Impact Potpourri: A Multimethod Survey Study on Youth Substance Use During COVID-19

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ABSTRACT

**Background:** Given the important implications of youth substance use, it is essential to document and describe changes in substance use during the coronavirus disease 2019 pandemic.

**Methods:** This multimethod survey study examines the impacts of the coronavirus disease 2019 pandemic on youth substance use among 149 Canadian youth who were using substances at a mid-pandemic period. Participants were 21.9 years of age on average (SD = 2.2), including 99 girls/young women, 42 boys/young men, and 8 transgender or nonbinary individuals. The majority were Caucasian and born in Canada. Qualitative and quantitative findings are reported, with thematic analysis combined with descriptive and inferential statistical analyses.

**Results:** Qualitatively, many youth reported increases or shifts in their substance use over the course of the pandemic. Youth reported using substances with limited numbers of peers, with family, or alone. Many reported using substances out of boredom and to cope. While legal substances remained highly accessible, illegal substances were reported to be more difficult to acquire and less trustworthy. Spending had increased. Quantitative findings suggested alcohol use has decreased, but other substance use has remained stable in the sample as a whole, although for each substance, some youth reported increases.

**Discussion:** Despite minimal quantitative change, qualitative findings show that some youth increased their use of some substances during the pandemic, decreased others, changed their motivation to use, and decreased in safety behaviors. Youth-serving organizations should be aware of individual differences, the changing context of substance use, and the potential long-term impacts.

**Keywords:** youth, young adults, substance use, COVID-19

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The coronavirus disease 2019 (COVID-19) pandemic has heralded significant change in day-to-day life, affecting the mental health of Canadian youth. Educational, occupational, and medical systems have been disrupted, as has in-person social interaction. Youth are vulnerable in terms of mental health and substance use (MHSU) challenges. MHSU both typically emerge during late adolescence and early adulthood. Protective factors are often social and interpersonal, such as peer acceptance, community involvement, and extracurricular activities. However, peer factors also bring risk for substance use. During the COVID-19 pandemic, many youth have experienced considerable disruptions in prosocial activities and peer contact, raising concerns about MHSU implications.

Alcohol is the substance used most by Canadian students in grades 7 to 12. Other common substances include electronic cigarettes, cannabis, and the nonmedical use of prescription opioid pain relievers. While for many youth, this use is experimental or occasional, some youth engage in riskier, more harmful use. In 2017–2018, one in 20 hospital stays among Canadian youth aged 10 to 24 was related to substance use. Furthermore, 69% of these hospital stays involved concurrent care for a mental health condition.

Heightened mental health challenges have been identified among children and youth during the COVID-19 pandemic, but findings on youth substance use have been mixed. Early in the pandemic, a number of Canadian youth reported using substances to cope; however, substance use overall had declined since prepandemic. It was hypothesized that this decline may be due to disruptions in social activities. An American study found that substance use did not significantly change from before to after the implementation of the pandemic stay-at-home order. However, another report found higher-than-expected rates of substance use among Canadian youth during the pandemic. One study found that while the percentage of youth who used alcohol did not change significantly from before to after the pandemic, there was a greater frequency of use for cannabis and alcohol. Methodological challenges have been cited as a reason for mixed findings, with inaccurate reporting in cross-sectional retrospective studies in contrast with longitudinal findings. Nevertheless, recent reviews suggest an overall portrait of reduced substance use among youth during the pandemic and pointed to the importance of monitoring changes in youth substance use patterns when the pandemic resolves. There remains a paucity of research examining trends for specific substances, in contrast to reductions in substance use as a whole.

Other areas of research highlight the critical importance of examining MHSU during the pandemic. Notably, substance use disorders significantly increase risk for COVID-19 infection and worse COVID-19 outcomes. Increasing reports of substance use withdrawal emergencies, and even death, have been observed during the pandemic, which may in part be due to disrupted supply changes. Research in adults shows that lockdowns may result in a concerning increase in substance use disorders; concerns have been expressed that the increases may continue well after the pandemic. For youth, who are in a developmental period that heavily influences lifelong trajectories, it is essential to document, understand, and address substance use during the pandemic and in its aftermath. While research has emerged rapidly during the pandemic, significant gaps in the literature remain, particularly with regard to generating a nuanced understanding of the way the pandemic has affected the use of various types of substances using both qualitative and quantitative data.

