



## An Exploratory Analysis of the Factors Influencing the Decision to Use Poisoning as a Suicide Method and Awareness of Potential Health Risks: A Qualitative Study

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### Abstract

**Background:** Self-poisoning, a method often chosen for near-fatal suicide attempts, substantially increases the risk of eventual suicide and necessitates hospitalization due to chemical-induced health impairment. However, there is a dearth of studies investigating the choice of self-poisoning in near-fatal suicide attempts and the cognizance of potential non-lethal risks. **Objective:** The present study aims to explore the factors contributing to the decision to self-poison in near-fatal suicide attempts as well as the awareness of its potential dangers among survivors. **Methods:** An exploratory qualitative study was conducted with 17 adult psychiatric patients who survived near-fatal suicide attempts by self-poisoning. These patients were admitted to a general hospital in São Paulo, Brazil. **Results:** Participants indicated three primary factors influencing their choice of self-poisoning: the anticipation of a painless death, belief in its efficacy as a suicide method, and accessibility of chemical agents. None of the participants had contemplated the health risks associated with survival following a self-poisoning attempt, indicating a significant role for impulsivity and misinformation. **Conclusion:** The majority of the participants selected self-poisoning with the expectation of a painless death. Even though half of the sample necessitated hospitalization post-attempt, none had contemplated the potential risks associated with surviving the ingestion of chemical agents. As a result, our findings suggest that prevention strategies must include educating at-risk individuals about the potential health damages associated with the use of chemical agents in suicide attempts.

**Keywords:** Suicide attempt; Self-poisoning; Qualitative study.

### Background

Suicide is a global public health issue of alarming proportions [1]. Among the countries most affected is Brazil, which ranks among the top ten in absolute numbers of suicide fatalities. Further, it is estimated that for every successful suicide, there are ten suicide attempts necessitating medical intervention [2]. Individuals with a history of near-fatal suicide attempts present a profile akin to those who eventually die by suicide, with their future suicide attempts doubling in lethality compared to people whose previous attempts were not clinically severe [3]. Thus, exploring the mental processes involved in near-fatal suicide attempts is a crucial advancement in suicide prevention [4]. Self-poisoning is the most prevalent method employed in suicide attempts [5]. Several factors, such as gender, accessibility, lower suicidal intentionality,

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the presence of mental disorders, impulsivity, reactivity to psychosocial phenomena, and stressful life events, are associated with the choice of chemical agents for suicide attempts [6]. However, the motivations behind selecting or rejecting a method remain unexplored. Analyzing the narratives of survivors of near-fatal suicide attempts could offer invaluable insights into these motivations. This paper, therefore, aims to elucidate the factors influencing the decision to employ self-poisoning as a suicide method to guide future preventative efforts. Moreover, self-poisoning can cause severe clinical complications necessitating hospitalization due to the toxic effects of chemical agents [7]. Investigating the awareness of health risks linked to the use of these agents might provide an avenue to implement preventative measures targeting populations at high suicide risk. For instance, a study conducted in the United Kingdom revealed that most individuals lacked information about the risk of liver damage resulting from intentional paracetamol overdose [8]. This knowledge gap was subsequently addressed through informative campaigns, which significantly mitigated the issue, as shown in a follow-up study nearly two decades later [9]. The current study looks into why people choose self-poisoning as a suicide method and whether they are aware of the potential health risks associated with chemical use.

## Methodology

The research was executed in a general hospital situated in São Paulo, Brazil, from January to July 2016. The study population included adult patients who were admitted to the hospital's emergency room following near-fatal suicide attempts via self-poisoning. Consent to participate in the study was obtained from all participants, following a rigorous informed consent procedure that was approved by the hospital's Research Ethics Committee (Protocol Number: 51024415.4.0000.5463).

## Sampling Procedures and Data Collection

The sampling for this study was purposeful, targeting individuals who met the established criteria. A member of the hospital's psychiatric liaison team approached these individuals and extended an invitation to participate in the study. A special emphasis was placed on ensuring that the interview process did not provoke or exacerbate distress in the participants. Conducted exclusively by the principal investigator, the interviews typically lasted between 60 and 120 minutes and took place within the emergency department environment.

