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Parental Factors Influence Teen Alcohol Use After an Emergency Department Visit

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Abstract

Objectives—To determine if parental factors are significant predictors of short-term adolescent drinking after an alcohol-related emergency department (ED) visit.

Methods—Adolescents, 13 to 17 years, who either had evidence or reported usage of alcohol in the 6 hours before an ED visit, were eligible for this study. Alcohol use was assessed at baseline and at 3-month follow-up. Data on parental variables and parenting practices were collected at baseline. Linear regression models were created to determine the relationship between parental factors and follow-up drinking.

Results—Parental alcohol use, socioeconomic status, and monitoring practices were significant predictors of adolescent alcohol use at 3-month follow-up.

Conclusions—Parental factors may significantly influence subsequent adolescent drinking after an ED visit. These factors should be assessed when treating alcohol-positive teens, and parents should be advised to closely monitor their teens.

Keywords

adolescent; alcohol; parental factors

Adolescent alcohol use is a significant problem in the United States. Recent studies^{1,2} have shown that 73% of high school seniors have tried alcohol, 45% used alcohol in the previous 30 days, and that 3% use alcohol daily. Adolescents who use alcohol have higher rates of poor grades, school drop-out, depression, risky sexual behavior, other drug use, and theft/shoplifting.³ In addition, teens who have early onset of drinking and drop out of school are at high risk for heavy alcohol use in adulthood.⁴ Reducing adolescent alcohol use is thus important not just in decreasing morbidity and mortality among youth, but may also be an important form of secondary prevention of adult alcohol problems.

Alcohol-positive adolescents are frequently seen in emergency department (ED) settings because drinking is associated with injuries, motor vehicle crashes, and assaults.⁵ Estimates of injured pediatric ED patients who are alcohol-positive range from 5% to 39%.^{6,7} In a population of older adolescent patients who were intoxicated in the ED and admitted for

traumatic injuries, nearly 50% screened positive for a possible or probable alcohol use disorder.⁸ In addition, many adolescents do not have regular contact or follow up with a primary care provider⁹ and often seek medical care in EDs.¹⁰

An ED visit may also represent an important “teachable moment.” Numerous adult studies have shown that an injured patient’s readiness to change their alcohol behavior is associated with the aversiveness of their injury and the patient’s perception that alcohol contributed to their injury.¹¹

This finding is not unique to adults. In an ED-based study of older adolescents comparing a brief alcohol intervention to “standard care,” Monti et al¹² found that all patients had significantly reduced alcohol use at 3 months follow up, regardless of intervention status. They believe that the experience of having an alcohol-related ED visit may account for this reduction in alcohol use. Spirito et al¹³ analyzed data on 13- to 17-year-old adolescents from the same study and came to similar conclusions. Barnett et al¹⁴ analyzed data collected from the Monti study and found that a patient’s readiness to change was associated with their injury severity or if they had been frightened by their injury.

The Monti et al¹² and Spirito et al¹³ studies only involved the adolescent. There was no family participation in these studies. Yet it is known that parental factors are important determinants of adolescent alcohol use. Factors such as parental use of alcohol,^{15,16} parental approval of adolescent alcohol use,¹⁷ and provision of alcohol by parents¹⁸ are all important predictors of adolescent alcohol use. Research has also shown that parental factors such as involvement/monitoring, as well as warmth and support all predict adolescent alcohol use.^{19–24} However, little is known about parental factors that predict future alcohol use by adolescents seen and identified in the ED setting.

The purpose of this study was to determine if parental factors influence adolescent alcohol use at 3-month follow up, after being seen in the ED for an alcohol related visit. On the basis of prior research, we hypothesized that parental factors would predict follow-up alcohol use. Elucidating factors which influence future adolescent alcohol use may be important in designing and implementing effective ED and post-ED treatment of the adolescent and their family.

METHODS

Population

Subjects for this study were drawn from a previously described clinical trial.^{12,13} Adolescents aged 13 to 17 years, who either had evidence of alcohol in blood, breath, or saliva, or who presented to the ED with an injury and reported usage of alcohol in the 6 hours before the ED visit, were eligible for this study. Patients were tested for the presence of alcohol at the discretion of the ED attending physician. Patients who were suicidal, in police custody, non-English speaking, had significant injuries, or failed a mental status examination were excluded. Parents who were non-English speaking were excluded.

Setting

The setting of this study is an urban pediatric emergency department, located in a tertiary care, free-standing children’s hospital. The pediatric ED serves as a Level I trauma center, with an annual census of 45,000 patient visits.

Procedures

Subjects were referred to this project either by the ED staff or the biochemistry laboratory. Research staff (bachelors and masters level interventionists, with 1 to 2 years of clinical research experience) conducted all aspects of the baseline contact in the ED, including obtaining informed consent from parents and assent from the adolescents, and administering the assessment and intervention. Parents and adolescents were informed that the adolescent's responses would be held in strict confidence. Adolescents were not approached until their blood alcohol content was less than 0.1% (g/ml) and/or they could pass a mental status examination. If subjects were unable to complete the baseline assessment at the time of their ED visit, a follow-up visit was scheduled within a few days.