This multimethod survey study aims to understand the impact of the COVID-19 pandemic on the substance use behaviors and experiences of youth who use substances.

METHODS

Sample

This study was conducted as part of a larger longitudinal study on youth and COVID-19 that began in April 2020,
with data collection waves every 2 months for an extended period thereafter. The original sample consisted of participants invited from a bank of previous participants in 3 clinical and one school-based study cohorts, who had consented to be contacted for future research. For more details on the original participant pool and sample, see. The current sample consists of participants in the February 2021 data collection wave (details below); based on team consultations and consideration of empirical questions that were as of yet unanswered during the pandemic, in-depth qualitative questions were inserted in the February 2021 survey to better understand youth substance use. The sample size is \( N = 149 \); that is, all 149 participants who reported using substances at this time point and provided qualitative responses, representing 38.7% of the 385 participants who responded to the February 2021 survey.

**Procedure**

Participants received an email with a web link to the 30-minute bi-monthly online survey hosted on REDCap software. The February 2021 scheduled survey wave occurred 11 months after COVID-19 was declared a pandemic by the World Health Organization, when Ontario, Canada was between its second and third waves of COVID-19. Research Ethics Board approval was obtained from the Centre for Addiction and Mental Health. Informed consent was obtained for all participants.

**Measures**

Select baseline data were used, combined with data from the February 2021 survey wave.

The CoRonavIruS Health Impact Survey (CRISIS) Youth Self-Report Baseline version 0.1, which measures mental health, substance use, and other COVID-19 impacts, was employed to document the evolving MHSU and other experiences of participants over the course of the pandemic. The CRISIS scale includes a subscale about the use of: alcohol; vaping; cigarettes or other tobacco; cannabis/marijuana; opiates, heroin, or narcotics; cocaine, amphetamines, methamphetamines, hallucinogens, or ecstasy; and sleeping medications, sedatives or hypnotics. This was administered in each survey wave, with the first data collection wave (April 2020) including a retrospective rating of youths’ substance use 3 months before the pandemic.

Qualitative questions were embedded in the February 2021 survey, asking how the pandemic has affected (1) how participants get substances, (2) which substances they consume, (3) how much they consume, (4) the reasons they consume, and (5) with whom they consume. Using skip logic, these fields appeared for any youth who endorsed using substances in the CRISIS scale “occasionally” or more, or using substances to cope on the COPE-B tool. The sample therefore consists of participants who were using at least 1 substance in February 2021 and who provided qualitative responses.

The GAIN-SS is a brief screening tool that identifies the likelihood of an internalizing disorder (eg, depression, anxiety), an externalizing disorder (eg, conduct disorder), a substance use disorder, or problems related to crime or violence. The GAIN-SS was included for its indication of meeting diagnostic criteria, above and beyond the CRISIS continuous MHSU scores. Each subscreener consists of diagnostically relevant items endorsed based on a timeline ranging from “never” to “past month.” Updated psychometrics suggest a cutoff score of 4 items to suggest a high likelihood for diagnosis of an Internalizing Disorder and 2 for a Substance Use Disorder. The cutoff of 3 was used for the Externalizing and Crime/Violence subscreeners.

**Youth engagement**

This is a youth-engaged project in line with the Strategy for Patient-Oriented Research and the McCain Model of Youth Engagement. The qualitative questions were co-developed with youth co-researchers, who also co-interpreted the findings and co-authored the manuscript.

**Analyses**

Participant characteristics are presented using descriptive statistics; time-varying demographics were drawn from the February 2021 data collection wave (age, student and employment status, area of residence, living circumstances). Time-invariant demographics were drawn from the April 2020 survey.

