

A Systematic Review of the 21st Birthday and Alcohol Consumption Literature

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Abstract

In the United States, college students experience the largest portion of alcohol-related negative consequences compared to other age groups¹. Some of these alcohol-related negative consequences include personal injuries, academic struggles, risky sexual behavior, social problems, and legal problems². Approximately 500,000 college age students are injured and 1,700 die each year from alcohol-related consequences³. Due to these negative consequences, alcohol consumption on college campuses is a public health concern. The quantity of alcohol consumption consumed by college students is an ongoing problem as well. Heavy Episodic Drinking, (HED) which is defined as five or more drinks for men and four or more drinks for women within a two hour period is a common metric for problematic alcohol consumption levels⁴. Recent literature suggests that event specific or celebration alcohol consumption are particularly related to larger numbers of alcohol-related negative consequences. Studies have focused on events in a college student's life such as 21st birthdays, and have found that the quantity of alcoholic drinks consumed is high and more compared to that of the typical drinking quantity during a semester⁵. Neighbors et al.⁶ demonstrated that students drank more during the week of their 21st birthday and on their 21st birthday compared to typical drinking patterns during the semester. This study includes articles selected through the Miami University library database. Articles were systemically searched using a combination of subject headlines including 'alcohol consumption on college campuses,' 'alcohol consumption and 21st birthdays,' 'college age episodic drinking,' 'negative consequences related to alcohol consumption,' or 'celebratory drinking on college campuses.' Based on methodology, control and intervention techniques, articles were selected to use for the study. It is concluded in the study that a majority of the students (over 80%) celebrated their 21st with alcohol consumption and that the number of drinks for 21st birthday celebration was significantly higher than typical days. In conclusion, there needs to be more preventative education or interventions to eliminate the risk of negative alcohol related consequences on 21st birthdays. Whereas individual studies have examined aspects of the relation between alcohol and 21st birthdays, a systematic review of this literature is currently unavailable. Therefore, the purpose of this study is to systematically examine the literature in regards to alcohol consumption on 21st birthdays. This systematic review of the literature will reveal trends among college students with regards to alcohol consumption patterns and alcohol-related negative consequences. In addition, it will inform future research examining alcohol consumption on 21st birthdays.

Key Words: Heavy Episodic Drinking, Celebration Drinking, 21st Birthday

1. Introduction

The excessive drinking patterns on college campuses are an ongoing problem. The negative consequences associated with alcohol consumption are thoroughly reviewed through the literature. Annually, around 20% of college students are likely to suffer from clinically significant problems associated with alcohol consumption⁷. These negative consequences include unintentional injury resulting from drinking and driving and other causes, health problems,

physical and sexual assault, unsafe and unplanned sexual activity, interpersonal problems, impaired sleep and study time and sexual harassment^{8,9}. Alcohol consumption by college students is linked to at least 1,400 student deaths and 500,000 unintentional injuries per year¹⁰. The risky drinking patterns exhibited by college students are a serious cause for concern and the resulting negative consequences are seen throughout the literature⁹.

According to research, 43 % of undergraduates report heavy episodic drinking at least once in the last 2 weeks¹¹. In 2009, 40% of full-time college students reported consuming 5 or more drinks in a row, which is known as heavy episodic drinking⁴. Heavy episodic drinking or binge drinking is defined as a blood alcohol concentration level of .08 gram percent or above according to the National Institutes of Health¹². A concern in particular is heavy episodic drinking in relation to celebratory drinking. Celebratory drinking can be seen on holidays, campus or personal events¹³. A greater proportion of students drink hazardously on these celebration event days according to Bass et al¹³. Roche and Watt¹⁴ report from their students that the main reason for drinking is for a celebratory cause. Drinking at consistently heavy levels increases risk for not only experiencing the same consequences in the future but also chronic long-term consequences¹⁵. One event in particular- 21st birthday celebrations, has shown data consistency with increase levels of alcohol consumption¹⁴.

An important event that commonly occurs during college is the 21st birthday. Heavy alcohol use is associated with 21st birthdays as this is the transition from underage to legal age¹⁶. Some of this heavy episodic drinking is relating to certain drinking practices on the 21st birthday. Previous research has shown that three out of four students visits a bar as part of their 21st birthday celebration and that 72% of these students consumed at least four or five standard alcoholic beverages resulting in an estimated average blood alcohol concentration level of .17 mg/dl¹⁶. Zernike¹⁷ also reports on a tradition that is known as “21 for 21,” or also called the “power hour.” This involves visiting a bar during the earliest hours of one’s 21st birthday and attempting to drink 21 shots from midnight until the bar closes. These high-risk drinking practices involve quick ingestion of large amounts of alcohol where there can be a shut down in breathing and heart function because of alcohol poisoning. The extreme drinking tradition on 21st birthdays is quite unique because it involves bar locals, direct interpersonal encouragement, pressure, 21 shots and competitiveness⁵.

