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Deliberate Self-Poisoning And Suicidality: A Qualitative Analysis of The Factors That Influence Repetitive Suicidal Behavior

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SUMMARY

Suicide attempts are more common than suicide completions and occur more frequently in women than in men. Patients who survive a suicide attempt are at an increased risk of suicide completion. The most common method of non-lethal suicide attempt is deliberate self-poisoning. Suicidal individuals often have psychiatric comorbidities, most frequently mental and behavioral disorders due to psychoactive substance use and personality disorders. Chronic diseases are also factors that can lead to suicide attempts. Repetitive suicidal behavior is influenced by several important risk factors. Among them, the most important ones are the number of self-harm episodes and the age of suicidal individuals. Other risk factors include male gender, solitary living, and higher social and economic status. Recent studies point to the fact that rates of deliberate self-intoxications are rising among young people and adolescents. The choice of substance for a suicidal act highly depends on its availability. The drugs of choice are usually benzodiazepines, antidepressants, antipsychotics, and antiepileptic drugs. However, deliberate self-harm by poisoning sometimes includes illicit drugs. Novel psychoactive substances are a new trend associated with attempted suicides. Survival after deliberate ingestion of substances is common. Hence, it is important to identify individuals at high risk of suicide and work on adequate measures of secondary prevention, while the follow-up period should be long enough in order to reduce the rates of successful suicide following the first episode of suicide attempt by self-poisoning. Health care professionals, family, and society should play an important role in suicide prevention activities.

Keywords: Attempted Suicide, Drug Overdose, Illicit Drugs, Secondary Prevention

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INTRODUCTION

Suicidal behavior is regarded as a continuum that progresses from negative thoughts or ideas to suicidal plans, non-fatal suicide (suicide attempt), and fatal suicide [1]. Suicide represents one of the most important public health issues [2,3]. More than one million people commit suicide annually [2,4]. In addition to the loss of life, the consequences of suicide can be devastating for the family and friends of the deceased individual [2]. Another major public health problem is suicide attempts [2,3]. Acts of attempted self-destructive behavior are more common than completed suicides It is estimated that suicide attempts are 20 times more frequent than successful suicides, though this ratio can vary between 10 and 40 times [2,5,6,7]. While suicide is more frequent in the male population, a suicide attempt is seen in women more often [5,6,8]. This is because women usually choose less lethal methods (e.g., self-poisoning) than men, who, in general, opt for rather fatal means (e.g., hanging, or firearms) [5]. Suicidal behavior is more commonly seen in females, probably due to the higher prevalence of pessimistic thoughts and ideations as well as a bigger risk of suicidality-associated mental health problems, such as depression [9].

Patients who survive a suicide attempt are at risk of repeating the act of taking their own life, often by using more violent methods, which sometimes results in completed suicide and premature death, especially among younger members of the general population [2,4]. Therefore, an unrecognized suicide attempt represents an important risk factor for suicidal behavior later on [5,9]. Several studies have estimated that the risk of repetition of an autodestructive act is strong during the first 2 years after the initial attempt at taking one's own life [3,10,11]. One meta-analysis showed that 1 in 25 patients who were treated at the hospital due to self-harm will die by completed suicide in the next 5 years [12]. Another longitudinal study estimated that between 1-2% of individuals who were discharged after a self-harm (including self-intoxication) episode will eventually die by suicide within 10 years after their release from the hospital [4].

The most common method of non-lethal suicide attempt is deliberate self-poisoning [2,5]. It is reported that self-intoxication is the method of choice in even 98% of first episodes of non-fatal suicide attempts [5]. About 85% to 95% of hospitalizations due to attempted self-harm are attributed to intentional overdose [2,4]. It is well known that survival after self-intoxication is common, while the use of firearms or hanging often results in completed suicide [2]. However, deliberate self-poisoning is the third most frequent method in completed suicides [13]. Finkelstein et al. pointed to the fact that self-intoxication can be associated not only with completed suicide but also with accidental death or death by indeterminate intent, suggesting an even higher risk of fatal outcome after a deliberate poisoning attempt [2].

Not all deliberate self-intoxications are necessarily suicide attempts, as this self-injuring behavior may often be interpreted as a nonsuicidal overdose. In such cases, an individual may claim they had no intention of dying, instead seeking relief from pain or intending to self-punish [14]. In summary, a self-intoxication episode may result from an authentic motivation to take one's own life or to lead people to believe that suicide was the goal. Conversely, some people may engage in self-harm without intending to die. Sometimes, it can be challenging to determine what the motivation for the autodestructive behavior was [14]. It should also be kept in mind that not all episodes of self-harm are reported and treated in hospitals [3,8].