Pragmatism—an approach commonly associated with mixed methods—underpins this study as it is an approach that values both subjective and objective knowledge. We adopted a pluralistic stance, that is, utilizing both the strengths of qualitative and quantitative approaches to better understand substance use. Qualitative data were imported into NVivo 12 and analyzed using Braun and Clarke thematic analysis. A research team member (N.Y.S.) read each participant’s responses in transcript format and used initial coding to familiarize themselves with the data. Codes were discussed in multiple team meetings with NYS and the first author (L.D.H.) for refinement. Codes were organized into themes through iterative discussion. Themes were reviewed and defined through multiple team meetings to form a coherent story from the data. Reflexivity was maintained through discussions of assumptions. The findings and interpretations were discussed with 2 youth.
co-researchers (M. Daley, M. Dixon), enhancing trustworthiness and supporting validity.

Informed by the qualitative findings and discussions, quantitative analyses were conducted. Changes in discrete substance categories were explored, from retrospective reports of prepandemic use to February 2021. Change scores were computed for each participant and each substance to identify increases, decreases, or no change in use; substance use scores were tested using repeated measures \(t\) tests in SPSS 25. Cohen \(d\) effect sizes were computed in G*Power.39

RESULTS

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Participant characteristics are presented in Table 1. Participants were 21.9 years of age on average (SD = 2.2) in February 2021. While the univariate majority were girls or young women in the 19 to 23 age range, Caucasian, Canadian-born, living in urban or suburban areas, other demographic profiles were present in sample, along with intersectionalities. Among participants, 75.5\% met the criteria for an internalizing disorder, while over half met criteria for externalizing disorders and over half met for a substance use disorder. A few (7.4\%) reported crime and violence problems.

Qualitative findings

Qualitative themes are summarized in Table 2. Youth participants discussed: (1) the impact of the COVID-19 pandemic on consumption; (2) coping; (3) changes in their social circle for consumption; (4) accessibility of substances; (5) patterns of spending on substances; (6) safety issues with substance use during COVID-19; and (7) perception of COVID-19 risk.

Impact of COVID-19 on consumption

Youth identified increases in substance use during COVID-19 due to restrictions, lockdowns, isolation, boredom, and more free time. Compared with prepandemic, one participant said: “Greatly increased – both alcohol and marijuana. Especially alcohol. Now I’m a daily user and morning user. I was not before COVID” (Participant 1). Another described: “I began using in the first place because I wanted to experiment, while during the pandemic, I just used drugs because I was bored and lonely” (Participant 2).

Increased use particularly involved cannabis and alcohol, but other substances were also affected for some youth. For example, one participant noted “Isolation has caused me to relapse with opioids” (Participant 3).

In contrast, some youth reported decreased consumption, often related to reduced socialization. One youth stated: “I never get to hang out with friends anymore, so I don’t consume alcohol socially anymore” (Participant 4). A few participants reported reductions in consumption of illicit substances: “I take party drugs less often because there is no parties” (Participant 5). Other identified living at home with their parents as barrier to consumption, specifically for cannabis. Some felt COVID-19 had only minor impacts, or no impact, on their consumption of substances: “I smoke weed almost every day, but I was doing that before COVID” (Participant 6).

Coping

Many youth reported using substances to cope during the pandemic. When comparing reasons for using substances, one participant stated: “before it was more for fun or social situations. Now it’s almost only for coping” (Participant 7). Another expressed: “I was losing my mind in quarantine alone and decided to start smoking weed again” (Participant 8). Youth also stated that substances provided them with an escape from the news and other forms of media: “Sometimes alcohol takes off the edge of whatever pandemic news I hear on TV” (Participant 9). While some youth expressed using substances to relax or have fun, others reported feelings of melancholy and despair in relation to the pandemic and their substance use. Reasons behind use included numbing feelings of loneliness, relying on substances to stay calm and to sleep, and using substances to cope with depression and anxiety. For example, one participant expressed using substances “to numb out the loneliness/make me ‘feel’ everything is going to be okay the following day” (Participant 11), while another stated, “My drug use has made it easier to cope with depression and social isolation” (Participant 3).

