

Chapter 11

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Suicidal behavior is a global public health concern, responsible for 1.4% of all deaths, amounting to approximately 800,000 deaths annually (Klonsky, May & Saffer, 2016). Suicide is the fifteenth leading cause of death worldwide and the nineteenth leading cause of the global burden of disease, particularly prevalent in developed countries and among men (Klonsky; May and Saffer, 2016). The Centers for Disease Control and Prevention

(CDC) defines suicide as death caused by self-directed behavior with the intent to die, while a suicide attempt is a non-fatal self-directed behavior that can be harmful, and suicidal ideation refers to thinking about or planning suicide (Klonsky; May and Saffer, 2016).

Research on suicide faces challenges such as diverse definitions and terminologies without consensus, differing measures, stigma, and the complexity of suicidal thoughts and behaviors (Klonsky; May and Saffer, 2016). In clinical evaluation, tools like the Suicide Attempt and Self-Injury Interview and the Suicidal Ideation Scale are used to better understand these behaviors and thoughts (Klonsky; May and Saffer, 2016). Clinical interventions include Dialectical Behavior Therapy and Cognitive Therapy for suicide prevention, although no universally accepted gold standard exists (Klonsky; May and Saffer, 2016). Suicide prevention can also be addressed through means restriction, medical education, and school programs (Klonsky; May and Saffer, 2016).

The transition to emerging adulthood is characterized by exploration and significant changes, being a period of high exposure and vulnerability to risk factors such as drug use and unprotected sex (Pereira *et al.*, 2018). Protective factors, such as self-esteem and self-efficacy, as well as a well-structured support network, help mitigate these risks and promote better problem-solving abilities (Pereira *et al.*, 2018). Effective interventions during this phase are essential for developing a healthy mindset and reducing the risk of suicide (Pereira *et al.*, 2018).

Active interventions and post-discharge follow-up have shown relevance in reducing new suicide attempts in patients admitted to emergency and urgent care services (Inagaki *et al.*, 2019). Approaches that include recurring contact with patients and care coordination are crucial for preventing suicidal behavior (Inagakiet *al.*, 2019).

Studies indicate that neurocognitive functioning can predict suicidal behavior in young people with affective disorders, suggesting that detailed neurocognitive assessments can be useful in identifying and preventing suicidal behaviors (McHugh *et al.*, 2020). Additionally, elevated levels of impulsivity have been associated with a higher likelihood of suicide attempts, highlighting the importance of assessing impulsivity in preventing suicidal behavior (Millneret *al.*, 2018).

Research on suicide biomarkers in the past five years has been promising, with the identification of potential biomarkers that can predict risk and classify diagnostic subtypes, enabling more precise and effective interventions (Johnston *et al.*, 2020). These advances could revolutionize how suicide risk is assessed and treated in daily clinical practice.

EPIDEMIOLOGY

Suicidal behavior in psychiatric emergencies represents a significant challenge for mental health professionals and emergency care systems. This complex phenomenon is characterized by the manifestation of suicidal behaviors, including suicidal ideation, suicide

attempts, and self-harming behaviors, which require immediate and effective interventions to mitigate the risk of morbidity and mortality (Gaynor *et al.*, 2023).

According to current data, suicide accounts for approximately 1.4% of all global deaths, resulting in more than 800,000 annual fatalities. When considered together, suicide and suicidal behavior constitute the nineteenth leading cause of global disease burden. Impulsivity plays an instrumental role in suicide, as suicidal behaviors are often executed by impulsive decisions with little prior assessment of harmful consequences. Individuals with a higher propensity for impulsivity who contemplate suicide are considered at greater risk of actualizing these thoughts (Millner *et al.*, 2018).

The lifetime prevalence rates of suicidal ideation and suicide attempts are approximately 9.2% and 2.7%, respectively. The risk of repeated suicide attempts is particularly high in the period following the first attempt, with one in ten patients reattempting within five days. In England, 220,000 patients are admitted annually for self-harming behaviors (Inagaki *et al.*, 2019).

Studies highlight interventions aimed at reducing suicidal behaviors and ideation in adolescents, a particularly vulnerable group. Recent data indicate that suicide is the second leading cause of death among adolescents in some countries, second only to automobile accidents. This suggests a continuous need for preventive strategies tailored to the specific demographic and psychosocial characteristics of adolescents (Gaynor *et al.*, 2023).

Moreover, significant gender differences in suicide, suicidal ideation, and self-harm have been observed after release from correctional institutions. A higher proportion of completed suicides was found among women in these circumstances, underscoring the importance of differentiated approaches for men and women in the post-incarceration context (Janca *et al.*, 2023).

