



Vitality: A Health Sciences Journal

Examining the Deleterious Effects of Alcohol on the Human Body

By GiannaMaria Guido 25'

Introduction According to the Centers for Disease Control and Prevention (2025), the consumption of alcohol of any kind, ranging from moderate to excessive, increases an individual's risk of developing an illness, becoming injured, or dying prematurely. Alcohol is a psychoactive, harmful substance that affects human physiology, contributing to physical illnesses and other cognitive impairments (Arora et al., 2022). According to Shaaban et al., 53% of Americans consume alcohol on a regular basis with 44% (equivalent to 61 million individuals) engaging in binge drinking, defined as four or more drinks on a single occasion (Shaaban et al., 2023) (National Institute on Alcohol Abuse and Alcoholism, 2025). Within the United States, alcohol-related fatalities are the third preventable cause of death, accounting for an estimated 3.3 million global deaths annually (Muneer et al., 2011). The prevalence of alcohol use disorder (AUD) within the United States is concerning, with an estimated 14.4 million individuals suffering each year (Ferrari et al., 2014). The impact of alcohol varies based on a range of factors such as drinking levels, age, sex, and an individual's existing health conditions (Georgescu et al., 2024). The physiological effects of alcohol encompass an array of ailments affecting the cardiovascular and nervous systems, liver function, and an increased risk of cancer. Indicated through numerous research studies, the higher levels of alcohol consumed, the greater the risk of developing both short and long-term adverse health effects (Mousa, 2021)(Patel and Mueller, 2023).

Cardiovascular Health Cardiovascular disease (CVD) is the leading cause of death in the United States, with alcohol playing a significant role in its development (Centers for Disease Control and Prevention). The progression of cardiovascular disease is complex, with a wide range of factors including lifestyle and environmental elements. Cardiovascular illnesses account for an estimated 17.9 million fatalities per year, posing a significant risk to public health (Georgescu et al., 2024). Among these factors, alcohol consumption increases the risk of conditions such as hypertensive heart disease, cardiomyopathy, atrial fibrillation, and stroke (Arora et al., 2022).

Cardiovascular function is impacted by alcohol in myriad ways, including lipid metabolism, endothelial function, and blood pressure regulation (Georgescu et al., 2024). The adverse effects of alcohol intake vary, impacting different aspects of the heart, including blood pressure, triglyceride levels, and high-density lipoprotein cholesterol (HDL-C) (Mukamal, 2006). Alcoholic cardiomyopathy (ACM) is a cardiac disease associated with chronic alcohol consumption, characterized by ventricular dilation and impairment of cardiac function (Shaaban et al., 2023).

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The Collegiate Approach to Imbibing

By Mohanie Mathura 25'

Introduction College life comes with considerable pressure including social and academic stress and peer influence; the data suggest that one in four students report missing classes and falling behind academically as a result of alcohol consumption (National Institute on Alcohol Abuse and Alcoholism, 2021). Research shows myriad factors influence students to drink in college such as alcohol use in high school, campus norms related to drinking, expected emotional release, parental attitudes on drinking, involvement in athletics or Greek-life organizations, and alcohol accessibility (White & Hingson, 2014). College students may engage in binge drinking that can eventually turn into high-intensity drinking. Binge drinking is defined as consuming 5+ drinks on one occasion for males and 4+ drinks for females, while high-intensity drinking is considered consuming almost twice this amount (National Institute on Alcohol Abuse and Alcoholism, 2021). Although some experimentation in college is a common phenomenon, some college students develop regular habits of drug and alcohol use resulting in a rise in substance abuse in this population (LaGuardia, 2022). At times students have trouble adapting to a more independent, less-structured lifestyle which can also increase the pressure to engage with drugs and alcohol (LaGuardia, 2022). Harmful alcohol use can increase the risk of injury, accidents, infectious disease, and neuropsychiatric disorders. In 2018, 13.5% of deaths in individuals aged 18-39 were associated with alcohol consumption (Herrero-Montes et al., 2022). College staples such as fraternities and sororities often cultivate alcohol-centric social environments.

Social & cultural norms of college life and alcohol consumption Often times the college experience includes fraternity/sorority parties and athletic events contributing to mounting alcohol-related social pressure during freshman year. Within the first six weeks research suggests that these students are vulnerable and can engage in heavy drinking due to student expectations (National Institute on Alcohol Abuse and Alcoholism, 2021). Alcohol consumption is the highest in students living in fraternities compared to students living at home with adult supervision (National Institute on Alcohol Abuse and Alcoholism, 2021). Of late there have been rising rates of depression, anxiety, suicide, and an increase in drug use and overdose deaths (Scheid, 2022). College-related drinking can originate and be subsequently reinforced by peers with excessive drinking being an outcome of social pressure (Scheid, 2022). During the pandemic of COVID-19, drinking decreased from 32% to 24% due to social distancing and fewer opportunities to be with friends (Scheid, 2022).

