

Alcohol and Other Drug Use and Automobile Safety: A Survey of Boston-Area Teen-agers

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ABSTRACT

To provide educators with information regarding students' behaviors and beliefs about drinking, drug use and driving, the authors surveyed a stratified random sample of approximately 2,000 seventh and 10th graders in the Boston area in the spring of 1982. The focus of the present paper is on those students who might be most at risk for operating a motor vehicle under the influence of alcohol or marijuana. Therefore, the analysis presented here is limited to 623 students who were 16 years of age or older at the time of the survey.

About half of the students in this age group used alcohol (63%) or marijuana (44%) and as many as 18% had used other illicit drugs during the 1982 school year. While most current drinkers (72%) drank not more than three times a month, nearly half (46%) of the current marijuana users smoked at least once a week.

A substantial proportion of students combined drug and/or alcohol use with driving. Between 43% and 50% had been a passenger with a driver who was under the influence of alcohol or marijuana at least once since the beginning of the school year. Many students did not appear to be aware of the dangers involved in driving under the influence of alcohol or marijuana and about one out of four believed they could use alcohol and other drugs responsibly.

Both students' behaviors and beliefs regarding drinking, drug use and driving were significantly related to the extent of their involvement with alcohol and other drugs. Frequent marijuana users, heavier drinkers and students who used drugs other than alcohol or marijuana were more likely than other students to combine drug use and driving and believe that these activities could be combined safely. The data suggest that the entire constellation of risk-taking and drug-using behaviors should be addressed in educational programs and that information on the effects of other drugs (both alone and in combination with alcohol) on driving ability should be emphasized.

INTRODUCTION

In recent years, deaths and injuries from alcohol-related automobile accidents among young Americans have become recognized as serious public health problems. Young people, inexperienced at both drinking and driving, all too often combine these activities with fatal results. Automobile accidents are a leading cause of death among 15-34-year olds.¹ It is estimated that between 45% and 60% of all fatal crashes involving a young driver are alcohol-related,² and in any traffic accident, young drivers are more likely than older drivers to have been drinking.³

Although fewer studies have examined the relationship between marijuana use and traffic accidents, there is increasing evidence that marijuana impairs sensory and perceptual functions, motor coordination, concentration and judgment and that marijuana users are involved in a higher than average number of accidents.^{4,5}

As part of a Medical Foundation program to support school health education, the present study was conducted to gather information about the extent of alcohol consumption and drug use by Boston-area public school students, their use of alcohol and marijuana when driving and the attitudes of students about driving, alcohol and marijuana use.

METHOD

The data presented here were collected in Spring 1982 among a stratified random sample of 1,841 seventh and 10th graders in eight urban and suburban school systems in the Boston area. The sample was stratified by district and race to ensure an accurate representation of students in these grades by race, socioeconomic status and academic ability.

A 17-page questionnaire was administered during regularly scheduled class periods and completed anonymously by the students. Information was collected on students' knowledge, attitudes and behaviors regarding a series of health-related

topics that included alcohol and drug use, smoking, nutrition, stress management and exercise.

Completed questionnaires were screened for internal consistency and only 16 questionnaires had to be excluded because the information was considered to be unreliable. Almost all students appeared to answer the questions carefully and thoughtfully.

The extent to which data collected in in-class surveys are truly representative depends upon the absenteeism rate and the characteristics of the absentees who may be more involved in drug use.⁶ The average absentee rate in the seventh and 10th grade classes in this study was 23%. Although this is no higher than the average rate reported for Boston-area schools, it limits the generalizability of the current data to those students who are present in school on a regular basis.

RESULTS

Demographic Characteristics

In order to examine the characteristics of those students who might be most at risk for operating a motor vehicle under the influence of alcohol or marijuana, the authors conducted a series of analyses limited to the 623 students in the 1982 school survey who were at least 16 years of age.* Of the students in this age group, nearly all (98%) were 10th-graders, 55% were boys and 45% were girls. About half (51%) were white, 36% black, and 14% belonged to other minority groups. Thirty-four percent of the students attended school in suburban areas, 66% in urban areas.

Alcohol Use

More than four-fifths (82%) of the teen-agers in the 16+ age group had used alcohol at some time in their lives. The proportion of students who were current drinkers, defined as having had a drink during the 1981-1982 school year, was smaller (63%).

Most students using alcohol during the school year did so fairly infrequently, approximately 42% of the current drinkers saying they drank less than once a month. However, 35% of the boys and 19% of the girls who used alcohol during the school year reported drinking once a week or more often.

