The Perfect Storm? COVID-19 and Substance Use amongst Social Work Students in the USA

Youn Kyoung Kim 1,*, Sung Seek Moon2, Mansoo Yu 3, Mee Young Um4, Arati Maleku 5, Omoshola Kehinde 3, and David Pooler2

1School of Social Work, Louisiana State University, 2165 Pleasant Hall, Baton Rouge, LA 70803, USA
2Diana R. Garland School of Social Work, Baylor University, 811 Washington Ave, Waco, TX 76701, USA
3Department of Public Health, School of Social Work, University of Missouri, 720 Clark Hall, Columbia, MO 65211, USA
4School of Social Work, Arizona State University, 411 N. Central Avenue, Suite 800, Phoenix, AZ 85004, USA
5College, The Ohio State University, 1947 N. College Road Columbus, OH 43201, USA

*Correspondence to Youn Kyoung Kim, Assistant Professor, School of Social Work, 2165 Pleasant Hall, Baton Rouge, LA 70803, USA. E-mail: ykim@lsu.edu

Abstract

During the COVID-19 pandemic, health risk behaviours related to substance use have been recognised as a significant public health concern amongst university students. Understanding the mechanisms of substance use behaviours, including those used to cope with COVID-19-related stressors, is imperative to curate targeted prevention efforts. To that end, we examined substance use prevalence and its associations with socio-demographic characteristics, preventive behaviours, and mental health amongst US social work students. We collected data from 457 students across all degree levels (BSW, MSW and PhD) from July to August 2020 through an online survey, to examine thirty-day patterns of substance use behaviours related to cigarettes, electronic vapour products, alcohol, binge drinking and marijuana. Univariate and bivariate analyses revealed high rates of substance use behaviours, particularly alcohol use (71 per cent), binge drinking (35 per cent) and marijuana use (25 per cent). Findings also revealed significant associations amongst substance use, socio-demographic characteristics, and mental health. Amongst other implications, our study should encourage social work programmes to promote positive coping strategies amongst students and foster substance abuse prevention efforts, both to mitigate health risk behaviours and to enhance student well-being, both during and after the COVID-19 pandemic.
Keywords: COVID-19, mental health, social work students, socio-demographic characteristics, substance use behaviours

Accepted: September 2021

Introduction

As of March 2021, more than 30 million Americans have been directly affected by the novel coronavirus (COVID-19) since its initial outbreak in March 2020 (Centers for Disease Control and Prevention, 2021). In tandem with the rising number of COVID-19 cases, substance use behaviours in general have increased due to high anxiety levels, often stemming from fear, uncertainty, job loss and significant lifestyle changes (Osborne et al., 2020). Although substance use behaviour poses a substantial risk to health in general, individuals who smoke, drink and use other substances are particularly susceptible to COVID-19 infections, leading to higher mortality rates during the pandemic (Osborne et al., 2020; Volkow, 2020). Further, COVID-19 mitigation measures (e.g. quarantine, social distancing) are likely to inhibit access to substance use treatment and services, compounding the significant health risks associated with COVID-19 (Jemberie et al., 2020).

In general, US students have had to rapidly modify their education due to campus closures and increased virtual learning. Feeling socially isolated and uncertain about the future could lead to maladaptive coping strategies that exacerbate substance use behaviours in this population. Although recent studies have shown that alcohol consumption increased in both quantity and frequency in the weeks before and after campus closures in the USA, emerging findings are less clear-cut. Horigian et al. (2021) showed that 80 per cent of US college and university students reported drinking alcohol, with 19 per cent and 44 per cent binge drinking at least weekly and monthly, respectively. This pattern seems analogous with other countries; social work students in Israel and Russia reported an increase in cigarette use (44 per cent), alcohol consumption (39 per cent) and cannabis use (52 per cent) during lockdown and social isolation protocols (Yehudai et al., 2020).

In contrast, some studies have reported decreased substance use amongst young people before and during the pandemic. For example, Sokolovsky et al. (2021) reported a decrease in binge drinking (before: 16 per cent vs. during: 10 per cent), marijuana use (17 per cent vs. 14 per cent) and vaping (17 per cent vs. 12 per cent) amongst high school students (Dumas et al., 2020), and in the number of smoking days (2.8 vs. 1.3) and vaping days (4.8 vs. 3.8) during the past week amongst
college students. White et al. (2020) reported a similar decrease in the number of drinks per week (11.5 vs. 9.9) amongst college students.

These inconsistencies suggest that substance use changes due to COVID-19 may differ across student groups. Understanding these patterns might help identify segments of the student population at higher risk: substance misuse can compromise personal safety; weaken families, communities and the educational environment; and jeopardise students’ futures, undermining the purpose of higher education. For social work students specifically, substance use might also harm their clients by disrupting the provision and delivery of services.

In short, the COVID-19 pandemic has been the perfect storm, exacerbating already high substance use rates amongst US college and university students (Substance Abuse and Mental Health Services Administration, 2019). Amongst these students, social work students are a priority population because the social work profession is deeply embedded in providing equitable services to marginalised and vulnerable populations. This will make the demand for social workers extremely high in the post-COVID-19 context due to the prolonged impact of the pandemic and disproportionate effects on vulnerable groups. Preparing social workers for the post-pandemic world is thus a tall order. However, no studies have examined substance use behaviours during COVID-19 amongst social work students.

Our study attempts to (i) understand the prevalence of substance use (cigarettes, vaping, alcohol, binge drinking and marijuana) amongst social work students, then (ii) explore associations of substance use behaviour with socio-demographic characteristics, preventive behaviours and mental health during the COVID-19 pandemic. This knowledge could inform targeted substance use prevention and mitigation efforts in this niche student group. Knowledge gained from this study can also be replicated across similar student populations during and after the COVID-19 era.

