SAMHSA

Disaster Technical Assistance Center

Supplemental Research Bulletin: People With Substance Use Issues and Conditions and Disasters

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SAMHSA
Substance Abuse and Mental Health Services Administration

CONTENTS

The focus of the *Supplemental Research Bulletin* is to provide an overview of the current literature on a specific topic and make it easy to understand for disaster behavioral health professionals who are not otherwise exposed to the research. The product aims to assist professionals and paraprofessionals involved in all-hazards planning, disaster behavioral health response and recovery, and/or Crisis Counseling Assistance and Training Program grant activities.

Would you like to see a *Supplemental Research Bulletin* on a topic we haven't yet covered? Contact us with topic ideas and feedback via email at dtac@samhsa.hhs.gov or phone at 1–800–308–3515.

INTRODUCTION

This issue of the *Supplemental Research Bulletin* focuses on the impact of disasters on people who use substances. To investigate this topic, in February 2024 we conducted an initial exploratory query for literature related to the impact of disasters on individuals who use substances, including individuals who use substances and have co-occurring mental health issues. Using those initial articles, our team created a modified snowball sample (using a sample of relevant articles to identify additional articles for inclusion) using the National Library of Medicine's "Similar Articles" function in PubMed[1].

We limited our review to articles that:

- Were published in the last 10 years (in and after 2014)
- Were published in English
- Focused on behavioral health topics (e.g., substance use, mental health, treatments)
- Primarily described research conducted in the United States, though we included global studies where relevant
- Focused on disasters and populations who use substances

We recognize that the review is not an exhaustive observation of the many ways in which people who use substances or live with substance use disorders (SUDs) may be more negatively impacted during disasters in comparison to the general population. We sought to highlight at a high level the challenges faced by people who use substances in usual circumstances and after disasters. We also outlined some of the practices, including preparedness and resilience mechanisms, in support of post-disaster health and well-being for people who use substances.

EFFECT OF DISASTERS ON POPULATIONS WHO USE SUBSTANCES

Various categories of disasters, such as natural disasters, technological disasters, or mass violence, are unexpected events that disrupt lives, involve losses, and endanger people, leading to negative behavioral health outcomes (Alexander & Ward, 2018). Studies have shown that disasters negatively impact publicly funded substance use prevention, treatment, and recovery programs (National Association of State Alcohol and Drug Abuse Directors [NASADAD], 2020). For example, an analysis by the Substance Abuse and Mental Health Services Administration (SAMHSA) found that the 9/11 terrorist attacks increased intervention needs for people who were in substance use prevention and treatment programs; increased a return to substance use treatment services among former participants in these services; and increased misuse of alcohol, tobacco, and medications among people who may not have misused them previously. During the COVID-19 pandemic, alcohol sales increased, as did use of fentanyl, methamphetamine, heroin, and cocaine. Overdoses increased by as much as 42 percent per month. Alcohol consumption and hospitalization rates increased after Hurricane Katrina (2005) (NASADAD, 2020).

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1 More information on how the National Library of Medicine's National Center for Biotechnology Information (NCBI) computes and identifies "similar articles" in relation to the reference article can be found in the *PubMed User Guide* at https://pubmed.ncbi.nlm.nih.gov/help/#computation-of-similar-articles (NCBI, 2023).

A study of alcohol and substance use in members of a university community during Hurricanes Florence (2018) and Dorian (2019) found that anxiety ratings and self-reported drinking were higher just before the hurricanes (when community members had knowledge about the impending events) than they were during corresponding days of a regular semester (Noel et al., 2021). Other major events, such as economic crises, geopolitical conflicts, and historical colonization, have been shown to cause sufficient destabilization at the individual level to predispose people to substance use (Mackey & Strathdee, 2015). COVID-19-related anxiety was shown to trigger tobacco use, and exposure to COVID-19-related news was associated with decreased odds of pausing smoking or vaping in a scoping review by Kumar et al. (2022). Additional observations from the review were that anxiety and depression during COVID-19 increased alcohol use among people older than 40 years, opioid overdose increased following the COVID-19 emergency declaration in Kentucky at the onset of the pandemic, the proportion of opioid overdose cases among emergency department visits increased during the pandemic, and opioid overdose deaths were higher among non-Hispanic Black individuals compared to non-Hispanic White individuals (Kumar et al., 2022).

Comorbidity of SUDs with posttraumatic stress disorder (PTSD) has been shown in the aftermath of multiple types of disasters, such as the 9/11 terrorist attacks in 2001, Hurricane Katrina in 2005, and the Deepwater Horizon oil spill in 2010 (Dowling & Lowe, 2023; Fuchs et al., 2021). The association was observed both for adults and adolescents. Studies of people enrolled in the World Trade Center Health Registry (WTCHR), a group of people directly exposed to the 9/11 attacks, showed positive associations between the number of 9/11-related traumatic events witnessed and hospitalizations due to alcohol or substance use (Hirst et al., 2018). Fuchs et al. (2021) showed a positive correlation between substance use and exposure to Hurricane Katrina or disruption due to the Gulf oil spill in high school populations in the regions affected by the disasters. Public works infrastructure failure causes disasters that particularly impact disenfranchised communities, and such disasters, like disasters affecting other communities, may trigger alcohol and substance use (Onookome-Okome et al., 2023). In a survey of residents of Flint, Michigan, after the Flint water crisis of 2014–2015, 17 percent of the respondents reported substance use, which caused problems in their personal and professional lives, and 61.6 percent of the respondents reported alcohol use since the crisis. Respondents who believed that their physical health was negatively impacted by the water crisis were more likely to use substances at the cost of disruption to their daily lives (Onookome-Okome et al., 2023).