The Associated Press found that from 1999 through 2005, 157 people between ages 18 and 23 died of alcohol poisoning and 11 were attributed to the celebration of their 21st birthday¹⁸. Because of such high episodic drinking reported on 21st birthdays, several studies look at interventions to combat this problem. Many programs and campaigns aim at the prevention of common occurrences of heavy episodic drinking instead of certain events that result in a large quantity of alcohol consumption³. Some interventions that have been used are the B.R.A.D (Be Responsible About Drinking) card intervention strategy, motivational interviewing, and health teaching. The B.R.A.D program consists of sending a 21st birthday card with a message about the tragedy of a Michigan State student who died drinking excessive amounts of alcohol on his 21st birthday to students turning 21. The students also would receive cards that gave them educational facts about alcohol poisoning and what to do incase of an emergency¹⁶. In many studies reviewed for this study, the card intervention is used.

Many officials recognized the need for programs and intervention in college campuses, but many of the interventions focus on ongoing drinking patterns, but not on how to reduce risky drinking behavior that occurs on events like 21st birthdays¹⁶. Furthermore, Neighbors et al.¹⁶ reports that it is important for researchers to focus on event specific drinking because a significant amount of college students report that celebratory event drinking is one of the most important reasons to drink. The purpose of this study is to systemically examine the literature in regards to alcohol consumption on 21st birthdays. This systematic review of the literature will reveal trends among college students with regards to alcohol consumption patterns and alcohol-related negative consequences. In addition, it will inform future research examining alcohol consumption on 21st birthdays.

2. Methodology

The author conducted a systematic review on several studies investigating alcohol consumption on 21st birthdays. The Miami University library database was systemically searched using a combination of subject headlines including ‘alcohol consumption on college campuses,’ ‘alcohol consumption and 21st birthdays,’ ‘college age episodic drinking,’ ‘negative consequences related to alcohol consumption,’ or ‘celebratory drinking on college campuses.’ The search was limited to English, American, and college students. The articles found in the database were then screened. Related studies were selected by reviewing the title and abstract, and then completely screened if applied. This paper focused on articles that dealt with 21st birthday drinking trends and negative consequences. The research articles screened included surveys, and results that report the association of alcohol consumption and 21st birthdays. Articles were selected for this study depending on methodology and if intervention to 21st birthday alcohol consumption were used.

3. Results

Of the many articles reviewed, around 20, five were selected in response to the intended research review. Out of the near 20 articles, the five were selected due to interventions used to prevent heavy alcohol consumption and methodology. Of the five studies reviewed, three specifically show that alcohol consumption on 21st birthdays compared to typical nights or last time partied is higher or more drinks consumed compared to typical nights. Furthermore, it is seen in Neighbors et al.¹⁶ and Hembroff et al.³ study that a majority (more than 80%) of college students celebrate their 21st birthday with alcohol. Heavy episodic drinking is associated with the celebration of one's 21st birthday³. Negative consequences associated with alcohol consumption are related as well. In Hembroff et al.³ study, 60.5% of students got drunk on their birthday, as 13.6% got sick. Glassman et al.¹⁹ also examined negative consequences related to 21st birthday alcohol consumption and reports that 29.2% of participants had a hangover, 20.3% vomited, and 19.7% had a memory lapse or could not recall events. Lewis et al.²⁰ further concluded that 56.8% of participants experienced a negative consequence related to 21st birthday drinking. Out of 233 male respondents the average negative consequence occurred during 21st birthday was 1.275 and for females the mean was .89 negative consequences¹³. The results also display if the interventions used to prevent excessive alcohol use on 21st birthdays is viable or not. According to Neighbors et al.¹⁶, the birthday card intervention related to the B.R.A.D. birthday card intervention strategy reported that those who read the card did not have any significant difference of lower BAC (blood alcohol concentration) then those who did not get the card. But, Hembroff et al.³ found that the B.R.A.D card intervention strategy was effective if the cards were sent to the student prior to their birthday. And Bass et al.¹³ reported that students who receive the card before their birthday consumed less amounts of alcohol and had a lower BAC level. Glassman et al.¹⁹ used four different types of electronic birthday cards to see which would be most effective in the prevention of high alcohol levels on 21st birthdays. There were four cohorts of cards that were received by different groups of people (randomized). The first card included a congratulatory e-mail and message from the dean of students to celebrate in a safe way by giving education about health risks of excessive alcohol as well as coupons for alternative options (free movie, pizza, ice cream). The second card group had a birthday card with a social norms message, the third birthday card was a birthday card with coupons and risk reduction tips on it and the fourth birthday group received a combo of all three cards. It was found that card one and four intervention styles had the most percentage of students who excessively drank on their 21st birthday¹⁹. All of these studies used a survey to conclude results. Some of the studies used demographics in their surveys to calculate the BAC levels.

