

Examination of alcohol use patterns in youth: A study of alcohol-related poisonings at a pediatric hospital in British Columbia, Canada.

Phoebe Cheng¹, Atousa Zargaran*, Fahra Rajabali², Kate Turcotte², Shelina Babul¹⁻⁴

¹Canadian Hospital Injury Reporting and Prevention Program, British Columbia Children's Hospital, Vancouver, British Columbia, Canada

²British Columbia Injury Research & Prevention Unit, British Columbia Children's Hospital, Vancouver, British Columbia, Canada

³British Columbia Children's Hospital Research Institute, Vancouver, British Columbia, Canada

⁴University of British Columbia, Vancouver, British Columbia, Canada

Abstract

Objective: Identify alcohol use patterns among pediatric patients with alcohol-related poisonings to better inform current substance use programs on how youth poisonings could be addressed.

Methods: Alcohol-related poisonings treated in the emergency department [ED] at British Columbia Children's Hospital [BCCH] between January 1, 2016, and December 31, 2019, were extracted from the Canadian Hospitals Injury Reporting and Prevention Program. The sample included all youth aged 16 years or younger and had intentionally consumed alcohol prior to their ED arrival. The hospital's electronic health information system and patient's health records were reviewed to collect additional information on their drinking practices. This included the types and amount of alcohol consumed, the location, as well as information from the individuals who sought medical treatment for the poisoned youth

Results: Of the 1,289 total poisonings treated at the BCCH ED, 434 were alcohol-related [33.7%]. The sample consisted of a majority of female youth [59.0%] with a median sample age of 15 years [IQR: 14-16 years]. The youngest was 11 years old and the oldest youth was 16 years. Most poisonings were unintentionally incurred. Few differences were observed in how male and female youth consumed alcohol. Overall, youth often binged on distilled alcohol, while with peers, in home environments, and at the end of the week. A few youths reported on the consumption of sweetened and/or flavoured alcohols. Intervention from bystanders, families, friends, and first responders was often needed to help the youth seek medical treatment at hospital. Most individuals were treated in the ED but a tenth of the patients were admitted into hospital for further care.

Conclusion: Alcohol-related harm continues to be a prevailing public health problem despite the establishment of national drinking guidelines and laws to discourage underage drinking. Continued efforts to educate and disseminate safe drinking practices among youth are especially crucial to mitigate alcohol poisonings during and post-COVID-19 pandemic.

Keywords: Alcohol, Substance use, Liquor, Intoxication, Poisoning, Youth, Adolescents, Injury prevention.

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Introduction

Alcohol continues to be the popular drug of choice amongst youth. Recent surveillance indicates that almost half of youth in British Columbia [BC], Canada had consumed alcohol in the past year. On average, their first alcohol use occurred at 14 years of age [1] despite the legal drinking age being 19 years in the province [2]. While most individuals consume it responsibly, young drinkers are more likely to drink excessively and engage in risky behaviours compared to those who are older [3,4]. For example, a majority of youth who reported recent alcohol use had consumed large amounts of alcohol within a short period of time – otherwise known as binge drinking. A fifth of sexually active youth also reported alcohol use immediately prior to engaging

in sexual intercourse [1]. And until 2005, motor vehicle crashes due to alcohol intoxication was a major cause of death amongst those 16 to 25 years of age [5]. Altogether, an estimated six Canadian youth aged 10 to 19 years are hospitalized daily due to alcohol use [6].

Monitoring patterns in alcohol use that lead to injury or poisoning is especially critical in BC. The province already has the highest rates of alcohol-related hospitalizations in Canada [7] and alcohol is the primary substance involved in poisoning-related emergency department [ED] visits among those aged 15 to 19 years [8]. Furthermore, a majority of youth continue to perceive alcohol as an easy commodity to obtain despite the illegality of selling alcohol to minors [9]. Nevertheless, BC has

moved forward in relaxing liquor restrictions and increasing its accessibility to the public [10]. This included extending hours of alcohol-serving establishments, discounting liquor prices, and allowing the sale of liquor by private businesses, grocery stores, and during social events [11–14]. The increased density in privately-owned liquor stores has been attributed to increases in alcohol-related violence and deaths in the province [15,16].

