

Alcopops Disproportionately Consumed by Minors in Sexual Assault Cases

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Abstract

Alcohol is present in a large proportion of sexual assault cases. However, research largely overlooks the role that providing alcoholic beverages – particularly those with high-alcohol-content and/or whose flavors mask the taste of alcohol – may have in making young people more vulnerable to being assaulted. This research is especially important given the rise in the availability of sugar-sweetened alcopops and their high-alcohol-content counterparts “supersized alcopops,” which contain up to 5.5 standard alcoholic drinks. In the current study, we examined whether alcopops and supersized alcopops, relative to beer, were involved in disproportionately more sexual assault cases involving victims who were minors (< 18 years old) rather than adults. In this secondary data analysis, we used Nexis Uni to search legal documents for the brands of supersized alcopop (Four Loko), alcopop (Smirnoff Ice), and beer (Bud Light) most commonly consumed by underage drinkers. Inclusion criteria were U.S. sexual assault cases occurring from 2010 to 2019 and involving victims who consumed one of these three alcohol brands. Two researchers coded information from the case facts, compared coding, and reaching consensus. Thirty-six cases were included for analyses. Compared to victims of sexual assault who consumed beer, victims who consumed supersized alcopops or alcopops were significantly more likely to be minors. Similar results were observed after adjusting for the victim being given the alcohol by the perpetrator, which was strongly associated with the victim being a minor. This study provides initial evidence that sexual assault perpetrators may disproportionately use alcopops and supersized alcopops for the sexual victimization of minors.

Keywords: ready-to-drink flavored malt alcoholic beverages, binge drinking and heavy episodic drinking, rape, unlawful forcible intercourse, sex crimes, sexual assault

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Introduction

Underage drinking is a pervasive public health problem in the United States (U.S.). Approximately 29% of U.S. high school

students report consuming alcohol in the past 30 days, and one-in-seven students reported engaging in heavy episodic drinking, i.e., girls consuming four or more and boys consuming five or more standard alcoholic drinks in one sitting (Jones et al., 2020).

Furthermore, according to 2021 data from the National Survey on Drug Use and Health (NSDUH), more than 15% of 12-to-20-year-olds consumed alcohol in the past month, and 8.3% engaged in heavy episodic drinking (SAMHSA, 2022). These statistics highlight the urgent need for effective prevention and intervention strategies targeting underage drinking, as it is associated with numerous adverse health, social, and behavioral consequences, including sexual assault (Hingson & White, 2014).

Approximately 15% to 20% of sexual assaults among adolescents involve alcohol (Champion et al., 2004; Howard et al., 2008; Ngo et al., 2018; Young et al., 2008), with higher levels of intoxication carrying greater risk of sexual victimization (Howard et al., 2008; Mohler-Kuo et al., 2004). Among high school youth, relative to those who have never drunk, current drinkers had nearly twice the odds, and past 30-day heavy episodic drinkers had three times the odds, of being sexually assaulted (Thompson et al., 2012). Additionally, adolescent drinkers are at higher risk of experiencing sexual assault relative to older, more experienced drinkers (Cashell-Smith et al., 2007; Mohler-Kuo et al., 2004). This may be because adolescent drinkers tend to drink more alcohol per episode than adults (Chung et al., 2018) and frequently go to places where people are engaging in heavy drinking (Cashell-Smith et al., 2007; Mohler-Kuo et al., 2004). For example, a study using NSDUH data found that, among 12-17-year-old drinkers, nearly 60% drank at someone else's home during their most recent drinking event and drinking at someone else's home was associated with greater odds of heavy episodic drinking (Rossheim et al., 2017).

Sexual assault during adolescence carries a high toll; victims may experience increased risk of depression, anxiety, post-traumatic stress disorder, alcohol-related problems, relationship instability, and intimate partner

violence (Gidycz et al., 2007; Kirk-Provencher et al., 2020; Plichta & Falik, 2001; Waldrop et al., 2007). It is possible that adolescents who were intoxicated during the assault may feel these consequences even more strongly (Abbey, 2002), potentially because alcohol use can increase the severity of sexual assaults (Abbey et al., 2003). Given these findings, it is imperative to develop targeted interventions that aim to reduce alcohol-facilitated sexual assault of minors. Such targeted approaches should account for the types of alcohol commonly consumed by young people, assess whether the distinct alcohol product characteristics pose varying levels of risk to consumers, and evaluate the impact of youth-oriented marketing of alcohol products.