After the initial assessment was complete, subjects were randomized to receive either a 30- to 40-minute motivational interviewing-based intervention to decrease alcohol use or a 5-minute "standard care" ED advice for their alcohol use. Subjects were remunerated with a gift certificate at the completion of the baseline assessment.

All research procedures were approved by the overseeing university and hospital institutional review boards.

Instruments

The assessment battery was read aloud to subjects and took on average 45 minutes to complete. At the baseline assessment, adolescents in this study completed the Adolescent Drinking Questionnaire (ADQ), which is a 4-item screening tool, abstracted from the Adolescent Health Behavior Questionnaire.²⁵ It assesses drinking frequency, quantity, frequency of high volume drinking, and frequency of drunkenness over the past 3 months on 8-point scales. The ADQ was also administered at 3-, 6-, and 12-month follow up. Other baseline measures inquired about behavior(s) over the preceding 12 months. The Adolescent Drinking Index (ADI)²⁶ is a 24-item measure of severity of alcohol involvement. It is scored on either a 3 point scale (0, not all like me; to 2, like me a lot) or 4-point scale (0, never; 3, 4 times). This measure was administered only at baseline to determine which adolescents had potential alcohol problems and for personal feedback for subjects randomized to motivational interviewing treatment. The Short Michigan Alcoholism Screening Test (SMAST)²⁷ is a 13-item self-report measure, completed by parents to detect parental alcohol problems. Subjects answer "yes/no" questions about their drinking history and behaviors. A score of 3 or greater is concerning for problem drinking.

Parent and adolescent perceptions and rules about drinking were derived from a measure of parent concerns and empowerment.²⁸ At the baseline assessment, both parents and adolescents were asked about the house rules regarding drinking and if there were penalties if these rules were violated. Parents were also asked to respond to 4 possible scenarios involving their teen and drinking and if they have ever discussed strategies to avoid drinking or other alcohol-related risky behaviors (rated on a scale from 0 = never to 5 = more often than once per month). Adolescents were asked if they thought they would get in trouble with their parents (yes/no), lose privileges (yes/no), or fought with their parents as a result of their alcohol use (0 = never to 3 = 4 or more times), if their parents asked where they were going or checked on them when they went out, and if they had ever called their parents to avoid drinking and driving situations.

Socioeconomic (SES) status was assigned using a state health department manual which classifies SES based on zip code of residence. Socioeconomic status was coded on a 4-point scale (1 = poverty, 2 = low, 3 = middle, and 4 = high).

Follow-up

Adolescents were interviewed by telephone at 3 months, and in person at 6 and 12 months. Interviews were conducted by research assistants who were blind to treatment group assignment. Only the 3-month follow-up data are reported here because parental influence was only predicted to have short-term effects after the ED visit. Subjects were modestly compensated for their follow-up participation.

Analyses

Multiple stepwise linear regression models were created to determine the relationship between parenting factors and adolescent alcohol use at 3-month follow up. Because of multiple statistical comparisons, significance level was set at $P = 0.01$. All statistical calculations were performed using SPSS software (version 14.0; SPSS Inc., Chicago, IL). Variables were dropped from the model if they were not statistically significant to a step. The final model was selected on the basis of clinical and statistical significance as well as model parsimony.

Adolescent baseline alcohol use and intervention status were included in the first step of the regression model because both were known to be highly associated with follow-up drinking. All other dependent variables were first checked for distributional assumptions. The distribution of parental SMAST data was skewed toward low or no alcohol problems. A log transformation of the parental SMAST was thus included in the second step of the regression model, as was parental SES. A correlation matrix was then constructed to identify potential parental variables for use in the regression models and to check for collinearity. Parenting variables were selected for regression modeling if there was a significant relationship with alcohol use at follow-up (ie, baseline alcohol use and intervention status were included in the first step of the model) or if they were relevant to the study question. Five potentially important parenting variables were identified and included in the final step of the regression model.

RESULTS

Of 287 eligible subjects, 127 (44%) declined to participate or were discharged from the ED before completion of recruitment. The most common cited reasons for declining to participate were lack of interest, fatigue, or pain. Of the 160 subjects in the study sample, 102 (64%) were male and 58 (36%) were female, with an average age of 15.6 years. The ethnic background of the subjects were 114 (71%) non-Hispanic White, 28 (18%) Hispanic, 10 (6%) African American, 5 (3%) Asian or Pacific Islander, 1 (0.6%) Alaskan or Native American, and 2 (1%) others.

Ninety-three percent of enrolled patients completed the 3-month follow-up assessment. There were no significant differential follow-up rates between treatment conditions at the 3-month interview.

Results of the baseline ADI and ADQ as well as the 3-month follow-up ADQ are presented in Table 1. As a group, these patients drank on average nearly 4 days a month. On days that they drank, they consumed on average 4.65 drinks per occasion. They also reported an average of 2 days per month of high volume ("binge") drinking. Using an ADI score of 15 as a cutoff for a possible alcohol use disorder, 47% of this patient sample scored above this cutoff.