During the COVID-19 pandemic, there was a concerning increase in self-harm and suicidal behaviors among children and young people, exacerbated by prolonged exposure to precipitating factors. This increase reflects the adverse effects of public health crises on the mental health of the young population, with a potential rise in psychiatric emergencies (López *et al.* 2023).

Ross *et al.* (2023) highlight that presentations in emergency departments with suicidal ideation and self-harm represent missed opportunities for effective preventive interventions. The need for rapid screening and intervention protocols is emphasized to identify and intervene early in high-risk cases, highlighting the importance of a multifaceted approach in psychiatric emergencies that integrates epidemiological research, early identification of risk factors, and continuous development of intervention strategies.

Understanding the complexities of suicidal behavior is crucial for improving care and reducing the devastating impacts on communities. This study aims to investigate and comprehend the prevalence, incidence, risk factors, and current trends associated with suicidal behaviors, including suicidal ideation, suicide attempts, and self-harm. Additionally,

it seeks to analyze the opportunities and challenges in early and effective intervention of these behaviors in different populations, considering demographic, contextual, and temporal variations, contributing to the development of preventive strategies and clinical interventions that can reduce the impact of suicidal behavior on public health and improve the management of these cases in psychiatric emergency services (Millner *et al.*, 2018; Inagaki *et al.*, 2019; Gaynor *et al.*, 2023; Janca *et al.*, 2023; López *et al.*, 2023; Ross *et al.*, 2023).

According to Ross *et al.* (2023), suicidal ideation, a factor that frequently precedes suicidal behaviors such as unsuccessful suicide attempts or completed suicides, is a globally prevalent phenomenon affecting approximately 9% of the population over their lifetime. In a study conducted by the authors involving 1,662,118 individuals aged over 10 years, 15,267 presented with suicidal ideation in the emergency room during the study period.

The prevalence of suicidal behaviors also varies among population groups within the same region. Young people, especially LGBTQ+ adolescents, face disproportionately high rates of suicidal ideation and suicide attempts, often related to stigma, bullying, and lack of family support. Similarly, ethnic minority groups may encounter additional barriers to accessing culturally sensitive mental health care, increasing the risk of undetected or inadequately treated suicidal crises. In this regard, a study conducted by Janca *et al.* (2023) aimed to synthesize evidence on the incidence of suicide, suicidal ideation, and self-harm after release from incarceration, with a focus on gender differences. The analysis included 29 studies. The crude mortality rate (CMR) for suicide per 100,000 person-years was 114.5 (95% CI 97.0, 132.0) for samples not stratified by gender, 139.5 (95% CI 91.3, 187.8) for women, and 121.8 (95% CI 82.4, 161.2) for men. The standardized mortality ratio (SMR) for suicide was 7.4 (95% CI 5.4, 9.4) for samples not stratified by gender, 14.9 for women (95% CI 6.7, 23.1), and 4.6 for men (95% CI 1.3, 7.8). The pooled incidence rate ratio (IRR) comparing suicides between women and men was 1.1 (95% CI 0.9, 1.4). According to the authors, the suicide rate is higher after release than during incarceration, with the elevated risk for women being three times greater than for men compared to the general population (Janca *et al.*, 2023).

López-Goñi *et al.* (2020), in turn, introduced significant contributions to the topic by conducting a prospective multicenter case-control study investigating the incidence of suicidal behavior in a sample of 440 patients seen in psychiatric emergency services. Using the Brugha Adverse Life Events Scale and the Columbia Suicide Severity Rating Scale, the authors divided the patients into three groups: those with no previous suicide attempts, those with a single index attempt, and those with multiple attempts. After two years, medical histories were reviewed to analyze the occurrence of suicidal behavior.

DIAGNOSIS

Suicide represents a serious global public health problem. WHO statistics indicated nearly 800,000 deaths by suicide annually, with projections of 1.53 million by 2020. However, the true extent of the problem is reflected in the widespread underreporting in most countries. It is estimated that the number of suicide attempts is significantly higher, between 10 to 20 times, compared to the number of completed suicides. A previous history of suicide attempts has been the best predictor of subsequent completed suicides, with a repetition rate of 35% to 50% within this group. Therefore, early detection and effective intervention are crucial for preventing new attempts. However, the lack of official data due to methodological challenges corroborates the difficulty in obtaining an accurate understanding of this problem (Espandian *et al.*, 2020).

To introduce the topic of suicide diagnosis in the emergency room, it is crucial to highlight the severity of suicidal behavior as a significant public health issue, especially among children and adolescents. The alarming increase in cases of suicidal ideation and suicide attempts in this age group underscores the urgent need to identify early risk factors (Servi *et al.*, 2023). Suicide attempt (SA) behavior and non-suicidal self-injury (NSSI) among these individuals are becoming increasingly prevalent and represent a serious challenge for mental health. Suicide is the leading cause of death in this age group, and both SA and NSSI have profound impacts on families, communities, and generate significant social costs (Kim; Ryu and Kim, 2020).