Despite the many dangers alcohol may pose, few studies have been dedicated to examining the events leading up to youth experiencing alcohol poisoning. Most recently, Paradis published an article on alcohol-related ED visits amongst teenagers and young adults in Quebec, Canada. They reported a male-dominated patient sample with a large volume of alcohol-related visits to the ED occurring on weekends and associated with special occasions or holidays. They also reported common drinking locations and the types of medical complications associated with the patient's ED visit [17]. Their results give an early glimpse into the events leading up to the poisonings.

Given the gravity of the situation and early reports that some Canadians are drinking more during the COVID-19 pandemic [18,19], this study adds to the body of literature by describing the poisoning context – their intent, how the alcohol was consumed, whether it was consumed with peers, and the individuals who helped the youth seek medical treatment at the ED. It also compares the characteristics of male and female drinkers reporting alcohol poisoning. The sample is inclusive to youth aged 16 years or younger who received medical treatment at a BC pediatric hospital for alcohol poisoning.

Research Methodology

Data collection and extraction

All alcohol-related poisonings treated at the BC Children's Hospital [BCCH] were extracted from the Canadian Hospitals Injury Reporting and Prevention Program [CHIRPP]. BCCH is a level 1 Trauma Centre that treats pediatric patients across BC with traumatic injuries or poisonings [20]. CHIRPP is an ED surveillance system that collects information on all injuries, including alcohol poisoning, using hardcopy forms administered by the ED registration clerk to the patient or caregiver at the time of arrival. The inclusion criteria included: BCCH patients aged 16 years or younger, reported injuries between January 1, 2011, and December 31, 2019, had injury codes "50 NI: poisoning or toxic effect" and "900 BP: body part not required", and had injury event descriptions containing one or more string words "alcohol," "liquor," "intoxication," "ETOH," "wine," "vodka," "whiskey," "beer," "cooler," and/or "rum." The exclusion criteria included patients who left without being triaged, or those who had already received treatment for alcohol poisoning but returned to the hospital for further follow-up. Any alcohol poisonings involving the consumption of illicit alcohols [i.e., hand sanitizer, moonshine, and acetone] or cases resulting from the inadvertent ingestion of alcohol were removed from the final sample. Ethics approval was obtained from the Department of Pediatrics, Faculty of Medicine, University of British Columbia, certificate number H18-03680.

To better characterize alcohol use behaviours in the poisoned

youth, additional information was collected from the hospital's electronic health information system and the patient's health records. The patient's age, sex, postal code, timing and location of alcohol use, the intent of the poisoning, and number of injuries treated, and the treatment received were collected from CHIRPP. Description of the poisoning event including the location where the poisoning was first noticed, the types and amounts of alcohol consumed, whether the substance[s] was consumed in the presence of another person [social drinking], if cannabis, illicit drugs, or medications [including the use of prescription or over-the-counter drugs other than their intended medicinal purposes] were co-ingested with the alcohol, the primary individual who sought medical care for the patient [treatment-seeking individual], and the mode of arrival at the hospital were extracted from the hospital's electronic health information system and patients' health records. The type of alcohol was categorized by the method of production: distilled [e.g., whiskey, gin, vodka, rum, tequila, etc.], fermented [e.g., beer, wine, cider, etc.] or mixed [e.g., a combination of distilled and fermented alcohol]. Binge drinking occurred if a female youth consumed four or more standard alcoholic drinks or a male youth consumed five or more standard drinks within a given occasion. A standard drink is defined by Canada's Low-Risk Alcohol Drinking Guidelines as equivalent to a 12-ounce beer, 12-ounce cider or cooler, 5-ounce wine, or 1.5-ounce distilled alcohol [21].

