Decreased Drinking Following an Alcohol-Related Motor Vehicle Crash: Preliminary Findings Using Brief Intervention Strategies

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INTRODUCTION

Approximately one third of all deaths in people ages 15 to 24 years in the United States (US) result from motor vehicle crashes (MVC) (CDC, 1995). An estimated two out of every five Americans will be involved in an alcohol-related MVC at some time during their lives (CDC, 1996). Not only does alcohol increase the risk for MVC in all adults, but in young adults the risk begins to increase at very low blood alcohol concentrations (BAC). At blood alcohol levels as low as 0.02 g/dL, alcohol affects driver performance by slowing decision-making and reducing reaction time. Drivers under the age of 21 generally have less experience driving and less experience drinking, raising the risk of an alcohol-related MVC at even low BAC (Hingson, 1993).

In the US in 1994, 29% of crash-related deaths among persons aged 15-17 years and 44% of persons aged 18-24 years were alcohol-related (BAC ≥ 0.01 g/dL). In that same year, 57% of persons aged 15-17 years who were alcohol-involved drivers in fatal crashes were intoxicated (BAC ≥ 0.10 g/dL), compared to 64% of persons aged 18-20 years, 75% of persons aged 21-24 years, and 79% of persons older than 24 years (CDC, 1995). Persons with alcohol problems are nearly five times more likely to die in motor vehicle crashes than those without alcohol problems (Dunn, Donovan, & Gentilello, 1996; Evans, 1990). The link between traffic fatalities in young adults and alcohol ingestion, therefore, is very strong.

Trauma recidivism rates are reported to be as high as 44% (Reiner et al., 1990; Smith et al., 1992; Tellez, Mackersie, Morabito, Shagoury, & Heye, 1995). The potential exists for one alcohol-related driving to lead to another. Several reports of recurrent trauma noted that alcohol abuse was a major risk factor for repeated injury (Gubler et al., 1996; Reiner et al., 1990; Sims et al., 1990; Swan et al., 1989). Teenagers and young adult drivers ages 16 to 29 years arrested for driving while intoxicated (DWI) were four times more likely to die in future crashes involving alcohol than those without DWI arrests (CDC, 1996). An alcohol-related motor vehicle crash, therefore, may be the first event for a young adult in the progression of a chronic...
illness, that of traumatic injury.

PURPOSE

Gentilello et al. (1995) state that trauma centers are uniquely positioned to implement programs for alcohol screening, intervention, and referral. Brief intervention (BI) strategies consist of an assessment of alcohol consumption and related symptoms accompanied by health information on the risks of heavy drinking. The purpose of this prospective study is to test the effects of two types of BI on post-discharge alcohol consumption and future driving events in young adults 18 to 45 years of age. The subject population are those nonalcohol-dependent young adults hospitalized at a Trauma Center following an alcohol-related MVC. The two types of BI are the Simple Advice (SA) and Brief Counseling (BC) interventions (WHO Brief Intervention Study Group, 1996). SA is a health interview consisting of a baseline assessment for all outcome measures plus 5 minutes of advice about the importance of sensible drinking or abstinence. BC consists of the same intervention as the SA plus 15 minutes of counseling about drinking. In addition to the SA content, the BC intervention contains problem-solving strategies, strategies for coping with high-risk drinking situations, and constructive alternatives to drinking.

METHODS

A study with a three-group (Control Group [CG], Simple Advice Group [SA], Brief Counseling Group [BC]) experimental design with a total of 135 subjects is in the third year of data collection. Potential subjects for the study were those patients admitted to the Trauma Center following an alcohol-related (BAC £ 0.01 g/dL) MVC who were 18 to 45 years of age, nondependent drinkers, and alert and oriented. Following informed consent, subjects were randomly assigned to one of the three groups and interviewed by specially trained nurse clinicians during their hospitalization. The interview contained a detailed health history as well as the intervention when appropriate. Alcohol consumption was determined by the Timeline Followback Method (Sobell & Sobell, 1992) for the year prior to injury.

A booster dose of the two experimental interventions was provided by phone conversation at 30 days following hospital discharge. Phone interviews were conducted at 3, 6, and 12 months after hospital discharge to determine the subjects' current health status and their alcohol consumption. Crash reports and driver abstracts were obtained for the two years prior to the MVC and the two years following the MVC to determine the number and type of alcohol-related driving events.
RESULTS

As of March 15, 1997, 114 (90 males, 24 females) subjects were entered into the study with a mean age of 29.71 (R 19-45; +/- 7.71), mean admitting blood alcohol of 167.15 mg/dL (0.167g/dL) (R 12-315; +/- 68.26), and mean Injury Severity Score of 11.4 (R 1-34; +/- 8.55). The majority of the subjects were European American (83%), 16% were African American, and 1% were Asian American or Hispanic. At three months, 100% of the CG, 78% of the SA, and 100% of the BC had decreased their drinking. At six months 53% of the CG, 64% of the SA, and 90% of the BC (the more intensive intervention) had decreased their drinking.

An analysis of covariance was conducted to investigate changes in the mean number of drinks over time by condition. The covariate was the mean number of drinks per day in the 12 months preceding the MVC. The dependent variable was the mean number of drinks per day in the three months immediately following the MVC. The data were transformed using a $\ln(X) + 1$ transformation because a preliminary analysis with untransformed scores resulted in a set of residuals that were positively skewed. The results revealed that the effect of condition approached significance (F = 2.74; df = 2,64; p = 0.07). Preliminary findings revealed that no statistical difference existed between the CG and the BC, but the mean number of drinks per day in the SA group was significantly increased as compared to the other conditions (CG, BC). Data analysis of crash records and driver abstracts is currently under way as is analysis of data from 6 and 12 months after injury.

SUMMARY

A three group, experimental study is in progress to determine the effects of two types of brief intervention strategies on the alcohol consumption and number of alcohol-related driving events in young adults requiring hospitalization following an alcohol-related motor vehicle crash. Preliminary findings revealed a decrease in drinking across all three groups at three and six months. At six months, 90% of subjects with the more intensive intervention had decreased their drinking. Patterns of drinking at 3 months revealed a statistically significant decrease in alcohol consumption in the CG and BC group as compared to the SA. Several possibilities exist to explain these results. The less intensive intervention (SA) may serve to encourage rather than discourage drinking, whereas the more intensive motivational interviewing (BC) may discourage drinking. The interview, present in all three conditions, may serve as an intervention itself, thereby explaining the similar findings at three months in the CG and BC. Additionally, because at this time each group at three months contains approximately half of the full sample and because data are only available for the first 3 months of a 12 month study, the findings must be viewed as preliminary. The research is funded by the Centers for Disease Control and Prevention, Grants for Unintentional Injury Prevention and Control, United States Department - 419 -
REFERENCES