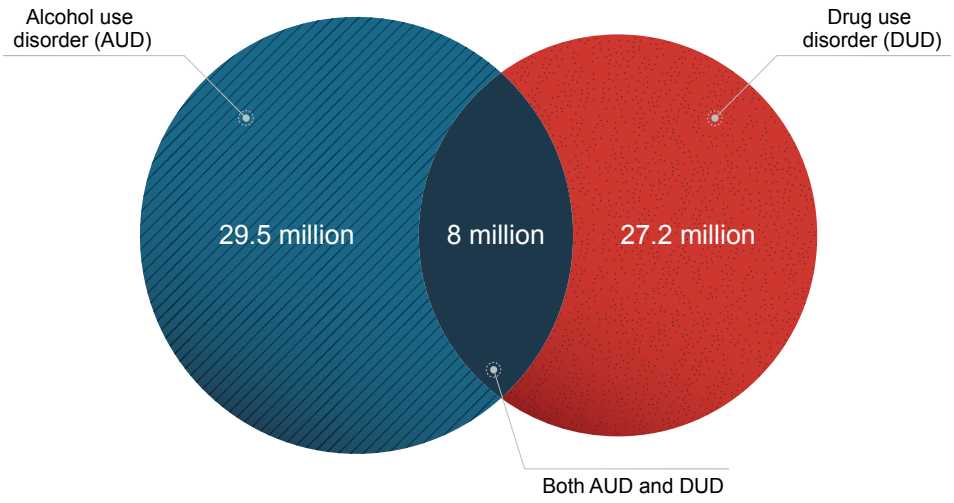
Alexander and Ward (2018) describe self-medication (using substances to help cope with challenges) as a result of decreased self-efficacy due to disaster exposure. Describing a complex pathway, the authors state that although exposure to a disaster itself may not predispose people to substance use, it may cause the body and mind to experience an intensified state of arousal or reaction to the disaster, which in turn may determine the coping strategy an individual may choose—with substance use being one of the options (Alexander & Ward, 2018). Zengin İspir et al. (2023) describe several contributing factors to SUDs after natural disasters, such as the trauma and stress caused by loss of life and property, disruption of social support networks, inaccessibility of treatment for SUDs, and disrupted access to mental health services after a disaster.

SNAPSHOT OF PEOPLE WITH SUBSTANCE USE ISSUES AND CONDITIONS

Demographic, Regional, and Behavioral Health Patterns

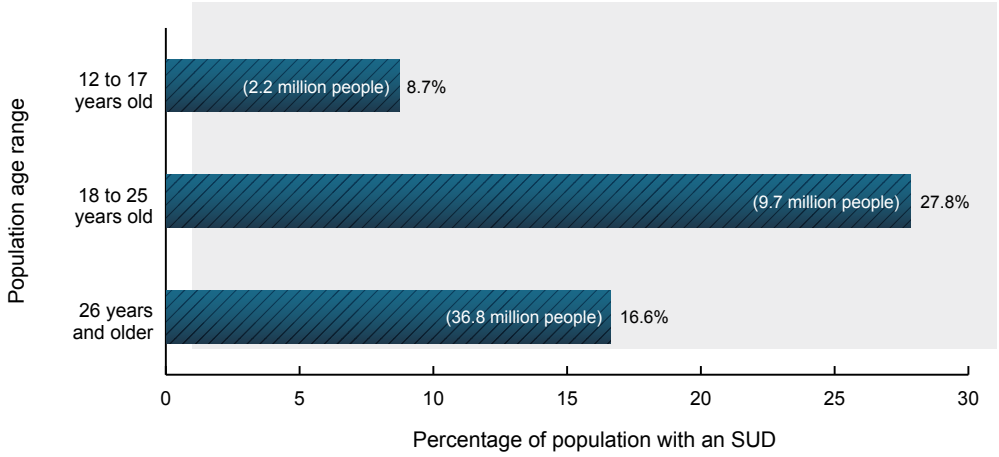
According to SAMHSA's National Survey on Drug Use and Health (NSDUH) in 2022, 48.7 million people aged 12 or older had an SUD in the past year, including 29.5 million who had alcohol use disorder (AUD), 27.2 million who had drug use disorder (DUD), and 8.0 million who had both AUD and DUD (SAMHSA, n.d.-b). The percentage of people aged 12 or older with an SUD in the past year was highest among young adults aged 18 to 25 (27.8 percent or 9.7 million people), followed by adults aged 26 or older (16.6 percent or 36.8 million people), then by adolescents aged 12 to 17 (8.7 percent or 2.2 million people). These data are shown in Exhibits 1 and 2.

Exhibit 1. Number of Individuals 12 Years or Older With an SUD in the Past Year



Note. These data come from SAMHSA's National Survey on Drug Use and Health in 2022.

Exhibit 2. Percentage of Individuals by Age With an SUD in the Past Year



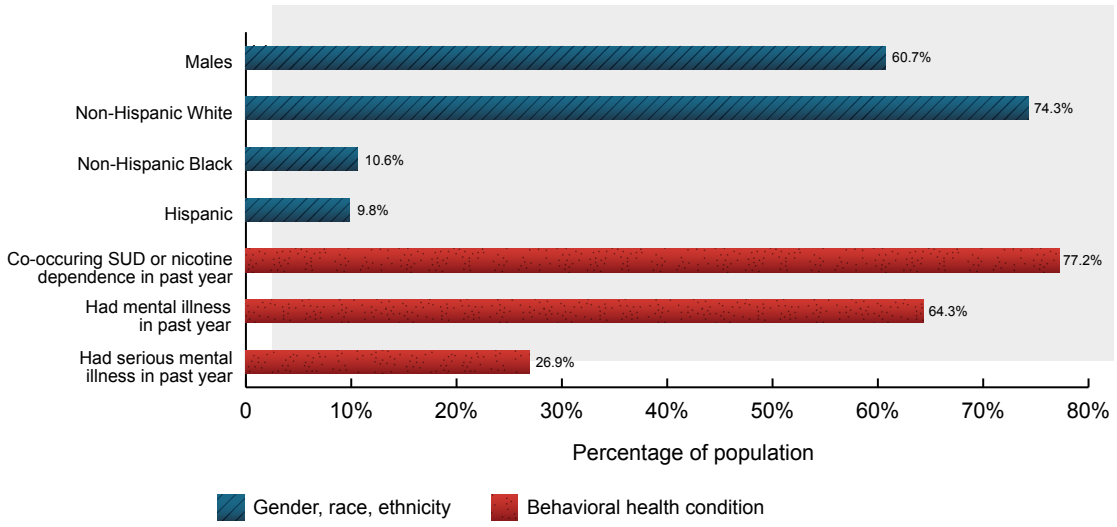
Note. These data come from SAMHSA's National Survey on Drug Use and Health in 2022..