Interrater reliability

Interrater agreement as described by the Cohen kappa statistic κ was calculated for social drinking and treatment-seeking individual as this information was not explicit for every alcohol-related poisoning. For social drinking, two coders were assigned to code "yes" for those who had consumed alcohol with one or more individuals prior to their poisoning or "no" for those who consumed alcohol while alone. For the treatment-seeking individual, the coders were instructed to code for "bystander", "patient", "family", or "friends". A bystander is defined as an individual who did not participate in substance use with the patient and was not a friend or family member of the patient. Family is defined as all individuals within the patient's nuclear and extended family. One-quarter of the poisoning cases containing the coded variables were randomly selected for comparison. The interrater reliability for social drinking was $\kappa=0.745$ [SE=0.073, $p<0.001$] and treatment-seeking individual was $\kappa=0.770$ [SE=0.056, $p<0.001$].

Data analyses

Data analyses were conducted using IBM SPSS Statistics 26.0 [IBM Corp, Armonk, NY, USA]. Due to patient confidentiality guidelines, any absolute counts fewer than five were not reported to prevent the identification of individuals in the study. In addition, as CHIRPP data are not population-based, incidence rates could not be determined for this study. Data were analyzed by sex, results were interpreted to be significant if $p<0.05$.

Results

One-third of the 1,289 total poisonings treated at the BCCH ED were alcohol-related [$n=434$, 33.7%]. The sample consisted of

more females than male youth (59.0% and 41.0% respectively). The median age was 15 years [interquartile range [IQR]: 14-16 years] and the age did not differ across sex [$\chi^2(1)=2.84$, $p=0.092$]. The youngest individual was 11 years while the oldest individual was 16 years. Most youth resided in urban areas (96.1% and 96.5%) than rural areas of BC (2.2% and 2.0%).

Alcohol was consumed at certain times of the day and the week (Table 1). Most alcohol consumptions occurred during the night between the hours of 6:00 p.m. to 5:59 a.m. for both males and females [79.8% and 78.1%, respectively]. Most alcohol consumptions among males and females were reported at the end of the week on Friday [21.9% and 21.5%, respectively], Saturday [20.2% and 23.8%, respectively], and Sunday [15.7% and 18.0%, respectively]. The frequency of alcohol poisoning-related ED visits between males and females did not differ by the years of interest [$\chi^2 [3]=5.97$, $p=0.113$].

Common characteristics of alcohol consumption in youth are presented in Table 2. Of the 69 males [38.8% of all males] who reported co-ingesting alcohol with other psychoactive substances, 52.2% had combined it with cannabis, and 15.9% had combined it with both cannabis and illicit drugs. Another 8.7% of males co-ingested alcohol with illicit drugs only, and 8.7% with medication [results not shown]. Of the 101 females who reported alcohol co-ingestion [39.5% of all females], other substances consumed included: cannabis [30.7%], illicit drugs [27.7%], and medication [26.7%] [results not shown]. Moreover, females primarily consumed only distilled alcohol [57.4%] whereas the types of alcohol consumed by males varied [distilled=46.6%, fermented=11.8%, mixed=16.3%] [χ^2

[3]=9.68, $p=0.022$]. The consumption of flavoured or sweetened alcohols was reported by 8.4% males and 15.2% females. Binge drinking was described by 48.9% of male youth and 39.5% of female youth.

The poisonings resulting from alcohol use were largely unintentional, accounting for 93.3% of the cases among males and 86.7% of cases among females (Table 3). Few cases reported excessive alcohol use as an alternative form of self-harm (4.5% and 10.9%, respectively) and even fewer poisonings were associated with sexual or other unspecified assaults [results not shown due to counts lower than five]. The location of poisoning was commonly reported in homes although one-fifth of youth also reported being on the road or street at the time [25.8% for males and 20.7% for females]. When seeking medical attention, more male youth reported help from bystanders [36.0%] rather than from friends [24.7%] or family members [23.0%]. In contrast, female youth often sought help from bystanders [27.3%] or friends [27.0%] rather than from family members [22.3%] [$\chi^2 [4]=10.42$, $p=0.034$]. The majority of patients were transported to the hospital by first responders. Most received treatment for alcohol poisoning and were discharged directly from the ED.