Table 1: Survey of School Alcohol Consumption

Author/Year	Participants	Measures	Interventions Used	Main Results
¹⁶ Neighbors et al., 2005	Undergraduate students from Midwestern university who turned 21 during spring semester, 164 students, 63 men, 92 women	Survey	Birthday Card related to B.R.A.D program card	90.3% students consumed alcohol on 21 st birthday. Average number of drinks: 8.73 72.3% students engaged in drinking behaviors that met cutoff for heavy episodic drinking. Average estimated BAC: .17. Those who reported reading card did not have significantly lower BAC then those who did not get card

<p>³Hembroff et al., 2007</p>	<p>1,731 students Michigan State University students within 2 weeks of their 21st birthday</p>	<p>Survey involving Office for Survey Research to conduct the survey as a series of computer-assisted telephone interviews</p>	<p>B.R.A.D card intervention strategy</p>	<p>86.6% of students celebrated birthday with alcohol. Women reported drinking an average of 7.2 drinks when going out with male and female friends. Men on average consumed 10.2 and 10.3 drinks when going out with male and female friends. 60.5% got drunk on their birthday. 13.6 % got sick. B.R.A.D cards are effective if receive card in time and read it.</p>
<p>¹⁹Glassman et al., 2009</p>	<p>2,302 college students having 21st birthdays during spring semester, 701 students that completes survey</p>	<p>Survey</p>	<p>Four versions of electronic 21st birthday cards. First card included a congratulatory e-mail and message from dean of students to celebrate in a safe way by giving education about health risks of excessive alcohol as well as coupons for alternative options (free movie, pizza, ice cream), second card group had a birthday card with a social norms message, third birthday card received birthday card with coupons and risk reduction tips and the fourth birthday group received a combo of all 3 cards</p>	<p>The mean number of drinks consumed was 6.8 and the total number of hours drinking was 4.1. Mean difference compared to number of drinks consumed on one's 21st birthday (M=6.8, SD =5.7) to last time partied nearly doubles (M=3.6, SD=3.8.) Negative consequences: 29.2% hang over, 20.3% vomiting, 19.7% blackout or memory lapse. Card intervention style 1 and 4 had most percentage of extreme drinking students.</p>

²⁰ Lewis et al., 2009	Undergraduate students from Midwestern university turning 21, 306 participants 50% male	Survey involving the the Daily Drinking Questionnaire and Young Adult Alcohol Problems Screening Test	None	Students reported heavier birthday drinking week (mean =15.10, SD = 8.43) then compared to typical week (mean=7.18, SD= 8.43). Consumed 7.92 drinks more on 21 st birthday week then typical week. 56.8% reported experiencing at least 1 negative consequence on 21 st birthday week
¹³ Bass et al., 2013	2,380 undergraduate students who turned 21 years-old received a survey and 1,057 responses were collected	Survey	Birthday Card Intervention	Women and men consumed a significantly greater number of drinks during their 21 st birthday compared to a typical night out (males: N=290, V= 1410.5, p<0.001; females: N=521, V=5866.5, p<0.001). Magnitude of 21 st birthday BAC to be greater than typical night was significant. The 233 male respondents reported an average of 1.275 negative consequences and the 446 female respondents reported a mean of .89 negative consequences. Results show that both men and women who received card prior to birthday consumed less alcohol and had lower BAC levels.

4. Discussion

This research expands on the growing literature of alcohol consumption on 21st birthdays and its trends. Moreover, this research reviews some tested interventions used to prevent excessive alcohol use on 21st birthdays. The purpose of this study was to systemically review the literature on 21st birthday and alcohol consumption. Findings demonstrated that college students tend to drink more on their 21st birthday compared to typical nights or typical weeks. Furthermore, findings demonstrate that college students consume large amounts of alcohol that constitute as heavy episodic drinking, on celebratory events like the 21st birthday. Results also conclude that negative consequences are related to the alcohol consumption on 21st birthdays. The results show that celebratory drinking on the 21st birthday is a major concern.

Nearly 1 in 4 students achieved BACs (blood alcohol concentration) at or above the levels that often result in coma, blackouts and death from respiratory failure¹⁵. Also, those who do not normally drink heavily and have lower tolerance may be at risk on occasions when they drink much more than they would usually¹⁵. The greater quantity of alcohol consumed during 21st birthdays results in a greater number of negative consequences. These consequences include hangovers, vomiting, memory loss, unwanted sexual activity and more risky behaviors¹². With these negative consequences, programs and campaigns need to take place to combat this issue. Several studies use interventions such as the B.R.A.D birthday card strategy to see if that could prevent excessive alcohol consumption on 21st birthdays.

Results of this research suggest that there needs to be development and programs that target for celebratory drinking prevention efforts. The literature review provides interventions in the form of a birthday card that displays educational information about alcohol abuse, but other programs or interventions should be underway. Limitations would include a limiting amount of articles reviewed. Additionally, in some of the studies not the whole population of the institution is represented. Only a percentage of people in the population would respond back to the survey. Also, some surveys used in the studies may not have been completely reliable depending on the circumstance of the participant (could not remember exactly how many drinks consumed, etc.) The studies use populations only at their institutions, which could be improved upon in the future.

In conclusion, the literature review reveals that alcohol consumption on 21st birthdays is considerably high, meaning that there is research showing that a majority of people celebrate their 21st birthday with alcohol and there is a higher amount of alcohol consumption on 21st birthdays compared to typical days. Past research does not focus on heavy and dangerous amounts of alcohol consumption on event specific days like 21st birthdays. This research suggests that different interventions need to take place to prevent excessive alcohol consumption on 21st birthdays.

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