For the most part students did not drink in large quantities, about two out of five (40%) current drinkers generally taking one or two drinks during a given drinking episode. A significant number, however, reported drinking larger typical quantities. Twenty-six percent of the boys and 12% of the girls said that they generally consumed five or more drinks at a time.

Measures of the usual quantity and frequency of alcohol use were combined into a drinking typology that classified students into six categories ranging from abstainers (students who never drank or did not drink during the 1981-1982 school year) to heavy drinkers. As shown in Table 1, about two out of five students (37%) abstained from alcohol. Of the remaining 63%, less than half were infrequent or light drinkers, while the others were classified as moderate, moderate/heavy or heavy drinkers. Although only 9% were classified as heavy drinkers

*In Massachusetts, learners permits can be issued to 16 year olds with parental consent.

(defined as those who drank five or more drinks at least once a week), it should be noted that they accounted for 14% of all current drinkers.

Use of Marijuana and Other Drugs

Nearly three out of five (57%) students reported trying marijuana at some time in their lives and 44% had used the drug during the 1981-1982 school year. When used at all, marijuana tended to be used regularly. Nearly half (46%) of

the current users smoked marijuana at least once a week and approximately three out of 10 current users (29%) said they smoked every day or nearly every day (Table 2).

Students also were asked if and how often they had used a number of other drugs during the school year. The most commonly used drugs among students 16 years of age and older were (in order) amphetamines (18%), cocaine (17%), barbiturates ("downers") (14%), hallucinogens (14%), tranquilizers (7%), PCP (3%) and heroin or other opiates (2%). On the average, students used 1.1 drugs other than alcohol during the school year. If students who did not use drugs during the school year were excluded, the average number of other drugs used was 2.6.

Automobile Safety: Practices and Beliefs

Half of the surveyed students reported being a passenger in a car during 1981-1982 whose driver "was drinking or had been drinking a short time earlier" and 43% responded affirmatively when marijuana was the substance in question. Among students who drove, 14% indicated that they had operated a car while or shortly after consuming alcohol and 17% drove while or shortly after smoking marijuana. Boys were more likely than girls to drink and drive (17% vs. 10%) or drive under the influence of marijuana (20% vs. 12%).

Regardless of sex, however, the likelihood of drinking and driving or riding with a drinking driver was strongly associated with the quantity of alcohol typically consumed. For example, while less than half (48%) of the infrequent or light drinkers had ridden with a driver who had been drinking, nearly nine out of 10 (88%) heavy drinkers had done so. Among students of driving age, 3% of the infrequent-light drinkers and 61% of the heavy drinkers indicated that they had operated a car while under the influence of alcohol.

As with alcohol consumption, frequency of marijuana use was significantly correlated with driving under its influence or riding with a driver who was high. Eighty-five percent of the students who smoked marijuana several times a week, as compared with 44% of those who smoked less than once a month, reported riding with a driver who was high. Among students of driving age, more than half of the frequent marijuana users had driven a car while under its influence as compared with only 13% of the infrequent users.

A significant relationship also was observed between use of other drugs and driving under the influence of alcohol and marijuana. For example, students who used drugs such as cocaine, opiates, amphetamines, hallucinogens, PCP, barbiturates or tranquilizers were more likely than nonusers to drive under the influence of alcohol (33% vs. 2%) or marijuana (34% vs. 6%), or to ride with a driver who was under the influence of alcohol (67% vs. 42%) or marijuana (69% vs. 29%).

When asked about their knowledge and beliefs regarding automobile safety, about half (48%) of the students surveyed did not know that automobile accidents were the leading cause of death among teen-agers. One in three believed that "some people can drive safely after drinking" and 15% thought that marijuana did not affect driving ability.

Students' attitudes about drug use and driving were also closely associated with their use of alcohol and other drugs. Heavier drinkers, marijuana users and other drug users were more likely than other students to believe they could use alcohol and other drugs responsibly, that it was okay for some people to drink and drive and that marijuana does not affect driving ability. These differences are outlined in Table 3.

To determine which student characteristics were most closely associated with driving under the influence of alcohol, the authors entered several variables, including demographic characteristics, drinking and drug use practices, reasons for

Table 1
Drinking Typology Among Students 16 Years of Age and Older

Drinking Typology	16+ Years
Abstainer/Did not drink during school year	37%
^a Infrequent Drinker	10%
^b Light Drinker	18%
^c Moderate Drinker	13%
^d Moderate/Heavy Drinker	13%
Heavy Drinker	9%
Total	100%
Number	573

^a 1 drink less than once a month.

