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Intersections of Substance Use and Suicide: Evidence and Key Take-Aways

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CCSA, 500–75 Albert Street
Ottawa, ON K1P 5E7
613-235-4048
info@ccsa.ca

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Conflict of Interest

None

Disclaimer

The content in this report may be uncomfortable for some readers. For help with a mental health crisis or concerns about suicide, call Canada Suicide Prevention Service: 1-833-456-4566 or visit Talk Suicide Canada website: <https://talksuicide.ca/>



Terminology

There are no universally accepted definitions for suicidal thoughts, suicide attempts or death by suicide. Definitions and language related to substance use and mental health are continuously evolving to better represent and respect the experiences of people who use substances, have mental health concerns or both. For the purposes of this report, we use the following definitions:

Death by suicide: Death caused by self-directed harmful behaviour with an intent to die (Crosby et al., 2011).

Mental illness: Illness “characterized by alterations in thinking, mood or behaviour that exists on a spectrum of severity and is associated with significant distress and impaired functioning. Examples of specific mental illnesses include: mood disorders; schizophrenia; anxiety disorders; personality disorders; and eating disorders” (Public Health Agency of Canada, 2022).

Substance use: The use of all legal and illegal drugs, Substance use exists on spectrum from non-use to substance use disorder (Health Canada, 2023).

Substance use concerns: Use of substance that interferes with or has a negative impact on a person’s overall health and well-being.

Substance use disorder (SUD): “A medical condition characterized by continued use despite negative impacts on many domains of a person’s life including physical health, family and social relationships” (Health Canada, 2023).

Suicide: Unless otherwise specified, this term is used to refer to suicidal thoughts, suicide attempts and death by suicide.

Suicide attempt: Self-directed, potentially harmful behaviour with an intent to die that does not result in death (Crosby et al., 2011).

Suicidal thoughts: Thinking about or planning suicide. In the literature, suicidal thoughts are also referred to as suicidal ideation and thoughts of suicide (Crosby et al., 2011).



Executive Summary

Many intersecting factors contribute to suicide risk among people with substance use concerns, including mental illness, trauma, feelings of hopelessness, impulsivity, social isolation, and social, environmental and systemic factors such as stigma that can be barriers to accessing services and supports.

The objectives of this report are to highlight:

- How specific substances affect the relationships among substance use concerns, substance use disorder (SUD), suicide risk and the transition from suicidal thoughts to suicide attempts and death by suicide;
- People and communities who are at higher risk for substance use and suicide, and population-specific approaches that show promise for mitigating their risk;
- Approaches for prevention and intervention that could improve support and outcomes for people with substance use concerns who are at risk for suicide; and
- Gaps in knowledge and areas for further research.

While many intersecting factors contribute to suicide risk among people with substance use concerns and SUDs, these factors cannot be used consistently to predict whether a person with suicidal thoughts will transition to suicide attempt or death by suicide (Franklin et al., 2017; Klonsky & May, 2014). For people with substance use concerns or SUD who are at risk for suicide, the amount and type of substance used can affect this transition. For example, the disinhibiting effects of acute alcohol use (heavy drinking) can reduce fear and increase the risk that a person with thoughts of suicide will attempt suicide. Recent theories of suicide emphasize the importance of understanding these transitions among diverse populations to gain a better understanding of how risks interact (Franklin et al., 2017; Klonsky & May, 2014; O'Connor & Kirtley, 2018).

Key Findings

- Substance use and SUD appear to be associated with an increased risk of suicide.
- The relationship among substance use, SUD and suicide is complex and affected by many intersecting factors. Trauma, health and social inequities, stigma, co-occurring disorders and stressful life events contribute to suicide risk among people with substance use concerns or SUDs.
- Some groups might be at higher risk of suicide because of overlapping health and social inequities. Intersections of race, ethnicity, sex, gender, poverty, and biological and cultural factors might increase the risk of suicidal thoughts, suicide attempts and death by suicide in people with substance use concerns or SUDs.
- To gain a full picture of suicide risk among people with substance use concerns or SUDs, research must consider the impacts of stigma and structural and systemic factors that can affect access to care and lead to under reporting.
- Suicide risk appears to increase during treatment for SUD and in the 12 months after.
- Health and social service providers should conduct ongoing assessment for suicide risk at regular intervals over the short and long term to be able to identify concerns and respond early.



- Aftercare and long-term supports are essential to help reduce the risk of recurrence and provide ongoing supports.
- Screening tools for people with substance use concerns who are at risk for suicide should be evaluated to ensure they are effective and meaningful.

The studies included in this report indicate that specific patterns of substance use and SUD appear to increase suicide risk (Bohnert et al., 2017; Borges, Bagge, et al., 2017; Crump et al., 2021; Culbreth et al., 2021). There are some limitations to the academic research reviewed in this report, which should be considered when interpreting the findings (e.g., small numbers of participants in some studies). Despite these limitations, a better understanding of the relationships among substance use concerns, SUDs and suicide will better equip policy makers, researchers, health-care professionals and others to make effective and meaningful changes in evidence-informed prevention and intervention approaches at the municipal, provincial, territorial and federal levels.

This report will be of interest to policy makers and decision makers at the federal, provincial, territorial and municipal levels as it can inform work on the Federal Framework for Suicide Prevention and the Government of Canada's work on national standards for substance use and mental health services. It could also be of interest to regulatory bodies in the health and behavioural sciences to support ongoing training about substance use and suicide for current and future practitioners.



Introduction

Substance use concerns and substance use disorders (SUDs) appear to increase the risk of suicide and the transition from thoughts of suicide to suicidal behaviour (Bohnert et al., 2017; Borges, Bagge, et al., 2017; Crump et al., 2021; Culbreth et al., 2021). There are many intersecting factors that contribute to suicide risk, including mental illness, trauma, social isolation, stressful life events, and long-standing health and social inequities. SUD is the second most-frequent risk factor for suicide after depression (Conner et al., 2019). However, the relationship among substance use, SUD and suicide is complicated and requires further investigation.

Substance use occurs on a spectrum ranging from abstinence (no use) to beneficial use (e.g., use of prescription medicine) to SUDs (Health Canada, 2023). For example, about three in four people living in Canada use alcohol, usually in relation to social or celebratory occasions (Paradis et al., 2023). In most studies reviewed for this report, substance use concerns refer to patterns of substance use that might interfere with a person's life or physical or psychological well-being. More research is needed to understand the relationships among substance use, SUDs and suicide among diverse people and communities in Canada.

Most risk factors studied in relation to suicide risk cannot consistently predict whether a person with suicidal thoughts will transition to suicide attempt or death by suicide (Franklin et al., 2017; Klonsky & May, 2014). One of the effects of a SUD is that it can increase a person's feelings of isolation and negatively impact personal relationships, two factors that might increase suicide risk. The type and amount of substance used can affect the transition from suicidal thoughts to suicide attempts and death by suicide. For example, the disinhibiting effects of acute alcohol use can reduce fear and increase the risk that a person with suicidal thoughts will attempt suicide.

This report will be of interest to policy makers and decision makers at the federal, provincial, territorial and municipal levels as it can inform work on the Federal Framework for Suicide Prevention and the Government of Canada's work on national standards for substance use and mental health services. It could also be of interest to regulatory bodies in the health and behavioural sciences to support ongoing training about substance use and suicide for current and future practitioners.