Consequences of harmful alcohol use Some of the many consequences related to alcohol consumption in college students include missed classes, lower grades, injuries, sexual assaults, overdoses, memory blackouts, changes in brain function, lingering cognitive deficits, and death (White & Hingson, 2014). Research shows the short-term physical aftermath of drinking included vomiting and hangovers. Immediate social consequences reportedly included physical altercations and damaged property (Lee et al., 2010). The first report on alcohol misuse by college students was issued in 1976 by the National Institute on Alcohol Abuse and Alcoholism (White & Hingson, 2014). There are two national survey reports that distinguish the drinking habits of college students in the United States: The National Survey on Drug Use and Health (NSDUH) and the Substance Abuse and Mental Health Services Administration (SAMHSA) (White & Hingson, 2014). Data from NSDUH suggest that about 65% of college students drink alcohol each month, and it's suggested that a large percentage of students drink to excess—binge drink. Students who binge drink are more likely to expect negative outcomes. Data from Harvard states that students who binge drink one or two times during a two-week period are three times more likely to get behind in schoolwork, do something regretful, blackout, have unplanned or unprotected sex, damage property, engage with police, drink and drive, or sustain an injury (Wechsler et al. 2000).

Assault & sexual assault in college due to alcohol consumption Statistics show an estimated 696,000 students between the ages of 18-24 are assaulted by another student under the influence of alcohol (National Institute on Alcohol Abuse and Alcoholism, 2021). Binge drinking and sexual assault are heavily interrelated among college students in the United States occurring among an estimated 20-25% of students (Mellins et al., 2017). Research suggests that alcohol use is a major contributor to sexual assault making it a leading public health issue (Gilmore et al., 2024).

The assaults vary from unwanted touching (fondling), unwanted/non-consensual attempts at oral, anal, or vaginal intercourse to complete penetrative sex (Mellins et al., 2017). In a study conducted by Columbia University and Barnard College in New York City, 22% of students reported experiencing at least one of the aforementioned categories of sexual assault (Mellins et al., 2017). Additionally, both men and women engaged in risky drinking and binge drinking are more likely to experience sexual assault than those who did not drink. (Mellins et al., 2017).

Conclusion Education is a critical component in reducing alcohol use/abuse among college students and this includes dispensing science-based information while elevating awareness of the grave harm that can ensue. Before entering college, a positive family life and peer role models can help adolescents build a strong self-image and resist drug and alcohol use (Deep et al., 2024). Once in college, positive peer support is critical in the quest to remain emotionally and mentally capable of making health-enhancing decisions and resisting stigma and negative peer pressure (Scheid, 2022). Finally, help must be repeatedly available, accessible and offered without stigma or hesitation.



FACTS

- ♦ Alcohol arrives at your brain in five minutes and effects us in ten minutes.
- ♦ The liver can only process an ounce of alcohol per hour
- ♦ If you are at the legal blood alcohol level of 0.08, it will take approximately 5 1/2 hours to clear your system.

Northwestern Medicine (<https://www.nm.org/healthbeat/healthy-tips/alcohol-and-the-brain>)

- ♦ Blood alcohol level will take longer to peak if food is in the stomach
- ♦ Alcohol can hinder muscle protein synthesis impacting muscle repair and strength development.
- ♦ Metabolism is slowed by alcohol compounding efforts at weight loss while also adding empty calories to the diet.
- ♦ A hangover can increase blood pressure, heart rate, and sweat rate, while resulting in dehydration, fatigue, brain fog, irritability, anxiety, depression, nausea, vomiting, and head ache.
- ♦ There is no safe level of alcohol consumption; ingesting alcohol has been linked to an array of physiological, psychological and safety issues impacting health, quality of life and length of life.

Sleep, Cognition and Health in College Alcohol Users

By Teylor London 26'

Introduction Studies indicate that 70% of college students experience insufficient sleep, with alcohol use being a contributing factor (Hershner & Chervin, 2014). While 49% of full-time college students report consuming alcohol as part of their social lives, alcohol has proven to have disruptive effects on sleep that can result in serious health consequences. Sleep quality refers to the adequacy of rest achieved during the sleep cycle, resulting in a sense of refreshment and the ability to effectively carry out daily activities (Hirshkowitz et al., 2015). Alcohol disrupts sleep by altering normal sleep cycles, increasing wakefulness, and reducing rapid eye movement (REM) sleep, all of which contribute to poorer sleep quality (Colrain et al., 2014). Approximately two-thirds of college students fail to get the recommended 7-9 hours of sleep for their age group (Hirshkowitz et al., 2015; Lund, Reider, Whiting, & Prichard, 2010). Research shows that excessive alcohol intake reduces sleep quality by 39%, (Sun & Truong, 2023) leading to fragmented rest, daytime fatigue, and impaired cognitive function. Maintaining consistent sleep schedules is already a challenge for college students due to academic pressure, social obligations, and environmental factors such as noisy dormitories and late-night socializing (Hershner & Chervin, 2014). When combined with alcohol-induced sleep disturbances, these factors can negatively impact academic performance, mental health and overall well-being.

The disruptor Many college students underestimate the importance of sleep and fail to recognize alcohol as a major disruptor. Alcohol is often misinterpreted as a sleep aid, yet it significantly interferes with sleep cycles, worsening sleep patterns (Ebrahim et al., 2013). The harmful effects of alcohol on sleep quality emphasizes its role as a pressing public health issue that demands further research and increased awareness among college students. Understanding the connection between alcohol consumption and sleep deprivation is crucial for preventing both short-term and long-term health consequences in college students. Research shows that alcohol, regardless of the amount, negatively affects the developing brain of students, leading to impaired cognitive function and increased academic challenges (English, 2021). Poor sleep quality caused by alcohol increases the risk of adopting ineffective coping strategies, which can exacerbate alcohol dependence and a long-term risk of addiction (Stein & Friedmann, 2006).

