

Caffeinated Cocktails: Get Wired, Get Drunk, Get Injured.

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Introduction

The consumption of alcohol mixed with energy drinks is popular on college campuses in the US. Limited research suggests that energy drink ingestion lessens subjective intoxication in persons who also have consumed alcohol.

Objective

To examine the relationship between energy drink use, high-risk drinking behavior, and alcohol-related consequences.

Methods

In Fall 2006, web-based surveys were administered to stratified random samples of 4,271 college students from 10 NC universities. Students answered questions regarding alcohol use, its consequences, and other health risk behaviors.

Statistical Analysis

Data were analyzed using multiple linear and logistic regression accounting for within-school clustering. Adjusted odds ratios (AOR) and 95% confidence intervals were calculated for significant predictors ($p < 0.05$).

Results

697 students (24% of 2,886 past 30 day drinkers) reported consuming alcohol mixed with energy drinks (AmED) in the past 30 days. Students who were male, White, intramural athletes, Greek society members or pledges, and younger were significantly more likely to consume alcohol mixed with energy drinks.

In multivariable analyses, consumption of alcohol mixed with energy drinks was associated with increased heavy episodic drinking and twice as many episodes of weekly drunkenness. (See Table 1.)

Students who reported consuming alcohol mixed with energy drinks had significantly higher prevalence of alcohol-related consequences. (See Table 2.)



Table 1. Drinking Behaviors Significantly Associated with AmED

Drinking Behavior*	Non-AmED N=2,189 (76%)	AmED N=697 (24%)	b** 95% CI	z statistic	p-value***
Typical # drinks in single episode	4.5 ± 0.15	5.8 ± 0.17	1.4 (1.1, 1.6)	11.69	<0.001
# days with 5/4 heavy episodic drinking in past 30 days	3.4 ± 0.17	6.4 ± 0.23	2.9 (2.5, 3.3)	14.21	<0.001
# days drunk in a typical week	0.73 ± 0.04	1.4 ± 0.05	0.70 (0.61, 0.79)	15.44	<0.001
Most # drinks in single episode in past 30 days	6.1 ± 0.15	8.3 ± 0.19	2.2 (1.9, 2.5)	14.28	<0.001

* Students who reported drinking in past 30 days only.

** Numbers given in first two columns are adjusted means ± SE from multivariable clustered linear regression model adjusting for student gender, age, race, Greek status, athlete status and within-campus clustering. b is the regression coefficient of the indicator variable comparing AmED (alcohol mixed with energy drinks) to non-AmED drinkers.

*** p-value is from comparing AmED vs. non-AmED for each drinking behavior outcome.

Table 2. Consequences Significantly Associated with AmED

Consequences ¹	Non-AmED N=2,189 (76%)	AmED N=697 (24%)	AOR 95% CI	z statistic	p-value ²
Was taken advantage of sexually	3.7% (2.9, 4.8)	6.4% (4.7, 8.7)	1.77 (1.23, 2.55)	3.05	0.002
Took advantage of another sexually	1.7% (1.2, 2.4)	3.7% (2.5, 5.4)	2.18 (1.34, 3.55)	3.13	0.002
Rode with a driver who was under the influence of alcohol	22.5% (18.6, 26.9)	38.9% (32.7, 45.6)	2.20 (1.81, 2.68)	7.83	<0.001
Was hurt or injured	5.9% (4.8, 7.2)	12.3% (9.9, 15.3)	2.25 (1.70, 2.96)	5.74	<0.001
Required medical treatment	1.2% (0.8, 1.8)	2.6% (1.7, 4.1)	2.17 (1.24, 3.80)	2.70	0.007

1. Students who reported drinking in past 30 days only.

2. p-value is from comparing AmED (alcohol mixed with energy drinks) users to Non-AmED for each drinking behavior outcome in a multivariable clustered logistic regression model adjusting for student gender, age, race, Greek status, athlete status, typical # of drinks in an episode and within-campus clustering.

Limitations

This study used cross-sectional data, which limits our ability to assess causal relationships. In addition, the relationships between consumption of alcohol mixed with energy drinks, and high-risk drinking, and alcohol-related consequences may be result of selection effects; specifically, sensation seeking individuals may be drawn to energy drinks, heavy alcohol consumption, and risky behaviors.

This investigation was limited to college students from a specific geographic area, limiting its generalizability. Data were obtained by self-report; it is possible that survey respondents may have under- or overestimated their alcohol use and its consequences.

Conclusions

Nearly one quarter of college student current drinkers reported drinking alcohol mixed with energy drinks. These students are at increased risk for alcohol-related consequences, even after adjusting for the amount of alcohol consumed.

Future directions

Additional research is necessary to examine the health risks of drinking alcohol mixed with energy drinks. In addition, policy measures may be warranted, such as requiring that energy drinks sold in the United States carry a warning label regarding the danger of consuming these beverages with alcohol.

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