Because substance use and dependence have been linked to stress and trauma, factors that also negatively affect well-being, studies have examined prevalence of alcohol and substance use in the global community of forced migrants (Horyniak et al., 2016). A literature review of studies involving these populations found a broad range of substance use patterns and levels of prevalence in forced migrants on a global scale, with the heterogeneity likely reflecting regional differences in substance use patterns. Hazardous and dependent alcohol use showed higher prevalence among refugees in camp settings than among those in community settings (Horyniak et al., 2016).

Connery et al. (2020) reported that the overall disease burden attributable to AUD and SUD varies between countries. Explaining the global impact of SUDs, the authors present the measure of disability-adjusted life years (DALYs). A DALY is equivalent to 1 year of time lost to premature death or years lived with a disability (World Health Organization, n.d.). Alcohol was deemed to account for 76 percent of global DALYs attributable to substance use, but drugs accounted for 53 percent of all substance-attributable DALYs in North America. Worldwide, the sex ratio for disease burden attributable to the use of most substances is 4 (men) to 1 (women) according to Connery et al. (2020). The authors note that the sex difference likely is due to differences between regions in how socially acceptable it is for men versus women to use substances and in how likely people are based on sex to be exposed to substances. In 2016, the World Health Organization reported a global prevalence of AUD in 1.7 percent of adult women and 8.6 percent of adult men. For both men and women, the highest prevalence of AUD was in the Americas and Europe (Connery et al., 2020).

Data from the 2015–2017 NSDUH showed that a large proportion of people with opioid use disorder had co-occurring SUDs or mental illness (Jones & McCance-Katz, 2019). Among adult Americans with past-year opioid use disorder in 2015–2017, 60.7 percent were male, 74.3 percent were non-Hispanic White, 10.6 percent were non-Hispanic Black, 9.8 percent were Hispanic, 77.2 percent had past-year co-occurring SUD or nicotine dependence, 64.3 percent had past-year mental illness, and 26.9 percent had a serious mental illness in the past year (Jones & McCance-Katz; see Exhibit 3).

Exhibit 3. Americans With Past-year Opioid Use Disorder, 2015–2017



Source. Jones & McCance-Katz, 2019.

Highlights of NSDUH findings by race and ethnicity for 2022 indicate that percentages of people aged 12 or older in 2022 with a past-year SUD ranged from 9.0 percent of Asian individuals to 24.0 percent of American Indian or Alaska Native individuals (SAMHSA, n.d.-a). Except for Asian people, percentages did not differ significantly by race or ethnicity. The percentage of Asian people aged 12 or older in 2022 with a past-year SUD was lower than the percentages among people in other racial and ethnic groups.

Experiential Factors

Studies have linked childhood traumatic experiences to substance misuse or dependence (Simmons & Suárez, 2016). For example, the National Survey of Adolescents reported that 24 percent of girls and approximately 30 percent of boys with PTSD had comorbid substance use or dependence. Adult respondents in a retrospective study were 7 to 10 times more likely to report illegal drug use when they had more than 5 adverse childhood experiences (ACES) defined by the Centers for Disease Control and Prevention (CDC) as "potentially traumatic events that occur in childhood (0–17 years)" (CDC, 2024). Simmons and Suárez (2016) present a bidirectional relationship between PTSD and SUD, where the sequence of onset may vary from one to the other. Teens with trauma experience may use alcohol or drugs to manage their symptoms and conversely, an existing SUD may reinforce or promote maladaptive coping tendencies contributing to PTSD development (Simmons & Suárez, 2016).

A literature review by Crowe et al. (2023) found that substances were used for managing mood. The same study reported qualitative assessments indicating that people with mood disorders found substances to be more effective than prescribed medications in managing their symptoms and that substance use provided them an escape from trauma and social challenges (Crowe et al., 2023). ACEs were shown to be associated with increased prevalence of intravenous substance use (Cabanis et al., 2021). At least 77 percent of individuals exposed to a traumatic event before the age of 16 years had SUD and PTSD later in life. A meta-analysis using the Childhood Trauma Questionnaire-Short Form (CTQ-SF) showed that 31–38 percent of respondents with SUD had experienced childhood trauma versus 13–36 percent of those from the general population. Other studies showed that exposure to childhood stressors more than doubled the risk of developing SUDs (Cabanis et al., 2021). A cross-sectional study demonstrating the association between social determinants of health and drug overdose mortality in mid-Atlantic American counties found that higher scores on the social vulnerability index correlated with higher drug overdose deaths (CDC, n.d.; Sistani et al., 2022). The study also showed a statistically significant positive correlation between the rate of experiencing or witnessing violent crimes and drug overdose deaths.

The occupational hazards of being an emergency first responder, such as a firefighter, police officer, paramedic, 911 dispatcher, or rescue personnel, can have a negative effect on psychological health. A report on several different studies suggests a prevalence of alcohol misuse in 16–40 percent of first responders (Gilman, 2020). A retrospective analysis of self-reported data from first responders, emergency service personnel, and police officers who sought voluntary counseling and therapy services from 2017 to 2021 showed that emergency medical technicians and firefighters who became more isolated during the pandemic experienced four times the odds of an SUD compared to law enforcement officers (Beauchamp, 2022). Additionally, those at early stages of their career (6–10 years of service) and those at the end of their career (more than 20 years of service) were at higher risk of developing an SUD.