**Socio-demographic characteristics and substance use during the pandemic**

The literature has established that substance use (alcohol, illicit drug and tobacco use) is more common amongst young adults than any other age group (Substance Abuse and Mental Health Services Administration, 2019). Given their COVID-19-related life stressors, it is safe to assume that young adults might have faced more risk of substance use behaviours. However, little is known about the impact of the COVID-19 pandemic on substance use behaviours amongst college and university students with different socio-demographic characteristics. Unravelling substance use behaviours based on variables such as age, sex, race and ethnicity, living arrangements, educational level, marital
status and employment status will shine a light on segments of student groups that largely remain invisible, which will then help inform targeted substance use prevention strategies.

Biological sex is the most frequently used socio-demographic variable in examining students’ substance use. Yehudai et al. (2020) showed that amongst Israeli and Russian social work students, more males than females reported an increase in alcohol consumption (70 per cent vs. 33 per cent, respectively) during COVID-19. Gritsenko et al. (2020) found that cigarette use (48 per cent vs. 27 per cent) and marijuana use (5 per cent vs. 1 per cent) were significantly higher amongst male university students than their female counterparts in Russia and Belarus. In the USA, Dumas et al. (2020) found that 49 per cent of substance-using adolescents used substances alone (male: 58 per cent, female: 46 per cent). However, amongst high school students who lived with their parents, females were more likely than males (46 per cent vs. 30 per cent) to use substances with their parents and to send images of substance use to friends (32 per cent vs. 29 per cent). Finally, Sokolovsky et al. (2021) reported that moving to a non-independent residence (vs. staying independent) significantly predicted tobacco cessation in a sample of US college students.

These studies suggest that the prevalence of substance use amongst social work students may vary by socio-demographic characteristics, including age, race and ethnicity, education level, marital status, employment status, gender and living arrangements. Further, the pandemic may have influenced students differentially based on these characteristics, particularly regarding how they coped with COVID-19-related life changes and potentially engaged in substance use.

**Preventive behaviours and substance use**

Given that individuals who use substances are at higher risk of COVID-19 infection (Volkow, 2020), it is particularly important for substance-using students to comply with COVID-19 mitigation measures, such as using face coverings and physical distancing. Many colleges and universities require students, staff and faculty to practice these strategies as part of return-to-campus plans, but students may reduce or abandon preventative behaviours at parties or other social gatherings (Faulds et al., 2020). Although anecdotal evidence from US campuses suggests a link between lax preventative behaviours and viral outbreaks, to our knowledge, only one study (of university students in Kazakhstan) indicated that substance users were less likely to adhere to COVID-19 mitigation measures (Konstantinov et al., 2020). Thus, more empirical evidence is needed to better understand the association between preventative behaviours and substance use amongst university students.
Mental health and substance use during the pandemic

Symptoms of mental illness such as anxiety and depression increased considerably during this pandemic. According to a Morbidity and Mortality Weekly Report (Czeisler et al., 2020), the prevalence of anxiety disorders and depressive disorders was approximately 3 times (26 per cent vs. 8 per cent) and 4 times (24 per cent vs. 6 per cent) greater than in the second quarter of 2019. Hence, it is important to examine the association between mental health and substance use during COVID-19. The few studies engaging this association have shown mixed findings. For example, Horigian et al. (2021) found that loneliness was positively associated with increased alcohol and drug use, while anxiety was positively associated with drug and alcohol use severity amongst US young adults. Charles et al. (2021) also reported a positive correlation between mood disorder symptoms and alcohol use amongst US university students. In addition, amongst Australian adults over age eighteen, Tran et al. (2020) found a positive association between mental health symptoms and drinking during the first months of the pandemic. In contrast, Sokolovsky et al. (2021) reported that higher anxiety was associated with increased odds of tobacco cessation amongst college students in the USA.

Therefore, there is a lack of consistent evidence on the association between mental health and substance use amongst students during this pandemic. Uncovering associations between various types of mental illness (e.g. anxiety, depression, stress, hopelessness and self-harming thoughts) and use of substances (e.g. cigarettes, e-cigarettes, alcohol, binge drinking and marijuana) is clearly important. As social work researchers, we are particularly interested in these associations amongst social work students in the USA.

Method

Study design and sample

In July and August 2020, in collaboration with five researchers across five universities, we collected cross-sectional data from public and private universities in the USA via an online survey. We employed a non-probability sampling approach to recruit undergraduate and graduate social work students aged eighteen or older and enrolled in US universities during the Summer 2020 semester. The research team distributed a link to the online survey hosted on a Qualtrics platform, using the email listservs of students who attended social work programmes. They also collaborated with course instructors of Summer 2020 programmes and asked them to share the survey link with their students. In
addition, the researchers recruited students from other departments and institutions through their professional and personal networks. Two weeks after the initial distribution of the survey link, reminders to complete the online survey were sent to all students who had been initially contacted. Participation was voluntary, and no incentives were offered. The anonymity of all participants was assured and no information that could be used to identify any of the participants was included in the online survey. The students were required to give their informed consent by agreeing to a statement that appeared at the beginning of the survey. If they did not want to participate, they could click on ‘I don’t agree to participate’, which took them to the end of the survey. The online survey took about twenty to thirty minutes to complete. After institutional review board (IRB) approval had been obtained at the host study site, IRB approvals of the remaining four universities were relinquished to the host institution in line with the IRB reliance agreement approvals from the four universities. All questions were voluntary and although no foreseeable risks or discomforts were anticipated, the consent forms and the survey instrument included links to hotline services for participants.