This review aims to analyze repetitive suicidal behavior in association with deliberate self-intoxication, as well as to explore the risk factors for recurrent self-aggressive acts and to discuss possible prevention strategies for reducing the rates of repeated self-poisoning episodes.

TOPIC

Suicidality-related comorbidities

People who attempt deliberate self-harm by intoxication can be either newly diagnosed with a psychiatric disorder at the moment of the self-harming behavior or they already have a diagnosis of a mental health problem. However, it is important to note that not all individuals with psychiatric illness ever attempt self-destructive behavior [9].

A large number of self-poisonings include one ingested substance (mono-intoxica-

tion), but many suicidal individuals often use more than one compound (combined drug intoxication) [4,5]. The cases of suicide attempts with multiple substances usually involve alcohol [5]. In agreement with this, alcohol-related problems (ICD F10.0-F10.9), as well as all the other mental and behavioral disorders due to psychoactive substance use (ICD F10-19), are often associated with the subjects who attempt suicide [5,7,9]. Comorbid personality disorders, particularly borderline personality disorder, are also strongly linked to suicidal behavior and repetitive attempts at self-destruction, including deliberate self-intoxication [9,15]. These two categories stand out due to their frequent association with suicidality. Yet, repetitive suicidal behavior is comorbid with psychiatric disorders, in general. Among them, it is impossible to omit schizophrenia, depression, and anxiety from the discussion [2,5]. In summary, being in psychiatric treatment is a significant risk factor for repetitive suicidal behavior, and this risk can even be augmented with stressful life events and/or traumatic experiences [1,16]. The feeling of hopelessness alone, with or without clinical depression, is an important predictor of suicidal behavior [17]. Some personality traits, such as impulsivity, can positively interact with the abovementioned factors and even increase the odds of attempting suicide. However, impulsivity alone does not correlate with suicidal behavior [5].

Suicidal behavior is not only associated with mental health problems but also with physical health issues. Suicidal behavior has been particularly studied and confirmed mostly among patients with cancer and HIV [6]. However, any disease with a chronic pattern (e.g., epilepsy) elevates the risk of suicide attempt or even suicide. The factors associated with suicidality in people with somatic diseases are severe physical and mental disability, the diminished quality of life, the feeling of stigma, loneliness, social isolation, the length of the disease, congenital disability, and aggression [18].

The risk factors for repeated and/or completed suicide

The repetition of suicide attempts and completion of suicide depend on several risk factors. Interestingly, the ingestion of psychoactive drugs at the first self-harm episode is associated with repetitive suicidal behavior [4]. Deliberate self-harm repetition is itself one of the most important predictors of completed suicide [3]. First hospital presentation due to a suicidal act is a very powerful predictor of eventual successful suicide and premature death [2]. After deliberate self-poisoning, the risk of subsequent successful suicide is more than 40-fold higher, implying the necessity of adequate follow-up after hospital demission [2,5]. The risk of completing suicide is also related to the number of non-lethal episodes of deliberate self-harm [4,8,9]. Several other variables can serve as predictors of eventual suicide after a deliberate self-poisoning episode. Finkelstein et al. conducted a population-based study to determine the risk of suicide and mortality from other causes following a first self-poisoning episode. Their findings indicated that advanced age was the strongest predictor in their study [2]. In recent literature, it was confirmed that older age groups are at higher risk of suicide completion than younger individuals [9,13]. The older the person, the more dangerous repetitive suicidal behavior becomes over time. The risk of suicide increases with a higher number of suicide attempts throughout one's lifetime, and this risk is further amplified in individuals with alcohol-related problems [9]. Additional established predictors of subsequent suicidal acts are male gender, solitary living, and higher social and economic status [2,5].

Repetitive suicidal behavior among young people

According to the relevant literature, younger age is also a risk factor for repetitive suicidal behavior [9]. Consistent with this fact, there are many studies that explore suicidality among young people. The recent findings show that the rates of suicide attempts by self-poisoning are rising among adolescents [19]. Similar to the elderly, the risk of repeated self-harm episodes significantly increases with the number of autodestructive suicidal events in the patient's history [4,8]. The risk of repetition was shown to be lower in patients who attempted suicide by self-poisoning compared to those who used self-cutting as a means of deliberate self-harm [8]. In this age group, the most prominent risk factors for repetitive suicidal behavior include: a history of self-harm (including self-poisoning), being in psychi-