Stigma and Related Challenges

Past surveys have documented negative public attitudes toward SUDs, which may in part be the reason for a large gap that exists between those who live with SUDs and those who receive SUD treatment. In its 2022–2026 Strategic Plan, the National Institute on Drug Abuse (NIDA) articulated a cross-cutting priority of identifying and developing approaches to reduce stigma, in part because stigma is a barrier to care-seeking and treatment engagement for people interested in changing their patterns of substance use (NIDA, 2022). A literature review showed that the public holds stigmatizing views toward people who use substances and who have SUDs (Yang et al., 2017). In one study included in the review, 87 percent of U.S. respondents believed that people with SUDs tended to be violent toward others, and more than 70 percent viewed individuals with cocaine dependence as being unable to make treatment decisions. In addition, three studies showed that the public endorsed greater social distancing from individuals with SUDs than those with other psychiatric disorders (Yang et al., 2017).

Earnshaw (2021) states that stigma overemphasizes the role of personal control in initiating substance use. Strategies that use stigma to promote public health and prevent substance use are a barrier to recovery for people with SUDs due to associations with shame and low self-esteem. Several interconnected forms of stigma—such as those faced by people of historically marginalized sexual orientations and gender identities, people of historically marginalized races and ethnicities, people of low socioeconomic status, and people with mental illness—may increase the risk of substance use. At a structural level, substance use stigma has been manifested historically by public policies that criminalize people with SUDs, and by organizational policies in employment and housing contexts. Stigmatization may lead to anxiety, depression, and other challenging emotions in those who are its targets, who may in turn engage in substance use as a coping mechanism. Among gay and bisexual men, experience of stigma as mediated by anxiety and depression has been shown to be associated with hazardous alcohol use. Among African American adolescents, experience of stigma as mediated by anger has been shown to be associated with substance use (Earnshaw, 2021).

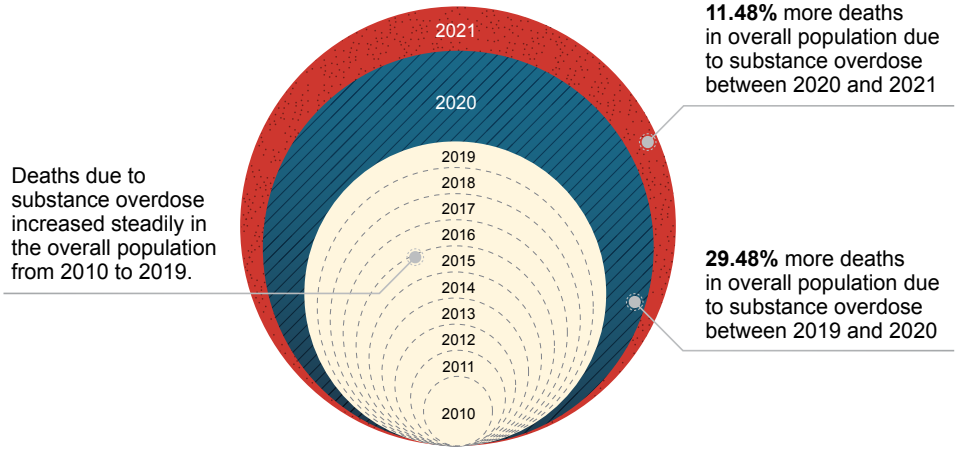
Connery et al. (2020) cite a study showing how stigma is generated or perpetuated in the language used to describe people with SUDs. When a person with an SUD was described as a “substance abuser” to mental healthcare practitioners attending a professional conference, the practitioners were less likely to believe that the person in question needed treatment.

Overdose Crisis in the United States

Overdose deaths occur due to high-intensity alcohol or substance use or by co-occurring alcohol and substance use in combinations that inhibit brain regions that control bodily functions like breathing, heart rate, and body temperature (McLellan, 2017). According to CDC, an average of six deaths occurred daily in 2014 due to alcohol overdose, and 70 percent of those deaths occurred in people who were not clinically alcohol-dependent or using other substances at the time of death (McLellan, 2017). In their study using CDC’s Wide-ranging ONline Data for Epidemiologic Research (WONDER) database, which contains records of all U.S. deaths from drug overdose, Friedman et al. (2022) found that although substance overdose deaths among adolescents remained stable from 2010 through 2019, the overdose mortality rate increased by 94.03 percent between 2019 and 2020, and by 20.05 percent between 2020 and 2021 (see Exhibit 4). For the overall population, however, substance

overdose deaths steadily increased from 2010 to 2020. There were 29.48 percent more deaths due to substance overdose in the overall population between 2019 and 2020, and 11.48 percent between 2020 and 2021. In 2021, the highest rate of drug overdose mortality was experienced by American Indian and Alaska Native adolescents, followed by Hispanic adolescents, suggesting racial and ethnic disparities in drug overdose in the adolescent population (Friedman et al., 2022). Data from CDC's State Unintentional Drug Overdose Reporting System (SUDORS) indicates that substance overdose deaths among U.S. adolescents have increased substantially since the end of 2019, most of which involve the use of illicitly manufactured fentanyl (Tanz et al., 2022). A quarter of substance overdose mortality among adolescents since 2019 has involved counterfeit pills, and two-thirds of the deceased had a bystander present but mostly received no response to their overdose. Nearly 41 percent of the deceased had a history of mental illness or treatment (Tanz et al., 2022).

Exhibit 4. Increases in Substance Overdose Deaths Among Overall Population, 2010–2021



Source. Friedman et al., 2022.