Discussion

In response to social and environmental factors, youth alcohol consumption becomes more prevalent as they progress through each school grade [22]. While alcohol may not be the foremost concern for these students, some youth will experience significant consequences to their alcohol use. Examining the trends and patterns among those youth who required an ED

Table 1. Temporal characteristics of alcohol poisonings treated at BCCH, January 2016 to December 2019.

Variables	Total		Male		Female		χ^2	df	p-value
	n	%	n	%	n	%			
	434	100.0	178	41.0	256	59.0			
Consumption time ^a									
Daytime	75	17.3	31	17.4	44	17.2	0.985	2	0.611
Nighttime	342	78.8	142	79.8	200	78.1			
Unknown	17	3.9	5	2.8	12	4.7			
Consumption day of week									
Monday	31	7.1	16	9.0	15	5.9	5.324	6	0.503
Tuesday	46	10.6	18	10.1	28	10.9			
Wednesday	53	12.2	20	11.2	33	12.9			
Thursday	39	9.0	21	11.8	18	7.0			
Friday	94	21.7	39	21.9	55	21.5			
Saturday	97	22.4	36	20.2	61	23.8			
Sunday	74	17.1	28	15.7	46	18.0			
Consumption season ^b									
Spring	106	24.4	46	25.8	60	23.4	2.445	3	0.485
Summer	114	26.3	43	24.2	71	27.7			
Autumn	125	28.6	47	26.4	77	30.1			
Winter	90	20.7	42	23.6	48	18.8			
ED year									
2016	95	21.9	43	24.2	52	20.3	5.973	3	0.113
2017	112	25.8	37	20.8	75	29.3			
2018	111	25.6	53	29.8	58	22.7			
2019	116	26.7	45	25.3	71	27.7			

^a**Time:** Daytime (6:00a.m. - 5:59p.m.), nighttime (6:00p.m. - 5:59a.m.)

^b**Season:** Spring (March – May), summer (June – August), autumn (September – November), winter (December – February)

Table 2. Characteristics of alcohol use prior to poisoning.

Variables	Total		Male		Female		χ^2	df	p-value
	n	%	n	%	n	%			
	434	100.0	178	41.0	256	59.0			
Alcohol type^a									
Distilled	230	53.0	83	46.6	147	57.4	9.677	3	0.022
Fermented	37	8.5	21	11.8	17	6.6			
Mixed	53	12.2	29	16.3	24	9.4			
Unknown	114	26.3	45	25.3	68	26.6			
Sweetened and/or flavoured alcohol-related									
No	267	61.5	117	65.7	150	58.6	4.784	2	0.091
Yes	54	12.4	15	8.4	39	15.2			
Unknown	113	26.0	46	25.8	67	26.2			
Alcohol co-ingestions^b									
Alcohol-only	264	60.8	109	61.2	155	60.5	0.021	1	0.921
Alcohol co-ingestions	170	39.2	69	38.8	101	39.5			
Binge drinking^c									
No	63	14.5	24	13.5	39	15.2	3.84	2	0.147
Yes	188	43.3	87	48.9	101	39.5			
Unknown	183	42.2	67	37.6	116	45.3			
Social drinking									
Alone	38	8.8	9	5.1	29	11.3	5.732	2	0.057
With peers	323	74.4	135	75.8	188	73.4			
Unknown	73	16.8	34	19.1	39	15.2			
Location of consumption									
Home	57	13.1	14	7.9	43	16.8	12.452	6	0.053
Other house	96	22.1	36	20.2	60	23.4			
Beach or park	46	10.6	20	11.2	26	10.2			
School grounds	24	5.5	10	5.6	14	5.5			
Road or street	17	3.9	6	3.4	11	4.3			
Other locations ^d	19	4.4	12	6.7	24	9.4			
Unknown	175	40.3	86	48.3	89	34.8			