For the purposes of this study, self-poisoning was operationalized as the intentional ingestion of a dosage exceeding the recommended prescription of any pharmaceutical or non-ingestible chemical, including pesticides. Instances of alcohol intoxication or the recreational use of drugs were not considered within the purview of self-

poisoning unless they were coupled with the above-specified types of self-poisoning. Additionally, 'near-fatal' was defined as circumstances necessitating emergency intervention due to a perceived risk of death as evaluated by a trauma physician or emergency medicine specialist.

## Data Collection Tools

Data collection included the gathering of socio-demographic data, as well as clinical information, both of which were sourced from interviews and relevant medical records. The severity of the suicidal intent was gauged using Beck's Suicide Intent Scale (SIS), a validated instrument that offers a quantitative measure of intent to die. The median SIS score was employed to differentiate between a group with lower suicide intent (SIS score < 18) and a group with higher suicide intent (SIS score ≥ 18).

## Interview Methodology

A single-session, semi-structured face-to-face interview was conducted with each participant. The interview addressed the reasons for selecting a chemical agent as the method of suicide and explored the individual's awareness of potential health implications in the event of survival. All interviews were recorded, transcribed manually, and subjected to content analysis.

## Data Analysis

The transcription of the interviews served as the first step in the data analysis process, which then involved a careful reading of these transcriptions in order to understand the concepts and meanings that the participants had expressed. Themes related to the study objectives were identified, after which the data were categorized accordingly. The final step in the data analysis process involved an interpretative analysis of the categorized data and a discussion of the results.

The data was rigorously scrutinized for patterns and trends, and narrative accounts were coded using an inductive approach to capture all nuances within the data. This qualitative content analysis was designed to extract salient themes that shed light on the reasons behind the selection of self-poisoning as a suicide method as well as the participants' awareness of potential health damages linked to the survival of such attempts.

Overall, the research methodology of this study is grounded in established qualitative research practices and is aimed at extracting rich, nuanced insights from participants who have had near-fatal experiences with self-poisoning to reduce size.

## Results

All 17 patients agreed to participate in the study (14 women and 3 men), with a mean age of 46.8 years (range 26–96). Twelve participants had previously attempted suicide,

fourteen had already undergone psychiatric treatment, and others received psychiatric diagnoses during hospitalization, according to the 10th edition of the International Classification of Diseases (14). Fourteen patients used psychotropic drugs, and the analysis of suicidal intent using the SIS showed low intentionality among most participants (n = 11). See Table 1.

Twelve reported acting on impulse, and all but one reported having considered the chosen method. Participants spoke freely about their reasons for choosing the method. The content analysis produced nine categories: death without suffering (cited by 7), the expectation of effectiveness as a lethal method (cited by 7), easy access (cited by 6), preservation of physical appearance (cited by 3), internet search (cited by 2), to alleviate suffering with no intention of

ending life (cited by 2), to simulate a natural death (cited by 1), cheap method (cited by 1), and one did not consider the choice of method because she obeyed a commanding voice.

In our sample, all participants needed life support care, and eight additionally required hospitalization in specialized wards. Clinical complications were arrhythmia (n = 3), aspiration pneumonitis (n = 3), fracture of the lumbar spine and heels resulting from a fall (n = 1), and seizures (n = 1). No participant considered the health risks or harm if they survived. Twelve patients reported that the impulsiveness of the suicide act impaired reflection on possible clinical consequences. The others mentioned the lack of knowledge about potential health damages related to chemical agents.