A few youth stopped using substances or attempted sobriety during the pandemic: “I have been sober over 4 months. It has been good for me because I don’t have the option of going out and drinking and I don’t feel left out because no one else is doing it” (Participant 12). Lastly, some noted that they had experienced self-realizations around their substance use:

Not having much external stimuli, and [smoking cessation] book, made me realize how much smoking (nicotine) is controlling my life and making me more anxious and stressed. It was easier to notice since the days were about the same. (Participant 13)

Changes in social circles for consumption

Most youth expressed that their social circles for consumption had changed due to COVID-19. For example, participants referred to a shift from prepandemic drinking in social settings, such as parties and bars, to
drinking at home, with roommates or family members or alone. Some explained that they had less contact with their peers or had tightened their social bubble for consumption: “I consume substances with close friends, rather than random people at a party” (Participant 14). Another youth asserted that “[I’m] drinking more socially at home with my family” (Participant 15). Others talked about a shift toward using substances alone: “Before I drank with friends mostly, now I mostly drink by myself” (Participant 16).

Some youth expressed that there had been no change in their social circles for consumption: “I was never a social user. I always used alone” (Participant 17).

Accessibility of substances

Youth described easy access to legal substances through online stores, delivery, and nearby liquor stores and dispensaries: “everything is considered an essential service, so it’s always available (weed and alcohol)” (Participant 18). Only a few youth reported that restricted hours and limited places to purchase substances were a barrier: “there have been no changes, except restrictions in hours that I sometimes keep in mind” (Participant 19).

However, some participants articulated increased barriers for illicit substances. Youth described increases in prices, difficulties finding dealers, and safety/quality concerns: “I think because of the borders being closed, the drugs I was consuming were less trustable than before” (Participant 2). Others asserted: “Safety has gone down, because more desperate to get them, so I get them off anyone” (Participant 20). One participant mentioned safety precautions: “my dealer and I keep more than 6 feet apart” (Participant 9).

Patterns of spending on substances

Participants explained that they were spending more on substances during the pandemic, particularly alcohol and cannabis; for a few, this was related to increased tolerance:

I spend more on it then I used to because I need more, as my tolerance has grown too high. I spend more on quality weed too, and my THC intake has gone too high for me to feel high. (Participant 10)

Some youth remarked that they were purchasing in bulk: “I find myself buying in bulk more often to get a better deal and to avoid going out again soon” (Participant 21). A few participants expressed either no change in their spending patterns or reduced spending. These youth generally attributed the change to lockdowns and reduced socialization with friends: “I spent a lot less money during the pandemic on alcohol because of the restaurant closures” (Participant 2).

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Table 1: Demographic and Clinical Characteristics of Participants (N = 149)

| Demographic Characteristics | n (%) |
|-----------------------------|-------|
| Age (y)                     |       |
| <19                         | 9 (6.2)|
| 19–23                       | 109 (74.7)|
| 24–29                       | 28 (19.2)|
| Gender                      |       |
| Man/boy                     | 42 (28.2)|
| Woman/girl                  | 99 (66.4)|
| Transgender or nonbinary    | 8 (5.4)|
| Ethnic origin/background    |       |
| Caucasian                   | 110 (74.3)|
| Asian (East and Southeast)  | 8 (5.4)|
| South Asian                 | 7 (4.7)|
| Black                       | 5 (3.4)|
| Multiple                    | 8 (5.4)|
| Another background          | 10 (6.8)|
| Born in Canada              | 132 (88.6)|
| First language English      | 137 (91.9)|
| Student                     | 77 (51.7)|
| Employed                    | 81 (54.4)|
| NEET                        | 21 (14.1)|
| Type of community of residence |       |
| Large city or suburbs       | 97 (65.1)|
| Small city                  | 30 (20.1)|
| Town, village, rural area   | 22 (14.8)|
| Number of people living with|       |
| Alone                       | 9 (6.6)|
| 1–2                         | 63 (46.0)|
| 3–4                         | 49 (35.8)|
| 5+                          | 16 (11.7)|
| Familial living situation   |       |
| With parent(s), grandparents| 78 (52.3)|
| Other                       | 71 (47.7)|
| GAIN Short Screener         |       |
| Internalizing disorder      | 114 (76.5)|
| Externalizing disorder      | 80 (53.7)|
| Substance use disorder      | 78 (52.3)|
| Crime/violence              | 11 (7.4)|

Gender, ethnic origin, country of birth, and first language were drawn from the first wave of data collection in April 2020; all remaining demographic and clinical characteristics were derived from the February 2021 data collection wave. NEET indicates not in employment, education or training.
Safe substance use during COVID-19

Youth described changes in personal safety. Some reported safer consumption due to controlled socialization (eg, intoxication at home vs. in a public space), being more cautious around their usage, and using less: “I guess it’s safer ‘cuz I’m at home 98% of the time I’m on drugs, less bad can happen” (Participant 22).