In this study, we only focus on the sub-sample of social work students (N = 457) from the larger pool of 835 students who completed the survey. Our sample of social work students is a diverse conglomeration of students in terms of age, sex, race and ethnicity, living arrangements, educational level, marital status, hours worked per week, loss of employment and preventive behaviours. The social work student participants were from one university in the Southwest (34.4 per cent), two universities in the South (27.0 per cent and 9.0 per cent), two institutions in the Midwest (14.9 per cent and 9.0 per cent) and several other universities across the USA (5.7 per cent). The demographic characteristics of the respondents are shown in Table 1. The average age of study participants was 31.1 years and most were female (89.4 per cent). Most participants were White (73.3 per cent), were living with families (56.7 per cent), were single (49.9 per cent) and were in a Master of Social Work programme (87.3 per cent). About 46.8 per cent of the respondents stated that they worked at least thirty-one hours per week, 20 per cent reported job loss due to COVID-19 and 81.4 per cent practiced high levels of preventive behaviours.

Not exploring within-group differences amongst this diverse sample of social work students can erase the differential experiences of certain sub-groups, including their experiences with service provision and how others perceive them (Schwabish and Feng, n.d.). In light of renewed calls to gather and disaggregate data within larger groups to create better programmes and services, the present study focuses on within-group differences. By doing so, we hope to provide a more comprehensive picture of the prevalence and association of substance use behaviour
amongst the diverse pool of social work students who have been under-studied in prior research.

**Measures**

**Socio-demographic variables**

The current study had nine socio-demographic variables: age, sex, race and ethnicity, living arrangements, educational level, marital status, hours worked per week, loss of employment and preventive behaviours.

**Table 1** Sample characteristics ($N = 457$)

| Variable                               | % ($n$) |
|----------------------------------------|---------|
| **Age**                                |         |
| 18–30                                   | 60.6 (277) |
| 31–40                                   | 21.9 (100) |
| 41 or older                             | 17.5 (80) |
| **Sex**                                 |         |
| Male                                    | 10.6 (48) |
| Female                                  | 89.4 (403) |
| **Race and ethnicity**                  |         |
| White                                   | 73.3 (335) |
| Black or African American               | 12.0 (55) |
| Hispanic or Latino                      | 9.2 (42) |
| Other                                   | 5.5 (25) |
| **Living arrangement**                  |         |
| Live alone                              | 14.0 (64) |
| Share a place with friend(s)            | 16.0 (73) |
| Live with family                        | 56.7 (259) |
| Other                                   | 13.3 (61) |
| **Educational level**                   |         |
| Bachelor’s                              | 7.4 (34) |
| Master’s                                | 87.3 (399) |
| PhD                                     | 5.3 (24) |
| **Marital status**                      |         |
| Single, never married                   | 49.9 (228) |
| Married                                 | 34.4 (157) |
| Cohabitating                            | 6.1 (28) |
| Other                                   | 9.6 (44) |
| **Working hours per week**              |         |
| I don’t have a job                      | 20.5 (90) |
| 30 hours or less                        | 32.7 (144) |
| 31 hours or more                        | 46.8 (206) |
| **Lost a job during the COVID-19 pandemic** |         |
| No                                      | 80.0 (365) |
| Yes                                     | 20.0 (91) |
| **Preventive behaviours**               |         |
| Low                                     | 18.6 (82) |
| High                                    | 81.4 (358) |

*Note: Actual $n$ varies based on missing values.*
The age variable included three response options (1 = ‘18–30 years old’, 2 = ‘31–40 years old’ and 3 = 41 ‘years old or older’). The two response categories for sex were ‘male’ and ‘female’. The four response categories for race and ethnicity were ‘White’, ‘Black or African American’, ‘Hispanic or Latino’ and ‘other’. Living arrangements included four response categories: ‘living alone’, ‘sharing a residence with one or more friends’, ‘living with family’ and ‘other’. Educational level was assessed through three response categories (1 = ‘bachelor’s degree’, 2 = ‘master’s degree’ and 3 = ‘PhD’). The four response categories for the marital status variable were ‘single (never married)’, ‘married’, ‘cohabitating’ and ‘other’. Hours worked per week was measured as a single item with three response categories (1 = ‘I do not have a job’, 2 = ‘30 hours or less’ and 3 = ‘31 hours or more’).

Lastly, preventive behaviours were operationalised as practicing social distancing and wearing a mask, both measured on a 5-point Likert scale: 0 = ‘never’, 1 = ‘rarely’, 2 = ‘sometimes’, 3 = ‘often’ and 4 = ‘always’. For this study, it was necessary to dichotomise these two variables. Hence, if participants responded with ‘never’, ‘rarely’ or ‘sometimes’, their answer was coded as 1. If they responded with ‘often’ or ‘always’, it was coded as 2. The two dichotomous variables were combined. Combined scores of 2 and 3 were recoded as 1, indicating a low level of preventive behaviours, whereas a combined score of 4 was recoded as 2, indicating a high level of such behaviours.

Substance use variables

Cigarette use, electronic vapour product (EVP) use, alcohol use, binge drinking and marijuana use were assessed using questions adapted from the Youth Risk Behavior Survey (Centers for Disease Control and Prevention, 2019) and the indicators of risky or excessive drinking provided by the Substance Abuse and Mental Health Services Administration (SAMHSA, n.d.): ‘During the past 30 days, how many days did you (a) smoke cigarettes; (b) use an electronic nicotine delivery system such as e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, or hookah pens; (c) have at least one drink of alcohol; (d) have four or more drinks of alcohol (if you are female) or five or more drinks (if you are male) of alcohol in a row on the same occasion—that is, in about 2 hours; and (e) use marijuana?’

