ARTICLE

A Closer Look at Substance Use and Suicide

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Suicide is the tenth leading cause of death in the United States across all age groups. A total of 44,193 suicides occur each year, or 121 suicides per day (1). The Centers for Disease Control and Prevention defines suicide as "death caused by self-inflicted injuries with the intention of dying from the result of such actions" (1). Substance use is a risk factor for both fatal and nonfatal overdoses, suicide attempts, and death by suicide. Compared with the general population, individuals with alcohol dependence and persons who use drugs have a 10–14 times greater risk of death by suicide, respectively (2), and approximately 22% of deaths by suicide have involved alcohol intoxication (2). Furthermore, one study found that opiates were present in 20% of suicide deaths, marijuana in 10.2%, cocaine in 4.6%, and amphetamines in 3.4% (2). Among the reported substances, alcohol and opioids are associated with the greatest risks of suicidal behavior.

Psychiatric disorders have a strong association with suicide. Ninety percent of people who die by suicide have one or more concomitant psychiatric disorders (3). Suicide risk is highest among patients with bipolar disorder (odds ratio=7.77) and unipolar affective disorder (odds ratio=6.67), followed by schizophrenia (odds ratio=6.55) and anxiety disorders (odds ratio=3.57–6.64) (4). The risk of suicide increases further when psychiatric disorders are comorbid with substance use disorders. Research shows that men with comorbid depression and alcohol use have the highest long-term suicide risk (16.2%) (5). The prevalence of lifetime suicide attempts among patients with alcohol use disorder and bipolar disorder is reported to be between 21% and 42% (6). Similarly, patients with bipolar disorder and comorbid substance use disorder have earlier-onset mood symptoms, higher rates of anxiety disorders, more suicide attempts, and more frequent hospitalizations than patients with bipolar disorder alone (7).

Substance use independently increases the risk of suicidal behavior (8). Acute and chronic drug abuse may impair judgment, weaken impulse control, and interrupt neurotransmitter pathways, leading to suicidal tendencies through disinhibition (9). Additionally, physiological and metabolic stress resulting from drug abuse can lead to neurotoxic damage and other severe medical complications. This is particularly significant in older populations who are less physiologically resilient due to increased chronic medical comorbidities and neurodegenerative diseases (10). In older populations, suicide is closely linked first with psychiatric illness and subsequently with substance use disorders, particularly alcohol use disorder. Therefore, persons in this patient population have a higher risk of suicidal behavior compared with younger individuals (9).

ALCOHOL USE DISORDER AND SUICIDE

Drinking alcohol at an early age, binge or heavy drinking, and drinking behaviors that meet criteria for mild, moderate, or severe alcohol use disorder can all lead to increased suicidal ideation. Persons with heavy alcohol use are five times more likely to die by suicide than social drinkers (11).

In 2015, a survey conducted by the Substance Abuse and Mental Health Services Administration showed that 9.8 million people ≥18 years old seriously considered suicide in the past 12 months, with 1.4 million making nonfatal suicide attempts (12). Young adults aged 18–25 were also more likely to have serious thoughts of suicide or suicide attempts. One study of the elderly found that 24.5% of people aged 60–69 and 13% of people aged 70–79 had consumed alcohol before attempting suicide (13). Older persons use alcohol as a palliative measure in response to pain, losses, and affective changes. This often leads to a damaging cycle of alcohol use to self-medicate symptoms of depression, worsening the situation. For this reason, alcohol use disorder has been reported to be the second most common psychiatric disorder associated with elderly suicide, second only to depression (10, 13).

OPIOID USE DISORDER AND SUICIDE

Opioid-related suicides have doubled in the last 15 years. This increase has paralleled the massive increase in drug overdose deaths, particularly those involving prescription opioids. Prescribed opioid use nearly doubled between 1999 (116 million) and 2011 (219 million) (14) and has been noted to be a risk factor for suicide by overdose. In 2015 alone, the Centers for Disease Control and Prevention reported a total of 52,000 drug overdose-related deaths, with 63.1% involving a prescription or illicit opioid (15). The rates increased to 72.2% for synthetic opioids and were 20.6% for heroin. A meta-analysis by Wilcox and colleagues (2) showed that heroin use increased the risk of suicide by 13.5 times compared with the 10-fold increase with alcohol use disorder. Another study investigating the association between prescription opioid use and suicide among patients with chronic noncancer pain revealed that an increased opioid dose was related to an increased risk of suicide, even after controlling for demographic and clinical factors (16). The recent increase in drug overdose-related suicides highlights the importance of assessing suicide risk in patients receiving opioids.

BOX 1. Dynamic and Static Risk Factors Associated With Suicide and Protective Factors[a]

Dynamic and Acute Risk Factors	Static and Long-Term Risk Factors	Protective Factors
Current suicidal ideation	Family history	Reasons for living
Current suicidal plan	Caucasian race	Being clean and sober
Preparation for suicide	Unmarried status	Attending 12-step support groups
Acute symptoms of mental disorder	Living alone	Religious attendance and/or internalized spiritual teachings against suicide
Severe psychic anxiety	Lack of social support	
Anxious ruminations	Medical illness	Presence of a child in the home and/or childrearing responsibilities
Global insomnia	Unemployment	
Psychosis with delusions of poverty or doom	Fall in social or economic status	Intact marriage
Active or recent alcohol abuse	Rejection by spouse or partner	Trusting relationship with a counselor, physician, or other service provider
	Previous suicide attempts	
	Anniversary of important losses	Employment

[a] For further details, see Simon (19).