atric treatment (mostly for alcohol and drug abuse, depression, and behavioral problems), having problems in the family (problematic relationships, alcohol use in the family, parent(s) on prescribed opioid medications [20]), social isolation, and poor academic performance [8]. The feeling of social isolation in young people is nowadays intensified with the emergence of social media, which is correlated with time spent on new media platforms. This can lead to increased adolescent anxiety but also to more serious outcomes, such as suicide attempts [19,21]. Spiller et al., in their study on suicide attempts by self-poisoning in children and young adults, demonstrated several curious facts. First, they observed that OTC (Over-the-Counter) analgesics and antihistamines were the most commonly used substances for suicide attempts in the United States from 2000 to 2018. Both groups of medications are widely available and easy to access. Second, an increase in suicide attempts involving ADHD drugs, antidepressants, antihistamines, and antipsychotics was also recently shown. Finally, a cyclical pattern was described among youth, which is linked to the school calendar, as the observed frequency of suicide attempts was higher during the school year. The reasons for these seasonal effects on suicide rates remain unclear [19]. Special attention should be paid to young females aged from 15 to 19 years, as it was observed that there is a significant risk for repeated suicide attempts in this group of patients. Additionally, young adult males aged 20 to 24 years were shown to be at high risk of repetitive suicidal behavior [8].

Repetitive suicidal behavior and the substances involved

Different types of substances are reported in acutely poisoned patients who attempted suicide. The choice of substance for suicidal purposes depends on several factors, but predominantly on its availability and accessibility, the social and financial status of an individual, cultural factors, and the influence of religion [3,5]. In developing countries (e.g., India), it was observed that pesticides (organophosphates and carbamates) are most commonly used, probably because these substances are easily available because the predominant activity in these countries is agriculture [19]. On the contrary, in more developed countries (e.g., Western countries), illicit drugs (primarily opioids) and medications (anxiolytics and antidepressants in the first place) are the substances used for deliberate self-harm [5]. Pushpakumara et al. explored the influence of cultural factors on repetitive suicidal behavior. This group of authors observed that there are geographical differences in the frequencies of suicide reattempts. According to their results, repeated suicide attempts are less common in Asian countries in comparison to countries of the Western world [3].

Many reported cases of overdose included individuals with a psychiatric diagnosis. Therefore, medications, such as benzodiazepines, antidepressants, antipsychotics, and antiepileptic drugs, are usually the substances of choice for a suicidal act [5,13]. Frequently used drugs, such as NSAIDs and paracetamol, are also used in attempts of deliberate self-harm [4].

Benzodiazepines are commonly used by people attempting suicide by self-poisoning due to their broad indication spectrum. These medications are typically prescribed for anxiety disorders, insomnia, and epilepsy [5,22]. Thankfully, fatal cases of benzodiazepine mono-intoxication poisoning are rarely reported. The risk of serious benzodiazepine poisoning increases in elderly patients [13]. Pfeifer et al. pointed to the fact that zolpidem, a nonbenzodiazepine hypnotic drug, has a higher mortality rate in comparison to benzodiazepines. Additionally, it is noteworthy to mention that this drug can arouse suicidal ideations. In accordance with these facts, if a patient with documented suicidal behavior requires sedatives, a better option would be to opt for benzodiazepines (e.g., lorazepam) to reduce the risk of suicide completion if an attempt occurs [13].

The current literature supports the fact that antidepressants are a group of drugs that is frequently reported among ingested substances in attempted suicides by self-intoxication. Individuals who attempted to take their own life by ingesting antidepressants usually used tricyclic antidepressants or selective serotonin reuptake inhibitors (SSRIs) for this purpose. A more favorable clinical outcome was documented in patients who used SSRIs, comparing the effects tricyclic antidepressants had in people who took them for suicidal intent. This observation can be explained by the better safety profile of the SSRI group of antidepressants [5]. Tricyclics and monoamine oxidase inhibitors are two groups of

antidepressants with the highest risk of fatal outcomes in association with deliberate self-poisoning attempts [13]. Doxepin (a tricyclic antidepressant) was shown to have the highest mortality index in its corresponding group of antidepressants. However, it is rarely used for suicide attempts, probably because it is not prescribed as often as other antidepressive medications [13]. The risk of suicide is unpredictable and could be influenced by the patient's age. For instance, venlafaxine (a serotonin and norepinephrine reuptake inhibitor) is an antidepressant drug much more likely to be taken by adults who attempt suicide [23]. Additionally, children and adolescents on SSRIs should be carefully observed for increased depression and suicidal ideation and behavior. Suicidality among minors on SSRIs can be associated with the activation syndrome, a phenomenon that consists of agitation, insomnia, and irritability. Moreover, if antidepressants cause the patients to be energized, they might act on their impulses if suicidal thoughts exist. The outcome of this effect could be suicidal action, hence the necessity of careful and regular follow-up of the young patients [24].