Youth disproportionately consume certain alcohol products, specifically sugar-sweetened alcopops (e.g., Mike's Hard Lemonade, Bacardi Breezers, Smirnoff Ice) (Siegel et al., 2015). Alcopops have been criticized for more than a decade for being products designed to transition young people from novice to regular drinkers (Mosher & Johnsson, 2005). In each year from 2004 to 2019, more than one-half of underage drinkers consumed an alcopop in the past month (Johnston et al., 2021). Moreover, in 2012 (the most recent data available), nearly 10% of underage drinkers consumed a "supersized alcopop" in the past 30 days (Fortunato et al., 2014). Supersized alcopops (e.g., Four Loko, Joose) contain especially high alcohol content, up to 5.5 standard alcoholic drinks in a single ready-to-drink can (Rossheim & Thombs, 2018). Consuming a single supersized alcopop constitutes heavy episodic drinking and can put youth well over the adult *per se* legal driving limit of 0.08 g/dL (National Institute on Alcohol Abuse and Alcoholism [NIAAA], n.d.; Rossheim & Thombs, 2018). Thus, these products elevate the risk of being highly

intoxicated, and therefore, may increase the risk of being sexually assaulted.

There are numerous explanations for underage youth preference for and consumption of supersized alcopops, including their low retail price and high retail availability in locations such as gas stations and convenience stores, i.e., places where underage drinkers often obtain their alcoholic beverages (DiLoreto et al., 2012; Fortunato et al., 2014; Mart, 2011; McClure et al., 2018; Roberts et al., 2014; Rossheim et al., 2020a; Rossheim & Thombs, 2013; Rossheim et al., 2019b; Rossheim et al., 2015). Furthermore, supersized alcopops tend to be marketed on youth-oriented social media platforms (Mart, 2011) and glorified in user-generated content, which frequently depicts hazardous consumption of these products (Rossheim et al., 2019a).

Another factor likely influencing youth consumption of both alcopops and supersized alcopops is that their marketing and flavors are similar to that of sodas and energy drinks (Rossheim & Thombs, 2013). Importantly, these flavorings also mask the high alcohol content of supersized alcopops, which could facilitate youth's consumption of dangerously large quantities of alcohol (Rossheim et al., 2019a; Rossheim & Thombs, 2018). The same characteristics that make (supersized) alcopops appealing to underage youth and contribute to dangerous drinking also may make them an appealing tool in the sexual victimization of minors.

Because of their unique product characteristics and consumer base, it is plausible that, compared to beer, (supersized) alcopops would be involved in disproportionately more sexual assault cases where the victims are minors. Perpetrators may use alcohol to incapacitate their victims or otherwise facilitate the assault, such as by making it difficult for the victim to resist and/or recall details of the event (Abbey et al., 2001; Testa et al., 2003). Consequently, it

is plausible that perpetrators may offer (supersized) alcopops to minors, who, as inexperienced drinkers, may be unaware of the high alcohol content in these beverages (Rossheim et al., 2018; Rossheim et al., 2020b).

Despite the tremendous health and societal burden of crimes involving alcohol, there are major knowledge gaps related to the role of alcohol in sexual assault. For example, surveys that ask about incapacitated sexual assaults often combine alcohol and drugs together, which limits the conclusions that can be made about the individual role of alcohol (Griffin & Read, 2012; McCauley et al., 2009; Wolitzky-Taylor et al., 2008). This is important because, according to one study, approximately 90% of victims of incapacitated rape drank alcohol (Rossman et al., 2018). Moreover, information on the types of alcohol consumed before the sexual assault is essentially non-existent. These information gaps prevent researchers from identifying products and brands that may be most strongly implicated in the sexual assault of minors. To address these gaps, in the current study, we examined whether, compared to beer, alcopops or supersized alcopops were disproportionately involved in more sexual assault cases involving minors compared to adults.

Methods

Data Source and Keyword Search

This study was a secondary analysis of data from legal cases related to sexual assaults, as these cases provide detailed information regarding the incidents. Using Nexis Uni (an academic database containing legal documents, formerly LexisNexis Academic), we searched for Four Loko, Smirnoff Ice, and Bud Light, the brands of supersized alcopop, alcopop, and beer products, respectively, that are most

commonly consumed by underage drinkers in the U.S. (Fortunato et al., 2014). Each of these alcohol brand names (four loko OR smirnoff OR bud light) were searched in combination with the following 12 search terms to identify sexual assault cases: (sex* OR sexual* OR intercourse OR rape* OR molest* OR sodomize* OR sodomy OR human traffic* OR pornograph* OR genital* OR penis OR vagina).