In contrast, others reported increased safety concerns due to consuming substances alone: “I’m at home alone as opposed to in public or with friends. If I OD, I wouldn’t be found quick enough” (Participant 21). A few participants expressed being willing to take more risks with substance use: “I take more risks because of desperation to feel relief” (Participant 7).

Perceptions around risk of COVID-19

Many youth articulated that their substance use had no impact on their risk of contracting COVID-19. Many felt there was no risk as they did not leave their homes, received contactless deliveries, and took appropriate precautions: “I use precautions. Going to the grocery store is more risky than getting drugs honestly in that sense” (Participant 7).

In contrast, some youth expressed being at a greater risk of contracting COVID-19 due to sharing smoking accessories, immune system impacts, and increased contact with their dealers: “I am in contact with drug dealers, so it probably increases my chances of catching it” (Participant 23), “Probably more because sharing joint with friends” (Participant 24), and “I’m at a higher risk because I smoke and so my respiratory system is weaker” (Participant 25). Only a few felt that substance use would decrease their risk of COVID-19 due to reduced socialization: “If anything it may be reducing my chances; I tend to sleep in very late after a night of drinking. If I’m passed out I’m not going anywhere!” (Participant 26).

Quantitative findings

Analyzed based on the qualitative findings, changes in use of substances in individual substance categories are presented in Table 3. Results show that among these youth, the mean use of alcohol significantly decreased from prepandemic to February 2021 ($t_{147} = 3.59, P < 0.001, d = 0.30$). On the individual level, 45.0% of youth in the sample had decreased their alcohol use, 30.2% reported no change, and 24.2% reported increases. For the remaining substance categories (Table 3), there was no significant difference in mean substance use across the sample from prepandemic to intrapandemic assessments. However, for each substance, some youth reported decreases, some no change, and a few reported increases in the use of the substance, ranging from 4.0% to 22.1%. Despite relative stability in mean substance use by substance category, 56.4% ($n = 84$) of participants reported an increase in at least one category of substance from prepandemic to intrapandemic assessments.

DISCUSSION

This study explored the perceived impacts of the COVID-19 pandemic on substance use among youth who...
were using substances in a mid-pandemic period. Participants were selected for inclusion due to substance use at the time of the survey; over half met screening criteria for a substance use disorder. The frequency of substance use did not change for the majority of substances in the sample as a whole and declined for alcohol. However, these findings should be interpreted with caution: for each substance measured, use had increased during COVID-19 for some youth, and youth reported meaningful experiences regarding changes in use during the pandemic. Notably, participants reported pandemic-related shifts in various aspects of their substance use: changes in quantity, in substance of choice, in reasons for use, in contexts of use, and in risk behaviors.

Research on youth substance use during the COVID-19 pandemic has produced mixed findings. Some studies have reported increased use, while others reported decreases or no change, and reviews suggest overall decreases. Emerging research is also suggesting that adults with substance use disorders are at an increased risk for contracting COVID-19 and for having a more severe COVID-19 disease course. Adolescence and emerging adulthood are peak periods for the emergence of substance use, including the development of substance use disorders. Substance use behaviors that youth develop set the stage for their substance-related behavior in adulthood.