The use of antipsychotics (neuroleptics) for self-poisoning is generally attributed to younger individuals. Atypical antipsychotics are used more frequently than first-generation neuroleptic drugs. The highest toxicity was registered for levomepromazine and clozapine [13,25]. Therefore, individuals who repeatedly self-intoxicate with these drugs, having suicidal or nonsuicidal intentions, are at the highest risk of fatal outcomes. Extrapyramidal side effects of antipsychotics are also factors associated with suicidal ideation and actions. Akathisia, a subjective and motor restlessness, also occurring with the use of antidepressants, was linked to suicidal behavior. A possible link between akathisia and suicidality might be depression. Akinesia, a diminished ability to initiate or sustain motor activity, is a side effect that can imitate depression. This adverse reaction, along with tremor and rigidity, are the main elements of parkinsonism. Unlike akinesia, which may attenuate suicidal behavior (though not suicidal ideation), the severity of parkinsonism is one of the strongest predictors for future suicide attempts. Tardive dyskinesia is also a potential risk factor for attempted suicides among patients with schizophrenia. Another strong predictor is the severity of depression. Comorbid depression is the most common reason for schizophrenia-related suicides. The depressiogenic effect is more associated with first-generation antipsychotics than the second generation of these drugs. This occurrence can be attributed to either direct pharmacogenic depression or depression caused by the experience of adverse effects. Other risk factors include anxiety, agitation, impulsivity, and command hallucinations [26].

Mood stabilizers are psychiatric medications also utilized for suicidal acts. Even though these substances have protective effects from suicidal behavior, current literature suggests that they are frequently used for self-harm [27]. Among them, anticonvulsants have higher relative toxicity than lithium [13].

The abuse of illicit psychoactive substances, such as cocaine and heroin, was associated with suicidal behavior and fatal suicides. It was observed that suicide attempts were linked to traumatic events related to the use of illegal drugs (e.g., crime, trafficking, drug-related violence, and prison history), while drug users with prior aggressive behavior were more likely to report a self-harming act during the treatment [1].

Recently, new psychoactive substances emerged as illicit substances that are used for repeated suicide attempts among their users [5]. According to the literature, novel compounds, such as synthetic cannabinoids or synthetic cathinones, were related to suicidal behavior as they were detected in the blood of individuals who died by suicide [28,29,30].

The identification and prevention of suicde

Repetition of a suicide attempt can occur many years after the initial episode, so it is important to identify individuals at high risk of repeating self-intoxication [4]. Identifying these high-risk individuals outside of continuous observation in mental health institutions is challenging, for example, through follow-up in primary health services [31].

Surviving an overdose is a common occurrence, which highlights the importance of secondary prevention as a key public health activity aimed at individuals with documented suicidal behavior [4]. Suicide prevention is one of the most challenging tasks in clinical practice due to superficial comprehension of the risk factors and motivation for autodestructive behavior [2]. Emphasizing the need for preventive measures is the fact that up to 15%

of all suicide attempts are successful [5]. Finkelstein et al. also found that the suicide risk after the first episode of self-intoxication is persistent over time. In order to reduce the risk of completed suicide, adequate follow-up protocols should be developed and implemented. Active follow-up of patients treated due to suicide attempts could significantly reduce the risk of repeating the autodestructive behavior [4]. However, such recommendations are often lacking, as most medical interventions focus on the acute period following a suicide attempt, with less attention given to the post-discharge phase [2,4].

One potential preventive strategy is to maintain communication with the patients who attempted suicide by self-poisoning, which could reduce the risk of repeating the attempt or even completing the act of suicide, as it was shown by recent results [2]. Cebria et al. conducted a one-year telephone management program, which showed effectiveness in reducing the proportion of patients who made another self-destructive attempt by 8% in comparison to the control population [32].