Cigarette, EVP, and alcohol use were measured on a 7-point Likert scale (1 = ‘0 days’, 2 = ‘1 or 2 days’, 3 = ‘3–5 days’, 4 = ‘6–9 days’, 5 = ‘10–19 days’, 6 = ‘20–29 days’, 7 = ‘all 30 days’). Likewise, binge drinking was assessed on a 7-point Likert scale (1 = ‘0 days’, 2 = ‘1 day’, 3 = ‘2 days’, 4 = ‘3–5 days’, 5 = ‘6–9 days’, 6 = ‘10–19 days’, 7 = ‘20 or more days’). Marijuana use was assessed on a 6-point Likert scale (1 = ‘0 times’,
2 = ‘1 or 2 times’, 3 = ‘3–9 times’, 4 = ‘10–19 times’, 5 = ‘20–39 times’, 6 = ‘40 or more times’). Because response options were ordinal, these five variables were dichotomised to indicate any use (0 = ‘no’, 1 = ‘yes’) for each variable, to essentially compare mental health problems between social work students who used substances and those who did not.

Anxiety

The seven-item Generalized Anxiety Disorder scale (Spitzer et al., 2006) was used to assess anxiety levels amongst participants. This self-administered measure assesses the frequency of anxiety symptoms in clinical and research settings. For response options, the scale uses a 4-point Likert scale ranging from 0 (‘never’) to 3 (‘nearly every day’). Anxiety can be rated as mild (5 points), moderate (10 points), moderately severe (15 points) and severe (20 points), with 10 points being the threshold for a diagnosis of anxiety (Spitzer et al., 2006). Items were summed to create a total score, with higher scores indicating higher levels of anxiety. Cronbach’s alpha was 0.90 in our sample.

Depression

The Patient Health Questionnaire 9 (Kroenke et al., 2001) was used to assess depressive symptoms amongst the respondents. This nine-item self-administered scale uses a 4-point Likert scale ranging from 0 (‘never’) to 3 (‘nearly every day’). Depression can be rated as mild (5 points), moderate (10 points), moderately severe (15 points) and severe (20 points), with 10 points being the threshold for a diagnosis of depression (Kroenke et al., 2001). Items were summed to create a total score, with higher scores indicating higher levels of depressive symptoms. Cronbach’s alpha was 0.87 in our sample.

Stress

The eleven-item College Student Stress Scale (Feldt, 2008) was used to measure perceived stress. Respondents rated the frequency with which they experienced anxiety or distress due to eleven listed events, using a 5-point Likert scale ranging from 0 (‘never’ to 4 (‘very often’). The eleven items were summed to create a total score, with higher scores indicating higher levels of stress. Cronbach’s alpha was 0.83 in our sample.
Hopelessness

A short version of the four-item Beck Hopelessness Scale was used to measure three aspects of hopelessness: feelings about the future, loss of motivation and expectations (Perczel Forintos et al., 2013). Respondents were asked to rate each item using a 4-point Likert scale ranging from 0 (‘not at all’) to 3 (‘nearly every day’). These items were summed to create a total score, with higher scores indicating higher levels of hopelessness. Cronbach’s alpha was 0.82 for the current study.

Self-harming thoughts

To measure the frequency of self-harming thoughts, we asked: ‘How often have you had thoughts about harming yourself during the COVID-19 pandemic?’ This question was measured on a 5-point Likert scale ranging from 0 (‘never’) to 4 (‘very often’). Higher scores indicate more frequent occurrence of self-harming thoughts.

Data analysis

Descriptive and bivariate analyses were conducted using SPSS version 26. For descriptive analyses, frequencies and percentages were calculated for categorical variables, whereas means and standard deviations were calculated for continuous variables. For bivariate analyses, chi-square tests were used to determine the associations between categorical socio-demographic variables and dichotomous substance use variables. We conducted independent-sample t-tests to examine the associations between the continuous mental health variables and dichotomous substance use variables.

Results

Descriptive information of current substance use and mental health

As shown in Table 2, 13.6 per cent of the respondents had used cigarettes and 17.5 per cent had used EVPs in the past thirty days. During the same period, 70.5 per cent had used alcohol and 35.0 per cent had engaged in binge drinking, while 24.5 per cent had used marijuana. In terms of mental health, the means of anxiety and depression were 8.84 (SD = 5.32) and 8.89 (SD = 6.06), respectively, which indicates that participants were mildly anxious and depressed. The students also showed...
high levels of stress ($M = 24.06$, $SD = 8.01$). The average scores for hopelessness and self-harming thoughts were 2.24 (range 0–12) and 0.43 (range 0–4), respectively.

Socio-demographic characteristics and current substance use

Our findings show that age was significantly associated with current alcohol use ($\chi^2 = 7.87$, $p < 0.05$), binge drinking ($\chi^2 = 13.12$, $p < 0.001$) and marijuana use ($\chi^2 = 8.77$, $p < 0.05$; Table 3). Race and ethnicity were also significantly associated with current alcohol use ($\chi^2 = 15.67$, $p < 0.001$). Living arrangements had significant associations with current EVP use ($\chi^2 = 8.12$, $p < 0.05$) and binge drinking ($\chi^2 = 9.24$, $p < 0.05$).