The use of the “*” command identifies and includes all possible endings of a root word (LexisNexis., n.d.). Use of the “OR” connector provides for broad coverage, as it will identify every case in the Lexis database that contains any of the terms (LexisNexis., n.d.). The 12 specific terms used were selected because one or more likely will show up in a relevant judicial opinion, because they are words directly underlying the facts of the case (Federal Judicial Center, 2013). Thus, it would be anticipated that a well-drafted opinion adjudicating a case involving facts of a sexual assault would contain one or more of the terms used in the search string. These search terms yielded an initial sample of 140 cases that were then reviewed to determine whether they met the study’s inclusion criteria.

Inclusion Criteria

Inclusion criteria were: (1) U.S. sexual assault cases, (2) occurring from 2010 to 2019, (3) involving the victim consuming Bud Light, Smirnoff Ice, or Four Loko within 24 hours of the sexual assault, and (4) including information about the victim’s age. **There were no inclusion criteria related to age.** For the purposes of this investigation, we reviewed sexual assault cases that met the U.S. Department of Justice’s definition of sexual assault: “any nonconsensual sexual act proscribed by Federal, tribal, or State law, including when the victim lacks the capacity

to consent” (U.S. Department of Justice, 2021).

Coding of Variables

Two researchers (KMG-P and KKT) reviewed the facts of each legal case, independently created variable codes, and compared codes to reach consensus. The coding process for these 140 legal cases proved to be both time-consuming and emotionally challenging for the coders, as numerous cases contained graphic descriptions of sexual assaults involving vulnerable children and adolescents. Discrepancies in coding were nominal and infrequent. To ensure that they accurately interpreted and coded the facts of the cases, the coders provided a legal research consultant (RDT) with a sample of 11 cases to independently code. A comparison of codes supported the accuracy of the research team’s coding.

Variables and Analysis Sample

Victims were coded as minors if they were less than 18 years old at the time of the assault (1 = minor, 0 = not a minor). Provision of alcohol from the perpetrator of the sexual assault to the victim was coded as a binary variable (1 = yes, the perpetrator gave the alcohol brand to the victim, 0 = no, the perpetrator did not give the alcohol brand to the victim).

Cases were predominantly excluded because they did not involve sexual assault, with the second most common exclusion criteria being that the victim did not consume the specified brand. Among the 140 cases, 40 cases (29%) involved a victim of sexual assault who had consumed Bud Light, Four Loko, or Smirnoff Ice within 24 hours of their assault. Four cases were excluded because they were missing age data. As a result, the final analysis sample included 36 sexual

assault cases – 11 involving the consumption of Bud Light, eight involving Smirnoff Ice, and 17 involving Four Loko.

confounder of the association between the type of alcohol consumed and the victim being a minor.

Data Analysis

We used descriptive statistics stratified by type of alcohol product to assess the percentage of victims who were minors. Fisher’s exact test was used to examine whether there were statistically significant differences in the distribution of these variables, because some expected cell counts were less than five (Kim, 2017). Finally, we used binary logistic regression analyses to examine whether the type of alcohol consumed (predictor) was associated with the victim of assault being a minor (outcome), statistically adjusting for whether the perpetrator gave the alcohol to the victim.

It was important to make a statistical adjustment for the provision of alcohol, as it is possible that: (1) perpetrators are more likely to give the alcohol to victims who are minors and may otherwise have limited access to it, and (2) alcopops and supersized alcopops, which have flavors that mask their alcohol content, more likely could be the type of alcohol provided to sexual assault victims by perpetrators irrespective of age, to facilitate incapacitation. Thus, it is a potential

Results

Sample Characteristics

For the study sample, 97% of sexual assault victims were female and 58% were minors. Overall, 69% of the sexual assault victims were provided the alcohol by the perpetrator of assault, including 95% of minors and one-third (33%) of adult victims. Whereas 27% of sexual assault victims who consumed Bud Light were minors, 63% of sexual assault victims who consumed Smirnoff Ice and 77% of those who consumed Four Loko were minors. In cases of sexual assault involving minors, the perpetrator provided the victim with the specific brand of alcohol in almost every instance – 100% for Bud Light, 100% for Smirnoff Ice, and 92.3% for Four Loko. Table 1 provides sample characteristics overall as well as by whether victims were minors or adults.