Bolded values indicate significant findings at the $p < 0.050$ level

aAlcohol type categorized by their method of production: distilled (i.e. whiskey, gin, vodka, rum, tequila, etc.), fermented (i.e. beer, wine, cider, etc.), or mixed (i.e. combination of distilled and fermented alcohol was consumed)

bAlcohol co-ingestions included patients who consumed alcohol with cannabis, illicit drugs (including heroin, cocaine, fentanyl and its derivatives, methamphetamine, psilocybin, MDMA/molly/ecstasy, and LSD), and/or medication (prescription or over-the-counter)

cBinge drinking is defined as the consumption of four or more standard drinks for women or five or more standard alcohol drinks for men in a given occasion. A standard drink as defined by Canada's Low-Risk Alcohol Drinking Guidelines is a 12-ounce (oz) beer, 12oz cider/cooler, 5oz wine, or 1.5oz distilled alcohol

dOther location of alcohol consumptions mentioned: amusement parks, retail stores, community centres, stadiums, arenas, transit stations, roads or streets.

visit for alcohol poisoning provides a better understanding of the current drinking behaviours that result in injury. In turn, this provides better evidence to inform substance use programs on promoting appropriate harm reduction techniques. This study identified key drinking patterns among underage youth who were recently treated for alcohol-related poisonings, including the large proportion of youth drinking with their peers, the preference towards distilled alcohol use, engagement in binge drinking, and combining alcohol with other psychoactive substances – namely cannabis. The results from our study align with the literature published on this issue. For example, alcohol was often consumed in homes, during the night, and on the weekends. Also, those intoxicated from excessive alcohol relied heavily on first responders for transport to hospital [23] and most patients were discharged from the ED after receiving treatment [24].

We also examined how alcohol consumption leading to

poisoning differed between male and female youth. Previous studies reported that males were more likely to combine alcohol with other psychoactive drugs to enhance their effects [25] while females were the heavier drinkers [26]. This study of youth aged 16 years or younger found that more females consumed distilled alcohol and were helped by bystanders or their friends in getting to the hospital as compared to males. Few differences were observed in how the alcohol was consumed. While females are innately more vulnerable to the effects of alcohol poisoning than males [27,28], more research will be needed to examine other discrepancies in alcohol use patterns.

A topic for future investigation involves the where and from whom youth access the alcohol that results in their injuries. Self-reports by youth showed that alcohol was often obtained through informal channels [29], males being more likely to have lied about their age while buying alcohol for themselves while females being more likely to have obtained it from an adult or

Table 3. Characteristics of events following alcohol-related poisoning.

Variables	Total		Male		Female		χ^2	df	p-value
	n	%	n	%	n	%			
	434	100.0	178	41.0	256	59.0			
Intent of the poisoning									
Accidental; injury was not intended	388	89.4	166	93.3	222	86.7	-	-	-
Intentional self-harm	36	8.3	8	4.5	28	10.9			
Sexual, physical or other unspecified assaults	5	1.2	*	*	*	*			
Unknown intent	5	1.2	*	*	*	*			
Location of injury									
Home	75	17.3	27	15.2	48	18.8	5.433	6	0.490
Other house	80	18.4	30	16.9	50	19.5			
Beach or park	45	10.4	19	10.7	26	10.2			
School grounds	26	6.0	7	3.9	19	7.4			
Road or street	99	22.8	46	25.8	53	20.7			
Other locations ^a	69	15.9	30	16.9	39	15.2			
Unknown	40	9.2	19	10.7	21	8.2			
Treatment-seeking individual									
Bystander	134	30.9	64	36.0	70	27.3	10.423	4	0.034
Family	98	22.6	41	23.0	57	22.3			
Friends	113	26	44	24.7	69	27.0			
Patient	27	6.2	*	*	23	9.0			
Unknown	62	14.3	25	14.0	37	14.5			
Mode of transportation									
First responders	360	82.9	146	82.0	214	83.6	2.318	3	0.509
Family ^b	39	9.0	19	10.7	20	7.8			
Other	12	2.8	*	*	9	3.5			
Unknown	23	5.3	10	5.6	13	5.1			
Multiple injuries									
Poisoning only	375	86.4	146	82.0	229	89.5	5.211	2	0.074
Poisoning and one other injury	44	10.1	23	12.9	21	8.2			
Poisoning and two or more injuries	15	3.5	9	5.1	6	2.3			
Patient disposition									
No treatment	80	18.4	40	22.5	40	15.6	4.846	3	0.183
Observation in ED	135	31.1	47	26.4	88	34.4			
Treatment in ED	180	41.5	75	42.1	105	41.0			
Admitted into hospital	39	9.0	16	9.0	23	9.0			