Research studies have found that alcohol consumption profoundly disrupts the physiological processes of sleep, severely disturbing sleep quality and triggering long-term, damaging health consequences. The body cycles through two main stages of sleep throughout the night, non-rapid eye movement (NREM) and rapid eye movement (REM). NREM sleep is crucial for body restoration, building bone and muscle, and immune strengthening (Patel, 2024), while REM sleep is essential for memory consolidation, emotional regulation, and brain development (Peever & Fuller, 2017). Alcohol has been proven to alter the human sleep architecture by acting as a sedative that targets neurotransmitters crucial for sleep regulation and sleep cycle patterns (Colrain et al., 2014). Alcohol consumed before bed, irrespective of the dose, initially increases non-rapid eye movement (NREM) sleep, and rapidly reduces sleep onset latency (SOL), causing individuals to fall asleep faster and consequently have trouble staying comfortably asleep due to the effects on the central nervous system (Thakkar et al., 2015).

Sleep cycles In a typical 8-hour sleep cycle, blood alcohol levels will significantly suppress the REM sleep stage (Roehrs & Roth, 2001). When the REM stage is suppressed it affects sleep duration as sleep becomes more fragmented since the body is likely to wake up several times throughout the night as it tries to regulate this pattern (Roehrs & Roth, 2001). Additionally, as the alcohol begins to metabolize later in the night, the sedative effects wear off and the disruption of the REM stage leads to "REM rebound" where the body attempts to catch up on REM sleep, which results in multiple awakenings, parasomnia, and decrease in sleep efficiency (Ebrahim et al., 2013). Disturbed sleep and alcohol misuse both remain prevalent issues among college students that are both linked to the development of alcohol-related sleep disorders such as insomnia, circadian rhythm disorder, short sleep duration, and obstructive sleep apnea syndrome (He et al., 2019), with insomnia being the most prominent reported disorder affecting approximately 69% of students (Al Salmani et al., 2020).



Alcohol consumption, regardless of the quantity, disrupts sleep quality, resulting in sleep deprivation that impairs the body's healing process, hinders cognitive development (Bryan & Singh, 2020), and contributes to a variety of behavioral and psychological consequences.

Brain functioning Alcohol severely disrupts brain chemistry and sleep quality, leading to harmful behavioral

and psychological outcomes. Alcohol-induced sleep deprivation is a contributing factor to lower concentration rates, decreased learning retention, and impaired decision-making (Vetreno & Crews, 2014). Most students who consume alcohol report experiencing chronic daytime fatigue, poor judgment, an increase in procrastination, and reduced motivation (Hirshkowitz et al., 2015). These effects are contributing factors that withdraw students from their academic studies and extracurricular activities impairing overall academic performance (English, 2021). Sleep deprivation destabilizes mood regulation, increasing emotional instability and irritability that can trigger psychological disorders such as anxiety, bipolar disorder (BD) and major depressive disorder (MDD) (McDonald, 2017). These mood disturbances are often what drive students to use alcohol as a coping mechanism, fueling a dangerous cycle of long-term disrupted sleep, alcohol dependence and addiction (Kenney et al., 2014). The mental health effects of alcohol-related sleep deprivation also impact the social aspects of student's lives. Weakened emotional regulation leads to unwarranted conflicts, deteriorating relationships, and heightened tension in social environments (Kenney et al., 2012). The lack of sleep is likely to increase impulsivity and risk-taking behaviors—such as reckless driving, sexual assaults, violence, and aggression—further jeopardizes students' personal safety and long-term well-being (Htet et al., 2020). Despite the negative effects of alcohol on sleep and mental health, many students continue to engage in these behaviors, perceiving alcohol as a benefit rather than a risk.

Alcohol consumption is a significant yet often overlooked contributor to sleep deprivation among college students. Research indicates that many students resort to alcohol as a means of self-medicating their sleep issues (Goodhines et al., 2017). Almost 12% of students who drink say they use alcohol to help them sleep (Emerson, 2025). This self-medication pattern exacerbates both sleep deprivation and alcohol-related problems, leading to increasingly harmful effects over time (K J Brower & Hall, 2003). Alcohol use as a sleep aid has been linked to sleep disturbances such as pre-sleep arousal (Nicassio et al., 1985), erratic sleep schedules (Gellis et al., 2014), and evening circadian preference (Fernandez-Mendoza et al., 2010). This creates a dangerous cycle where students worsen their sleep issues and continue to rely on alcohol, unknowingly increasing their risk of developing long-term alcohol dependence and sleep disturbances (K J Brower & Hall, 2003). The underlying reason is the temporary sedative effect of alcohol, which may initially aid sleep onset, but ultimately disrupts sleep quality and overall restfulness (Stein & Friedmann, 2006). While alcohol may provide temporary relief for sleep difficulties, its long-term impact on sleep quality and the potential for developing substance use dependence makes it a harmful and ineffective strategy for addressing sleep deprivation among college students (K J Brower & Hall, 2003).

Conclusion Alcohol misuse among college students is a serious public health concern with severe consequences on sleep quality, academic performance, and health outcomes. Despite common misconceptions, there are no benefits to drinking alcohol especially as it relates to our quality of sleep. Poor sleep quality affects cognitive function, mental health, and physical health, putting students at great risk for academic failure, indecent behaviors, and long-term health complications. We can address alcohol-induced sleep deprivation through education on the consequences of alcohol use, providing students with effective coping skills, implementing policy change that promotes healthier behaviors, and encouraging healthier lifestyle choices among students through social and emotional learning. These efforts are essential for ensuring academic success preserving the overall well-being of students, and protecting their futures from the long-term consequences of poor sleep and alcohol misuse.