^b 2-4 drinks less than once a month or 1 drink 1-3 times per month.

^c 5 or more drinks less than monthly; 3 or 4 drinks 1 to 3 times per month; 1 drink at least once a week.

^d 5 or more drinks at least 3 times per month, or as many as 6 drinks more than once a week.

Table 2
Marijuana Use Among Students 16 Years of Age and Older

Marijuana Use	16+ Years
Never used marijuana	43%
Used marijuana, but not during school year	13%
Used marijuana less than once a month	17%
Used marijuana 1 to 3 times/month	6%
Used marijuana 1 to 4 times/week	13%
Used marijuana every day	8%
Total	100%
Number	612

Table 3
Alcohol and Drug Related Attitudes and Behaviors by Drug Use Patterns

Attitudes/Behaviors	Heavier Drinkers (N=124)	Marijuana Users (N=342)	Other Drug Users (N=201)	Non-Drinkers (N=214)	No Drug Users (N=198)	All Students (N=611)
Agree that "young people my age can use alcohol and drugs responsibly"	39	34	34	21	17	24
Agree that "some people can drive safely after drinking"	51	42	40	23	25	32
Agree that "smoking marijuana doesn't affect your ability to drive a car"	25	22	25	14	9	15
Have driven under the influence of alcohol	38	13	33	-	1	14
Have driven under the influence of marijuana	36	16	34	5	-	17
Have been a passenger with a drinking driver	67	51	67	32	38	50
Have been a passenger with a driver under the influence of marijuana	62	43	69	24	21	43

drinking and drug use and beliefs and practices regarding traffic safety into a series of multiple regression analyses. Of all these variables, those characteristics most descriptive of students who drove under the influence of alcohol were: 1) heavier alcohol use; 2) driving under the influence of marijuana; 3) riding as a passenger with a driver who was drinking; and 4) use of drugs other than marijuana, particularly cocaine and amphetamines.

Altogether these variables explained 42% of the variation in driving under the influence among student drivers.

DISCUSSION

The data presented here suggest several important considerations for those responsible for drug and alcohol education and traffic safety programs. Although the general public may feel that the message already has been delivered through public health campaigns, it has not come across to the young people who are most at risk. Many high school students are not aware of or do not accept findings regarding the extent of teen-age mortality caused by traffic accidents or the dangers involved in driving under the influence of alcohol or marijuana. Most of the young people surveyed were aware of the dangers of drug abuse *per se*, but a substantial number believed it was safe to drive under the influence of alcohol or marijuana and many had done so during the school year. Information on the effects of alcohol or drugs continues to be important, but these data suggest that additional emphasis should be placed on the effects of alcohol and other drugs on driving ability. Careful program evaluation is needed to ensure the development and application of effective educational strategies that will facilitate behavior change as well as increase knowledge. Support for multidimensional and peer-oriented strategies in this regard should be encouraged.

Although any student who combines drug use and driving is at risk, there is evidence here that heavier drinking, drug use and driving under the influence are highly correlated. Drug and alcohol use and driving under the influence appear to be

part of a constellation of risk taking behaviors that need to be addressed in educational programs. For example, students who drank heavily or drove under the influence of alcohol also were more likely to use marijuana and other drugs, particularly stimulants that may provoke heavier drinking or cause users to overestimate their ability to drive safely. Students who drove under the influence of alcohol were also more likely to drive under the influence of marijuana. These findings also suggest that close attention be paid to the quantity and frequency of alcohol use as well as the use of other drugs as these may be accurate indicators of traffic safety risks.

References

1. *Healthy People — the Surgeon General's report on health promotion and disease prevention*. Washington, DC, Government Printing Office, 1979. DHEW publication no. (PHS)79-55071.
2. DeLuca JR, ed: *Alcohol and Health: Fourth Special Report to the U.S. Congress*. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, 1981. DHHS publication no. (ADM)81-1080.
3. Douglass R: Youth, alcohol and traffic accidents, in: *Special Population Issues: Alcohol and Health Monograph 4*. Washington, DC, Government Printing Office, 1982. DHHS publication no. (ADM) 82-1193.
4. Nicholi AM: The nontherapeutic use of psychoactive drugs — a modern epidemic. *New Engl J Med* 308:925-933, 1983.
5. Institute of Medicine: *Marijuana and Health*. Washington, DC, National Academy Press, 1982.
6. Trustees of Health and Hospitals of the City of Boston: *Adolescent School Health Program*. Report submitted to the Robert Wood Johnson Foundation, March, 1980.

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