TRAUMA PREVENTION EFFECTIVENESS WITH ALCOHOL AND DRIVING IN ADOLESCENTS.

Christine Sullivan, M.D., Chris Haas, M.D., Department of Emergency Health Services, The University of Missouri-Kansas City School of Medicine, Truman Medical Center, Kansas City, Missouri U.S.A.

SUMMARY. The "Staying Alive" alcohol and driving educational program was presented to 616 high school students. Participants completed a pretest, post test, and follow up test from 1 to 3 months later. Each test evaluated knowledge and behavior concerning alcohol and driving. An increase in knowledge was demonstrated which was retained during the follow up period. More importantly, behavioral modification in drinking and driving and being a passenger with a drinking driver was reported on the follow up test. The "Staying Alive" program may be an effective means of trauma prevention in adolescents by altering behavior regarding alcohol and driving.

TRAUMA PREVENTION has been cited as crucial by the Presidential Commission on Drunk Driving, as well as the emergency medicine and surgical communities. However, the efficacy of trauma prevention programs has not been described. Motor vehicle accidents have been identified as the leading cause of death in adolescents with alcohol a major contributor.

Therefore, we chose to focus on alcohol and driving trauma prevention teaching in adolescents. Bernstein and Woodall developed an emergency department based trauma prevention program to educate high school students. Over an eight month period an experimental program increased the study population's perception of the "riskiness" of driving under the influence of drugs or alcohol. However, there was no significant difference in knowledge or self-reported behavior between participants of the program and a control group.

The purpose of our study was to determine if an emergency department provided trauma prevention program had an effect on the knowledge and actions of adolescents in regards to drinking alcohol and driving over a one to three month follow up period.

METHODS

All high school principals in the Kansas City metropolitan area received a letter from the authors asking them to participate in the "Staying Alive" education program. The program was scheduled for presentation to classes of thirty students or less in those schools that responded. The presentation was made to the students by both of the authors, between October and December, 1987. The follow up test was distributed to the participating students in January, 1988. This was required so that the students could be tested before the end of the semester and class schedule changes.

The "Staying Alive" program was developed by the Orange County Trauma Society in 1985. It consists of a fifteen minute videotape depicting the lives of three teenagers involved in drinking and driving motor vehicle accidents. Its unique focus is to present the personal effect of alcohol related motor
The students completed the pretest immediately before the session. The "Staying Alive" program was presented and students completed the post test. The correct answers to the knowledge questions were then discussed. The follow up test was distributed in January 1988. The three tests included the same two types of questions; 1) five true/false questions regarding knowledge of the effects of alcohol on drinking and driving, and 2) questions regarding the students' behavior, attitudes, and actions involving drinking and driving. The tests were designed by an emergency medicine physician for the study. The confidential nature of the test answers was stressed to the students to increase the likelihood of honest answers about behavior. To further insure confidentiality, the tests were completed anonymously, requiring that test results be compared as independent samples.

A score of 80% or greater (4 or 5 correct true/false responses) was defined as good knowledge of subject matter. Chi-square analysis was utilized to compare knowledge and behavior test results among the three testing periods; pretest, post test, and follow up. Statistical significance was defined as p < 0.01.

RESULTS

Six hundred sixteen students took the pretest, and 603 students completed the "Staying Alive" program and post test, 337 were male and 279 were female. Three hundred eight students took the follow up test, for a 51% follow up. Follow up testing was done at one month for 79 students, two months for 163 students, and three months for 66 students.

Twenty two percent of the participants had their motor vehicle operator's license at the time of the study. Seventy-five of the students were 14 years old, 197 were fifteen years old, 290 were 16 years old, 42 were seventeen years old, and 12 students were 18 years of age. Public, parochial, and private schools participated in the study.

There was a significant increase in the percent of students who achieved a score of 80% or greater on the knowledge section from pretest to post test, p < 0.001. This improvement was sustained over the follow up period. No difference in results was seen when the three follow up intervals were compared, p = 0.0228.

Evaluation of participant behavior included three questions. Comparison of reported behavior indicated that the program had a significant effect on behavior. Examined first was self-reported drinking and driving. Ninety-three students reported drinking and driving before the pretest. Thirty-two students stated that they would continue to drink and drive on the post test, and 29 students reported drinking and driving during the follow up period. Comparison of reported drinking and driving behavior demonstrated a significant decrease in this behavior, p < 0.001. The second question addressed being a passenger...
with a drinking driver. Four hundred twenty eight students reported being a passenger with a drinking driver before the pretest, 56 students stated on the post test that they would continue this behavior, and 59 students reported having been a passenger with a drinking driver during the follow up period, \( p < 0.001 \). On the post test, 580 students stated that they would stop someone from drinking and driving, and 241 students stated that they had intervened, preventing someone from drinking and driving, at the time of follow up, \( p < 0.001 \).

**DISCUSSION**

The results of this study demonstrate a retention of knowledge, and suggest that drinking alcohol and driving behavior can be modified in adolescents using the "Staying Alive" education program over the follow up period examined. To our knowledge, these results are the first emergency department based trauma prevention program to demonstrate a long-term effect of trauma education programs in adolescents.

There are important differences between the "Staying Alive" educational program, and the prevention program presented by Bernstein and Woodall. Bernstein's program involved prolonged individual experience, observing trauma and medical problems related to alcohol and drug abuse. Their participants were seventh grade students and we were more broad including fourteen through eighteen year olds. The participants spent two weekend evenings in a busy Emergency Department, which significantly limits the number of students which can participate in the program, only seventeen students were studied. The "Staying Alive" program required 45 minutes to complete, and can be presented a large group. As a prevention program, "Staying Alive" could be a community-based program. Although Bernstein found an increase in perception of "riskiness" regarding alcohol and drug use in participants, they did not show any change in participant knowledge or behavior.

The retention of knowledge with the "Staying Alive" program was significant during the follow up period. There was some decline in the percent of students who had a score of 80% or better in the knowledge test, however, scores retained their significant improvement over pretest values. The actual increased score in the students who were followed at one month likely reflects the fact that the correct answers to the questions were discussed with the students after the post test had been completed.

A significant effect on the drinking and driving behavior of the students was demonstrated, based on the answers to the behavioral questions. There was a decline in reported drinking and driving, as well as in students who had been a passenger with a drinking driver. A majority of students had intervened to keep a friend from drinking and driving during the follow up period. These results suggest that behavior can be appropriately modified with the "Staying Alive" program.

It would have been ideal to have had a longer follow up period between the post test and follow up test, however, with the class change at the end of the semester, this was not feasible. Behavior type questions were self-reported, and students may not have accurately reported their behavior. It is also possible that some of the students had not been in drinking and driving situations during the follow up interval, which would have altered their
response to behavioral questions. Also, since the follow up was 51%, it is possible that those participants lost to follow up had actually been drivers or passengers in alcohol related situations. The most meaningful test of the educational program's effectiveness would be to prove a decline in the number of alcohol-related motor vehicle accidents among study participants, compared to a control population.

Trauma prevention was found to be effective in increasing knowledge and modifying reported actions of adolescents in regards to alcohol and driving. It would be interesting to follow these students over time to see if their behavior eventually was reported at pretest levels. This might suggest that repetition of "Staying Alive" at certain intervals might re-emphasize appropriate behavior. Also, similar trauma prevention programs addressing other preventable accidents might be effective. The results of our study support the participation of physicians in focused, community-based trauma prevention programs.

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REFERENCES