Adolescent Alcohol Consumption and Risk

By Melissa Buchanan 26'

Introduction Adolescence is defined as a crucial age of human development and typically refers to young people between the ages of 10 to 19 years of age. (Sawyer, 2018) Of major concern and a leading cause of death among adolescents is a psychoactive and toxic substance when ingested—alcohol (Creswell et al., 2020). The 2023 National Survey on Drug Use and Health (NSDUH) reported that 19% of youth ages 14 to 15 had already consumed alcohol. (National Survey of Drug Use and Health ,2023). According to the CDC, approximately 4,000 alcohol-related deaths occur per year in people under the age of 21. This has become a public health issue along with a significant financial burden to society (Hingson, 2004). As published in the Journal of Adolescent Health in 2005, underage drinking-related traffic accidents and violent crimes have resulted in costs totaling over 53 billion dollars. (Hingson, 2004). Alcohol has been named as the #1 cause of death in people younger than 21 years old according to the Substance Abuse and Mental Health Administration. (SAMHSA) This includes deaths resulting from 1,345 motor vehicle crashes involving an alcohol-impaired driver, 998 from homicides, 177 from alcohol overdose, falls, burns, and drowning, and 649 resulting from suicide (Sacks et al., 2010).

Alcohol use Early onset alcohol use is associated with alcohol-related issues later in life. A research study found that 49% of 35-year-olds surveyed related their current alcohol issues to their early/adolescent use of the substance. (Creswell et al., 2022). The consumption of alcohol preceding adulthood is frequently influenced by social determinants in the adolescent population. With the advent of many social media platforms, coercion to consume alcohol has become nearly unavoidable. In these online social communities, alcohol use is glorified and deemed favorable by peers endlessly, often showcasing the images of alcohol as well as the risky behaviors associated with its consumption. (Mundt *et al*, 2012) Some social media posts are designed to entice the youth to overindulge in alcohol and idolize being “hung over”, vomiting or other drunken behaviors. (Moreno, 2011). Solitary drinking is another warning sign; according to The National Library of Medicine, adolescent solitary alcohol use is correlated with the development of alcohol issues later in life (Skrzynski and Creswell, 2020). Additionally, being able to consume alcohol in a comfortable setting allows adolescents to drink more easily and frequently. According to the National Library of Medicine in 2012, by the time young people reach the 12th grade 50% of teens reported peer-related drinking. Approximately 10.5% of U.S. children ages 17 and younger live with a parent who has an alcohol use disorder, according to a 2017 report by the Substance Abuse and Mental Health Services Administration. (SAMHSA,2023; Richesson et al., 2024) Further, compounding evidence also suggests that mental health disorders such as depression, anxiety, and ADHD often coupled with a family history of alcoholism in first- and second-degree relatives, can set the stage for alcohol use in youth. (Miller and Taskiran, 2024) In a 2016 study performed by the National Library of Medicine, 10,000 adolescents were surveyed regarding alcohol use and previously diagnosed mental health disorders. Two-thirds had reported developing alcohol use disorders with a prior associated medical history of a mental health disorder. (Conway et al, 2016)

Interventions Responding to the national issue of substance abuse in adolescents, state and government officials have implemented regulations regarding driving and alcohol possession restrictions for young adults. All 50 states have enforced the GDL (graduated driver licensing) law including 3 separate stages that must be passed to lift all restrictions at the end of the driving term (NHTSA, 2024). In 2023, all 50 states and the District of Columbia also prohibited the possession of alcoholic beverages by people younger than 21.

Effective programming and intervention efforts now include the implementation of screening tools in clinical and academic settings, working to highlight increasing alcohol abuse as well as making clinicians aware of the onset of alcohol use in adolescents. Orchestrated by the National Institute on Drug Abuse titled the BSTAD and S2BI—these screening tools can be utilized by healthcare providers in clinical visits, or perhaps in onsite academic environments where applicable and permitted. Assuming that responses are honest, the patient/adolescent is then triaged into 3 different risk factor categories: high-risk, some-risk, or no risk possibly flagging the healthcare provider about potential issues and notifying parents (Gryczynski, 2014; NIDA, 2019). To successfully and efficiently reduce adolescent alcohol consumption we must work together and implement prevention tactics and screening tools to yield the best possible outcome.

Mainstream society, including social media platforms and daily advertisements, are providing positive, alluring and culturally enticing alcohol-related information to our youth. Popular commercials depict eye-catching, candy-flavored alcohol-containing beverages, this may coerce adolescents to engage with alcohol and perhaps even increase their followers by using the products. Social media platforms showcase alcohol consumption as a part of a mainstream flourishing life for adolescents, also encouraging them to enjoy social success by drinking with their peers. Ultimately, attempting to eradicate the problem of underage drinking would require the collective efforts of lawmakers, educational institutions, healthcare providers, the media and informed young people to make a significant difference in underage drinking (Halpern – Felsher and Cornell, 2005).