This report was developed by the Canadian Centre on Substance Use and Addiction (CCSA) in partnership with the Mental Health Commission of Canada (MHCC). It builds on a report by the Centre for Suicide Prevention (2022) that was produced in response to a need to understand the relationships among substance use, suicide and related mental illnesses.

Substance Use and Suicide

Understanding the Relationship Between Substance Use and Suicide

Despite decades of research on suicide and substance use, the intersecting risk factors and mechanisms that link substance use concerns and SUDs to the risk of suicide remain complex and poorly understood. Recent theories of suicide focus on the importance of distinguishing among the risk factors for this transition to determine the best screening, prevention and intervention efforts (Franklin et al., 2017; Klonsky & May, 2014; O'Connor, 2018).



Prior research has shown that many intersecting factors, including individual, environmental and social factors, affect the relationships among substance use, SUDs and suicide risk. For example, specific patterns of substance use can increase suicide risk by impairing a person's judgment and decision making, reducing inhibition and fear, increasing aggression and impulsivity, changing emotional state, increasing the risk of other mental illnesses (e.g., depression, anxiety), or aggravating pre-existing conditions (Britton & Conner, 2010; Bryan et al., 2016; Conner et al., 2014; Kuo et al., 2011). However, most risk factors cannot consistently predict whether a person with suicidal thoughts will transition to a suicide attempt and death by suicide (Franklin et al., 2017; Klonsky & May, 2014).

It is also important to consider that various physical and psychosocial effects of substance use or SUDs can have different impacts on a person's suicide risk. For example, some feelings related to substance use such as hopelessness and distress are often associated with suicidal thoughts. Also, excessive alcohol consumption in a short period of time (i.e., binge drinking) can result in reduced fear, increased tolerance or both, which might increase a person's risk for transitioning from suicidal thoughts to a suicide attempt (Bagge et al., 2014; Borges, Bagge, et al., 2017; Borges, Cherpitel, et al., 2017; Bryan et al., 2016; Gonzalez et al., 2009; Klonsky & May, 2014).

The association among substance use concerns, SUDs and suicide risk might also be influenced by factors that are less studied in the current academic literature. For example, some individual and environmental factors, including mental illness, trauma, discrimination, stigma and poverty, can act as underlying or intersecting risk factors for both substance use concerns and suicide, and increase their risk at the same time. For example, mental illnesses such as depression and anxiety have shown a strong association with both substance use and suicide (Brådvik, 2018; Luo et al., 2022) and suicide risk increases when mental illnesses and SUDs co-occur. The 2012 Canadian Community Health Survey – Mental Health, which included data from 25,113 people aged 15 years old and older, indicated that major depressive episodes that co-occurred with SUDs increased the risk of past 12-month suicidal thoughts up to 16 times (Onaemo et al., 2022). Other risk factors include adverse childhood experiences, grief, trauma and stressful life circumstances (e.g., relationship problems, financial difficulty) (Crump et al., 2021; Liu & Miller, 2014).

There is limited research on how different types of substances and specific substance use patterns (e.g., frequency, quantity, duration, severity, diagnosis) affect suicide risk. A Swedish study conducted from 2003 to 2016 of a national cohort of adults showed that all SUDs (opioid, sedative-hypnotic, hallucinogen, cocaine, amphetamine, cannabis and alcohol) were associated with a significant risk of death by suicide regardless of other risk factors (Crump et al., 2021). Similarly, a study of the association of SUDs with death by suicide using the electronic health records and insurance claims data of a U.S. population of 2,674 men and women who died by suicide between 2000 and 2013 compared to 267,400 matched controls randomly selected from the general population indicated that all categories of SUDs were associated with increased risk of death by suicide. This association remained significant even after adjusting for other factors that are known to increase risk of suicide, including demographic information (e.g., gender, age, education) and mental and physical illnesses (Lynch et al., 2020). Other studies and meta-analyses also highlighted the relationships between opioid use and opioid use disorders and increased risk of death by suicide (Bohnert et al., 2017; Chesney et al., 2014). Additionally, a study of 27,942 people in Denmark receiving services for SUDs compared to 139,710 matched controls without SUDs showed that the two substances associated with the highest risk of death by suicide were opioids and alcohol when consumed in the 12 months prior to receiving services (Hesse et al., 2020). However, these findings are only focused on death by suicide and did not assess the risk of suicidal thoughts and suicide attempts or the transitions from suicidal thoughts to suicide attempts.



Stigma

People who experience mental health concerns who use substances or have an SUD often experience different types of stigma. They can encounter stigma at different points of care within health and social service systems (e.g., emergency departments, pharmacy, medical appointments) (Public Health Agency of Canada, 2019). Stigma can act as a barrier to care by reducing the likelihood that someone will access or return to services they need to achieve their well-being goals (Canadian Centre on Substance Use and Addiction, 2019). Suicide and substance use are highly stigmatized and there is a possibility when substance use and suicide co-occur that the impact of stigma can be compounded and increase barriers to care and service. Education, training and policy changes that address stigma at the individual, community and system levels are necessary to ensure health equity among people with substance use and mental health concerns, including suicide risk. Research is needed to explore how stigma impacts access to suicide prevention and intervention services among people with substance use concerns or SUDs.

Alcohol Use and Suicide

One in four deaths by suicide in Canada involves alcohol, either as a means of suicide or detectable in a person's body at the time of death (Orpana et al., 2021). A systematic review and meta-analysis that included 31 studies investigating the association between alcohol use disorder (AUD) and suicide indicated that AUD is associated with higher risk of suicidal thoughts, suicide attempts and death by suicide (Darvishi et al., 2015). Findings from a recent systematic review of the effect of alcohol consumption on the development of suicidal thoughts indicated that acute alcohol use may be associated with increased likelihood of suicidal thoughts in both adolescents and adults. In adolescents, the risk of suicidal thoughts also increased with greater frequency of alcohol use and among those who started drinking before age 13 (Cochrane Canada, 2022).

Alcohol has both stimulating and sedating effects (Hendler et al., 2013). Stimulating effects can be related to impulsivity and aggression, while sedating effects can be related to feelings of sadness, distress and despair (Hendler et al., 2013). Alcohol can reduce a person's awareness of their negative emotions and impair their ability to use healthy coping skills to manage stress (Hufford, 2001). Both effects can be harmful to someone experiencing suicidal thoughts as alcohol can reduce inhibition and increase the risk of transition from suicidal thoughts to suicide attempt.

Results from a review article about psychological autopsy investigations and post-mortem blood alcohol concentrations showed that AUD and acute alcohol use are prevalent among those who die by suicide (Conner & Bagge, 2019). A study of 272 individuals in 17 countries who attempted suicide and arrived at 38 emergency departments within six hours of the incident showed that even one or two standard drinks were associated with a substantial increase in the risk that a person will attempt suicide (Borges, Cherpitel et al., 2017). The risk of suicide attempt increased with the amount of alcohol used and followed a dose-response relationship in that every drink increased the risk of a suicide attempt by 30 per cent (Borges, Cherpitel et al., 2017). Another study of 166 individuals presenting to a hospital for a suicide attempt showed that acute alcohol use predicted the intensity of suicidal thoughts within the 24 hours preceding the attempt (Bagge et al., 2014). Research also shows that acute alcohol use during the 24 hours prior to a suicide attempt was associated with a rapid transition from suicidal thoughts to suicide attempts among 119 U.S. Army personnel (Bryan et al., 2016). A meta-analysis of seven studies on acute alcohol use and the risk of suicide attempt indicated that any level of acute alcohol use, but particularly at higher doses, is associated with an increased likelihood of a suicide attempt (Borges, Bagge et al., 2017). Acute



alcohol use is also associated with the use of methods that are more lethal (e.g., firearms) (Park et al., 2017).