OTHER SUBSTANCES, MULTIPLE SUBSTANCE USE, AND SUICIDE

Almost all substance use disorders are associated with an increase in suicide risk. Research shows that the suicide hazard ratio is 1.35 for cocaine use, 2.10 for psychostimulant use, 3.83 for benzodiazepine use, 3.89 for cannabis use, and 11.36 for sedative use (8). Additionally, marijuana use, cocaine use, alcohol use, and cigarette smoking were all found to be independently related to suicide, even after controls for sociodemographic factors (17). Tobacco use and smoking appear to contribute to deaths by suicide (18). Current smokers are at the highest risk of suicidal ideation, plans, and attempts, followed by past smokers, with nonsmokers carrying the lowest risk. Genetic vulnerabilities in the serotonergic system may predispose a smoker to suicide, although the exact mechanisms have yet to be elucidated (18).

RISK ASSESSMENT AND MANAGEMENT

Currently, no single rating scale or clinical algorithm can accurately predict the risk of suicide, because suicidal behavior emanates from a convergence of multiple predisposing and concurrent risk factors. Even if all the scales were combined into a single risk assessment form, other clinical risk factors would be omitted (19). Furthermore, suicide is difficult to predict, as shown in one report suggesting that 83% of deaths by suicide were unexpected or unavoidable (20). Therefore, reasonable clinical assessment and judgment is key.

The literature suggests numerous schemas to assist in evaluating individuals for potential suicide risks. One schema categorizes risk factors as either dynamic (acute) or static (long-term) (see box). Regarding patients who are suicidal and have a concurrent substance use disorder, clinicians should pay attention to dynamic risk factors that affect the individual's life. These factors can change rapidly but are easy to target for treatment intervention. They include current misuse of alcohol and other drugs, concomitant depression, criminality, and difficulties in controlling aggression and impulsivity.

The goal of intervention is to treat acute, modifiable risk factors and to continuously ensure the patient's safety (19). Patients at high risk for suicide should be hospitalized as a precaution, and detoxification treatment should be started immediately. Subsequently, it is crucial to make the patient aware of the process of rehabilitation. In the case of opioid use disorder, this can involve methadone and buprenorphine treatments, which have been shown to protect against suicide. Methadone treatment in particular has been shown to make patients 20% less likely to commit suicide (21). When treating patients with alcohol use disorder, a multilevel model of protection is recommended. This includes protecting against biological, behavioral, environmental, and cultural factors. Effective clinical care for patients with alcohol use disorder as well as other psychiatric and medical disorders will mitigate suicide risk, given the preponderance of evidence linking alcohol use disorder and suicidal behavior. In addition, easy access to a variety of clinical and nonpharmacological interventions can be helpful. These interventions may include psychotherapy,

KEY POINTS/CLINICAL PEARLS

- Collectively, substance use disorders confer a risk of suicide that is 10–14 times greater than that of the general population; deaths related to substance use are highest among persons with alcohol use disorders followed by persons who abuse opiates.
- Patients with comorbid alcohol use disorder and a mood disorder have a greater risk of suicide attempts compared with patients with a mood disorder alone.
- Ongoing suicide risk assessment allows for an integrated treatment plan that enables the clinician to continuously address acute and modifiable suicide risk factors, such as preparatory behavior or acute psychosis, while identifying protective factors, which include spirituality, an intact marriage, and child-rearing responsibilities.
- The use of methadone and buprenorphine should be prioritized within an integrated treatment plan for patients with opioid use disorder to protect against suicide; similarly, patients with alcohol use disorder require a multilevel approach, such as detoxification, attendance of rehabilitation programs, and engagement in recovery through follow-up programs.

motivational interviewing, cultural and family engagement, fostering spiritual beliefs, and limiting access to alcohol at the community level. Additionally, clinicians should address coexisting smoking addiction, because people with psychiatric disorders often have a truncated life span due to smoking related diseases and premature mortality, compared with the general population. Furthermore, nicotine use has been shown to contribute to deaths by suicide (18, 22). Patients who are reluctant to adopt pharmacological recommendations should be referred for nonpharmacological treatment modalities as described above.

Taking a closer look at family engagement as an intervention in substance use disorders, the clinician should engage the patient's family and friends in forming a crisis plan. For example, a crisis plan for a person who abuses opioids should include education and naloxone, particularly for those with a high risk of reattempting suicide via opioid overdose. Such individuals include those taking high-dose prescription opiates for chronic pain, those recently discharged from the hospital for opioid intoxication or overdose, and those recently released from prison with a history of opioid use disorder (19).

Because patients with substance use disorders are prone to suicidal ideation and attempts, clinicians need to screen such patients for suicidal thoughts and behaviors routinely and continuously throughout treatment. Collaboration between substance use treatment providers, other health care practitioners, family members, and community resources is imperative to the successful rehabilitation of patients with substance use disorders.

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