A Major Threat to Academic Success **By Dominic Morabito 25'**

Introduction Research suggests that the consumption of any amount of alcohol leads to an increased risk of disability and disease (Morrow & Greenwald, 2024); 20-25% of college students reportedly experience academic problems related to drinking making this a major issue across universities (El Ansari et al., 2013). The people group at the highest risk of alcohol disorders or problem drinking (binge drinking/ high-intensity drinking) are individuals aged 18 to 29—approximately 30% of this group are college learners (Winograd, 2025). Problem drinkers are often labeled as impulsive, prone to poor behavior, more likely to drink for an escape, and less devoted to their academic responsibilities (Berkowitz et al., 1986). Those who participate in high alcohol intake report experiencing consequences related to their substance use such as missed class, missed assignments, and poor grades (Presley & Pimentel, 2006) thus highlighting a strong negative correlation between alcohol and academic success (Thombs et al., 2009). With half of college students participating in drinking (NIAAA, 2023) the effects of alcohol consumption on academic performance is a pressing issue.

Academic Engagement Statistics show that one in four college students report having experienced academic conflict (missed classes/assignments, poor grades) due to their alcohol consumption (NIAAA, 2024), contributing to the decline in student performance among those who choose to consume alcohol (Singleton, 2009; Ham & Hope, 2003). Alcohol consumed in any amount is positively correlated with experiencing academic struggles (ARG, 2023) and may in part result from cognitive impairment (NIAAA, 2023). Continued abuse of this depressant, increases the risk of poor class performance and time management, which further leads to an increased risk of academic disengagement (Ham & Hope, 2003). Poor habits at university such as partying and prioritizing socializing, further contribute to participating in problem drinking. A statistically significant negative association exists between academic performance and alcohol consumption as demonstrated by an 8% dropout rate among high schoolers who drink (Thombs et al., 2009; Hjarnaa et al., 2023). Among 80 college students, researchers found a strong association between the amount of alcohol consumed and the number of missed classes, while an inverse relationship existed between alcohol consumed and the time spent on schoolwork (Conway & Diplacido, 2015). Clearly, alcohol poses a threat to academic performance, raising serious concern as there is widespread acceptance of alcohol use in college culture (Conway & Diplacido, 2015).

Threat to Academic Success (cont.)

More specific data show that drinking for more than ten days each month is associated with a 0.7 decrease in GPA (Turkson, 2024). College students who participate in binge drinking at least three times per week are approximately six times more likely to perform poorly in the classroom (40 percent vs. 7 percent) (NIAAA, 2023). The more a student participates in these unhealthy drinking behaviors, the more likely they are to struggle in class as alcohol seemingly detracts from their academic responsibilities and may be compounded by hangovers experienced (Hjarnaa et al., 2023). Consistent alcohol use negatively impacts college students' GPA (Turkson, 2024), in part due to their inability to turn in coursework on time (NIAAA, 2023), while overall increasing the risk of dropping out (Hjarnaa et al., 2023). Expanded research is necessary to examine the relationships between alcohol consumption and student performance to further inform colleges, universities and parents of proper ways to combat this issue (Ham & Hope, 2003).

Research suggests that college students who participate in excessive alcohol consumption are often drawn to prioritize socializing over academics, further jeopardizing academic performance (Dodd et al., 2010). There is also an increased difficulty when trying to retain knowledge as excessive alcohol consumption impacts both short-term and long-term memory (Wagener, 2022). An examination of alcohol-related behaviors in 65,233 high school students found a significant inverse relationship between GPA and alcohol consumption. Researchers found that among these young people, they averaged 10 drinks per week, 43.6% engaged in binge drinking 3+ times per month, and 7.9% of this cohort had dropped out of school (Hjarnaa et al., 2023). Moreover, the highest mean grade point average was found among students with the lowest weekly alcohol intake (Hjarnaa et al., 2023).

Conclusion Students who choose to prioritize socialization and the consumption of alcohol at excessive rates may be more likely to disengage from their learning and academic responsibilities, negatively impacting their ultimate academic success (Ham & Hope, 2003) (NIAAA, 2023). Research shows that 20-25% of college students report having experienced academic troubles related to their alcohol consumption habits (NIAAA, 2024). Cases of chronic alcohol consumption, or problem drinking, lead to a decrease in GPA (Turkson, 2024), decreased class attendance, and less time spent on schoolwork (Hjarnaa et al., 2023). The risk of dropping out exists for students prioritizing their social life and in turn these unhealthy drinking habits (Hjarnaa et al., 2023). Data shows that the students who choose to participate in this behavior at least three times a week are six times more likely to struggle academically further strengthening the need for proper substance abuse resources and education to address this concern (El Ansari et al., 2013). Through the prioritization of education strategies, colleges and universities across the country can endeavor to eliminate the alcohol-related decline in



Alcohol Consumption and Reckless Behaviors Among College Students: The Role of Impaired Judgment, Peer Influence, and Aggression

By Mitchethela Alexandre 26'

Introduction Approximately 53% of full-time college students report drinking alcohol in the past month, and nearly 33% engage in binge drinking (SAMHSA, 2020). Excessive drinking plays a major role in non-consensual sexual encounters among college students, largely due to its effects on judgment, peer influence, and aggression. (Kaysen et al., 2006; Abbey, 2002) When alcohol consumption gets out of control, situations can elevate very quickly devolving into reckless behaviors. Alcohol impairs a person's ability to read social cues, making it easier to misinterpret situations and harder to obtain clear consent (Brown et al., 2016; Giancola, 2002). In these high-risk circumstances, dangerous situations can escalate quickly, often with devastating consequences (Brown et al., 2016; Giancola, 2002). In these high-risk environments, dangerous situations can escalate quickly, often with devastating consequences. Understanding how alcohol consumption contributes to these reckless behaviors is essential to developing informed awareness about the risks facing college students. To better understand alcohol-related reckless behaviors among college students, it is essential to explore three key contributing factors: impaired judgment and decision-making, social dynamics and peer influence, and alcohol-induced aggression and loss of inhibition. Recent national data show that over 33% of U.S. college students engage in binge drinking at least once every two weeks, often in dorms, parties, or campus events, where alcohol lowers inhibitions and increases the risk of reckless, socially driven, and sometimes aggressive behaviors (Johnston et al., 2023).