All individuals with AUD should be screened for suicidal thoughts and previous suicide attempts. Most studies have focused on the effects of chronic alcohol use and AUD on suicide risk and mental illness. More research is needed to better understand the immediate suicide risk associated with acute alcohol use.

Opioid Use and Suicide

There is evidence that opioid use is associated with a higher risk of suicidal thoughts, suicide attempts and death by suicide (Ashrafioun et al., 2017; Braden et al., 2017). In one study, the risk of suicide attempt more than doubled when opioids were present in a person's body in the 24 hours before a suicide attempt (Bagge & Borges, 2017). Some studies have shown that the risk for suicidal thoughts is higher in people who formerly or persistently used prescribed opioids for non-medical reasons (e.g., the experience or feeling) compared to those who used them for medical reasons only (Kuramoto et al., 2012).

Opioid use has been linked to increased rates of co-occurring mental illnesses and SUDs (Becker et al., 2008), higher negative cognitive or emotional responses toward actual or anticipated pain (Martel et al., 2013), and impulsivity and aggressive behaviour (Evren et al., 2014). All these factors might affect the relationship between opioid use and suicide risk. For example, Luo and colleagues (2022) examined the relationship between frequency and dose of prescription opioid use and subsequent suicide attempts in over 8,000 adults. Results indicated that those who were prescribed frequent and higher doses of opioid medications were at significantly higher risk of suicide attempts compared to those not prescribed opioid medications (Luo et al., 2022). However, this link was highly affected by co-occurring medical and psychiatric conditions. People who experienced a mental illness (other than anxiety) and were prescribed more frequent and higher doses of opioids had an increased risk of suicide attempt, while those prescribed opioids for pain management of medical conditions had a lower risk of suicide attempt when prescribed more frequent and higher doses of opioid medications (Luo et al., 2022).

In some groups, the relationship between opioid use and suicide is persistent even in the absence of other factors that can affect it, including age and co-occurring psychiatric conditions (Bohnert et al., 2017; Ilgen et al., 2016). For example, a study of American veterans showed that past-year opioid use was correlated with past-year suicide attempts in individuals who were considered at high risk for suicide attempt. The study also showed that this relationship remained significant regardless of psychological factors associated with both behaviours, including impulsivity, major depressive disorder and type of opioid use (i.e., heroin, prescription opioids or both) (Chesin et al., 2019). These findings point to the complex relationships between physical and mental health and opioid use.

Brådvik and colleagues (2007) found that among people who use heroin “regularly” (regular use is not defined in the study) as their preferred substance a history of accidental poisoning was significantly associated with higher rates of suicide attempts by means other than heroin use. In addition, the more poisoning experiences a person had had, the greater the risk of suicide attempts (Brådvik et al., 2007). A study conducted in Sweden with adults aged 18 years old and older assessed for substance use or a SUD for a period of 14 years (2003–2017) showed that recency and frequency of non-medical opioid use (defined as any non-medical use of heroin and other opioids) were significantly associated with both death by opioid poisoning and suicide (Lundgren et al., 2022). However, when other factors such as age, history of suicide attempts, experience of mental illness, early onset of drug use and intravenous drug use were included in the analysis,



recency and frequency of non-medical opioid use were only related to death due to poisoning (accidental) and not suicide (intentional). Importantly, a composite score indicating the severity of mental illness (excluding suicide) was the strongest correlate in the relationship between opioid use and both death by suicide and poisoning (Lundgren et al., 2022).

Findings from the studies reviewed in this section highlight the importance of health systems supporting a variety of services and supports for people with substance use concerns and SUDs, including non-pharmacological supports such as psychotherapy and harm reduction services, and ensuring they are readily available and accessible. Despite the increased risk of suicide in people with concerns related to opioid use and those with opioid use disorders, there is a lack of research on pharmacological and psychosocial interventions that can reduce the risk of suicide and related mental illnesses in these populations (Rizk et al., 2021). There is a critical need for coordinated substance use and mental health services that specifically target the risk of suicide in people who use opioids as their preferred substance.

Cannabis Use and Suicide

Cannabis use has been linked to the risk of suicidal thoughts, suicide attempts and death by suicide (Borges et al., 2016; Gobbi et al., 2019; Guo et al., 2021; Hammami & Katapally, 2022). A large national survey in the United States, which included 281,650 adults aged 18 to 34 years old, found that any cannabis use or presence of cannabis use disorder in the past year was associated with higher rates of suicidal thoughts and attempts (Han et al., 2021). This link was consistent in those with or without depression and in both sexes, but significantly stronger in females (Han et al., 2021). Similarly, a systematic review and meta-analyses of cannabis use and suicide found that any cannabis use and heavy cannabis use were associated with higher risk of suicidal thoughts and suicide attempts. However, there is a lack of evidence that acute cannabis use (i.e., cannabis consumed on one specific occasion) increases imminent risk of suicide (Borges et al., 2016). In relation to death by suicide, 9.5 per cent of people who died by suicide tested positive for cannabis use (Borges et al., 2016). The literature in this area is still very limited and lacks consistency.

There is a risk that regular cannabis use can increase the potential for psychosis, depression and anxiety over the long term, especially for those who begin consuming cannabis during adolescence (Canadian Centre on Substance Use and Addiction, 2020). There is also evidence that heavy cannabis use might especially increase the risk of depressive disorders (Lev-Ran et al., 2014), which is an intersecting factor that can contribute to the risk of suicide in people with substance use concerns related to cannabis use. Further studies with more precise assessments of cannabis use are needed to understand the association between cannabis use, mental illness and suicide risk.

Other Substance Use and Suicide

Other substances, including cocaine, methamphetamine and some prescription medications, might increase the risk of suicide in certain individuals.

Daily or more frequent use of cocaine has been associated with increases in suicide attempts in the 12 months following a person's discharge from substance use services (Britton & Conner, 2010). A U.S. study of 406 people with cocaine use disorder who participated in substance use interventions showed that 43.5 per cent had attempted suicide in the past (Roy, 2009). Several factors, including childhood trauma, a family history of suicide attempts, treatment with antidepressant medication, and co-occurring alcohol and opioid use disorders, might have contributed to the higher risk of suicide attempts observed in people with cocaine use disorder (Roy, 2009).



Methamphetamine use has also been related to death by suicide. An Australian study, conducted between 2009 and 2015, of a large sample of people who used methamphetamine showed that a fifth (18.2 per cent) of all methamphetamine-related deaths (e.g., accidental poisoning, homicide) that happened over a period of escalating methamphetamine use were by suicide (Darke et al., 2019). In this study, a recent relationship breakup and loss of custody or access to children were the most frequently recorded life events immediately prior to the death by suicide. The negative emotions associated with these recent losses might have contributed to the impulsivity, aggression and agitation associated with methamphetamine use. Nearly half of people who died by suicide were found to have consumed methamphetamine before their deaths, which may have increased the risk of transition from suicidal thoughts to suicide attempts (Darke et al., 2019). Methamphetamine use is also common among people who experience psychotic and depressive disorders, both of which elevate the risk of suicide (Kuo et al., 2011).