Bolded values indicate significant findings at the $p < 0.050$ level

Asterisks (*) indicate absolute counts of fewer than five

Dashes indicate absence of a χ^2 test due to the violation of one or more assumptions of the test

^a Other locations of injury mentioned: amusement parks, retail stores, community centres, stadiums, arenas, transit stations, jail, hotel, government shelters

^b Family includes immediate and extended family members

Abbreviations: ED, emergency department

had someone buy it for them [1]. These results have yet been replicated in youth seen at a hospital for alcohol poisoning. Understanding how underage drinkers continue to access the substance will bring new insight into how current policies and laws could be improved upon, as well as inform targeted public awareness campaigns.

A notable finding was the intent of the poisoning. Few youths had consumed alcohol to achieve intentional self-harm – this included attempting suicide and seeking attention. Instead, most of the poisonings were unplanned and were overwhelmingly

unintentional in nature. This was expected based on the strong preference towards distilled alcohols, co-ingestion with other psychoactive substances, and excessive drinking. An important step forward is to raise awareness of the safe drinking guidelines through health education. Since 2011, Canada has published Low-Risk Alcohol Drinking Guidelines to promote safe alcohol consumption, encouraging underage youth to abstain entirely from alcohol use. However, for youth who do choose to consume alcohol, it is recommended not to have more than one or two alcoholic drinks at a time, not to drink more than

once or twice a week, and to do so under parental supervision [21,28]. Despite the clear guidelines, surveys have found that only one-quarter of all Canadians have seen or even heard of these guidelines [30,31]. It is estimated that if all Canadian who consume alcohol did so within the proposed limits, 4,600 alcohol-related deaths could be prevented each year [32].

Health education should not solely target youth, but should extend to their parents and caregivers, including teachers, instructors and other role-models as well. For parents and teachers, this includes being involved in the youth's lives and having healthy conversations about alcohol use [33]. For the general public, understanding the signs of alcohol poisoning and how to be proactive in aiding those in need may minimize the severity of harms the poisoned youth face. Compared to the preference of youth to drink in homes, a larger proportion of alcohol poisonings were reported from public spaces such as on the roads or streets. Subsequently, intervention from bystanders, friends, family members, and first responders was required to help the individual seek adequate medical treatment. Peers of youth who drink can also participate in harm reduction. Studies have shown that individuals who report having healthy attitudes towards alcohol use often motivate those around them to also drink responsibly [26].

This study also reported on the low prevalence of sweetened and/or flavoured alcohol consumption by BC youth. Introduced to Canada in 1984, these types of drinks are marketed to younger drinkers as the flavours are considered to be appealing, often mimicking non-alcoholic beverages [34]. As such, they are becoming increasingly popular [35]. Compared to 2013, BC youth were now more likely to be drinking flavoured alcohols rather than traditional spirits, beer, and wine. Although typically lower in alcohol content, the excessive consumption of these beverages have been attributed to a few deaths. As a result, the government has imposed restrictions on the amount of alcohol allowed per drink [36–39]. While the number of youth in this sample reporting sweetened and/or flavoured alcohol remained low, further investigation is needed to gauge if there is a growing interest amongst youth in these products, and the role these beverages may play in future poisonings.

