

The Differences of Hangover Symptoms in Beer vs. Vodka Drinkers

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Abstract

Alcohol abuse and hangovers decrease next day productivity and well-being. According to the Hangover Symptoms Scale (HSS), hangover symptoms include nausea, headache, and extreme thirst/dehydration.¹ These symptoms start to occur as blood alcohol levels decline, and peak as all the alcohol is removed from the system.¹ Generally, it is believed that the greater the amount and duration of alcohol consumption, the more prevalent the hangover.² Alcohol with a dark color, and higher congener content correlates to more numerous and severe hangover symptoms in young adults.³ Congeners are chemical compounds found in alcoholic beverages. The identity and concentration of congeners found in certain types of alcohol, may be responsible for hangover symptoms the next day.⁴ Using an objective measure of intoxication, the purpose of the study is to examine hangover symptoms and severity in college students who drank primarily beer versus those who drank primarily vodka. The survey was conducted at a public, midsized Midwestern University. The data was collected during throughout the 2013-2014 academic year, via an initial survey in the bar district and a breathalyzer test. Participants were later emailed an online survey, with additional questions. It is predicted that students who drank beer will experience more of the hangover symptoms outlined in the HSS, because beer had a higher congener content.⁴ Initial data shows no significant difference but data collection is still in progress. Implications will be discussed.

Keywords: college, alcohol, hangover

1. Introduction

Excessive college alcohol consumption is the root of several avoidable negative consequences in our society. Alcohol related unintentional injuries and motor-vehicles crashes are thought to be responsible for about 1,800 college student deaths a year.⁵ Death may be the most severe negative consequence, but college drinking is also correlated to injury, physical assault, sexual assault, unsafe sex, suicide attempts, memory loss, property damage, police involvement, and alcohol abuse or dependence in college students.⁶ In addition, immoderate alcohol use can lead to hangovers, decreasing next day productivity and general wellness in college students.

Although much is still unknown about the alcohol hangover, a scale has been developed to systematically compare symptoms and severity. Hangovers can be quantified by the 13 item Hangover Symptom Scale or HSS developed to standardize a hangover.⁷ The 13 symptoms listed on the scale include feeling/experiencing: extreme thirst or dehydration, more tired than usual, headache, nausea, difficulty concentrating, sensitivity to light and sound, sweating more than usual, trouble sleeping, anxiety, depression, trembling or shaking.⁷ Hangovers are likely to vary by symptom and severity depending on the individual, and amount of alcohol consumed. High HSS scores are significantly positively related to blood alcohol content.⁷ Other significant sources of hangover are not completely known, although congener content of the alcoholic beverage consumed is believed to play a role.

Congeners, or trace amounts of various chemical substances, differ in concentration depending on the alcoholic beverage.⁴ Alcohols dark in color, for example whiskey and bourbon have a higher congener content when

compared to light alcohols.³ On college campuses, vodka and beer are most commonly consumed alcohols. Beer is generally darker in color than vodka, and higher in congener content.⁴

A recent study compared the hangovers between subjects who drank bourbon vs. vodka.³ The results of the study found that bourbon, a high congener liquor produced a more severe hangover than vodka, a liquor with very little congeners.³ Beer and vodka are much closer in congener content, and very common on college campuses.⁴ The purpose of this experiment is to examine whether the identity of the alcohol alone has an effect on HSS score.

2. Methods

2.1 Participants

The survey was conducted at a mid sized Midwestern public university. The study surveyed ($n=183$) participants aged in the range of 18- 24 years. The population was 53.6% female. The participants were primarily white, as 92.3% identified as Caucasian. Of the total participants ($n= 57$) reported drinking beer only, while ($n= 19$) reported drinking vodka only.

2.2 Procedure

The data was collected from an initial survey in the bar district of the university throughout the Fall semester of 2013. Data was collected every night of the week, spanning several weeks of the semester. Data was collected from an initial survey where participants were verbally asked a series of questions about their drinking event. Participants were also sent a follow up survey the next day via email. All procedures were approved by the university's IRB. Participants were entered in a drawing to win a \$50 gift card.