Some prescription substances such as benzodiazepines are also associated with an increased risk of suicide attempt and death by suicide (Dodds, 2017). Benzodiazepines are a sedative medication commonly prescribed for anxiety and insomnia. Results from a review of 17 articles showed that the link between prescribed use of benzodiazepines and suicide attempts and death by suicide is consistent across different types of research and various populations (Dodds, 2017). The findings also indicated that the risk of suicide increases with the use of higher doses of benzodiazepines (dose-dependent effect) and is particularly prominent in individuals with higher baseline levels of aggression, impulsivity or both (Dodds, 2017).

Polysubstance Use and Suicide

Polysubstance use is the consumption of more than one substance at the same time or close in time and is highly prevalent among people with substance use concerns (Boileau-Falardeau et al., 2022). Results from a rapid review of the literature showed that a person might use multiple substances to enhance their experience, decrease overall consumption or self-medicate for a pre-existing condition (e.g., pain or mental illness) (Boileau-Falardeau et al., 2022). Polysubstance use is not always intentional. The unregulated supply can make it difficult for people to know exactly what is in the product they purchase, which may contribute to drug poisoning (Canadian Centre on Substance Use and Addiction, 2022).

Polysubstance use is a complicating factor in relation to the risk of suicide. For example, evidence suggests that among people who use both alcohol and opioids there is a significantly increased risk of accidental poisoning (both substances being depressants) and suicide (Rizk et al., 2021). In addition, polysubstance use is highly prevalent in some populations living in vulnerable conditions such as people who experience housing insecurity or are victims of intimate partner violence (Meacham et al., 2020; Choi et al., 2022). Findings from a study of 202,838 people who died by suicide between 2003 and 2017 in the United States showed that housing insecurity and being a victim of intimate partner violence were both associated with polysubstance use (Culbreth et al., 2021). Polysubstance use might further increase the risk of suicide by decreasing inhibition in individuals who are already at high risk of suicide because of these intersecting factors. Integrated health and social services with sustained funding that are readily accessible to individuals who have many intersecting needs could help reduce the risk of suicide by building meaningful connections and helping to address precarious and dangerous living conditions.



Key Take-Aways

- Co-occurring mental illness and substance use, across substances, significantly increase the risk of suicide (thoughts, attempts and death by suicide).
- The relationship between substance use and suicide appears to be dose-dependent such that acute use appears to increase risk of suicide. This relationship is well established with alcohol, but less clear for other substances.
- There appears to be an increased risk of suicide during substance use treatment and in the 12 months after completion. Screening for suicide risk by health-care professionals is critical during this period.
- Many intersecting factors contribute to suicide risk and the transition from suicidal thoughts to suicide attempts to death by suicide, including polysubstance use, trauma and stressful life events or circumstances.
- Prescribed medications such as benzodiazepines that might increase the risk of suicidal thoughts and suicide attempts alone or in combination with other substances should include warning labels clearly describing such risk.

Limitations

There are several limitations that should be considered when interpreting research findings about the relationships between substance use and suicide. First, many studies reviewed in this report are based on a small number of participants or specific groups, so their findings cannot be generalized to a broader population. In addition, many studies relied on the use of single questions to assess suicide and might not accurately capture the diverse experiences of people with substance use concerns and SUDs who are at risk for suicide. More research is needed with larger sample sizes and use of measures that are more precise and sensitive to unique, individual factors that affect suicide risk. Second, many studies did not differentiate between suicidal thoughts and suicide attempts and only studied “suicide risk” as a general term in relation to substance use. There is a need to further investigate how substance use and other intersecting factors affect the transition from suicidal thoughts to suicide attempts and death by suicide. Third, most studies included in this report only involved people who accessed services and did not include the experiences of people who could not or did not access services or their reasons for not accessing them. There is also a gap in research studies about the diversity of experiences. Fourth, there is a need for more studies on how types of substance and specific substance use patterns can affect the risk of suicidal thoughts and suicide attempts and the transitions from suicidal thoughts to suicide attempts. Finally, research must also incorporate the expertise of people with lived or living experiences of substance use and suicide risk to gain a holistic understanding of the many intersecting factors that affect risk both at the individual and system levels.

People at Higher Risk of Suicide

Some groups of individuals might be at higher risk of suicide because of overlapping health and social inequities (Centers for Disease Control and Prevention, 2022). Intersections of race, ethnicity, sex, gender, poverty and trauma, and biological and cultural factors might increase the risk of suicide attempts and death by suicide in people with substance use concerns. Targeted interventions and additional support might be needed to address their risks. This section discusses



some populations known in the literature to be at higher risk of suicide and whose risk is known to be highly affected by substance use and SUDs. Several other groups not discussed in this section, including veterans, people who experience housing insecurity and those who previously attempted suicide, might also be at higher risk of suicide.

Older Adults

Adults aged 65 years old and older are at a higher risk of suicide (Novilla-Surette et al., 2022). Several factors contribute to their higher risk, including physical illness, pain, functional impairment, social isolation, mental illness (especially depression) and substance use (Van Orden & Conwell, 2011). Substance use and particularly alcohol use and AUD interact with other risk factors such as depressive symptoms, physical illness, pain and cognitive decline to increase the risk for suicidal thoughts and suicide attempts in late life (Blow et al., 2004; Schepis et al., 2018). For example, older adults might be prescribed opioid medications to manage chronic pain, which can increase their risk of opioid use disorders and their access to a means of attempting suicide (Schepis et al., 2018; Vogel, 2017).

Similarly, use of psychiatric medications among older adults who experience mental illness might increase their risk for death by suicide because of a potential increase in aggressive behaviour or reduced inhibition (Waern, 2003). Furthermore, some psychiatric medications can be used as a means to attempt suicide (Gunnell, Middleton, & Frankel, 2000). A study by Carlsten and Waern (2009) indicated that using prescribed psychiatric medications, including antidepressants, antipsychotics, sedatives and hypnotics, is associated with a higher risk of death by suicide in older adults. However, after adjustments for mental illnesses (e.g., anxiety disorders, psychotic disorders), only sedatives and hypnotics were associated with an increased risk for death by suicide (Carlsten & Waern, 2009).

Polypharmacy, a term used to describe the simultaneous use of five or more medications daily, is common in older adults due to declining physical health (Masnoon et al., 2017). Aging is associated with metabolic changes and reduced drug clearance from the body, which can cause adverse effects. These potential negative side effects increase with the number of drugs used (Dagli & Sharma, 2014). Many medications used by older adults list depression, suicidal thoughts and suicide attempts as side effects (Qato et al., 2018). These findings suggest that prescribers should conduct a thorough assessment before prescribing medications to older adults and at regular intervals, especially for sedative, hypnotic or opioid medications.

A study of 17,917 American adults aged 65 years old and older who died by suicide indicated that 19.9 per cent disclosed suicide intent to a family member, partner or health-care provider within a month before their death (Choi & Marti, 2022). This study also showed that physical and mental health concerns, substance use and SUDs, and various stressors were related to a higher likelihood that individuals aged 65 to 84 years old would disclose their intention to attempt suicide (Choi & Marti, 2022). The higher likelihood of disclosure provides an opportunity for health-care providers to carefully screen and intervene for suicidal thoughts and attempts in older adults.

Recognizing and treating physical and mental health concerns, engaging in dialogue about the warning signs of suicide, and increasing social supports and ties are other important strategies for suicide prevention among older adults (Holm et al., 2021).