Mental health status and current substance use

Findings indicate that anxiety levels were significantly different by EVP use ($t = -2.17$, $p < 0.05$), binge drinking ($t = -2.81$, $p < 0.05$) and marijuana use ($t = -2.26$, $p < 0.05$). Depression was also significantly associated with EVP use ($t = -2.76$, $p < 0.01$), binge drinking ($t = -2.32$, $p < 0.05$) and marijuana use ($t = -3.40$, $p < 0.001$). Stress levels differed significantly by EVP use ($t = -2.25$, $p < 0.05$) and binge drinking

| Table 2 | Descriptive information of substance use and mental health ($N = 457$) |
|----------|----------------|----------------|
| Variable                        | % ($n$) | M (SD) |
| Cigarette use                |         |       |
| No                            | 86.4 (395) |       |
| Yes                           | 13.6 (62)  |       |
| EVP use                       |         |       |
| No                            | 82.5 (377) |       |
| Yes                           | 17.5 (80)  |       |
| Alcohol use                   |         |       |
| No                            | 29.7 (135) |       |
| Yes                           | 70.5 (322) |       |
| Binge drinking                |         |       |
| No                            | 65.0 (297) |       |
| Yes                           | 35.0 (160) |       |
| Marijuana use                 |         |       |
| No                            | 75.5 (345) |       |
| Yes                           | 24.5 (112) |       |
| Anxiety (range = 0–21)        |         | 8.84 (5.32) |
| Depression (range = 0–27)     |         | 8.89 (6.06) |
| Stress (range = 0–44)         |         | 24.06 (8.01) |
| Hopelessness (range = 0–12)   |         | 2.24 (2.53) |
| Self-harming thoughts (range = 0–4) | 0.43 (0.84) |

Note. Actual $n$ varies based on missing values.
EVP = electronic vapor product.
Table 3 Socio-demographic characteristics and current substance use (N = 457)

|                      | Cigarette use | EVP use | Alcohol use | Binge drinking | Marijuana use |
|----------------------|---------------|---------|-------------|----------------|---------------|
|                      | % (n)         | % (n)   | % (n)       | % (n)          | % (n)         |
| **No**               | **Yes**       | **No**  | **Yes**     | **No**         | **Yes**       |
| Age                  |               |         |             |                |               |
| 18–30                | 61.9 (244)    | 11.9 (33)| 79.4 (220)  | 20.6 (57)      | 27.1 (75)     |
|                      |               |         |             |                | 72.9 (202)    |
| 31–40                | 80.0 (80)     | 20.0 (20)| 85.0 (85)   | 15.0 (15)      | 26.0 (26)     |
|                      |               |         |             |                | 74.0 (74)     |
| 41 or older          | 88.8 (71)     | 11.3 (9) | 90.0 (72)   | 10.0 (8)       | 42.5 (34)     |
|                      |               |         |             |                | 57.5 (46)     |
| **χ²**               |               |         |             |                |               |
|                      | 4.54          | 5.37    | 7.87*       | 13.12**        | 8.77*         |
| Sex                  |               |         |             |                |               |
| Male                 | 83.3 (40)     | 16.7 (8) | 85.4 (41)   | 14.6 (7)       | 39.6 (19)     |
|                      |               |         |             |                | 60.4 (29)     |
| Female               | 86.6 (349)    | 13.4 (54)| 82.1 (331)  | 17.9 (72)      | 28.8 (116)    |
|                      |               |         |             |                | 71.2 (287)    |
| **χ²**               |               |         |             |                |               |
|                      | 0.39          | 0.32    | 2.39*       | 0.14           | 2.20          |
| Race and ethnicity   |               |         |             |                |               |
| White                | 86.9 (291)    | 13.1 (44)| 81.8 (274)  | 18.2 (61)      | 27.5 (92)     |
|                      |               |         |             |                | 72.5 (243)    |
| Black or African     | 83.6 (46)     | 16.4 (9) | 85.5 (47)   | 14.5 (8)       | 30.9 (17)     |
| American             |               |         |             |                | 69.1 (38)     |
| Hispanic or Latino   | 85.7 (36)     | 14.3 (6) | 81.0 (34)   | 19.0 (8)       | 23.8 (10)     |
|                      |               |         |             |                | 76.2 (32)     |
| Other                | 88.0 (22)     | 12.0 (3) | 88.0 (22)   | 12.0 (3)       | 64.0 (16)     |
|                      |               |         |             |                | 36.0 (9)      |
| **χ²**               |               |         |             |                |               |
|                      | 0.49          | 1.04    | 15.67**     | 7.04           | 1.08          |
| Educational level    |               |         |             |                |               |
| Bachelor’s           | 88.2 (30)     | 11.8 (4) | 79.4 (27)   | 20.6 (7)       | 35.3 (12)     |
|                      |               |         |             |                | 64.7 (22)     |
| Master’s             | 86.2 (344)    | 13.8 (55)| 82.7 (330)  | 17.3 (69)      | 29.1 (116)    |
|                      |               |         |             |                | 70.9 (283)    |
| PhD                  | 87.5 (21)     | 12.5 (3) | 83.3 (20)   | 16.7 (4)       | 29.2 (7)      |
|                      |               |         |             |                | 70.8 (17)     |
| **χ²**               |               |         |             |                |               |
|                      | 0.13          | 0.25    | 0.58        | 0.55           | 1.07          |
| Marital status       |               |         |             |                |               |
| Single               | 85.1 (194)    | 14.9 (34)| 79.4 (181)  | 20.6 (47)      | 30.7 (70)     |
|                      |               |         |             |                | 69.3 (158)    |
| Married              | 89.8 (141)    | 10.2 (16)| 89.2 (140)  | 10.8 (17)      | 28.7 (45)     |
|                      |               |         |             |                | 71.3 (112)    |
| Cohabitating         | 85.7 (36)     | 14.3 (4) | 75.0 (21)   | 25.0 (7)       | 14.3 (4)      |
|                      |               |         |             |                | 85.7 (24)     |
| **χ²**               |               |         |             |                |               |
|                      | 0.13          | 0.25    | 0.58        | 0.55           | 1.07          |
(continued)
Table 3. (continued)