DURING- AND POST-DISASTER BEHAVIORAL HEALTH FOR PEOPLE WHO USE SUBSTANCES

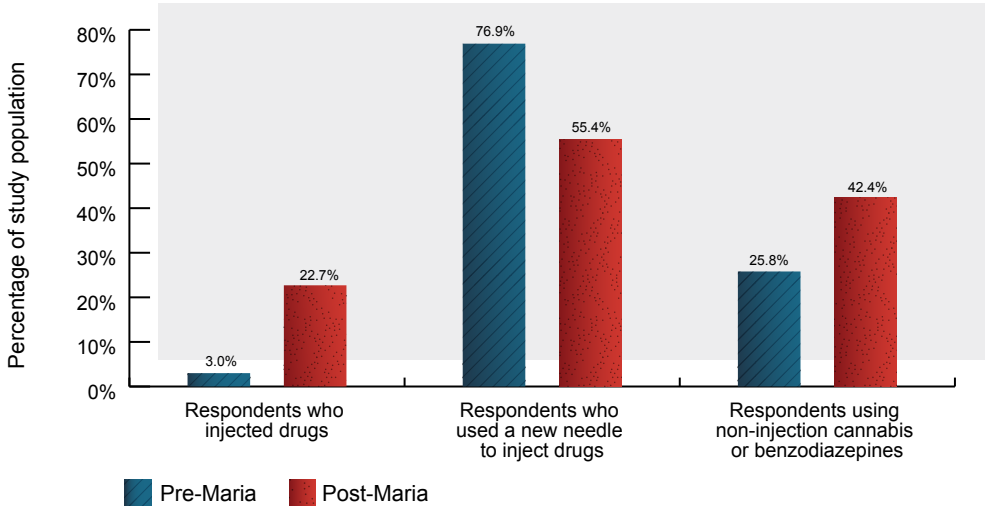
Changes in Substance Use During and After Disasters

Using longitudinal cohort data from the WTCHR, a registry of rescue and recovery workers and lower Manhattan community members exposed to the 9/11 terrorist attacks, Takemoto et al. (2020) reported that the risk of overusing and misusing opioids was significantly higher for individuals with past and current PTSD experience, compared to those who had never experienced PTSD. Among individuals with current PTSD, the risk of opioid overuse and misuse was higher for those who were not in treatment, compared to those who were in PTSD treatment. Individuals receiving PTSD treatment had a higher rate of recent prescription opioid use compared to those not receiving PTSD treatment (Takemoto et al, 2020).

In a longitudinal interview study of people who injected drugs before and after Hurricane Maria (2017) in Puerto Rico, 22.7 percent of respondents reported injecting drugs once per month after Maria

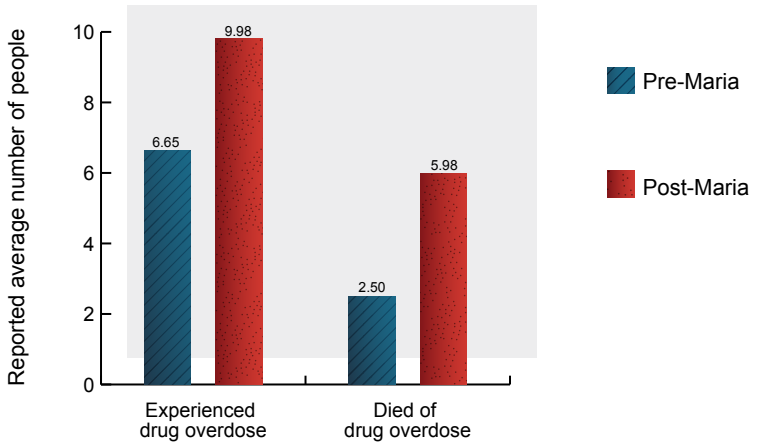
compared to 3.0 percent before Maria (Abadie et al., 2022). After the hurricane, 55.4 percent of respondents reported using a new needle for drug injection compared to 76.9 percent of respondents before the hurricane, indicating that syringe supply could not meet injection demands. The percentage of respondents using non-injection cannabis or benzodiazepines increased from 25.8 percent pre-Maria to 42.4 percent post-Maria. More than twice as many respondents post-Maria reported experiencing drug overdose in the same year or the year before the interview. Respondents reported knowing an average of 6.65 people who had experienced drug overdose pre-Maria and 9.98 people on average who had experienced drug overdose post-Maria. Respondents knew an average of 2.5 people who had died of drug overdose pre-Maria compared to 5.98 people post-Maria (Abadie et al., 2022; see Exhibits 5 and 6).

Exhibit 5. Study of Individuals Who Injected Drugs Pre- and Post-Hurricane Maria in Puerto Rico



Source. Abadie et al., 2022.

Exhibit 6. Reported Number of Overdoses in Puerto Rico Pre- and Post-Hurricane Maria



Source. Abadie et al., 2022.

Changes in Mental Health in People Who Use Substances

Several reports address co-occurring mental health issues and substance use after experiencing disaster events (e.g., Czeisler et al, 2020), instances where substance use after a disaster event occurs as a coping mechanism (e.g., Lemieux et al., 2020), and how substance use as a coping mechanism may cause mental health issues (e.g., Naylor et al., 2016). However, limited studies explore changes in mental health issues after individuals with preexisting substance use experience a disaster. Bonsaksen et al. (2021) report that daily use of alcohol was associated with depression during the COVID-19 outbreak in Norway, where the alcohol use was relatively independent of external circumstances. The same study demonstrated the risk of anxiety, depression, and insomnia in people who used sedatives often. Ahmed et al. (2021) report that determinants of anxiety and depression among people living with HIV/AIDS in Pakistan included the use of illicit drugs, along with other factors, such as stigma and low social support. NIDA (2021) states that substance use can cause changes in some of the same brain regions that are disrupted in mental disorders, such as schizophrenia, anxiety, and mood disorders. Thus, someone with a pre-disaster substance use issue or SUD may be at increased risk of development of a mental illness during or after a disaster, particularly in light of the stress and trauma that may be involved in experience of a disaster, given that stress and trauma are both risk factors for development of an SUD and mental illness.

Behavioral Health Among People With Preexisting SUDs and Those in Recovery

To understand existing substance use behavior among adolescents during COVID-19, a retrospective cohort study involving 12 district hospitals in the Netherlands found that the prevalence of adolescents admitted for acute alcohol intoxication (AAI) decreased during the first lockdown period compared with the pre-lockdown period, possibly due to the closure of bars and restaurants and closer parental supervision (Pigeaud et al., 2021). However, hospital admissions of adolescents for AAI significantly increased between the first lockdown phase and the reopening phase and did not significantly differ in the second lockdown phase (Pigeaud et al., 2021). An online survey on binge drinking, cannabis use, and vaping among adolescents in the weeks before and directly after physical distancing orders took effect found that although adolescent use of most substances decreased during this period, adolescent use of alcohol and cannabis increased (Dumas et al., 2020). Almost half of the surveyed adolescents engaged in solitary substance use, but nearly one-fourth of them used substances with others in spite of physical distancing protocols.