These behaviors are frequent reasons for presentation in child and adolescent psychiatric emergencies, with NSSI being particularly common. Pediatric emergency departments (PED) play a crucial role in screening and referring for specialized psychiatric treatment, given the high incidence of these issues. This demonstrates how early and properly documented diagnosis can lead to better treatment outcomes and the implementation of preventive measures (Kim; Ryu and Kim, 2020). It is worth noting that the use of advanced statistical techniques and artificial intelligence has shown promise in predicting suicidal behaviors and aiding in the implementation of preventive strategies and specific therapeutic interventions (Servi *et al.*, 2023).

Accurate diagnosis of suicide represents a significant challenge in emergency services. Reliable allocation of International Classification of Diseases, 10th Revision (ICD-10) codes for suicide and self-harm attempts in emergency departments (EDs) is crucial for monitoring treatment effectiveness and improving health outcomes. However, studies highlight inadequate sensitivity of these codes in accurately identifying suicide cases, resulting in underestimation of the true prevalence and impact of these events in the treated population (Sveticic; Stapelberg and Turner, 2020).

Suicide risk assessment in the emergency room is a critical and challenging process for mental health professionals. Various instruments have been developed to facilitate this

assessment. Some have demonstrated significant variations in diagnostic accuracy, with some tools presenting high sensitivity but low specificity, and vice versa. Despite many of these instruments being widely used, none have achieved sufficient diagnostic accuracy to be considered entirely reliable in predicting suicide or suicide attempts. This underscores the need for a comprehensive clinical evaluation and cautious use of risk assessment tools, considering their limitations and the specific context of each patient. Thus, the importance of an integrated approach that combines clinical experience with careful use of assessment tools is emphasized, ensuring that preventive interventions are based on a complete understanding of the patient (Runeson *et al.*, 2017).

Suicidal behavior can present in different forms: suicidal ideation, suicide attempts, and completed suicide. Suicidal ideation includes active or passive thoughts and behaviors such as threats, preparatory acts, and interrupted or aborted suicide attempts. A suicide attempt can be described as self-harming behavior with the intention to die, which may or may not be completed (Sveticic; Stapelberg and Turner, 2020). Previous studies have shown that approximately 60% of suicidal thoughts become attempts within one year of the onset of ideation. Therefore, the appropriate approach to suicidal ideation in the emergency room is of utmost importance, as it is a significant risk factor for suicide (Ana-Isabel *et al.*, 2021).

It should be reinforced that suicidal behavior is a multifaceted and complex phenomenon. Complaints such as mood disturbance, altered mental state, neurological symptoms, anxiety, agitation, exposure to drugs, and toxic agents may be present (Sveticic, Stapelberg, Turner, 2020). Characteristics such as impulsivity and hopelessness reinforce the risk of suicide attempts (Ana-Isabel *et al.*, 2021).

The Integrated Motivational-Volitional (IMV) model of suicidal behavior considers suicide as a behavioral process divided into three phases. In the pre-motivational phase, the model describes the biopsychosocial context in which suicidal ideation and behavior may arise. The motivational phase addresses the factors that lead to the emergence of suicidal ideation, and the volitional phase focuses on the factors that govern the transition from suicidal ideation to suicide attempts and death by suicide. While the IMV offers a useful framework, it has limitations, such as representing suicide in a linear manner, ignoring the cyclical nature of suicidal behavior, where individuals may transition between phases repeatedly. Additionally, it does not adequately consider repetitive suicidal behavior, which is associated with higher levels of distress than cases with only one episode. To address these limitations, it is necessary to develop a more comprehensive model that contemplates all possible combinations and variables. Emerging statistical techniques, such as network analysis, offer new opportunities to investigate variations in risk trajectories in different populations and optimize the efficiency of suicidal ideation and behavior assessment measures without compromising accuracy (Espandian *et al.*, 2020).

Additionally, among the common reasons for admission to psychiatric emergency services, beyond suicidal behavior, is non-suicidal self-injury (NSSI), defined as deliberate

self-inflicted harm to one's body without the intention to end one's life. In a study conducted among patients admitted to an emergency service, 26 out of 30 patients who attempted suicide had a history of self-injury in the past. Thus, it is evident that both non-suicidal self-injury and suicide attempts are risk factors for each other. Therefore, it is crucial for physicians to be adept at crisis intervention and refer patients to mental health services when appropriate (Kim; Ryu and Kim, 2020).