Impaired Judgment and Decision-Making Alcohol has a major impact on how decisions are made, it causes disarray in the brain's prefrontal cortex, which controls judgment, impulse control, and risk assessment (Crews & Boettiger, 2009). Studies show that alcohol makes it harder to think through the consequences of actions, like engaging in unprotected sex or driving while drunk (Brown et al., 2016). As alcohol impairs these functions, students may engage in unsafe behaviors they would typically avoid, such as risky sexual encounters or failure to obtain clear consent. A study involving 1,902 college students across 12 institutions found that 33.2% of men and 17.4% of women reported drinking more than usual to facilitate sexual encounters. Among these instances, 76.3% of men and 77.1% of women initiated condom use during vaginal intercourse. (Cooper, 2002) Kaysen et al. (2006) studied how alcohol impairs decision-making and the ability to read social cues. Ultimately, this leaves nearly one in four students engaging in unprotected sex while under the influence, raising concerns about impaired judgment, lack of preparedness, or diminished sexual assertiveness due to alcohol (Kaysen et al., 2006). Researchers found that heavy drinking reduces a person's ability to assess danger and understand subtle social signals, leading to an increased risk of unsafe behaviors like unprotected sex. Specifically, heavy drinking reduces a person's ability to assess dangers while also weakening one's capacity to understand even subtle social cues. (Kaysen et al., 2006). This lack of awareness can make sexual victimization more likely, especially in settings where drunk people might misinterpret social cues. Studies indicate that women who drink heavily in social settings are significantly more likely to experience incapacitated rape than their sober peers (Kaysen et al., 2006). These cognitive impairments demonstrate how alcohol consumption directly impacts decision-making and contributes to dangerous social interactions.

Social Dynamics and Peer Pressure Studies show that students often engage in risky drinking behaviors due to the desire to fit in with peers. Peer norms that endorse heavy drinking can significantly increase an individual's likelihood to engage in binge drinking or other alcohol-related risky behaviors (Borsari & Carey, 2001). Recent research found that nearly three-quarters of the students studied reported that they tend to overestimate how much alcohol their peers consumed, which in turn led them to drink more in an effort to match what they perceived.

Alcohol Consumption and Reckless Behavior (cont.)

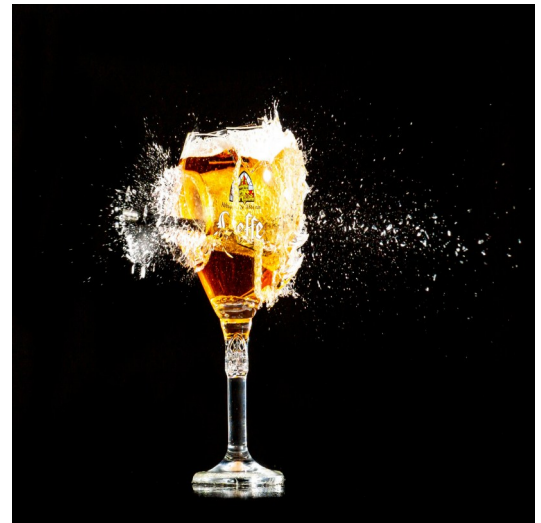
Those who believed their peers were drinking heavily were 3.5 times more likely to engage in binge drinking (Cohen & Marin, K. L. 2001). Borsari and Carey (2001) found that even when students know that their peers are drinking excessively, they are likely to join them. The findings revealed that students who overestimated their peers' drinking levels were 2.5 times more likely to increase their drinking over the course of the academic year. Additionally, 68% of students who believed their peers were heavy drinkers reported higher drinking frequency, even though only 34% of their peers actually engaged such behavior. Similarly, students are more likely to engage in dangerous activities themselves if they believe their peers are doing so. (Brown et al., 2016).

Dangerous situations might be increased by negative gender norms; for example, male students may experience pressure to act violently or exert dominance in social contexts where alcohol is prevalent. (Borsari & Carey, 2001). According to a study by Kremer and Levy (2008) college students who lived with heavy drinkers were more likely to increase their alcohol use, which in turn increased their risk of engaging in risky behaviors.