Results of the regression analysis for 3-month follow-up are presented in Table 2. At 3-month follow-up both parental and parenting factors accounted for 9.2% and 10.6% of the model's variance, respectively. Both steps were statistically significant at the $P = 0.01$ level.

In the parental factors step, higher parental SES and lower parental alcohol use were associated with greater adolescent alcohol use at follow up. In the parental monitoring step, the observed finding was driven by 1 variable. Specifically, increased parental penalties for drinking was associated with less teen drinking at follow-up.

DISCUSSION

In population- and school-based studies, parental factors such parents' use of and attitudes toward alcohol,^{29–31} socioeconomic status,³² as well as parental rules and monitoring of their adolescent^{33–35} have all been shown to influence adolescent alcohol use. This study demonstrates that in an ED-based population of alcohol using adolescents, these same parental factors are strong predictors of short-term future alcohol use.

Previous studies on the association between parental SES and teen drinking have shown mixed results. Most have found that low SES is associated with higher adolescent alcohol use^{32,36,37} but others have found an association with high SES.³⁸ There are several possible explanations for the association between high parental SES, lower parental alcohol use (as measured by parental SMAST), and higher adolescent alcohol use at follow-up. Parents of higher SES may have different views on adolescent alcohol use. They may tacitly approve of alcohol use as a normal "rite of passage," and thus may not view their teen's alcohol use as problematic. They may view alcohol as an appropriate method of relaxing or stress relief. Alternatively, high SES parents may have more denial about their teen's alcohol use and may have more resources with which to obtain alcohol.

Regarding parental alcohol use, adolescents whose parents reported lower amounts of alcohol use were found to have higher rates of drinking. This finding is not consistent with most previous studies, which found increased drinking among teens whose parents model this behavior.^{39–41} It is not clear why this study is different. One possible explanation is that parents of high alcohol-using teens may have under-reported their alcohol use. Parental assessments were face-to-face interviews. These parents may have chosen to answer the SMAST with more socially desirable answers.

Another possible explanation is that parents who reported lower alcohol use may have more alcohol available in the homes and/or monitor their home alcohol supply less than parents who use higher amounts of alcohol. This could result in greater access to alcohol for the adolescent. Alternatively, parents who are high alcohol users may monitor their teen's alcohol use more closely.

Higher levels of parental monitoring were associated with less adolescent alcohol use at follow-up, a finding consistent with the literature.^{22,24,33,34,38,42–44} There was a particularly strong association between teens and parents reporting that there were penalties for breaking family rules and less adolescent alcohol use. This form of parental monitoring may thus be an important deterrent of teen alcohol use.

The primary limitation of this study is that all measures of adolescent drinking and parental and parenting factors were self-reports and were not independently verified. Parental SMAST for example, was highly skewed toward lower alcohol use, a finding which is not consistent with what is known about alcohol use in the general population. This suggests that some parents may have provided socially acceptable rather than truthful responses. If this in fact occurred, then the effect of parental drinking on future adolescent drinking may be even larger than that observed in this study.

Another limitation of this study is that parental monitoring was only measured at baseline. Changes in parental monitoring and behavior may have influenced the observed findings.

This study is relevant to pediatric emergency physicians in several ways. First, in caring for alcohol-using adolescents, it is important to assess these parental variables. Second, when high-risk parental factors are detected, “standard treatment” for these adolescents may not be adequate. Parents should be advised of the importance of their role in decreasing future alcohol-related event. Lastly, parents should be advised about the importance of monitoring their adolescent in this process, in the weeks and months after their ED visit, as well as the months and years beyond.

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TABLE 1

Patient ADI and ADQ Scores

Variable	Baseline		3 Month Follow-Up	
	Mean	(SD)	Mean	(SD)
ADQ				
Frequency (days/month)	3.85	(4.82)	3.03	(4.75)
Quantity (drinks per occasion)	4.65	(2.17)	2.88	(2.81)
High volume drinking (days/ month)	2.19	(3.74)	1.51	(3.01)
ADI	16.04	(10.23)	—	—

TABLE 2

Hierarchical Regression Analysis Predicting 3 Month Follow-Up ADQ Score

Variable	B	SEB	β (P)	R ²	ΔR^2 (P)
Step 1				0.26	0.260 (.00)
Baseline ADQ	0.602	0.101	0.504 (0.00)		
Intervention status	-0.190	0.338	-0.048 (0.56)		
Step 2				0.352	0.092 (0.001) [†]
Parents SES code	0.459	0.163	0.230 (0.01) [*]		
Log parents SMAST	-1.442	0.614	-0.198 (0.02)		
Step 3				0.458	0.106 (0.004) [*]
Loss of privileges if teen caught drinking	0.022	0.190	0.011 (0.91)		
Number of arguments with teen over drinking	0.254	0.183	0.130 (0.17)		
Penalties for drinking	-0.600	0.204	-0.244 (0.00) [*]		
Discuss drinking at parties with teen	0.516	0.263	0.162 (0.05)		
Discuss drinking with teen	0.001	0.112	0.000 (0.99)		

^{*} $P < 0.01$.[†] $P < 0.001$.