|                                   | Cigarette use | EVP use | Alcohol use | Binge drinking | Marijuana use |
|-----------------------------------|---------------|---------|-------------|----------------|---------------|
|                                   | % (n)         | % (n)   | % (n)       | % (n)          | % (n)         |
| No                                | Yes           |         |             |                |               |
| Other                             | 81.8 (36)     | 18.2 (8)| 79.5 (35)   | 20.5 (9)       | 72.7 (32)     | 27.3 (12)     |
|                                  | 2.69          |         | 7.73        | 4.32           | 2.50          | 4.36          |
| Living arrangement                |               |         |             |                |               |
| Live alone                        | 79.7 (51)     | 20.3 (13)| 78.1 (50) | 21.9 (14)     | 60.9 (39)     | 39.1 (25)     |
|                                  | 91.8 (67)     | 8.2 (6)| 75.3 (55) | 24.7 (18)     | 67.1 (49)     | 32.9 (24)     |
| Share a place with friend(s)      | 86.1 (223)    | 13.9 (36)| 86.9 (225)| 13.1 (34)     | 69.1 (179)    | 30.9 (80)     |
|                                  | 88.5 (54)     | 11.5 (7)| 77.0 (47) | 23.0 (14)     | 49.2 (30)     | 50.8 (31)     |
|                                  | 4.52          |         | 8.12*       | 1.93           | 9.24*         | 4.45          |
| Live with family                  |               |         |             |                |               |
| Other                             | 84.0 (79)     | 16.0 (15)| 84.0 (79) | 16.0 (15)     | 72.3 (68)     | 27.7 (26)     |
|                                  | 90.5 (133)    | 9.5 (14)| 78.2 (115)| 21.8 (32)     | 65.3 (96)     | 34.7 (51)     |
|                                  | 85.1 (183)    | 14.9 (32)| 88.0 (66) | 14.9 (32)     | 61.9 (133)    | 38.1 (82)     |
|                                  | 2.85          |         | 3.04        | 3.82           | 3.12          | 4.70          |
| Hours worked                      |               |         |             |                |               |
| I don't have a job                | 86.8 (79)     | 13.2 (12)| 81.3 (74) | 18.7 (17)     | 59.3 (54)     | 40.7 (37)     |
|                                  | 86.6 (316)    | 13.4 (49)| 83.0 (303)| 17.0 (62)     | 66.6 (243)    | 33.4 (122)    |
|                                  | 0.00          |         | 0.15        | 2.33           | 1.68          | 0.61          |
| Lost a job                        |               |         |             |                |               |
| No                                | 90.2 (74)     | 9.8 (8)| 84.1 (69) | 15.9 (13)     | 62.2 (51)     | 37.8 (31)     |
|                                  | 89.4 (320)    | 10.6 (38)| 85.8 (307)| 14.2 (51)     | 68.4 (245)    | 31.6 (113)    |
|                                  | 0.05          |         | 0.14        | 0.08           | 1.18          | 0.31          |
| Yes                               |               |         |             |                |               |
| Preventive behaviours             |               |         |             |                |               |
| Low                               | 90.2 (74)     | 9.8 (8)| 84.1 (69) | 15.9 (13)     | 62.2 (51)     | 37.8 (31)     |
|                                  | 89.4 (320)    | 10.6 (38)| 85.8 (307)| 14.2 (51)     | 68.4 (245)    | 31.6 (113)    |
|                                  | 0.05          |         | 0.14        | 0.08           | 1.18          | 0.31          |

*p < 0.05; **p < 0.001.

Note. EVP = electronic vapor product.
Table 4 Mental health and current substance use (N=457)

|                      | Cigarette use | EVP use | Alcohol use | Binge drinking | Marijuana use |
|----------------------|---------------|---------|-------------|----------------|---------------|
|                      | M (SD)        | M (SD)  | M (SD)      | M (SD)         | M (SD)        |
| No                   | Yes           | No      | Yes         | No             | Yes           |
| Anxiety              | 8.69 (5.31)   | 9.86 (5.28) | 8.60 (5.24) | 10.05 (5.56)   | 8.24 (5.35)   | 9.10 (5.29)   | 8.33 (5.11)   | 9.08 (5.58)   | 8.53 (5.22)   | 9.85 (5.54)   |
| t                    | -1.55         | -2.17*  | -1.58       | -2.81*         | -2.26*        | -2.6*         | -3.40***      | -1.76         |
| Depression           | 8.76 (6.02)   | 9.92 (6.38) | 8.50 (5.81) | 10.96 (6.93)   | 8.36 (6.11)   | 9.12 (6.04)   | 8.42 (5.83)   | 9.83 (6.42)   | 8.31 (5.70)   | 10.86 (6.85)  |
| t                    | -1.28         | -2.76** | -1.21       | -2.32*         | -2.49**       | -2.32*        | -3.40***      | -1.76         |
| Stress               | 23.95 (8.01)  | 24.83 (8.05) | 23.68 (7.88) | 25.92 (8.42)   | 22.96 (8.44)  | 24.53 (7.78)  | 23.44 (7.99)  | 25.22 (7.95)  | 23.69 (8.03)  | 25.24 (7.86)  |
| t                    | -0.78         | -2.25*  | -1.91       | -2.26*         | -2.6*         | -1.76         | -2.85 (2.71)  | -2.06 (2.45)  | -2.76**       |
| Hopelessness         | 2.20 (2.52)   | 2.58 (2.63) | 2.12 (2.55) | 2.90 (2.33)    | 1.86 (2.43)   | 2.41 (2.55)   | 1.98 (2.37)   | 2.77 (2.76)   | 2.06 (2.45)   | 2.85 (2.71)   |
| t                    | -1.01         | -2.34** | -2.11*      | -2.99**        | -2.76**       | -2.99**       | -2.76**       | -2.76**       | -2.99**       | -2.76**       |
| Self-harming thoughts| 0.40 (0.82)   | 0.61 (0.98) | 0.38 (0.79) | 0.72 (1.03)    | 0.36 (0.79)   | 0.46 (0.86)   | 0.39 (0.80)   | 0.51 (0.91)   | 0.35 (0.76)   | 0.70 (1.04)   |
| t                    | -1.64         | -2.58*  | -1.24       | -1.39          | -3.16**       | -2.58*        | -1.39          | -3.16**       |