Understanding why some youth choose to consume alcohol and how they are being injured by these beverages is especially critical as the world is dealing with a long-term pandemic and anticipating a “new normal”. Early into the COVID-19 pandemic, the World Health Organization cautioned about regulating alcohol use [40], and many countries moved to limit alcohol sales to curb alcohol-fueled gatherings [41]. In contrast, BC designated liquor as an essential commodity [42,43] and made alcoholic beverages more readily accessible to consumers. These changes in regulations allowed liquor-serving establishments to sell packaged liquor for offsite consumption [44,45], consumers were encouraged to use home-delivery alcohol services [46], and public drinking is allowed in select parks [47]. Unsurprisingly, alcohol consumption in the province during the first half of 2020 was equal to or greater than 2019 rates [48]. Increased alcohol consumption due to the mental and emotional stresses of the pandemic has also been reported by some youth [49,50]. As BC begins efforts to vaccinate the

general public, and increased opportunities for social gatherings are anticipated [51,52], it is even more important to examine past alcohol use patterns to inform how the province can prepare for and prevent youth alcohol poisonings in the post-pandemic future.

Strengths and Limitations

Examination into alcohol poisonings in youth under the age of 19 years continues to be a difficult task due to the legality of underage drinking. They may be unwilling to verbally disclose their alcohol consumption habits and experiences at hospital. Therefore, by having the patient complete a paper form which inquires “what was the injured person doing when the injury happened”, “What went wrong” and “What actually caused the injury”, a more discrete disclosure of events is supported without fear of repercussions from peers. The questions also prompt the youth to identify key factors leading to their presentation at the ED.

To further enrich our data, we also used a multifaceted approach and aggregated CHIRPP data with information contained in the hospital's electronic health information system and the patients' health records. This allowed for the reconstruction of events surrounding the injury according to testimonies by bystanders, first responders, and hospital staff, even if the patient had lapses in memory. Therefore, this study captured extensive details on the poisoning event that otherwise may have been lost if relying only on the patient's personal account.

While self-reports have its benefits, there are some limitations to be noted. First, the hospital sampled in this study is located in an urban region of the province, so the youth who presented at the ED are often residents of nearby municipalities. Information on youth living rural BC – where higher rates of alcohol-related consumption and harms have been reported [53,54] – would only be available if they were transferred to BCCCH for further medical treatment. Secondly, CHIRPP and the BC healthcare system does not routinely report on patient's ethnicity, sexual orientation, education, or current living arrangements unless it pertains to their treatment at hospital. Therefore, identifying youth by their sociodemographic characteristics aside from their age and sex, was not feasible for this study. Lastly, deaths due to alcohol poisonings may be underestimated as CHIRPP methodology does not capture individuals who died at the scene or prior to their ED visit. Future research into this area should consider adopting sociodemographic variables, extending the data collection to hospitals located in rural or remote regions of BC, and incorporate coroner data.

Conclusion

Alcohol-related harms are on the increase in Canada, yet discussions regarding the impact on youth are being overshadowed by the COVID-19 pandemic and the drive to improve liquor accessibility to BC consumers. Few papers have been published on those who experience alcohol poisoning and the contributing factors. This study identified key patterns in alcohol use by youth using recent ED data. BC youth reporting alcohol-related poisonings often consume distilled alcohol, while with peers, and in homes. These events tended

to occur at night and on weekends. The poisonings were largely unintentional and youth often required intervention from bystanders, family, and friends to seek medical treatment for their injuries. These findings can be used to strengthen current health promotion initiatives in raising public awareness of the Low-Risk Alcohol Drinking Guidelines. Further research is needed to understand alcohol accessibility in youth and the role of sweetened and/or flavoured alcohols in youth poisonings in light of the COVID-19 pandemic.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

Author's Contribution and Statement

AZ and SB conceptualized the plan and objectives for this study. AZ and PC led the data collection. PC conducted the analyses, interpretation of the results, and drafted the manuscript. FR assisted with the analysis and interpretation of the manuscript. KT provided support with the ethics application. PC, FR, KT, and SB contributed to the review and revision of the manuscript. All authors read and approved the final manuscript.

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***Correspondence to:**

Atousa Zargaran
British Columbia Injury Research & Prevention Unit
British Columbia Children's Hospital
Vancouver, British Columbia
Canada
Address: F508, 4480 Oak St. Vancouver,
BC V6H 3V4, Canada
Tel: 604-875-3044
E-mail: Atousa.Zargaran@cw.bc.ca