The pandemic posed unique challenges to individuals in treatment for and recovery from SUDs. Residential SUD treatment facilities needed to take steps to prevent the spread of COVID-19 and at the same time continue to maintain treatment services onsite. Interviews with directors of residential SUD treatment centers in California during the lockdown revealed a cycle of intersecting challenges (Pagano et al., 2021). Staff at these centers were impacted by layoffs and furloughs, and those who remained experienced physical and emotional fatigue. Disruption of services impacted treatment initiation by clients and decreased receipt of services for those in treatment. Telehealth services posed challenges, such as technological difficulties and lack of safe, private space for clients for one-on-one telehealth appointments. Older and economically disadvantaged clients were particularly challenged by available telehealth provisions. The programs experienced lower client retention due to the plethora of factors stated above. Diminished client retention led to decreased revenue. The pandemic also had broad programmatic

impacts, such as insufficient resources to implement COVID-19 control measures at onsite facilities. Due to disruption of residential SUD treatment centers, clients faced economic and housing instability and experienced social isolation, and both of these impacts became barriers to their reentry into the community (Pagano et al., 2021).

Factors outside of treatment facilities affected SUD recovery during the pandemic as well. Starting in the period in which stay-at-home orders were in effect and following up after 6 to 12 months, a study blending qualitative and quantitative data on individuals in recovery from SUDs found that the linkages between substance craving at baseline and substance use at follow-up were stronger in individuals who experienced worsening mental health during the study period and those who were exercising caution against viral exposure (Shircliff et al., 2022). Individuals who exercised self-care as a coping strategy had lower substance use rates at follow-up than those who did not engage in self-care (Shircliff et al., 2022).

Increased Risk of Overdose

Abadie et al. (2022) found that their respondents, who were people who inject drugs who were affected by Hurricane Maria in Puerto Rico, were more than three times as likely to report substance overdose (involving opioids, mostly fentanyl) after the hurricane as before. In a post-Maria interview, half of the respondents believed that an increase in opioid overdose cases occurred immediately after the hurricane, and nearly three-fourths of the respondents felt that more overdoses had occurred after the hurricane than before it. Therefore, the risk perception of opioid overdose frequency indicated a strong association with not only the occurrence of Hurricane Maria but also changes in the availability of drugs, such as an increase of fentanyl in the illicit drug supply chain over time (Abadie et al., 2022).

In a cross-sectional study using data from the Office of the Chief Medical Examiner in San Francisco, Appa et al. (2021) investigated unintentional substance overdose deaths with fentanyl, heroin, medicinal opioids, methamphetamine, and cocaine. They found a higher number of fatal overdoses after the COVID-19 shelter-in-place order was issued in March 2020 than in the 8.5 months prior (537 versus 365). Although the proportion of African American decedents decreased after the shelter-in-place order, the overall proportion of African American individuals among the deceased was disproportionately high (272 per 100,000 African American individuals versus 89 per 100,000 White individuals). The proportion of decedents experiencing homelessness also increased after the shelter-in-place order, in comparison to the 8.5 months prior (183 versus 85). The percentage of deaths attributable to fentanyl increased significantly after the shelter-in-place order, suggesting easy access to cheap and toxic drugs during this time (Appa et al., 2021).

DISASTER EXPERIENCES FOR PEOPLE WHO USE SUBSTANCES

Although it has been hypothesized that substance use may increase after a disaster, Ustyol et al. (2023) did not find an association between disasters and problematic alcohol use or AUD. The pandemic disproportionately affected several demographic groups, including people with substance use issues and SUDs. Physical distancing measures disrupted essential care, such as opioid agonist treatment for people with opioid use disorder (Henderson et al., 2021). Studies suggest that people with opioid use disorder were more impacted by the pandemic than the general population due to common challenges, such as housing instability and loss of income, and those unique to people with opioid use disorder, such as disruption of drug supplies (Salisbury-Afshar et al., 2020), closure of treatment centers (Khatri and

Perrone, 2020), and stigma (Jenkins et al., 2021). Following Hurricane Sandy (2012), interviews of people in New York City who inject drugs indicated that 60 percent of interviewees experienced withdrawal and 27 percent shared injection supplies or injected drugs with people with whom they normally would not inject. Among people receiving opioid maintenance therapy, 70 percent could not obtain sufficient medication (Pouget et al., 2015).

A scoping review by Henderson et al. (2021) focused on populations in Canada highlighted major reasons for the pandemic to have affected people with opioid use disorder differently compared to people who do not use drugs. Disruptions in opioid agonist treatment access have been shown to cause withdrawal symptoms, which in turn has led individuals in recovery to seek illicit drug supplies and increased their risk of overdose due to the use of unfamiliar products in circulation. Reports have indicated potentially lower overdose rescues due to fear of COVID-19 transmission before personal protective equipment was available and aerosol protocols were established (Henderson et al., 2021).

APPROACHES AND INTERVENTIONS TO HELP PEOPLE WHO USE SUBSTANCES DURING AND AFTER DISASTERS

Generally, an optimum combination of medication and behavioral treatments may be adopted to help individuals recover from SUDs (Connery et al, 2020). Effective SUD treatment includes a combination of pharmacologic, psychotherapeutic, and psychosocial interventions (Dowling & Lowe, 2023). Medication interventions for AUD and SUD may be made available to people at home or in a residential treatment facility depending on the need. Behavioral therapies may leverage mutual support groups, such as Alcoholics Anonymous (AA), Narcotics Anonymous, and Self-Management and Recovery Training (SMART) Recovery, which are the most accessible SUD interventions in most regions, and even globally. SUD treatment may be disrupted after a disaster (Dowling & Lowe, 2023).

