: (1) score of 2 or higher on any or all of items 4,5,6, on the AUDIT, (2) participation in an alcohol treatment program within the past year, (3) evidence of symptoms of alcohol withdrawal as indicated by physical examine or chart review, and (4) history of daily alcohol use exceeding 150 g of use per day.

Data were collected between September 1, 1994 through August 1, 1998, and the 132 subjects recruited were part of a larger study on the use of Brief Intervention as a strategy to reduce alcohol consumption and thereby prevent future injury. The larger study is funded by the Center for Disease Control and Prevention (CDC). The institutional review boards at both trauma centers approved the study. Nurse clinicians determined eligibility of subjects by daily review of the trauma service admitting logs and requested consent for enrollment from potential subjects. Before subjects were enrolled or interviewed the nurse clinician insured they were alcohol-free by checking the admitting BAC and calculating the number of hours it would take to metabolize the alcohol.

Instruments

The attribution of injury scale was embedded in the Health Interview Schedule, a modification of the World Health Organization Composite Interview Schedule used by Fleming et al (11). The Health Interview Schedule, which is use in the larger CDC study, includes questions about health-related activities such as healthcare utilization, smoking, depression, exercise, sleep, stress and substance use, 7 items from the AUDIT and a 30-day Timeline Follow-Back calendar. The AUDIT is a brief screening device developed by the World Health Organization to screen for alcohol use and problems associated with drinking (12). Cherpitel (13) found an overall sensitivity of 85% for the detection of patients who were harmful drinkers and 83% for the detection of alcohol-dependent drinkers. The Timeline follow-back (TLFB) developed by Sobel and Sobel (14) is designed to assess variable drinking patterns and atypical heavy drinking. The TLFB is recommended when there is a need to evaluate specific changes in drinking before and after an intervention (14). The attribution of injury scale was developed by Longabaugh et al (15) to predict readiness to change drinking after injury. Subjects were asked, "To what extent do you believe your alcohol consumption was responsible for this injury?" Responses were measured on a 7-point scale ranging from 1 (not at all) to 7 (totally). Subjects were asked to indicate the point along the line that best corresponds to their response. Longabaugh et al (16) found that subjects who scored higher on the attribution of injury scale were more ready than subjects with lower scores to change their drinking behavior after injury. The test-retest reliability of the attribution of injury scale was $p=0.42$ for a small subsample of subjects.

Results

During the study period 132 subjects were enrolled (102 men, 30 women). The mean age of the subjects was 28.77 years (range = 18-45; SD = 7.73), the mean injury severity score was 10.77 (range = 1-36; SD = 8.03), and the mean admitting BAC was 35.9 mmol/L (range = 2.6-68.4; SD = 15.2). In response to the question, "To what extent do you believe alcohol consumption was responsible for this injury," 37.9% responded with "not at all," 31.2% responded "somewhat," and 30.9% responded "mostly" or "totally". The mean response was 3.73 (range 1-7; SD = 2.33). The relationship between alcohol consumption before the injury and attribution of injury to use of alcohol was tested using Spearman P. The relationship between the 2 variables was significant

($p = 0.440$, $P < .001$). The mean attribution of injury to alcohol was 4.35 (SD = 2.34) in women and 3.54 (SD = 2.31) in men; the difference in attribution by gender was not significant ($t = -1.70$, $df = 130$, $SE = 0.48$, n.s.). The relationship between attribution of injury to alcohol and severity of injury was not significant.

Discussion

At the time of hospitalization for an alcohol-related injury due to an MVC, health professionals are efficient and effective at managing the injury, but few take time to assess and discuss the contribution alcohol made to the injury, and offer the patient an opportunity to consider ways of changing their drinking pattern that lead to this injury. The results of this study, however, indicate that a large proportion (>60%) of non-alcohol-dependent patients injured in vehicular crashes do indeed attribute their injury partially or totally to the use of alcohol. These patients may be willing, even eager, to consider strategies for changing their current drinking behavior. This willingness to attribute alcohol as a contributor to their injury then provides the health care professional with a window of opportunity to capitalize on the patient's receptivity. Contrary to the commonly held stereotype of the patients involved in an alcohol-related injury, subjects in this sample appear to be open to discussion of the consequences of their current drinking behavior. The attribution of injury scale provides information concerning how ready a patient is to consider these changes.

Interestingly, in this study, subjects with higher levels of alcohol consumption before injury scored higher on the attribution of injury question than did those subjects with lower levels of alcohol consumption. It appears then as a result of the injury, the subjects drinking behavior became more salient to the injury and this salience increased as the alcohol consumption increased. Patients with BACs in the higher ranges acknowledged a higher attribution of injury to alcohol than did subjects with BACs in the lower ranges. The subject's attribution of injury to alcohol consumption indicated that they understood the causal link between drinking and injury. Many of these patients may therefore be ready to change their drinking behavior. Therefore the findings of this study support the conclusion that at the time of hospitalization for an alcohol related MVC most patients would benefit from an assessment and discussion of strategies to change their drinking behavior.

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