Youth

Suicide is one of the leading causes of death among youth aged 15 to 24 years old in Canada and globally (Campisi et al., 2020; Findlay, 2017). Initiating substance use in early adolescence (before age 13 years) compared to no use increases the risk of suicidal thoughts and suicide attempts in both young females and males (Kim & Kim, 2010). A systematic review of seven cross-sectional studies indicated that initiating alcohol use in the pre-teen years compared to middle or later teen years is associated with greater risk of suicidal thoughts (Cochrane Canada, 2022). In addition, past heavy episodic (binge) drinking was associated with a slight increase in the risk of suicidal thoughts (Cochrane Canada, 2022). Results from a systematic review and meta-analysis of 25 studies indicated that there is a bidirectional relationship between SUDs and suicidal thoughts and suicide attempts in youth aged 25 years old and younger, in which SUDs and suicide might intensify the effect of each other across development (Rioux et al., 2021). The findings from this study also suggest that the effect of SUDs on suicide might be longer lasting than the effect of suicide on SUDs (Rioux et al., 2021).

Studies have shown a significant increase in the risk of both substance use and suicidal thoughts among youth who have experienced violence or who have done harm to others compared to youth who have not (Katsaras et al., 2018; Litwiller & Brausch, 2013). Substance use might also mediate or intensify the relationship between experiences of violence, suicidal thoughts and suicide attempts (Litwiller & Brausch, 2013). A study of a sample of 15,425 high school students from across the United States showed that the effects of bullying and cyberbullying on suicidal thoughts and suicide attempts were mediated by substance use, violent behaviour and depression (Reed et al., 2015). Youth receiving care from protection services often experienced multiple types of trauma and neglect, and were especially at high risk of suicide, substance use and mental illnesses due to their experiences (Edalati & Conrod, 2017; Palmer et al., 2021). A study of 499 youth who died by suicide in the United States showed that the presence of alcohol, opioids or cannabis was significantly higher at the time of death for those involved in protection services than for those who were not (Ruch et al., 2023). These findings highlight the need for targeted screening and early interventions that are trauma-informed and address the specific needs of youth involved in protection services.

High risk of suicide in youth and the relationship with substance use can be better understood in the context of race and ethnicity, gender and sex, and cultural differences. A study in Colorado of 7,095 high school students aged 14 to 18 years old indicated that the rate of suicidal thoughts and other health-related outcomes such as depression and bullying were higher among youth with multiple marginalized identities, including those who were multiracial and transgender or nonbinary compared to youth who were white and cisgender (Park et al., 2022). Guo and colleagues (2021) compared two large samples of U.S. and Chinese adolescents on the relationship between substance use and suicidal thoughts and suicide attempts. The study found that when both groups were considered together, reported cigarette use, alcohol use and prescription pain medication use were all associated with a higher risk of suicidal thoughts and suicide attempts. Cannabis use and methamphetamine use were only associated with higher risk of suicide attempts but not suicidal thoughts (Guo et al., 2021). When two groups of adolescents were compared, alcohol use was associated with increased suicidal thoughts and suicide attempts only in Chinese adolescents, whereas cannabis use was associated with suicidal thoughts and suicide attempts only in U.S. adolescents. Use of prescription pain medication was associated with higher rates of suicide attempts in both groups, but this association was significantly stronger for Chinese adolescents (Guo et al., 2021). The findings from these studies suggest that the relationship between substance use and suicide in youth should be studied using an intersectional approach and a focus on the many



accompanying factors that affect risk. Approaches to prevention and intervention in schools and health-care settings should be sensitive to the interrelated factors that affect suicide risk. These approaches should be co-developed by the communities for whom the services and supports are intended.

Men

This section uses the terms “men” and “women” as many studies considered in this report did not clearly distinguish between sex (biological attributes) and gender (socially constructed roles and identities). Although the prevalence of suicidal thoughts and suicide attempts that did not result in death is higher among women (Nock et al., 2008), men appear to have a higher rate of death by suicide, globally (Naghavi, 2019) and in Canada (Statistics Canada, 2023a). It is also reported that the transition from suicidal thoughts to suicide attempts happens more quickly in men than in women (Schrijvers et al., 2012).

Men are more likely to report SUDs compared to women (Pearson et al., 2013) and have higher rates of apparent accidental opioid toxicity deaths (i.e., overdose) (Federal, provincial, and territorial Special Advisory Committee on the Epidemic of Opioid Overdoses, 2023). Substance use and SUDs might play a role in men’s elevated rates of death by suicide, whereas other mental illnesses such as post-traumatic stress disorder (PTSD) might be more related to the risk of suicide in women (Monnin et al., 2012). A systematic review of risk factors for suicide indicated that substance use and dependence had the most extensive supporting evidence (24 studies) as risk factors for suicide attempts or death by suicide in men (Richardson et al., 2021). The same study showed that substance use has more of an effect on risk of suicide in men compared to women (Richardson et al., 2021). Other risk factors that might interact with substance use to increase the risk of death by suicide in men are a diagnosis of depression, negative life events and trauma (Richardson et al., 2021), choice of more lethal means (Mergl et al., 2015), and less likelihood of help-seeking behaviours (Möller-Leimkühler, 2003).

Further research is needed to understand whether substance use in men is a predisposing risk factor for suicide, a coping mechanism for managing negative emotions or mental illnesses, or a motivational or facilitating factor for the transition from suicidal thoughts to suicide attempts. Further studies are required to understand the specific roles of sex and gender in the relationship between substance use and suicide.

The findings of these studies highlight the need for interventions to support men’s mental health and encourage help-seeking behaviours. Changing narratives around traditional masculine norms, including excessive self-reliance and heterosexuality, might help reduce the likelihood of suicidal thoughts among men and encourage them to seek help, and be compassionate and open (King et al., 2020).

First Nations, Métis and Inuit Peoples Living in Canada

Colonialism has had long-lasting, negative impacts on the overall health outcomes of First Nations, Métis and Inuit Peoples and communities (Graham et al., 2021). Research shows that some groups of First Nations, Inuit and Métis Peoples are at greater risk of experiencing substance use-related harms, suicide and mental illnesses compared to non-Indigenous people living in Canada (Crawford, 2022; Nelson & Wilson, 2017). Research into substance use and suicide among First Nations, Inuit and Métis Peoples must acknowledge the unique experiences of different communities (Chandler & Lalonde, 2008) to ensure accuracy and to respect their diverse histories, cultures, languages,



experiences and needs. Future research should acknowledge these realities (Government of British Columbia, n.d.).

Colonialism and its consequences such as health and social inequities, and intergenerational trauma continue to play a major role in shaping the health outcomes of First Nations, Inuit and Métis peoples (Crawford, 2022; Kumar & Tjepkema, 2019). Results from a scoping review of studies on the effects of residential schools on Indigenous Peoples in Canada showed that being forced to attend these institutions was associated with higher rates of depression, substance use, mental distress, stress and suicide, as well as increased rates of chronic and infectious diseases (Wilk et al., 2017). Federal laws that forcibly removed First Nations, Métis and Inuit children from their families and communities contributed to the loss of traditional knowledge and language, the destruction of culture and identity, and the disconnection from their land and cultural practices (Lines et al., 2019). These traumatic experiences and their adverse consequences, including risk factors for suicidal thoughts and suicide attempts, can be passed down from survivors to their children and grandchildren (Elias et al., 2012).