**Table 1:** Suicide Intent Scale score, ICD-10 codes, chemical agents used in the suicide attempt

ID	Sex, age	SIS	ICD-10 codes	Chemical agents
1	F,42	4	F41.1, F13.2	Analgesics and clonazepam
2	F,96	25	F32.2	Lorazepam
3	F,64	4	F32.2,F60.3	Lamotrigine and lorazepam
4	M,43	13	F19.2	Ethanol fuel and crack
5	M,45	13	F31.1	Clonazepam, paroxetine, and quetiapine
6	F,35	13	F31.3	Aripiprazole and clonazepam
7	F,49	18	F41.1, F60.4	Plants (snake plant and dumbcane) and clonazepam
8	F,32	19	F31.4	Lithium, haloperidol, analgesics, levothyroxine, and alcohol
9	F,54	19	F31.4	Diazepam and clonazepam
10	F,37	25	F32.2	Quetiapine
11	F,40	4	F32.2 + F60.4	Diazepam
12	F,61	15	F33.2	Quetiapine, clonazepam, analgesics, and venlafaxine
13	F,31		F32.2 + F60.3	Quetiapine, clonazepam, omeprazole, and midazolam
14	F,51	13	F29	Ethyl alcohol and pesticides
15	F,47	14	F32.2 + F60.4	Analgesics, captopril, and omeprazole
16	M,43	19	F32.2 + F10.2	Clonazepam and alcohol
17	M,26	14	F41.1 + F60.5	Sertraline and nortriptyline

\*ID: participant identification; SIS: suicide intention scale; F: female; M: male; ICD-10: International Statistical Classification of Diseases, 10th edition; SA: suicide attempt; SAs: suicide attempts.

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## Discussion

The motivations behind choosing poisoning as a suicide method have only rarely been studied [15,16], and no studies have been carried out in Brazil. The expectation of death without suffering was noticed in studies investigating self-poisoning [8], hanging [17], and the use of vehicular gas [18]. Seven participants in our study mentioned the expectation of death without pain. They expected that the chemical agents would result in a fast, painless death during sleep, as compensation for a painful life experience, as mentioned by Participant 8 (P8):

"People have called me a coward and assumed that I took medication because I did not want to die, but I actually want to pass away as soon as possible. The only reason I insist on it is because I know I will not go through any more pain because I will pass away peacefully. (P8)

The suicide method impacts the lethal outcome. Use of firearms, drowning, and suffocation/hanging present the highest lethality rates, and drug overdose, poisoning, and self-inflicted cuts present the lowest (19). Although the use of chemical agents is considered a low-lethal method, in this study, seven patients cited the choice of chemicals based on their supposed high efficacy as a lethal method:

"I had previously read the package insert, and I saw how dangerous these drugs are. If you read the package insert before taking it, you may even lose your nerve. Imagine the amount I took, and I was confident I would never wake up again." (P17)

When questioned on how they reached an understanding of lethal efficacy, they cited three reasons: the consumption of large amounts of drugs expecting cardiorespiratory arrest (n = 4), information obtained on the internet (n = 2), and the risk of consuming psychotropic drugs with alcoholic beverages (n = 1).

Easy access is a leading factor in choosing a suicide method [20]. In the current study, six participants mentioned easy access, and five said they used medications that were readily available in their homes.

Preserving physical appearance is a relevant factor in choosing a suicide method [17]. For three patients, the preservation of the physical appearance was justified by the concern that family members participate in the wake without embarrassment.

"With medication, it simply takes it and buries it; the aesthetic vision is better, without blood or a rope. I might die and go to the grave with everyone else. (P17)

Access to the Internet impacts suicide behavior [21]. The Internet can contribute to suicidal conduct through forums that encourage suicide as a strategy to solve problems and promote meetings and pacts among people with suicidal

ideation, sometimes showing examples of suicide attempts and suicides [22]. Nevertheless, Internet access might support the prevention of suicidal behavior by providing information on treatment and contributing to reducing the isolation and loneliness of vulnerable people [23]. In the present study, two participants cited visiting websites as an essential factor in deciding whether to choose a suicide method:

"I looked on the Internet about poisonous plants; I used the Brazilian ones. I could have taken medicine, but I had already tried that, and it did not work, so I looked for something that would. I do not like using knives on myself. (P7)

Many suicide deaths can be wrongly classified as accidental, such as suffocations in people who were intoxicated or under the influence of drugs, deaths during recreational activities, car accidents or falls from heights, and many cases of exogenous poisoning. In cases of exogenous intoxication, even when large amounts of substances are found in autopsies, relatives tend to doubt suicide, as shown in a study investigating suspected suicide deaths [24]. Furthermore, intoxication may simulate natural death, and some have reported the simulation of natural death by ingesting pentobarbital, probably to spare their relatives from the stigma of suicide [25]. In our study, P7 wanted to simulate death by heart attack by ingesting plants with clonazepam to "protect relatives from the dishonor of having a suicide in the family."

