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Important Notes About Suicide: Review Article

Ahmed Mohamed Abd Alla, Ramadan Abd El-Br Hussein, Mohammad Gamal Sehlo, Eman Tarek Ali Metwally, Eman Ahmed El-Saied
Psychiatry Department, Faculty of Medicine, Zagazig University, Egypt
Corresponding Author: Eman Tarek Ali Metwally
Email: eman.tarekali93@gmail.com

Abstract

Suicide is a worldwide public health problem. Every year, about 800,000 individuals die by suicide around the world, accounting for 1.5 percent of all deaths. Suicide is the tenth greatest cause of mortality in North America and the leading cause of death globally among people aged 15 to 24. The DSM-5 defines suicidal ideation as “thoughts about self-harm, with deliberate consideration or planning of possible techniques of causing one’s own death,” defines suicide as “the act of intentionally causing one’s own death,” and defines suicide attempt as “an attempt to end one’s own life, which may lead to one’s death.”

Keywords: Suicide

Introduction

Suicide is a worldwide public health problem. Every year, about 800,000 individuals die by suicide around the world, accounting for 1.5 percent of all deaths. Suicide is the tenth greatest cause of mortality in North America and the leading cause of death globally among people aged 15 to 24. **(1).**

The DSM-5 defines suicidal ideation as “thoughts about self-harm, with deliberate consideration or planning of possible techniques of causing one’s own death,” defines suicide as “the act of intentionally causing one’s own death,” and defines suicide attempt as “an attempt to end one’s own life, which may lead to one’s death.”

WHO defines suicide as the act of deliberately killing oneself and suicide attempt as “any non-fatal suicidal behavior and refers to intentional self-inflicted poisoning, injury or self-harm which may or may not have a fatal intent or outcome?” **(2).**

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 07, 2021

Therein, the WHO also specifies that nonfatal self-harm without suicidal intent is included. The WHO explains that this is because of the problem of evaluating suicidal intentionality due to ambivalence or even concealment on the part of the patient. On the other hand, suicidal behavior can be "a range of behaviors that include thinking about suicide (or ideation), planning for suicide, attempting suicide and suicide itself" **(2).**

Because distinct types of suicidality and self-injury might have widely different prevalence rates, functions, clinical correlates, and outcomes, it's vital to be specific in our nomenclature and classifications.Efforts to streamline the historically heterogeneous suicide nomenclature have been hindered by the difficulty of evaluating the intent of self-harming behaviours, but efforts such as those that resulted in the Columbia Classification Algorithm of Suicide Assessment have contributed to standardising nomenclature **(3)**.

❖ ***EPIDEMIOLOGY AND RISK FACTORS:***

According to the World Health Organization, a suicide occurs every 40 seconds, resulting in approximately 800,000 deaths worldwide each year. The global yearly mortality rate is estimated to be 10.7 per 100,000 people, with variations between age groups and nations. **(4).**

- **Age:**

Suicide is more common among middle-aged and elderly males in high-income countries **(2)**. On the other hand ,suicide are the second leading cause of early death in people aged 15 to 29. **(2)**.

- **Gender**

Suicide attempt rates are usually common in women than in men **(5).** while the global suicide rate was higher in males (13.7 per 100 000) than in females (7.5 per 100 000) **(2).**

- **Marital status**

Marital status and parenthood are also relevant factors influencing suicidal behaviour. In fact, being single or living alone has been classically associated with a higher risk of completed suicide **(6)**.

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 07, 2021

- **Socioeconomic variables**

Suicide rates are influenced by socioeconomic factors. Suicide was the leading cause of death in low- and middle-income countries (79%) **(2).**

- **Geographical variables**

Suicide rates ranged throughout the six WHO regions, with the region with the highest rate (Europe) and the region with the lowest rate (Africa) (the Eastern Mediterranean, including the Middle East). Differences in the classification of suicide, sociocultural attitudes toward suicide, access to lethal means of dying by suicide, and the adequacy of treatment for mental disorders are all possible explanations for this discrepancy. **(7).**

- **Seasonal variables**

Suicide rates have been shown to vary seasonally, with peak frequency in the spring and summer, and suicide rates may be correlated with latitude and sun exposure. **(5).**

- **Mental illness**

Psychiatric diseases account for a large majority of suicides and suicide attempts; numbers are at least 10 times higher than in the general population **(4).**

- **Early life events**

Studies found association between lifetime suicide risk and Exposure to early-life adversity as parental neglect or childhood physical, sexual, or emotional abuse and is moderated by several factors, including the type of abuse (neglect, physical abuse, or sexual abuse), the frequency of the abuse, and the relationship between the victim and the abuser **(5).**

- **Religion**

Religious affiliation was found to have a protective impact against lifetime suicide attempts, which was mediated by moral objections to suicide based on one's religious beliefs. **(6)**

❖ *AETIOLOGY*

➢ Neurobiological factors:

Suicide is linked to a variety neurobiological change throughout the brain that influence a variety of functional pathways **(5).**

- **Serotonin**

Serotonin function, and particularly serotonergic neurons, play a role in depression and suicide **(8)**.