Alcohol-Induced Aggression and Loss of Inhibition Alcohol consumption is closely linked to increased aggression, which can escalate into violent or dangerous situations. In a study examining alcohol-related aggression in college students, Giancola (2002) found that intoxicated individuals were significantly more likely to react violently in social conflicts compared to sober individuals. As alcohol weakens impulse control, some students may become more prone to aggressive behavior, including acts of physical violence or coercion. Research indicates that approximately 50% of campus sexual assaults involve alcohol consumption by the perpetrator, the victim, or both (Abbey, 2002).. Kaysen et al. (2006) found that women who engage in heavy episodic drinking are at a significantly higher risk of experiencing incapacitated rape, reinforcing the role alcohol plays in compromising informed decision-making in sexual encounters. In fact, studies show that incapacitated rape accounts for over 50% of sexual assaults among college women, with alcohol being the most common substance involved (Kilpatrick et al., 2007; Testa & Livingston, 2009). Research shows that heavy drinkers are 2-3 times more likely to engage in physical altercations compared to their sober peers (Tremblay & Graham, 2008). This combination of impaired judgment and increased aggression contributes to the heightened risk of non-consensual encounters and other reckless behaviors in college environments.

Environmental and Situational Factors Beyond individual behaviors, environmental factors play a significant role in facilitating alcohol-related incidents among college students. Campus party culture, access to cheap alcohol, and the absence of supervision in certain social settings all contribute to increased risk (Clapp et al., 2003). In particular, parties where alcohol is served in large quantities are commonly associated with unsafe sexual encounters, fights, and property damage. Also, situations like drinking games or competitive settings that drive students to consume alcohol quickly greatly enhance the likelihood that they will make unsafe decisions. (Barry et al., 2016). Students in these situations may underestimate their level of intoxication, further impairing their ability to make safe choices. Environmental conditions create a setting where reckless behaviors are not only more likely but often normalized.

Conclusion The relationship between alcohol consumption and reckless behaviors among college students is complex and influenced by multiple factors. Impaired judgment, peer influence, aggression, and environmental conditions all play significant roles in increasing the likelihood of risky situations, including non-consensual sexual encounters. Understanding these dynamics is crucial for promoting awareness and guiding future research on alcohol-related risks among college students. By examining the interplay of these factors, this article highlights the need for informed conversations about alcohol consumption and its consequences within campus environ-



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Deleterious Effects of Alcohol (cont.)

ACM is commonly observed among heavy alcohol users—defined as consuming four or more drinks in a day—typically within the age range of 30 to 55 years, with a significant history of alcohol use lasting more than 10 years (Shaaban et al., 2023) (National Institute on Alcohol Abuse and Alcoholism, 2025). The repercussions associated with cardiomyopathy are life-threatening, including atrial fibrillation, heart failure, cardiac embolism, and death (Shaaban et al., 2023). Atrial fibrillations, or cardiac arrhythmias, are described as a manifestation following binge drinking; studies initially introduced by Ettinger et al. examined over 20 patients hospitalized with atrial fibrillation after a weekend of binge drinking, coining the term “holiday heart syndrome” (Ettinger et al., 1978). When the heart’s electrical signaling becomes compromised, the regular pumping of the heart can increase at concerning fast or irregular levels, which can in turn cause other conditions such as high blood pressure and coronary heart disease (National Heart, Lung and Blood Institute, 2022).

Neurological Health As stated by the National Institute of Alcohol Abuse and Alcoholism (NIAAA), alcohol use disorder (AUD) is a chronic, relapsing brain disease affecting an individual's emotional well-being, involving direct alcohol abuse (Zinia et al., 2021). Developing AUD increases an individual's risk of developing an abundance of other neurological issues such as dementia, neurocognitive deficits, nerve fiber demyelination, and blood-brain barrier dysfunction (Lieber and Victor, 1992). An individual’s risk of developing AUD is contingent on how much, how often, and how quickly they consume alcohol (National Institute on Alcohol Abuse and Alcoholism, 2025). The misuse of alcohol, including binge drinking along with drinking at an early age, such as during adolescence, increases the risk of AUD (National Institute on Alcohol Abuse and Alcoholism, 2025). Persistent alcohol use poses considerable threats to neurological damage in the thalamus and hypothalamus, both playing a crucial role in regulating physiological functions, compromising the connection between the nervous and endocrine systems. (Alcaide et al., 2003).

The effects of alcohol consumption can include epileptic events, cerebral infections, cerebrovascular lesions, and increased disruption of the neurotransmitter systemic balance (Damn et al., 1985). MRI studies highlight significant shrinkage of the frontal cortex, pons, and cerebellar hemispheres in addition to thinning of the corpus callosum (Zuccoli et al., 2010). As evidence, a cohort study conducted in the United Kingdom examines the structural integrity of the brain following moderate alcohol consumption over 30 years (1985-2015) (Topiwala et al., 2017). The study measures the gross structural abnormality of hippocampal atrophy, grey matter density, and white matter (Topiwala et al., 2017). The results of the study indicate that even with minimal levels of alcohol consumption, there is an evident decline regarding cognitive performance with significant hippocampal atrophy (Topiwala et al., 2017).

Abrupt cessation of alcohol intake after a prolonged period, especially following binge drinking, can trigger diverse withdrawal symptoms (Rogawski, 2005). Alcohol withdrawal syndrome includes chronic effects such as muscular rigidity, delirium tremens, and seizures (Rogawski, 2005). Delirium tremens is a direct manifestation of alcohol withdrawal with symptoms such as tremors, profound confusion, autonomic hyperactivity, and cardiovascular collapse (Rahmanand and Paul, 2023). Alcohol acts as a depressant for the central nervous system, directly interacting with the brain’s primary inhibitory neurotransmitter, the gamma-aminobutyric acid (GABA) receptors (Rahman and Paul, 2023). GABA receptors control nerve cell hyperactivity associated with mood regulation, including anxiety, stress, and fear (Cleveland Clinic, 2022). With alcohol consumption, GABA receptors are suppressed, acting as a sedative with calming and tranquilizing effects. With continued alcohol use, the natural regulatory capabilities of the receptors become compromised, and with abrupt cessation, this can result in overactivity of the central nervous system, leading to the onset of delirium tremens symptoms (Rahman and Paul, 2023). Audiogenic seizures are the most studied alcohol-related seizures, mediated primarily in the brainstem and hippocampus (Rogawski, 2005). ¹⁵ With long-term alcohol use, different parts of the brain become accustomed to its effects, and when alcohol is withdrawn, it disrupts normal brain function, compromising neuronal firing, and potentially triggering seizures (Rogawski, 2005).