2.3 Measures

On the follow up survey participants were asked to select hangover symptoms they had experienced. The 13 items from Slutske's Hangover Symptom Scale were listed and participants selected any symptoms they experienced ranking them 1-4, 4 being the most severe, and 1 being the most mild. The survey also asked which type of alcohols the participant had consumed, and amount in standard serving size (8oz beer, 1.5oz. vodka = 1 standard drink). The data was analyzed using Statistical Package for the Social Sciences, or SPSS. An independent t test and an ANOVA were used to examine the relationship between identity of alcohol and hangover severity.

3. Results

The most commonly used types of alcohol by the midsized Midwestern University's students were confirmed to be beer and vodka. Fifty-seven participants drank beer only, 19 participants drank vodka only, and 19 participants drank vodka and beer. All 13 of the HSS variable questions were found to be reliable with a mean Cronbach's Alpha of 0.87. No items on the scale were found invalid.

Independent t test analysis showed that participants that drank beer only yielded a ($M= 6.32$, $SD= 6.36$). Students who drank vodka only had a mean HSS value of ($M=4.21$, $SD= 6.28$) There was not a statistically significant difference between the two values. Students who drank beer were found to drink more drinks overall. Beer drinkers averaged 6.81($SD=3.50$), while vodka drinker averaged only 2.87 drinks ($SD=3.49$) When amount of alcohol was removed as a variable, the HSS scores still did not have a statistically significant difference. The results of the ANOVA yielded mean HSS score of 6.09 ($SD=6.33$) for beer drinkers. Students who drank vodka had an HSS ($M =5.63$, $SD = 5.25$) when amount of alcohol was held constant.

4. Discussion

The purpose of the study was to examine whether the identity of the alcohol had an effect on hangover. The data analysis showed no significant difference in hangover in college beer vs. vodka drinkers. The only significant factor that can be used to predict HSS score was found to be blood alcohol content. These results are congruent with the findings of Swift et al., 1998 study, stating the positive correlation between amount of alcohol consumed and HSS.² This means that on college campuses hangovers can generally be predicted by the amount of alcohol that one drinks. The congener difference between beer and vodka was found not to be large enough to be solely responsible for any differing effects in hangover. This finding contrasts with the results reported by Rosenhow, which examined participants given controlled amounts of vodka and bourbon.³ The results of that study showed that bourbon drinkers reported greater hangover symptoms, because of the larger concentration of congeners in darkly colored bourbon.³

An unintentional finding of the present study was college drinkers who drank beer tended to have more drinks than vodka drinkers. In future research it may be interesting to examine why beer drinkers tended to drink more drinks.

Like all studies, the current study had limitations. It was restricted in the participant's demographics because the racial, ethnic and age breakdowns were homogenous. In order to extend these findings to a more general population, studies should be done on participants of all ages and ethnicity.

In addition, the measure of hangover symptoms relied upon self-report data. Participants completed the follow up survey online, and may have under-reported the amount of symptoms experienced, or the severity of each symptom. The sensitive nature of this topic may have cause participants to under-report as a means of presentation-of-self. This could cause the findings to show less hangover symptoms and severity than actually experienced. Another issue with self-report data is one participant may rank symptoms differently than another, when in reality the experience is the same

One more factor that was not considered was the identity of the beer. For example all beers light and dark were categorized under the label "beer". A dark beer may have enough of a congener difference to account for differences in hangover, while a light beer may not. In the future, it would be beneficial to inquire about what the vodka was mixed with (energy drink, diet soda juice etc.), as that may have a measureable effect on hangover as well.

In conclusion the study provided more insight on the main cause of hangover severity. It supported previous research relating high HSS scores to high amounts of alcohol consumed. There was no significant difference in hangover between people who drank beer when compared to vodka drinkers. To reduce hangover severity the only thing that can be done, according to the results of this research, is drink less.

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