It is crucial that every patient admitted to the ED due to a suicide attempt receives an aftercare in terms of psychiatric treatment for an appropriate assessment to be made since patients who were not seen by a psychiatrist are at higher risk of repeating self-harm or even committing suicide [8]. Many patients who attempt suicide are not even hospitalized after the treatment at the emergency department is finished [5]. For the inpatients, the duration of hospital stays due to suicide attempts is usually short; in Western countries it is usually one day, whereas in Sri Lanka it was shown that the median duration of hospitalizations is 2 days. Since the possibility of suicide re-attempting persists during the first years following the first suicidal episode, it could also be of significant effectiveness if hospitalizations of these patients were as long as possible. Extended hospitalization would allow patients to stay in a safe and controlled environment, which may help prevent a return to the same conditions that contributed to their suicidal behavior. The longer the hospitalization, the lower the repetition rates could be, primarily because the patient stays longer in safe and controlled surroundings and there is more time to create a plan for the patient after he is discharged [3,5].

An active engagement of the family, if possible, has the potential to prevent future unwanted suicidal events, and it has been discussed as an important psychotherapeutic factor in the long-term treatment of these patients [3,33,34]. Social support is another well-known preventive factor for suicide attempts, and it can have a positive influence in lowering suicide repetition rates [3,35,36,37]. Religion and faith were shown to be important protective factors against suicide and suicide attempts. Therefore, an active spiritual practice may serve as a potentially effective method of suicide prevention, especially among young people [38]. It is a well-known fact that suicide rates are higher among the elderly (60 years and beyond), so a significant number of suicide prevention activities should be aimed at this age group [9,39].

Since many individuals who attempt suicide are psychiatric patients, it is also required for mental health professionals to carefully prescribe psychoactive drugs, considering the fact that they are frequently used for self-harming intentions. The potential toxicity of each drug to be prescribed should be considered, and predictions should be made about the risk of causing death if used for autodestructive behavior [13].

CONCLUSION

Repetitive suicidal behavior stands out as a major public health issue, especially among young people. The use of legal and illegal substances is strongly associated with suicide attempts and their repetition. The risk for recurrence of suicidal acts persists over time, and it is influenced by age, the number of episodes of self-harm, coexisting conditions, and the duration of treatment and active follow-up. Adequate preventive strategies have not been established yet. Restriction of licit and illicit drug availability, adequate identification of high-risk individuals, and longitudinal follow-up of these patients, along with adequate social support, are the proposed measures for reducing the rates of attempted suicides by deliberate self-intoxication.

CONFLICTS OF INTEREST

All authors declare no conflict of interest.

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Namerno samotrovanje i suicidnost: kvalitativna analiza faktora koji utiču na repetitivno suicidno ponašanje

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KRATAK SADRŽAJ

Samoubistvo i pokušaj samoubistva su jedni od najvažnijih problema javnog zdravlja. Pokušaji suicida se dešavaju češće nego suicid. Osim toga, oni su češći u ženskoj populaciji, za razliku od suicida. Pacijenti koji prežive pokušaj sucida su pod povećanim rizikom da ga eventualno izvrše. Najčešći metod pokušaja suicida koji se ne završavaju letalno je namerno samotrovanje. Suicidne osobe vrlo često imaju neki od psihijatrijskih komorbiditeta, među kojima su najčešći mentalni poremećaji i poremećaji ponašanja zbog upotrebe psihoaktivnih supstanci i poremećaji ličnosti. Bilo koja hronična bolest predstavlja faktor rizika za pokušaj suicida. Ponavljajuće suicidno ponašanje zavisi od nekoliko važnih faktora rizika. Od njih su najznačajniji broj epizoda namernog samopovređivanja i starost osobe. Ostali faktori rizika su muški pol, usamljenički život, kao i pripadnost višoj društvenoj i ekonomskoj klasi. Novije studije ukazuju na porast stope namernih samotrovanja među mladim osobama i adolescentima. Izbor supstance za suicidni čin uveliko zavisi od dostupnosti. Medikamenti izbora su najčešće benzodiazepini, antidepresivi, antipsihotici i antiepileptici. Međutim, sredstva izbora za samotrovanje su ponekad i ilegalne droge. Nove psihoaktivne supstance su rastući trend povezan sa pokušajima samoubistva. Preživljavanje nakon namernih intoksikacija je često. Stoga, od značaja je da se identifikuju pojedinci kod kojih je prisutan visok rizik od ponavljajućeg suicidnog ponašanja, kao i da se sprovode adekvatne mere sekundarne prevencije koje najpre podrazumevaju dovoljno dug period praćenja sa ciljem da se redukuju stope izvršenih samoubistava nakon prve epizode samopovređivanja namernim samotrovanjem. Zdravstveni radnici, porodica i društvo bi trebalo da igraju važnu ulogu u aktivnostima koje se bave prevencijom suicida.

Ključne reči: pokušaj suicida, samotrovanje lekovima, ilegalne droge, sekundarna prevencija

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