The interrelationship between the COVID-19 pandemic, MHSU, and coping merits attention. Protective factors against poor mental health include extracurricular participation, active coping, and feelings of acceptance in social networks. However, the pandemic-related public health measures have disrupted activities and social interactions that protect against mental health challenges. Indeed, youth mental health has declined during the pandemic. Substance use can be a coping mechanism for stress and mental health challenges, making it particularly important to attend to during a public health emergency that has limited protective factors. This study suggests that among youth who were using substances at a mid-pandemic period, some had shifted toward potentially harmful substance use behaviors, that is, using substances to cope and using substances alone, while others had not. Using substances to cope aligns with anxiety and stress-related vulnerability to substance use disorders. Adolescence and emerging adulthood are peak periods for the emergence of substance use, including the development of substance use disorders. Substance use behaviors that youth develop set the stage for their substance-related behavior in adulthood. If COVID-19 has led to harmful shifts for some youth, there could be long-term implications. The shifts to using substances alone and as a coping strategy could herald the emergence of new problematic substance use and even new substance use disorders among some youth who may have had different outcomes if the pandemic had not occurred. In light of pandemic-related shifts in substance use for some youth, prevention programs should account for the risk factors catalyzed by the COVID-19 pandemic, including those related to coping, social circles, and boredom.

Although some youth are reporting decreases or no change in substance use during the pandemic, this is not the case for all youth. Youth-serving clinicians are encouraged to continue screening young people for substance use challenges. While clinical service delivery has changed due to the pandemic, clinicians and researchers are encouraged to be aware that so has youth substance use and that preexisting understandings of youth substance use might no longer apply to some youth. Some shifts may entail risk, and the new behaviors could persist for years, potentially becoming normalized. It is critical that substance use be carefully monitored and addressed, without making assumptions based on past patterns of use and using solution-oriented approaches, in both research.

| Change in Frequency of Substance Use From Pre-pandemic to February 2021 [%] | M (SD) | | | | |
|---|---|---|---|---|---|
| | Decrease | No Change | Increase | Pre-pandemic | Intrapandemic | t | P | d |
| Alcohol | 67 (45.0) | 45 (30.2) | 36 (24.2) | 2.84 (1.12) | 2.45 (1.27) | 3.59 | <0.001 | 0.30 |
| Cigarettes/tobacco | 27 (18.1) | 101 (67.8) | 21 (14.1) | 1.82 (1.28) | 1.75 (1.33) | 0.78 | 0.445 | 0.07 |
| Cannabis | 49 (32.9) | 66 (44.3) | 33 (22.1) | 2.72 (1.59) | 2.58 (1.69) | 1.15 | 0.253 | 0.10 |
| Opiates/heroin/narcotics | 6 (4.0) | 136 (91.3) | 6 (4.0) | 1.11 (0.47) | 1.16 (0.66) | -1.00 | 0.319 | 0.09 |
| Sedatives* | 25 (16.8) | 109 (73.2) | 15 (10.1) | 1.52 (1.09) | 1.53 (1.23) | -0.07 | 0.947 | 0.01 |
| Other† | 24 (16.1) | 114 (76.5) | 11 (7.4) | 1.35 (0.66) | 1.27 (0.71) | 1.36 | 0.175 | 0.11 |

* Sedatives included sleeping medications, sedatives, and hypnotics.
† Other was specified in the survey as cocaine, crack, amphetamines, methamphetamines, hallucinogens, or ecstasy.
and clinical practice. Potential long-term impacts of shifts in substance use behaviors should be carefully considered.

**Strengths and limitations**

This study has a number of strengths. The youth-engaged design ensured that the questions the interpretations resonate with youth experiences. Using qualitative and quantitative analysis provides meaningful evidence to inform MHSU services for youth during a pandemic. However, the qualitative questions were targeted only to participants who were using substances in February 2021; the perspectives of youth who used substances at another point in the pandemic but had stopped or decreased substantially in February 2021 are not represented. Despite some sample diversity, sampling in different population subgroups would enhance generalizability. The qualitative data were derived in survey format, which may have limited the breadth of the answers. It is also important to note that developmental changes may have affected longitudinal findings, as youth substance use typically increases with age; the lack of increase during the study period may reflect pandemic-related reductions in use compared with expected increases.

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**CONCLUSIONS**

While the overall level of substance use among youth who use substances does not appear to have changed dramatically over the course of the COVID-19 pandemic, this does not tell the whole story. Some youth experienced exacerbations in substance use, and a number of shifts in reason for use and context of use have occurred. Youth-serving organizations should be aware of these individual differences, screen youth for substance use challenges, and work with youth in person-focused ways to identify solutions that are sensitive to these contextual shifts.

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