*p < 0.05; **p < 0.01; ***p < 0.001.

Note. EVP = electronic vapor product
Hopelessness had significant associations with EVP use ($t = -2.34, p < 0.05$), alcohol use ($t = -2.11, p < 0.05$), binge drinking ($t = -2.99, p < 0.01$) and marijuana use ($t = -2.76, p < 0.01$). Last, self-harming thoughts were significantly associated with EVP use ($t = -2.58, p < 0.05$) and marijuana use ($t = -3.16, p < 0.01$).

**Discussion**

The COVID-19 pandemic has significantly affected substance use behaviours amongst social work students. Building on the limited research on this topic, our study found high substance use rates, particularly alcohol use, binge drinking and marijuana use. However, the pandemic has affected substance use unevenly based on students’ socio-demographic background and mental health status. These findings broaden our understanding of substance use prevalence amongst social work students across multiple US institutions. To the best of our knowledge, this study is the first to empirically examine social work students’ substance use behaviour in the USA during COVID-19. Given the paucity of related literature, our study advances knowledge on social work students’ substance use behaviour based on COVID-19-related life changes, preventive behaviours and differing socio-demographic backgrounds.

Our study found that 71 per cent of students used alcohol, 35 per cent engaged in binge drinking and 25 per cent used marijuana during the past thirty days. Compared to data from social work students in Israel and Russia (Yehudai et al., 2020), alcohol consumption in our study is much higher (71 per cent vs. 39 per cent) than marijuana use (25 per cent vs. 52 per cent) during the pandemic. However, our results show similar trends to surveys of substance use amongst university students overall (Horigian et al., 2021)—71 per cent versus 80 per cent in alcohol use and 35 per cent versus 44 per cent in binge drinking (35 per cent vs. 44 per cent)—though we used different measures for alcohol use and binge drinking. The Monitoring the Future study (Schulenberg et al., 2019), which used the same SAMHSA-recommended alcohol use and binge drinking measures as in our study, documented that 85 per cent of young adults (ages nineteen to twenty-eight years) drank alcohol at least once in the past two weeks and 31 per cent of them reported binge drinking. This comparison shows a marked increase in binge drinking (35 per cent) amongst young adults (about 61 per cent of our sample was between eighteen and thirty years) during the pandemic. Our findings also corroborate prior research on social work students’ substance use behaviour during crises. For example, according to Prost et al. (2016), social work students reported increased substance use following Hurricane Katrina and Hurricane Rita.
However, we found a relatively low prevalence of cigarette (14 per cent) and EVP (18 per cent) use, which is consistent with prior research examining substance use behaviour amongst high school students during COVID-19 (Dumas et al., 2020). Given that smokers are at higher risk (vs. non-smokers) of COVID-19 infection (Patanavanich and Glantz, 2020), many social work students living with their families might have engaged in lower cigarette or EVP use due to concerns that it could negatively affect their families. Our results indicate that living arrangements were significantly associated with substance use: participants sharing a place with friends were more likely to use EVPs, whereas those with other living arrangements were more likely to engage in binge drinking.

We also found that socio-demographic variables, such as age and race and ethnicity, were significantly associated with substance use amongst social work students. Specifically, students between thirty-one and forty years old were more likely to engage in alcohol use and binge drinking compared to other age groups, whereas students between eighteen and thirty years old were more likely to use marijuana compared to other age groups. In addition, we found that Latino students were more likely to use alcohol than those who identified as White or in other racial and ethnic groups. It is noteworthy that communities of colour have faced disproportionately higher risk of COVID-19 infection, hospitalisation, and death due to disparate underlying health conditions, exacerbated by socio-economic inequalities and compounded risks associated with higher substance use disorders (Osborne et al., 2020). Our findings corroborate the existing substance use disparities amongst minority populations.