Approaches that show the most promise for addressing the intersecting factors that contribute to suicide are community led and culturally based, including approaches that involve ceremony, Indigenous knowledge sharing by elders and being on the land (Graham et al., 2021). These approaches must address the unique needs of diverse groups of First Nations, Métis and Inuit Peoples and communities (Graham et al., 2021). More research is needed to understand the intersections of mental health, substance use and suicide among different communities, including Métis Peoples and First Nations Peoples who live off reserve (Nelson & Wilson, 2017). Future research should be distinctions-based, community led and ensure that First Nations, Métis and Inuit Peoples and communities establish how data and information will be collected, protected, used and shared (First Nations Information Governance Centre, 2023).

2SLGBTQ+ People

2SLGBTQ+ people (two spirit, lesbian, gay, bisexual, transgender, queer and other sexual orientations and gender identities) have higher rates of non-medical drug use and SUDs compared to people who are not 2SLGBTQ+ (Jones et al., 2020). Results from a study combining large Canadian and U.S. datasets on sexual minorities (defined in the study as lesbian, gay, bisexual and other non-heterosexual individuals) indicated that suicide attempts are significantly higher in both adolescents and adults who belong to sexual minorities (Salway et al., 2021).

A study from the Trevor Project's 2021 National Survey on LGBTQ Youth Mental Health among LGBTQ youth aged 13 to 24 years old from across the United States showed that regular (daily or weekly) use of prescription drugs (e.g., OxyContin, codeine, Ritalin) that were not prescribed to them was linked to three-times higher rates of suicide attempts in the past year compared to those with no regular use (Trevor Project, 2022). The study also indicated that regular use of both alcohol and cannabis was significantly associated with higher risk of suicide attempt in the past year in these populations compared to non-regular use. The risk was particularly high among LGBTQ youth under the age of 21 years old compared to older participants (Trevor Project, 2022). The same study also found that youth who had made efforts to change their gender identity or sexual orientation (e.g., conversion therapy) and those who experienced physical harms because of their identity were more likely to use substances (Trevor Project, 2022). It is possible that these youth use substances as a way of coping with negative experiences, victimization and discrimination against 2SLGBTQ+ communities. Early screening and interventions for substance use that are sensitive to the needs of



2SLGBTQ+ youth can help prevent long-term negative effects on their mental health and reduce the risk of suicide.

Similar results have been reported in adults from sexual minority communities. A Canadian study found that gay or bisexual men were four and six times more likely to have ever seriously considered suicide in their lifetime compared to heterosexual men (Brennan et al., 2010). Another Canadian study showed that gay or bisexual men who were HIV positive experienced significant levels of stigma, including being socially excluded for being HIV positive, being verbally and physically abused and being rejected as a sexual partner. These experiences were associated with heightened risk for suicidal thoughts and attempts (Ferlatte et al., 2017). All these factors might contribute to the higher rates of suicide in people in the 2SLGBTQ+ community compared to people not in the community.

More research is needed to better understand substance use and suicide among this population. However, research must ensure that it captures the diversity, intersections and experiences of different subgroups by engaging community members throughout the research process (Centers for Disease Control and Prevention, 2022).

Key Take-Aways

- Intersecting health and social inequities, isolation, substance use, SUDs, and experiences of mental illness and trauma, among other factors, increase the risk of suicide in some populations.
- Research and data about different communities and groups must be disaggregated to gain an accurate understanding of risk and protective factors for substance use and suicide.
- Community-led approaches, particularly among First Nations, Métis and Inuit Peoples, show promise.
- People with mental illnesses should be provided with education about the possible contraindications of medications, and their interactions with substances and suicide risk.
- Many intersecting health and social factors contribute to suicide risk among people with substance use concerns. It is essential to develop approaches that address the specific needs of different communities.
- Routine screening for suicidal thoughts and mental health status by service providers and engaging in dialogue that is both culturally safe and compassionate should be prioritized.



Impact of COVID-19 on Substance Use and Suicide

The COVID-19 pandemic had considerable impacts on the substance use and mental health concerns of people living in Canada. Impacts included the mental health outcomes associated with some COVID-19 measures such as isolation and fear, and limited access to a range of substance use and mental health services and supports, including those focused on preventing toxicity-related deaths (Canadian Centre on Substance Use and Addiction & Canadian Society of Addiction Medicine, 2021).

Some studies showed that the rate of death by suicide slightly declined or remained stable for the first pandemic interval (March 2020 to February 2021) compared to previous years in Canada (McIntyre et al., 2021). However, other studies showed that the rate of suicidal thoughts increased during the pandemic (Turner et al., 2023; Fortgang et al., 2021). A systematic review of 38 articles, which included 12 of them in its meta-analysis, indicated that the rate of suicidal thoughts during the COVID-19 pandemic was higher than that reported in studies published before the pandemic (Farooq et al., 2021). The higher rates of suicidal thoughts during the pandemic might result in higher rates of suicide attempts and deaths by suicide in the following years. The main risk factors for suicidal thoughts were low social support, loneliness, quarantine, exhaustion and mental health difficulties (Farooq et al., 2021). Similarly, a recent study assessing adults living in Canada over three time periods indicated that the rate of suicidal thoughts slightly increased from 2020 to 2021 (4.1 per cent [Wave 1], 5.3 per cent [Wave 2] and 5.8 per cent [Wave 3]) (Turner et al., 2023). Suicidal thoughts were higher in individuals with pre-existing mental illnesses and those aged 18 to 35 years old.

Varin and colleagues (2023) used the data from the Survey on COVID-19 and Mental Health to study the relationship between suicidal thoughts and alcohol use during the pandemic. The survey was a nationally representative cross-sectional survey led by Statistics Canada and the Public Health Agency of Canada involving 14,689 people aged 18 years old and older living in provinces and territories of Canada from September 11 to December 4, 2020. Findings from this study indicated that the prevalence of suicidal thoughts was higher among people who reported an increase in alcohol consumption and those who reported past-month heavy episodic drinking during the pandemic compared to individuals who did not (Varin et al., 2023). They also indicated that males and middle-aged and older-aged individuals had the highest risk of suicidal thoughts in relation to the increases in alcohol consumption and past-month heavy episodic drinking (Varin et al., 2023). Future research needs to consider the impact of other factors that could influence the association between increased alcohol use and suicidal thoughts such as the social determinants of health (e.g., income security, employment, social support, stress).

A Canadian survey of more than 13,000 people living in Canada examined the relationship between mental health and substance use over nine time periods between October 2020 and January 2022 (Canadian Centre on Substance Use and Addiction & Mental Health Commission of Canada, 2022). Findings indicated that up to one in four people with a history of SUDs have reported suicidal thoughts during the pandemic. Both men and women with a history of SUDs reported higher rates of suicidal thoughts compared with those without a history of SUDs. In addition, women and men with “problematic alcohol use and/or cannabis use”¹ compared with those without such concerns were

1. Defined as “respondents who reported moderate-to-significant risk of alcohol use harms (8+ on the Alcohol Use Disorders Identification Test [AUDIT], on a scale of 0 to 40), and/or problematic or hazardous cannabis use, or the presence of a probable cannabis use disorder



three-times more likely to report suicidal thoughts during the pandemic (Canadian Centre on Substance Use and Addiction & Mental Health Commission of Canada, 2022). Increasing severity of “problematic alcohol and cannabis use” were related to higher rates of suicidal thoughts for both women and men (Canadian Centre on Substance Use and Addiction & Mental Health Commission of Canada, 2022). These findings highlight the need for continuous and enhanced monitoring of suicidal thoughts among people with substance use concerns (Varin et al., 2023) and support the importance of evidence-based suicide prevention strategies during and after the COVID-19 pandemic (Wasserman et al., 2020).