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Deleterious Effects of Alcohol (cont.)

Liver Health The liver is one of the body's most complex organs, with its multifaceted functions including filtering toxins from blood, aiding in the digestion of food, and regulating blood sugar and cholesterol levels (NHS Inform, 2023). The liver is extremely resilient, as it has the capability of regenerating itself; however, with the filtration of alcohol, liver cells die each time, leading to permanent and irreversible damage (NHS Inform, 2023). Alcohol consumption poses major risks to the liver, including different types of diseases and cancer.

Alcoholic liver disease covers a spectrum of disorders starting from the fatty liver, progressing to alcoholic hepatitis, and culminating into alcoholic cirrhosis. The liver can sustain mild alcohol consumption, yet as one increases their intake, the risk of severe liver damage increases as well. The prevalence of alcoholic liver disease is identified to be highest in European countries, with individuals consuming alcohol for a minimum of five years (Patel and Mueller, 2023). In the United States, alcohol is the leading cause of liver disease, affecting 61 percent of the population, with 10 to 12 percent classified as heavy drinkers (Patel and Mueller, 2023).

The first stage of alcoholic liver disease is known as alcoholic fatty liver disease, otherwise referred to as steatosis. This period is the first of a series of events that can result in liver failure as fat begins to accumulate in the liver parenchyma (Patel and Mueller, 2023). Although this stage is harmful, it can be reversed with complete abstinence from alcohol, allowing the liver to regenerate and return to its normal state. Failure to limit the consumption of alcohol can be damaging to liver cells as they can become inflamed, known as hepatitis, risking the advancement of alcoholic cirrhosis (Patel and Mueller, 2023). Hepatitis is an acute inflammation of the liver with the death of cells, accompanied by permanent scarring (Johns Hopkins Medicine, 2024). Symptoms of this stage can include jaundice, loss of appetite, nausea, fever, and stomach tenderness (Mayo Clinic, 2023). This stage can last up to six to twelve months, contingent on abstaining from all alcohol use, treatment, and liver regeneration.

Risk of Cancer Alcohol has been identified as a factor contributing to deaths due to infectious diseases, intentional and unintentional injuries, digestive diseases, and other non-communicable ailments, such as cancer (Arora et al., 2022). Patterns emerging between alcohol consumption and cancer have become apparent, with 3.5% of cancer deaths in the US being alcohol related. As evidence, within the US during the year 2020-2021, an estimated 20,000 cancer deaths were alcohol-attributable (Esser, 2024). The National Toxicology Program of the US Department of Health and Human Services identifies any type of alcoholic beverage as a human carcinogen (National Cancer Institute). Research shows that alcohol drinking can be the root cause of several types of cancers, such as breast, esophageal, liver, throat (pharynx), colorectal, stomach, and pancreatic cancer (National Cancer Institute). According to the CDC, in 2021, more than 500,000 alcohol-associated cancers occurred in the US, with breast cancer as the most common among women and colorectal cancer among men (Centers for Disease Control and Prevention).

Alcohol can increase cancer risk in a variety of ways, including the disruption of hormones and cell cycles. As evidence, an analysis of a 20-cohort study indicates that alcohol consumption, even at moderate levels—defined as two drinks or less within 24 hours—results in a hormonal imbalance (Jung et al., 2016)(National Institute on Alcohol Abuse and Alcoholism, 2025). Hormones such as estrogen and insulin increase, in turn, promoting the division of cells, which then increases the chances of developing cancer. In terms of cell cycles, alcohol damages the DNA within cells, heightening chronic inflammation, and resulting in significant risks of developing cancer (Cancer Research UK, 2023).

Conclusion Alcohol consumption poses an array of risks to an individual concerning cardiovascular, neurological, and liver health, in addition to the increased risk of cancer. Alcohol is identified as the most misused drug throughout the entire world and is number one within the United States. The deleterious effects that alcohol poses on the various organ systems of the human body can be both short-term and long-term, accompanied by life-threatening complications. Different interactions that may involve alcohol use include individual traits, social and cultural norms, economic situations, governmental regulations, and genetic predispositions, among many others. Studying the patterns and mechanisms by which the body metabolizes alcohol is essential in understanding the long-lasting adverse impact it can have. Alcohol patterns are a significant element to dissect, understanding its influence by socioeconomic factors, cultural norms, and government policies. Economic development and globalization can have a hand in bringing rise to alcohol in addition to the overall availability and social acceptance of alcohol. Understanding the patterns of consumption and all the varying aspects then allows regulatory framework, intervention strategies, and public health policies to be shaped in coordination with specific challenges and risks (Georgescu et al., 2024).

Authors: Students in the Masters of Health Science program at Saint Peter's University
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