Studies of post-mortem brain tissues of people who died by suicide have demonstrated reduced levels of 5-hydroxyindoleacetic acid which is a serotonin metabolite **(9).** as well as a compensatory increase in the raphe nuclei of serotonergic neurons **(9).** and expression of tryptophan hydroxylase, a crucial enzyme in serotonin biosynthesis **(10).**

Individuals with suicidal behaviour have been found to have dysregulated serotonin transmission in both brain tissue **(11)** and cerebrospinal fluid of individuals with suicidal behaviour **(12).**

Studies has found significant changes in expressions of both the serotonin transporter and serotonin receptor 1A in the midbrain in people with suicidal behaviour, compared with depressed individuals without suicidal behaviour **(13).**

- **Glutamatergic and GABAergic dysfunction.**

Studies found that glutamate pathway, γ-aminobutyric acid (GABA)-associated genes, including those encoding the GABA-A and GABA-B receptors, are altered in the brains of people who committed suicide **(14).**

Treatments that target the glutamate pathway, such as MDA receptor antagonist ketamine, have shown initial promise in the treatment of suicide ideation **(15).**

- **Hypothalamic–Pituitary–Adrenal (HPA) Axis:**

Studies found a clear link between HPA axis dysfunction and suicide **(16).** Postmortem studies that compare subjects who died by suicide than controls who died for other causes have shown elevated corticotropin releasing hormone(CRH) levels in brainstem and CSF as well as lower mRNA CRH1 receptor levels in the frontal cortex **(17).**

Furthermore, in the PFC and amygdala of postmortem brains of adolescent suicide victims, glucocorticoid receptors (GR) protein expression was found to be lower than in controls **(18)**.

- **Inflammation**

A number of studies have looked into the role of inflammation in suicidal behaviour, finding that suicidal persons have higher plasmatic levels of interleukin (IL)-2, IL-4, and transforming growth factor (TGF)- than non-suicidal patients and healthy controls. **(19).**

- **Neurotrophin**

There is growing evidence of a relationship between reduced BDNF activity and suicide risk**.** Suicidal patients' BDNF levels were shown to be lower in the hippocampus, prefrontal cortex, and plasma when compared to non-suicidal controls. **(18).**

- **Genetic factors**

Large cohort studies have produced strong evidence for the heritability of suicidal behaviour, including findings that suicide and suicide attempts are transmitted independently of psychopathologies. Twin and adoption studies all suggest a heritability of about 30–50% **(5).**

Furthermore, the offspring of people who have attempted suicide are five times more likely than the general population to attempt suicide **(20).**

These findings, which reveal a familial clustering of suicidal behaviour, add to the evidence for genetic transmission. Despite extensive research over the last two decades, no single gene or combination of genes has been found as being associated for suicidal thoughts, suicide attempt, or suicide in several studies. **(21)**

- **Psycho -Social factors**

Several more factors that have been linked to an increased risk of suicide have been discovered over time, including Major childhood adversities, such as sexual assault or a long history of bullying, Chronic sleep problems, Job loss or unemployment, Bereavement, spousal loss Physical illness **(22)**

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 07, 2021

❖ ***SUICIDE RISK ASSESSMENT***

Suicide risk screening and assessment have been established as a critical component of effective suicide management**.** According to studies, people who commit suicide have interaction with primary care, emergency services, and, to a lesser extent, mental health services in the month prior to their death. **(23).**

suicide risk assessment scales have been validated and meet the Joint Commission's requirement for primary care, ED, and behavioural health professionals to assess individuals with behavioural health issues.

However, Over-reliance on any scales should be avoided. The literature demonstrates that the severity of suicidal ideation varies, but more crucially, no scale has been proven to properly predict imminent suicide risk. **(24).**

Clinical indicators of suicide risk:

• The Columbia Suicide Severity Rating Scale114 is widely used to establish the risk of suicide

• Previous suicide attempt and method of suicide attempt predicts increased suicide risk

• Suicide completers are likely to have had repeated hospital admissions; recurrence of self-harming is most likely within 3–6 months of first presentation

• Ambivalence, worthlessness, helplessness, and hopelessness are key indicators of heightened suicide risk

• High-risk patients should be followed up closely after discharge **(5).**

❖ PREVENTION

Strategies for Suicide prevention have been developed. These strategies take a risk factor-based approach to suicide prevention, classifying suicide prevention efforts as universal, selective or indicated on the basis of their target groups **(5).**

- **Universal interventions.**

Population measures include restricting access to the means of suicide, usually either affect the social environment or promote resiliency within individuals Pesticide bans are one example of these efforts**.** More recently, efforts have focused to the role of social media

(25). for example, resources are being developed to assist young people to have safe online discussions about suicide **(26).**

Other measures aimed at raising suicide awareness and prevention; these programmes frequently target young people and take place in schools, universities, and workplaces **(27).**

- **Selective interventions**

Selective interventions directed at subgroups of people who have risk factors that predispose them to suicidal thoughts or behaviours but but are not already exhibiting those behaviours **(28).**

Many selective approaches directly or indirectly target people with psychiatric disorders; for example, specific pharmacological treatments for mood disorders **(29).**

- **Multicomponent interventions**

  In what is known as a "systems-based" approach, universal, selective, and indicated interventions are frequently administered in combination **(30).**

- **Pharmacological Treatments**

Observational studies provide the majority of the data in favour of pharmacological treatment to prevent suicide in people with mental illnesses. Clozapine was the first anti-suicidal drug licenced by the US Food and Drug Administration **(31)**. Lithium trials in patients with bipolar disorder or depression have been linked to significantly reductions in suicide rates. **(32).**

Several studies have documented the effect of ketamine on suicidal ideation, mostly in people with mood disorders **(33).**

- **Psychological Treatment**

Suicide attempts have been demonstrated to be reduced by psychological therapies. Brief interventions are frequently used with patients who have visited the ED for a suicidal crisis, most often a suicide attempt, and are typically administered in one session or via multiple brief encounters in person, by phone, or by mail. **(5).**

longer-term psychological therapies like cognitive therapy (CT) and CBT have received the most research focus **(34).** Recent studies confirm that CT and CBT that target suicidal thoughts and behaviours in high-risk adults can reduce the incidence of self-harm **(35).**

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