Strategies for Suicide Prevention and Intervention in the Context of Substance Use

Substance use concerns, SUDs and suicide are complex public health issues. Many intersecting factors contribute to these issues and hence prevention and intervention strategies require multi-dimensional approaches. Research shows that people with SUDs receive less intensive care responses for suicide risk than those who do not use substances. Their suicide risk is evaluated by providers as less severe and they are less likely to receive a psychiatric referral or longer-term support and services (Suokas & Lönnqvist, 1995). They also have shorter hospital stays (Ries et al., 2008, 2009). This section discusses several factors that contribute to lower access to and limited support for suicide-related services among people with SUDs.

Provider Competencies

Many service providers, even those with substance use and mental health training, are not comfortable or equipped to evaluate risk for suicide or intervene if there is a risk of suicide reattempt (Pilkinton & Etkin, 2003). Harris and colleagues (2021) examined over 600 substance use clinicians across New York State for their perceptions, attitudes, practices and training needs in relation to suicide assessment and intervention. While 72 per cent of clinicians reported working with clients with a history of suicide attempts, less than half of them confirmed that they routinely assessed for suicidal thoughts and suicide attempts among new or existing clients. This study also showed that there is a strong relationship between a provider’s perceived self-efficacy in reducing the risk of suicide in clients and the delivery of protocols to reduce the risk of suicide (Harris et al., 2021). Inconsistent assessment and intervention for suicide risk by health-care providers may be related to a lack of adequate formal training during a provider’s education (Oordt et al., 2009). The findings of this study highlight the need for specialized curriculum-based training in suicide risks for clinicians who deliver services to people with substance use concerns. Regulatory bodies and training for current and future providers in the health and behavioural sciences should prioritize curricula about mental health, substance use, suicide and their intersections.

Service Co-ordination

High rates of co-occurring mental illnesses such as depression and mood disorders among people with substance use concerns add to the complexities of suicide prevention and intervention initiatives (Conner et al., 2019). For example, substance-induced depression (depression that occurs

(8+ on the Cannabis Use Disorder Identification Test-Revised [CUDIT-R], on a scale of 0 to 32)” (Canadian Centre on Substance Use and Addiction & Mental Health Commission of Canada, 2022).



because of substance use) is highly prevalent and is an imminent risk for suicide attempts in people attending bed-based programs for substance use concerns (Conner et al., 2014). However, coordinated approaches that address symptoms of depression and other mental illnesses in the context of substance use treatment are lacking.

Another factor that could contribute to reduced access to services among people with substance use concerns who are at risk for suicide is a lack of co-ordination and collaboration among these services (Lesage et al., 2008). Integrating and coordinating screening, services and supports for people who experience mental illness and who have substance use concerns or SUDs and other risks related to suicide leads to better quality of care and health outcomes. Service integration, followup care and strengths-based, community-led programs should be prioritized as a standard of care for mental health (Lake & Turner, 2017; Bombard et al., 2018).

Data Collection

Reliable data about suicide that reflect intersecting factors such as substance use concerns and SUD are essential to inform suicide prevention and intervention programs (Skinner et al., 2016). In Canada, there are limitations in how deaths are investigated and how data are collected, which may contribute to a lack of clarity in understanding how SUDs, substance use concerns and suicide intersect.

In Canada, death investigations are under provincial jurisdiction and follow either a coroner or medical examiner system. Medical autopsies indicate the cause of death and any substances that might have been present at time of death; however, most deaths in Canada are not subject to autopsy (91.5 per cent in 2020) (Statistics Canada, 2023b). Medical autopsies are limited as they cannot capture the intersecting social, environmental and other factors that might contribute to a person's suicide risk. Psychological autopsies that gather information about a person's life through interviews with family members, friends and other sources close to the person who died by suicide and any relevant medical or health-related documentation can provide key information to help understand the context of a person's life (Favril et al., 2022). Standardizing data collection methods across jurisdictions and consistently capturing contextual information about the circumstances surrounding apparent deaths by suicide can help provide a more comprehensive picture of the underlying and interrelated risk factors, and inform prevention efforts (Favril et al., 2022).

Community-Based Settings

Community health and social service settings, including community health centres, drop-in centres, pharmacies and harm reduction services, have an opportunity to offer services and supports to people with substance use concerns who are at risk of suicide. Providers in these settings likely have frequent contact with people with substance use concerns and might be aware of other risk factors, including co-occurring mental illness and SUDs, and social, structural and environmental factors such as housing insecurity, as well as grief, loss and trauma. Many individuals who die by suicide have visited an emergency department or substance use treatment centre weeks before their death (Vasiliadis et al., 2015; Ilgen et al., 2012). For example, 55.5 per cent of men with SUDs who died by suicide visited their providers either in a general medical setting or a mental health or substance use treatment setting one month before their death; 25.4 per cent were seen one week before their death (Ilgen et al., 2012). Routine suicide screening, intervention and followup in emergency departments and organizations that deliver services and supports to people with substance use concerns might reduce the risk that a person will transition from suicidal thoughts to a suicide attempt.



Individuals should be screened at intake to substance use programs and routinely monitored over the long term for suicidal thoughts, previous suicide attempts and associated risk factors (Kleiman et al., 2017). There is evidence that for most people at risk for suicide, suicidal thoughts, their intensity and related risk factors dramatically change over the course of most days (Kleiman et al., 2017, 2019). Frequent and ongoing screening for suicidal thoughts and changes over time, and short- and long-term followup care could help reduce suicide attempts among those who were seen in community-based settings or participated in treatment centres for substance use.

Emergency Departments

Several brief suicide screening, intervention and referral measures have been developed for emergency departments and other intensive care units (Stewart & Lees-Deutsch, 2022), but very few have been evaluated for use in the context of substance use. Research in Quebec indicated that almost half of people who died by suicide were seen in an emergency department in the year before their death and 29.5 per cent of those died within one month following discharge from an emergency department (Vasiliadis et al., 2015). Rassy and colleagues (2022) conducted a series of studies to develop a systematic and standardized clinical protocol (SecUrgence protocol) to assess and prevent suicide among people who are at risk and who present at emergency departments in Quebec. These studies included several steps based on scientific evidence and input from key experts and stakeholders to identify the best assessment and care statements to include in the suicide prevention protocol for emergency departments. The SecUrgence protocol has the potential to provide timely assessment and care for people with substance use concerns who present at emergency departments for the risk of suicide. However, it is still in pilot implementation and evaluation before it can be made widely accessible in practice (Rassy et al., 2022).