Table 1

Characteristics of the study sample

	Minors (< 18 years old) 58%	Adults (≥ 18 years old) 42%	Overall Sample 100%
Female	95%	100%	97%
Provided alcohol by the perpetrator	95%	33%	69%
Consumed Bud Light	14%	53%	31%
Consumed Four Loko	62%	27%	47%
Consumed Smirnoff Ice	24%	20%	22%

Bivariate Associations

Victims of sexual assault who had consumed an alcopop or supersized alcopop were statistically significantly more likely to be minors, compared to victims of sexual assault who consumed beer ($p = .025$). The same was true for supersized alcopops versus beer ($n = 28$); minors were statistically significantly more likely than adults to have consumed Four Loko versus Bud Light prior to being sexually assaulted ($p = .019$). Minors were also significantly more likely than adults to be provided the alcohol by the perpetrator ($p < .001$).

Multivariable Models

We used two logistic regression models to examine whether the type of alcohol consumed was associated with sexual assault victims being a minor, adjusting for the provision of the alcohol (Table 2). The first multivariable logistic regression model showed that, compared to victims of sexual

assault who had consumed Bud Light, victims who consumed Four Loko had significantly greater odds of being a minor rather than an adult (OR = 9.3, 95% CI = 1.01, 85.3). The second multivariable logistic regression model showed that, compared to victims of sexual assault who had consumed beer (Bud Light), those who consumed an alcopop (Smirnoff Ice), or supersized alcopop (Four Loko) were significantly more likely to be a minor rather than an adult (OR = 9.5, 95% CI = 1.2, 76.9). Both models statistically adjusted for the victims being given the alcohol by the perpetrator of assault. In both models, the provision of alcohol to the victim was strongly associated with the victim being a minor rather than an adult, adjusting for the type of alcohol consumed.

Discussion

Building upon the prevalent issues of adolescent drinking and sexual assault, the current study is the first to examine whether,

Table 2

Logistic regression models of alcohol-related contextual factors associated with sexual assault victims being a minor (< 18 years old) rather than an adult

Model 1	Odds of being a minor rather than an adult	Model 2	Odds of being a minor rather than an adult
Victim consumed Four Loko versus Bud Light	OR = 9.3 (95% CI = 1.01, 85.3)	Victim consumed Four Loko or Smirnoff Ice, versus Bud Light	OR = 9.5 (95% CI = 1.2, 76.9)
Victim consumed Smirnoff Ice versus Bud Light	OR = 10.2 (95% CI = 0.6, 180.6)		
Victim was given the alcohol by the perpetrator	OR = 51.2 (95% CI = 3.9, 672.6)	Victim was given the alcohol by the perpetrator	OR = 50.2 (95% CI = 4.1, 609.0)
<i>Indicators of overall model fit</i>	Pseudo $R^2 = 0.45$ $p < .001$	<i>Indicators of overall model fit</i>	Pseudo $R^2 = 0.45$ $p < .001$
Bold indicates statistically significant at $p < .05$			

compared to beer, alcopops or supersized alcopops are disproportionately involved in more sexual assault cases involving minors compared to adults. We found that, compared to adult victims, minor victims were more likely to consume an alcopop or supersized alcopop versus beer within 24 hours of the assault. Furthermore, minor victims were much more likely to be given alcohol by the perpetrator prior to the assault.

Whereas the association between age group and product type may reflect product preferences in these demographics (Fortunato et al., 2014; Siegel et al., 2015), our findings are still important for numerous reasons. For example, perpetrators might be exploiting minors' preferences for these drinks to facilitate their assault. Indeed, in the current study, the perpetrator provided the specific brand of alcohol to minors in 95% of cases (compared to 33% for victims 18 and older). Moreover, alcopops have fruity and sugary flavors that can mask the alcohol content, leading to overconsumption and increasing their susceptibility to the incapacitating effects of alcohol and subsequent assault. In this regard, supersized alcopops are especially problematic in that they contain high alcohol content and inadequate alcohol content labeling (Rossheim et al., 2018; Rossheim et al., 2020b).

This study provides initial evidence that, compared to beer, (supersized) alcopops may be disproportionately consumed in sexual assault cases in which the victims are minors. Our findings emphasize the importance of additional research into the potential need for special regulation of alcopops, including reduced alcohol content, higher taxes, warning labels, and re-classifications that distinguish them from traditional malt-based alcoholic beverages (Paradis et al., 2019; Rossheim et al., 2015). Overall, this study points to a unique issue that has had little discussion in the policy or regulation realm

and warrants future research. Specifically, there is large heterogeneity in the characteristics of alcohol products and their marketing. However, data on the specific types of alcohol consumed prior to sexual assault is largely lacking, hindering researchers' ability to pinpoint products and brands predominantly associated with the sexual victimization of minors.