Recent studies highlight the analysis of biomarkers as tools for diagnosing suicidal behavior. In the study by Fernández-Sevillano *et al.* (2022), plasma levels of various cytokines, including IL-2, IL-4, IL-6, and TNF- α , were analyzed in patients with a recent suicide attempt, patients with a history of suicide attempts, patients with major depressive disorder (MDD) without a history of attempts, and healthy controls. The results indicated that IL-6 levels were significantly elevated in patients with recent and past suicide attempts compared to MDD patients who had not attempted suicide, suggesting that elevated IL-6 levels may be associated with traumatic experiences and stress, negatively impacting attention and increasing the risk of suicide (Fernández-Sevillano *et al.*, 2022).

Moreover, the assessment of cognitive function and overall functioning is essential for identifying suicide risk. The study found that elevated IL-6 levels were correlated with poorer attention performance and lower global functioning scores, indicating that immunological dysfunctions may contribute to the vulnerability to suicidal behavior. Therefore, the evaluation of inflammatory biomarkers can be a valuable complement to clinical screening, helping to identify high-risk patients and guiding more effective preventive interventions (Fernández-Sevillano *et al.*, 2022).

TREATMENT

Once admitted to an emergency service, patients with suicidal ideation face the first challenge in managing their condition. In many countries, including Brazil, there are still no standardized measures to determine whether a patient is fit for discharge. The global tendency is that, once the emergency condition is resolved, the individual is released from hospital care. Thus, discharge depends solely on the attending physician's opinion about the patient's acute condition, without considering their mental situation as a whole (Katz *et al.*, 2020).

The conventional treatment for suicidal behavior in emergency and urgent care settings involves a multifaceted approach that includes rapid stabilization, comprehensive assessment, and appropriate patient disposition. Emergency departments have seen a significant increase in visits for mood disorders, including severe depression and suicidal ideation, necessitating effective interventions to manage these crises. Effective management of acute suicidal behavior, including suicidal ideation and suicide attempts, is crucial for patient survival. Besides cognitive-behavioral therapies, there is limited evidence on the

effectiveness of psychosocial interventions in reducing suicidal behavior rates. Studies indicate that interventions such as psychosocial assessment, hospital admission, or referral for outpatient follow-up can reduce the recurrence of suicidal behaviors and suicide mortality. However, negative attitudes and stigma from healthcare staff can negatively impact patient engagement and their willingness to seek help (Hill *et al.*, 2019).

However, it is known that the risk of death by suicide is highest within the first year after an attempt. Patients with suicidal ideation require long-term medical follow-up, with the period immediately after discharge being crucial for appropriate interventions. It is recommended that the patient be maintained in a safe environment and constantly accessed by the healthcare team. However, few care units worldwide provide psychologists, occupational therapists, psychiatrists, and other professionals capable of assisting a suicidal patient full-time, causing many to lose follow-up within the first year of the attempt (Hill *et al.*, 2019).

After discharge from the emergency service, many patients who attempted suicide receive prescriptions for antidepressants, especially selective serotonin reuptake inhibitors (SSRIs). Although this class of medications is relatively safer due to being less toxic in overdose cases, studies suggest that SSRIs may increase self-destructive thoughts and suicidal behavior within the first month of use. Thus, while they may be beneficial in the long term, patients who start using SSRIs need to be closely monitored in the first weeks, support that is rarely provided after emergency discharge (Katz *et al.*, 2020).

Another pharmacological option is lithium, widely used in the management of mood disorders due to its anti-suicidal properties. Despite being a viable alternative, lithium is rarely prescribed after emergency discharge due to the lack of experience of non-psychiatric physicians. The therapeutic dose of lithium is close to its toxic dose, requiring outpatient follow-up of the patient, which often does not occur (Katz *et al.*, 2020). Observational studies indicate that regions with higher natural lithium concentrations in water have lower suicide rates. Additionally, Danish patients who continued to take lithium as prescribed had a lower risk of suicide than those who did not maintain the treatment (Bolton; Gunnell and Turecki, 2015).

Studies show that antidepressants can reduce suicidal thoughts and behaviors, but the results vary with age. Reviews indicate a reduction of 40% to 81% in suicide attempts among depressed patients using antidepressants. However, a meta-analysis revealed an increased risk of suicidal thoughts and behavior in young people under 25, while there is a protective effect for people aged 25 to 64 and those over 65 (Bolton; Gunnell and Turecki, 2015).

Various interventions have been specifically developed for patients who self-poison, including postcard interventions, telephone interventions, and brief psychological interventions. However, the effectiveness of these approaches is unclear due to inconsistencies in study methodologies and designs, making it difficult to compare results

(Inui-Yukawa *et al.*, 2021). Throughout their treatment, both within and outside healthcare services, suicidal patients encounter prejudice. Empathy is often overshadowed by judgment and the stigmatization of the individual's mental condition. Inevitably, the lack of support from healthcare staff and the feeling of societal disregard lead to treatment abandonment (Hill *et al.*, 2019).

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