Suicide Interventions for People Accessing Substance Use Services

Substance use services offer opportunities for suicide prevention and intervention as they provide services and supports to some of the populations at highest risk of suicide. However, evidence-based interventions that specifically address the risk of suicide in people seeking substance use services and supports are limited. To respond to this gap, some recent studies tried to adapt or evaluate the effectiveness of suicide interventions in the context of substance use treatment. One study sought to evaluate the effectiveness of the Preventing Addiction Related Suicide (PARS) module on suicide-related outcomes (i.e., attitudes, knowledge and help-seeking behaviour) among adults receiving services in community-based substance use intensive outpatient programs across western Washington State (Ries et al., 2022). The PARS intervention is a one-session, interactive psychoeducational module that includes educational presentations and group discussions about risk factors related to suicide and warning signs and responses to suicide risk in self or others. The module was implemented by substance use counsellors. Those who received the PARS intervention were compared to a control group who did not receive PARS at one-, three- and six-month assessments after treatment (Ries et al., 2022). Participating in PARS was associated with significant increases in an individual's knowledge about suicide and adaptive attitudes at all followup assessments, as well as their help-seeking behaviour at their six-month followup. Although PARS was effective in improving some suicide-related outcomes, there is still a need to examine whether it can also decrease risk of suicide attempts over the long term (Ries et al., 2022).

Conner and colleagues (2021) examined the efficacy of rapid administration of a brief intervention called the Attempted Suicide Short Intervention Program (ASSIP) among adults with substance use



concerns who were admitted to a hospital following a suicide attempt. They were expected to stay in the hospital for a period (median hospital stay was 13 days) (Conner et al., 2021). The ASSIP is a patient-centred intervention that follows specific guidelines and is delivered over three sessions. It includes cognitive and behavioural components, video playback and narrative therapy. Results indicated that people who participated in ASSIP showed a higher satisfaction with the intervention and greater therapeutic alliance compared to a control group that did not participate. However, rates of suicide reattempts remained high in both groups over the six-month followup period (Conner et al., 2021). These findings suggest that people with SUDs who attempt suicide might need more comprehensive, long-term support and followup to decrease their risk of suicide reattempts.

Although substance use is a major risk factor for suicidal thoughts and attempts, accessing services and supports for substance use does not necessarily reduce the risk of suicide among people with substance use concerns. There is limited research available about the effectiveness of suicide prevention and intervention initiatives among people with substance use concerns. In fact, for some groups, the risk of suicide attempt significantly increases during the immediate months following substance use treatment (Britton & Conner, 2010; Darke et al., 2005). Some important factors that contribute to the increased risk of suicide during this period include previous history of suicide attempts, suicidal thoughts at treatment entry, social isolation and polysubstance use (Darke et al., 2005, 2007). Other studies confirmed these factors increase the risk of suicide attempts in the 12-month followup period after treatment for SUDs (Britton & Conner, 2010; Ilgen et al., 2007; Trout et al., 2017). For example, a longitudinal study of 2,966 people who received treatment for any SUD showed that 2.6 per cent of participants had attempted suicide in the 12 months following treatment (Britton & Conner, 2010). After controlling for several factors predicting suicide attempt at baseline, primary use of cocaine at treatment entry and daily cocaine use during the 12 months following treatment significantly increased the risk of suicide attempt in the first year after treatment for SUD (Britton & Conner, 2010). This finding could be related to the effects of chronic cocaine use on the brain's reward circuitry, which results in a major reduction in the ability or motivation to feel and experience pleasure (i.e., anhedonia, apathy) (Kalechstein et al., 2002). Anhedonia is a significant predictor of recurrent cocaine use during the treatment period, regardless of experiences of depressive symptoms (Crits-Christoph et al., 2018).

Findings from these studies suggest that the risk of suicidal thoughts and suicide attempts is not necessarily mitigated by receiving substance use treatment. Screening for risk of suicide at intake and throughout treatment is necessary and must consider the specific needs of people with SUDs. Furthermore, screening tools and substance use treatment services and supports must be evaluated to ensure they adequately assess risk for suicide in various substance use treatment settings. Targeted and coordinated programs that address psychological and physical symptoms (e.g., anhedonia, pain) among people who abstain from substance use in the months following discharge are needed.

Key Take-Aways

- Risk for suicide increases during and in the 12 months after treatment for SUDs.
- Ongoing assessment for suicide risk should be conducted by trained providers at regular intervals over the short and long terms.
- Services that provide aftercare and long-term support are essential to address the risk of recurrent suicidal thoughts and suicide attempts among people with substance use concerns.



- Continued examination and evaluation of screening tools for people with substance use concerns and are at risk for suicide are essential.
- Training on substance use, mental illness and suicide risk for practitioners in the behavioural sciences is essential.
- Coordinated, strengths-based, trauma-informed and targeted approaches that address intersecting needs, including mental illness, substance use and SUDs, show promise.
- Interventions that are sensitive and specific to the needs of populations that are at higher risk through the intersections of substance use and suicide should be developed.



Conclusions

The relationships between substance use and suicide are complex and influenced by several intersecting factors such as mental illness, social isolation, adverse childhood experiences, trauma, systemic barriers, stigma and difficult life situations such as housing and financial insecurity. The research in this report suggests that people with substance use concerns and SUDs are at an increased risk for suicidal thoughts, suicide attempts and death by suicide. This report contributes to the literature by pointing out the intersections of suicide and substance use and their associated risk factors. Importantly, the report highlights the relationships between risk of suicide and specific substances and strives to disentangle the factors that affect transitions from suicidal thoughts to suicide attempts and death by suicide. The relationships between suicide, alcohol use and AUD are better understood than the relationships between substance use and the unregulated drug supply. A lack of standardization in how data about deaths by suicide are collected makes it difficult to compare data across jurisdictions. Death determinations seldom include a thorough investigation into the contextual factors that contribute to death by suicide, which limits our ability to understand how different types of social, structural and interpersonal factors intersect. Standardized, comparable data are needed to inform prevention and intervention approaches.

We have highlighted systemic challenges such as lack of co-ordination among care services, different types of stigma, and health and social inequities that can negatively impact people with substance use concerns and SUDs who are at risk of suicide. For example, experiences of stigma can affect whether a person seeks or returns to services and supports. Strengths-based, community-based and community-led approaches are promising to help reduce stigma and other barriers to care, and to improve health outcomes.

This report is primarily based on academic research literature. Future research should engage people with lived or living experiences to validate the research questions and findings. Research should consider the contextual factors that contribute to suicide risk among people with substance use concerns or SUDs who are at risk of suicide. Applying a health equity lens and engaging people with lived or living experiences in the research process are key to understanding the diverse experiences and intersecting factors that contribute to substance use and suicide among different communities. This approach will lead to a more complete picture of these public health concerns and meaningful prevention and intervention approaches for an improved quality of life for all.

Recommendations

Recommendations are provided below for policy makers and decision makers. Each of these recommendations should include the meaningful involvement of people with lived or living experiences to advise on nuance, impact and unintended consequences.

- Establish sustainable and reliable funding for upstream approaches such as coordinated, long-term services and supports that are evidence-based, strengths-based and trauma-informed;
- Create opportunities to address the needs of diverse communities through community-led approaches;
- Support the development and implementation of standards of care and best practices for people with substance use concerns who are at risk of suicide;
- Continue to evaluate suicide screening tools and interventions for their effectiveness and scale up those approaches that demonstrate impact;



- Prioritize curriculum-based training for current and future providers delivering services to people with substance use concerns to improve competencies and comfort working with people with substance use concerns who are at risk of suicide and mental illnesses;
- Continue to support initiatives to standardize the collection of data about substance use and suicide and to strive for interoperable health and social service systems that can support coordinated care;
- Examine how data are collected and ways to collect data about suspected deaths by suicide and drug toxicity deaths to gain a clearer picture of substance use and suicide; and
- Perform research that includes people with lived or living experiences of substance use concerns, SUDs and suicide risk as part of discussions about prevention and intervention approaches.



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