NASADAD (2020) highlights some exemplary practices of states in using federal funding through the Substance Abuse Prevention, Treatment, and Recovery Services Block Grant. As an example, after 9/11 the New York State Office of Addiction Services and Supports utilized state and federal funds to assist communities with individuals at risk of SUDs and relapse; added wages to support staff overtime to meet increased demand; and developed school-based SUD prevention programs, media campaigns, and public education materials. As another example, the Louisiana Office of Behavioral Health addressed the impact of Hurricane Katrina in 2005 by providing crisis counseling and support, creating the Methadone Central Registry to address patient dosage needs, and offering helplines for counseling and recovery support (NASADAD, 2020).

Whole-community Approaches That Include People Who Use Substances

Based on literature, Southwick et al. (2016) have identified partnerships between behavioral and mental health workers and community-based organizations as an effective way to address behavioral health challenges after disasters. Partnerships help illuminate community vulnerabilities, leverage strengths, and address cultural factors. Post-disaster interventions that are informed by positive psychology, self-care, and resilience were reported to increase the range of tools available to mental health professionals, disaster responders, and survivors. Contextual coping, which employs specific coping strategies to

address physical and psychological needs, was also found to be effective across disaster types (Southwick et al., 2016).

Research on the Crisis Counseling Assistance and Training Program (CCP), which provides grants for disaster behavioral health services to states, territories, and federally recognized tribes, has found that high-quality training of crisis counselors and communication across organizational levels are important elements of successful whole-community approaches to disaster behavioral health (Bellamy et al., 2019). Implemented and funded by the Federal Emergency Management Agency and administered and overseen by the SAMHSA Center for Mental Health Services, the CCP requires that grantees collect data on their services, including the experiences of crisis counselors within the CCP. Data from surveys of CCP crisis counselors showed that counselors who found their job training useful reported lower levels of job-related stress and higher levels of job satisfaction (Bellamy et al., 2019). In addition, analysis of interview data identified communication across organizational levels as a potential area of improvement for effective crisis management.

In assessing the management of behavioral health issues after 9/11, Dowling and Lowe (2023) emphasize the need for SUD screening to identify individuals who may benefit from treatment, addressing mental health issues, mental illness, substance use issues, and SUDs after disaster exposure. They recommend early specialist consultation and an integrated care approach involving psychotherapy and psychosocial strategies. This includes cognitive behavioral therapy, motivational enhancement therapy, 12-step facilitation, behavioral couples' therapy, and peer linkage to address SUDs occurring with other conditions and encourage participation in mutual help programs (Dowling & Lowe, 2023).

Approaches Designed for People With Substance Use Issues and SUDs

Gray et al. (2020) investigated the integration of disaster risk reduction (DRR) programs and the field of mental health and psychosocial support (MHPSS) by mapping connections between the two fields and conducting a data and literature search. Some of the domains of integration reported by the authors were the development of MHPSS guidelines in a manual focused on disaster settings across European countries, capacity and systems building, child-focused DRR, disability and inclusive DRR, and resilience promotion.

Another study explored involving first responders—and specifically people in emergency medical services (EMS)—to serve as part of programs to help people with substance use issues and SUDs (Maragh-Bass et al., 2016). EMS providers were interviewed about participation in a program where they would be trained to screen patients for substance misuse and encourage them to enter treatment programs. Qualitative interviews with Baltimore City Fire Department EMS providers revealed that due to their contacts and rapport with substance-using individuals who had sought EMS, they felt well-positioned to intervene when individuals are the most receptive to seeking treatment, such as after an overdose revival event (Maragh-Bass et al., 2016). In keeping with the focus on reaching people with SUDs through populations other than behavioral healthcare professionals, another study analyzed data from a cross-sectional survey of business owners and employees in areas of Baltimore, Maryland, with high rates of drug use to explore whether these groups of people might be particularly effective in delivering naloxone (Schneider et al., 2022). A tested public health approach to combatting the opioid overdose crisis is community distribution of naloxone, which prevents fatal

overdoses by supplying take-home naloxone kits and providing resuscitation training to community members who may witness an overdose event (Schneider et al., 2022). In this study, researchers found that two-thirds of the survey respondents had witnessed at least one overdose event at work, and a similar proportion had heard of naloxone, but only a quarter of the businesses had more than one employee trained to use naloxone. These findings suggest that businesses should be utilized as reliable sources of naloxone to a greater extent, and employee training could help supplement naloxone distribution programs in preventing fatal overdoses (Schneider et al., 2022).

In December 2023, the Biden-Harris Administration recommended that all federal facilities across the United States include drug overdose reversal medications, such as naloxone, in their safety stations onsite (Office of National Drug Control Policy, 2023; Guidelines for Safety Station Programs in Federal Facilities, 2023). In March 2024, the White House launched a nationwide call to action to stakeholders across all sectors (including aviation, entertainment, hospitality, labor worksites, places of learning, and transit) to save lives by committing to increase training on and access to lifesaving opioid overdose reversal medications.

Before and during the COVID-19 pandemic, the toxic street drug supply increased dramatically due to changes in the drug supply chain in some parts of North America (Tyndall, 2020). Changes in the drug supply have included easy availability of illicit fentanyl, which is cheap, concentrated, highly addictive, and responsible for many overdose cases and deaths. Along with contrasting requirements for COVID-19 mitigation, which involved physical distancing and isolation, and drug overdose prevention, which relies in part on community involvement, increased toxicity of the street drug supply made people who use drugs particularly vulnerable during the pandemic. Although controversial, access to safe, regulated opioid drug supplies has been provided in certain North American regions to prevent people who use drugs from using toxic, illicit drugs. This strategy focuses on harm reduction (Tyndall, 2020).