Consistent with previous studies that examined mental health and substance use amongst college students and young adults (Charles et al., 2021; Horigian et al., 2021), mental health was significantly associated with substance use amongst social work students during the COVID-19 pandemic. In particular, anxiety, depression, stress, hopelessness and self-harming thoughts were all positively associated with EVP use in our study sample. Additionally, hopelessness was associated with using all substances, except for cigarettes, in our study. It is possible that social work students who exhibited hopelessness—presumably due to uncertainty related to their studies, work and future careers from the prolonged pandemic—might have engaged in increased substance use behaviour as a maladaptive coping strategy. As previously mentioned, the choice of substance remains a conspicuous finding that needs more examination. Although a recent meta-analysis investigating smoking and its association with COVID-19 progression stated that EVP users are highly likely to have an increased risk of infection and mortality from COVID-19 due to the pulmonary effects of EVP use, empirical studies examining EVP use during the pandemic are extremely limited (Patanavanich and Glantz, 2020).
In summary, the COVID-19 pandemic has not only worsened substance use issues amongst university and college students but also further compounded the associated mental health stressors. Social work students with previous mental health conditions who use substances are more likely to experience negative effects on their studies and engagement with school activities (Prost et al., 2016). The COVID-19 pandemic is evolving and is expected to have long-term mental health impacts. Emerging research suggests that the pandemic has also increased the likelihood of comorbid mental illness and substance use disorders in the general population (Jemberie et al., 2020). Because developmental, social and environmental factors largely contribute to college and university students’ substance use behaviours, they also face a higher risk of mental health problems. More research studies that examine substance use and the prolonged mental health toll during crises, particularly amongst college and university students in various programmes, will provide pertinent insights for post-pandemic prevention programmes.

Limitations

Our study has several limitations. First, it only focused on social work students to examine the impact of COVID-19 on their mental health and use of alcohol, cigarette, vaping, binge drinking and marijuana. Thus, examining the use of other illegal substances (e.g. cocaine) across student populations was outside our scope. Second, the cross-sectional nature of our data limits our ability to make causal connections. Our descriptive findings do not identify the impact of specific stressors or a collection of stressors that could have affected substance use amongst social work students. The use of non-random sampling also constrains the finding’s external validity to all US social work students. We collected data during the Summer 2020 semester, which could potentially obfuscate the prolonged effect of COVID-19 on students’ substance use behaviour. Future research could be enhanced by following students through the pandemic and assessing their mental health and substance use behaviour to better understand these associations over time.

COVID-19-related life changes can be a multidimensional construct. However, we only assessed job loss and living arrangements in our study. Further, data on these changes before the pandemic could not be articulated. Our data were also imbalanced in gender, race and ethnicity: the majority of the sample was female (89 per cent) and White (73 per cent). Thus, it is necessary to interpret the findings with caution. Despite these limitations, our study contributes to the limited knowledge on substance use behaviours amongst US social work students and elucidates the associations amongst substance use, socio-demographic
characteristics, preventive behaviours and mental health during the COVID-19 pandemic.

Implications and conclusion

Navigating the rapidly evolving COVID-19 pandemic has been a stressful endeavour for all people. Social distancing is particularly difficult for college and university students, given their developmental preference to be around their peers. Although our study focused on social work students, its findings and implications can be also relevant to other majors in the USA and across the globe. Our findings provide initial empirical evidence on the higher substance use amongst and mental health impact of COVID-19 on social work students across socio-demographic groups.

Although we focus on social work students, it might be pertinent to also discuss how social workers might be differently impacted. While students might be affected by placement deferment, online learning, as well as issues encountered in field education and learning, social workers might experience compassion fatigue and vicarious trauma from their clients’ disparate interactions, in addition to personal stressors. As the largest group of mental health service providers across communities, social workers can face significant health risks due to substance use behaviour and experience disrupted service provision and delivery to their clients. It is, therefore, essential to normalise the stressors and complexities of navigating the pandemic, even those yet to be named, recognised or fully understood. But it is equally critical to normalise help-seeking behaviours amongst students and encourage them to seek needed support for substance use and mental health more broadly, such as counselling services to manage internal and external stressors. Because peer influence plays a significant role in college and university students’ lives, particularly related to substance use, programmes such as peer-support groups or peer-led interventions might be more efficacious in this population.

Given its socio-demographic disaggregation of data, our study made visible the more vulnerable groups amongst social work students: students living alone, younger students and Latino students had a higher likelihood of using substances. Schools of social work should develop targeted interventions for these vulnerable groups, educate their students on posttraumatic stress symptoms and secondary traumatic stress, and encourage self-care, self-assessments (Pooler et al., 2012; Pyles, 2020) and healthy coping mechanisms. Social work students experiencing mental health symptoms such as anxiety, depression, stress, hopelessness or self-harming thoughts may benefit from learning more about the effectiveness of positive coping strategies, rather than engaging in mal-adaptive behaviours like using alcohol and other substances (Wu and
Mindfulness-based practices, which have been shown to decrease alcohol use and increase resilience and self-control, could be implemented across US campuses to promote substance use prevention strategies (Mermelstein and Garske, 2015). Education interventions such as pre-incident preparation, which provides practical tools for handling stress using cognitive behavioural therapy tactics, could be implemented across social work programmes to empower students to effectively control their stress (Prost et al., 2016).

Universities should likewise invest in mental health programmes at university or college counselling centres, support groups and virtual meetings to promote positive coping and reduce additional pandemic-related stressors amongst social work students. Such support could help social work students report depression, anxiety, stress, hopelessness, and self-harming thoughts and utilise needed mental health services. Field directors should also closely monitor students in internships during crises and collaborate with professors or mentors in their programmes to provide supervision and support to their students (Prost et al., 2016). To this end, social work programmes should encourage multisectoral collaboration amongst field placements, university field offices, university-based mental health services, faculty members and students. As part of substance use prevention efforts, this collaboration would promote future social workers’ overall well-being, an important pursuit because these students are likely to be the largest group of mental health service providers in the post-pandemic era.

Conflict of interest statement. None declared.

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