A study investigating self-poisoning showed that the desire to communicate hostility, influence people, and alleviate a painful mental state was the most relevant reason for overdosing [26]. P1 wanted to "escape the unbearable pain, the pain of the soul," and P3 wanted to convince her alcoholic husband to stop drinking.

Suicide is the leading cause of death among people with schizophrenia and psychotic disorders. The risk of suicide is considered high in this group, around 10%, resulting from concerns with the disease and the symptoms themselves, such as the influence of command voices, agitation, and behavior disorganization [27]. Similarly, P14 related that self-poisoning resulted from a command hallucination.

Few studies have been published on the correlation between the suicide method and individual considerations of clinical damage if there is no lethal outcome. Brazilian research analyzing suicide attempts using fire, a method with a high potential for health injury, showed that most participants reported not considering this possibility [28]. Interestingly, none of the participants considered the potential health risks of surviving self-poisoning attempts. Most participants acted impulsively, while others cited a lack of knowledge about the harmful effects of chemical agents. Paradoxically, twelve participants reported that they avoided using violent methods that could leave them "broken and dependent on third parties."



Two possibilities may be indicated by these results: They did not foresee any health risks because they 1) believed the chemical agents to be harmless, and 2) knew they would die anyway and did not give the prospect of living another day any thought.

Lastly, restrictions on drug access lower the fatality rate associated with suicide attempts [6]. The UK's public health strategy was altered as a result of the discovery that the majority of people who used paracetamol in suicide attempts were ignorant of the liver risks [8]. As a result, rates of liver transplantation and mortality related to paracetamol overdose were decreased as a result of a thorough warning of these risks and a reduction in the over-the-counter painkiller package [29].

This underscores the need for further education on the harmful consequences of self-poisoning to serve as a deterrent for individuals contemplating suicide.

Although our findings should be interpreted with caution due to the limitations of the small sample size, they provide meaningful insights into the reasons individuals choose self-poisoning as a suicide method. Additionally, they underline the need for increased awareness about the health risks associated with self-poisoning.

## Conclusion

The small number of participants in this study is a limitation. But it represents the challenge of patient selection for semi-structured interviews in settings of clinical severity. The strength of our research lies in being conducted in an emergency, so the feelings and ideas reported should be close to those preceding suicidal acts. Although this study does not allow causal inferences, the qualitative approach adopted is advantageous by exploring relevant individual insights in the face of an extreme experience. The suicidal act was impulsive for almost all participants in a moment of significant psychological pain. Despite that, our findings indicated a previous and elaborated conception of the choice of the method.

This study sheds light on the complex factors influencing the choice of self-poisoning as a method of suicide, offering valuable insights into suicide prevention strategies. It uncovers a paradox where individuals seeking a painless end to their suffering by self-poisoning overlook the potential suffering that survival from such an attempt could entail due to health complications. The findings underline the importance of increasing awareness about the health risks associated with self-poisoning, particularly in populations at high risk for suicide. The widespread misconception that self-poisoning ensures a quick, painless death underlines the need for psychoeducation about its real consequences and the low lethality of most chemical agents. Furthermore,

these findings emphasize the need for comprehensive and multi-dimensional suicide prevention strategies that address not only mental health issues but also broader socio-cultural factors.

Lastly, in the future, researchers could look at more diverse samples and use longitudinal designs to learn more about why people choose self-poisoning and other suicide methods. This would help them come up with more effective ways to prevent suicide.

## Author Contributions

Pires, E.G. and da Silva, G.M. made substantial contributions to the conception and design of the work; analysis, and interpretation of data; Pires, E. G. wrote the text of the main manuscript and prepared table 1. All authors reviewed the manuscript.

## Competing Interest

The authors declare that they have no competing interests.

## Ethics Approval and Consent to Participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

All participants signed an informed consent approved by the Instituto de Assistência Médica ao Servidor Público Estadual de São Paulo Research Ethics Committee (protocol number 51024415.4.0000.5463).

## Consent for Publication

The consent form is available from the corresponding author on request.

## Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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