Approaches To Ensure Continuity of Care for People Receiving Substance Use Services

SAMHSA's *Technical Assistance Publication (TAP) 34: Disaster Planning Handbook for Behavioral Health Service Programs* (2021) provides evidence-based guidelines to behavioral health treatment and service programs for maintaining services during and after disasters. The guidelines in TAP 34 include assembling a minimum number of staff who can perform all essential functions; identifying alternate people for leadership roles and delegating authority, in case personnel in the chain of command become unavailable during a disaster; housing important records and databases offsite at dedicated and accessible data centers, which may provide clients with secure, reliable, and uninterrupted data collection methods; and creating a resource list of social service providers who can supplement and support the staff during emergencies. As part of sustaining care for individuals in treatment and recovery, the guidelines suggest the following:

- Monitoring clients on prescription medications closely
- Looking for symptoms of withdrawal, resumption, and drug interactions
- Helping clients access prescription medications for mental health issues and SUDs
- Ensuring all clients except those in treatment only for AUD have access to naloxone

- Working with other opioid treatment programs (OTPs) for continued opioid agonist therapy provision, for guest dosing in case the center is unable to provide medication to clients, or for clients who need to relocate during disasters
- Preparing for patient transfer and evacuation to an alternate location or to another clinic that is able to provide guest dosing and tracking of clients who relocate
- Treating guest patients on methadone maintenance treatment and addressing needs of displaced patients who are on buprenorphine and who have psychiatric conditions
- Making action plans for scheduled psychiatric medicine dosing (SAMHSA, 2021)

In March 2020, to help counter the spread of COVID-19, SAMHSA adjusted the rules governing OTPs, allowing take-home methadone doses to be provided more broadly in order to reduce physical contact needed for in-person dosing (Peavy et al, 2022). A survey conducted among individuals receiving methadone prescriptions in North Carolina from June to July 2020 indicated that 68.3 percent of respondents had received take-home doses before the pandemic and 91.6 percent started receiving take-home doses after the start of the pandemic (Figgatt et al., 2021). A small proportion of individuals (6.9 percent) among those who received take-home doses during the pandemic reported selling or sharing their doses, the reasons for which were needing money, helping someone, or saving up for travel.

Approaches To Help People Sustain SUD Recovery

Research has found some evidence that participation in mutual help 12-step groups, such as AA, may be helpful to people in recovering from AUDs and SUDs (Mendola & Gibson, 2016). However, mutual help group alternatives such as Women for Sobriety, SMART Recovery, and LifeRing Secular Recovery (LifeRing) have been shown to achieve equal levels of involvement in group activities among participants and higher levels of satisfaction and group cohesion (Zemore et al., 2017). Kendra et al. (2014) assessed the satisfaction of 345 patients enrolled in a U.S. Department of Veterans Affairs outpatient SUD treatment program and 12-step groups. Results indicated that satisfaction with the outpatient treatment and 12-step groups was high, and both forms of intervention predicted greater likelihood of future abstinence from substances. A literature review found some evidence for ethnic disparities in participation in mutual help groups, with White people more likely to participate than Latinx people; however, in general, the researchers did not find strong evidence for ethnic or racial disparities across studies in the review and note that more research is needed in this area (Zemore et al., 2021).

During the COVID-19 pandemic, the move to virtual formats for many meetings, including mutual help group meetings, helped ensure continuity of care and participation for people in these groups, as well as availability of meetings to new participants while physical distancing orders were in place. Online 12-step groups did have some disadvantages common to other virtual settings. Lack of privacy, lack of access to technology, and experiencing technical difficulties were some of the disadvantages of online groups (Di Carlo et al., 2022). However, the benefits of online 12-step discussions have also been substantial. Maintenance and multiplication of group interactions during physical distancing periods, provision of a safe environment for shy or anxious individuals, and more engagement from youth were some of the benefits.

APPROACHES TO ENSURE CONTINUITY OF HARM REDUCTION SERVICES FOR PEOPLE WHO USE DRUGS

Harm reduction is a community-driven public health strategy aimed at supporting the health and well-being of people with lived experience of substance use, especially those in underserved communities (SAMHSA, 2023). Harm reduction emphasizes direct engagement with people who use drugs to prevent overdose and infectious disease transmission; improve physical, mental, and social well-being; and provide easier access to SUD treatments. Through its Harm Reduction grant program, SAMHSA is working to expand access to community harm reduction services through state, local, and tribal governments and nonprofit community-based organizations. CDC collaborated with SAMHSA to establish and expand the National Harm Reduction Technical Assistance Center, which provides technical assistance to programs and efforts across the country to provide harm reduction services and prevent, treat, and support recovery from SUDs.

LIMITATIONS

In this bulletin, we have sought to outline the unique challenges people who use substances face during and after disasters. We have not limited the findings to any particular type of disaster, although natural disasters, the COVID-19 pandemic, and 9/11 terrorist attacks emerged as recurrent themes in our literature search. We have included alcohol, tobacco, nicotine, cannabis, and opioids among substance categories. The bulletin outlines demographics of the substance-using population, reflecting commonalities with those populations that are also disproportionately impacted by disaster events. We have focused on U.S. studies, although relevant global literature was included in cases where similar U.S. research was not found. Studies included in this bulletin were published in and after 2014, which is a potential limitation, as knowledge about earlier years was indirectly obtained from reviews published after 2014. Substance use issues and SUDs have a complex etiology, often interacting with mental health conditions in multiple ways. We found limited literature on mental health issues after a disaster in people with preexisting substance use issues and SUDs. A literature search with an expanded timeline and/or reach beyond the United States may offer a more holistic understanding of the issue.

CONCLUSIONS

This bulletin details the key challenges people with substance use issues and SUDs experience in and after disasters. Several of these challenges overlap with those of the overall population, but they are made worse for people with substance use issues and SUDs due to their unique needs and situations, which may include being in treatment, experiencing homelessness, being at risk of overdose, and facing stigma. Recovery for people with substance use issues and SUDs may be challenged by disaster response and recovery measures such as physical distancing during the pandemic and closures of treatment facilities or forced relocation following natural disasters.

Substance use issues and SUDs often intersect with mental health issues and mental illness. In the context of a disaster, substance use, and mental health issues may reinforce one another. Appropriate interventions for people who use substances are multifaceted, leveraging a combination of therapies, community approaches, and mutual support programs. The most critical aspect during and after a

disaster is continuity of treatment and other activities promoting safety and recovery, requiring policies that support disaster preparedness and post-disaster approaches to monitoring and intervention.

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