When viewed in the context of the larger literature and keeping in mind that the victim is never to blame, adolescents who become victims of alcohol-facilitated sexual assault tend to be drinkers, and heavy drinkers, themselves (Pape, 2014; Thompson et al., 2012). These findings suggest that population-wide prevention approaches to reduce alcohol consumption among underage youth may help prevent these crimes (Kypri et al., 2020; Testa & Livingston, 2018). This field of work is critically important given that approximately 15% to 20% of sexual assaults among adolescents involve alcohol (Champion et al., 2004; Howard et al., 2008; Ngo et al., 2018; Young et al., 2008).

Strengths and Limitations

The study's strengths and limitations are mostly related to the use of data from legal cases, which are rarely examined in alcohol research. These legal cases contain greater detail than other resources such as newspaper articles, allowing the team to search systematically for and extract information on specific alcohol brands. However, screening and coding legal cases is time-intensive, so the inclusion criteria were limited to three brands and assaults that occurred between the years 2010 and 2019. Furthermore, the sample size was relatively small, yielding wide confidence intervals and high risk of type-2 error. For example, those who consumed Smirnoff Ice versus Bud Light had much higher odds of being a minor, but these associations were not statistically significant.

Additionally, cases analyzed may not be representative of all events. For example, these legal cases may include specific alcohol brand names because of lawyers' attempts to bias jurors with the connotations associated with each brand. Additionally, the cases identified only represent the small subset of sexual assault cases that were both reported and subsequently brought to trial. Finally, whereas it would have been ideal to include additional demographic information in our models, race/ethnicity was not routinely reported in these legal documents and, because of the small sample size for male youth, related estimates were not reliable.

Implications for Health Behavior Research

Our study findings are important given that alcohol plays a role in a large proportion of sexual assault cases, and most studies do not differentiate between types of alcohol consumed in sexual assault cases (Thompson et al., 2012). Research indicates that supersized alcopops are more appealing to young girls and women than young boys and men, in comparison to beer (Rossheim et al., 2022). Moreover, young drinkers, particularly girls and women, commonly underestimate the alcohol content in a can of supersized alcopop, even if they have prior experience consuming them (Rossheim et al., 2018; Rossheim et al., 2020b). Consistent with this underestimation and the preference for these products among adolescents, there are disproportionately more calls made to U.S. poison control centers for the consumption of supersized alcopops among underage drinkers (Rossheim et al., 2021). Consequently, it is plausible that the provision of these high-alcohol, sugar-sweetened beverages to minors may be a deliberate strategy employed by perpetrators to incapacitate their victims.

Although the current study uses a relatively small sample, it is the first to explore brand-specific associations with the provision of alcohol to minor victims compared to adult victims in sexual assault cases. This research is especially timely given the entry of alcoholic seltzers and sodas into the market (Alcorn, 2023), which may leverage brand loyalty in a young consumer base (Jenkins, 2022). This evolution in the marketplace highlights the need for a clear understanding of how various brands and their product attributes may be used in the sexual victimization of minors. It is also important to address this issue due to the research that suggests one in five high school girls have experienced sexual violence and about one in seven were forced to have sex (CDC, 2022). In our study sample, 97% were female, and gender was provided in the legal documents as male/female; however, those who identify as transgender or gender non-conforming experience a disproportionate burden of sexual violence, including alcohol-related sexual violence (Coulter et al., 2015; Trangenstein et al., 2022). More research is needed to improve understanding of the ways in which different types of alcohol products may pose varying risks to different groups of young consumers.

Discussion Questions

Findings show that sugar-sweetened alcohol products were involved disproportionately more in sexual assault cases in which the victim was a minor (< 18 years old) rather than an adult. What future studies are needed to determine whether certain characteristics of alcohol products make perpetrators more likely to use them to facilitate sexual assault?

Which product characteristics (e.g., sweet flavors, high alcohol content, container size and/or contain type) may make alcohol

products especially risky regarding their involvement in sexual assaults?

Is it possible that the presentation of alcohol in a single can versus an open cup makes minors think they are less likely to be drugged because they are able to open the can themselves?

Do adolescents view alcopops as less dangerous to drink than other alcohol products? What types of studies are needed to assess young people's risk perceptions associated with consuming various types of alcohol products?

If certain alcohol product characteristics (or combination of characteristics) are determined to facilitate the sexual assault of minors, are there certain behavioral or policy interventions that might be able to prevent some these incidents?

Ethical Approval

The Institutional Review Board (IRB) determined this project did not meet the definition of human subject research under the purview of the IRB according to federal regulations.

Conflict of Interests

The authors report no conflicts of interest.

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