

# Studying Survivors of Near-Fatal Suicide Attempts By Poisoning: Qualitative Study

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## Research Article

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# Abstract

**Background:** Near-fatal suicide attempts by poisoning increase the risk of subsequent suicide and results in hospitalizations due to health damage caused by chemical agents. There have been no studies in Brazil considering the factors related to the choice of self-poisoning in near-fatal suicide attempts and individual awareness of hazards if non-lethal outcome.

**Aims:** Investigate the factors influencing the decision to use poisoning in near-fatal suicide attempts and the perception of its dangers in case of survival.

**Method:** Exploratory qualitative research with 17 adult patients who had near-fatal suicide attempts by self-poisoning hospitalized at a general hospital in São Paulo, Brazil.

**Results:** Patients reported three main reasons for the choice of method: the expectation of death without suffering, the belief of its efficacy as a suicide method, and ease of access to chemical agents. None considered the health risks associated with the chemical agents if they survived due to impulsivity and misinformation.

**Conclusion:** Most participants chose self-poisoning with the expectation of death without suffering. Importantly, although half the sample required hospitalization, none had considered the risks associated with the use of such chemical agents. We conclude that prevention strategies should inform the possible health damages related to the use of chemical agents for people at risk of suicide.

## Background

Suicides have become a public health problem all over the world (1). Brazil is one of the ten countries with the highest absolute number of suicide deaths, and for each case of suicide, there are at least ten suicide attempts that require medical care (2).

People with a history of near-fatal suicide attempt present a similar profile to those who effectively committed suicide, with twice the risk of lethality in a future attempt compared to people whose previous attempts had no clinical severity(3). Research initiatives on mental processes involved in near-fatal suicide attempts represent a fundamental step to suicide prevention (4).

Self-poisoning is the most widely used method for attempting suicide (5). Some factors are associated with the use of chemical agents, such as female gender, easy access, the low degree of suicidal intention, the presence of mental disorders, impulsiveness and reactivity to psychosocial phenomena, and stressful life events(6). But the reasons for choosing or discarding a method are not well understood. Exploring meanings and motivations by narratives of people who had survived near-fatal suicide attempts may offer valuable new insights. This study examines the factors influencing the decision to use poisoning as a method of suicide to identify approaches to prevention.

In addition, self-poisoning can result in clinical complications with hospitalization due to the toxic effects of chemical agents (7). Investigating the awareness of health risks related to the use of chemical agents may provide an opportunity to implement preventive measures in populations at a greater risk of suicide. For example, in the United Kingdom, a study has shown that most people had no information on the risk of liver damage caused by intentional paracetamol overdose (8). Subsequent Informative campaigns reduced this problem, as demonstrated in a study conducted almost twenty years later (9).

The present paper aims to understand the reasons for choosing self-poisoning as a suicide method and investigate individual awareness of potential health damage related to the use of chemical agents in case of survival.

## Methods

Qualitative exploratory research was conducted at a general hospital in São Paulo, Brazil, between January and July 2016 and included adult patients admitted to the emergency room due to near-fatal suicide attempts by poisoning. All participants signed an informed consent approved by the Hospital's Research Ethics Committee (protocol number 51024415.4.0000.5463).

## Sampling

Eligible individuals were invited to participate by a hospital psychiatric liaison team member, and interviews took place in the emergency setting. Healthcare professionals ensured that interviews would not result in distressing for participants. The interviews lasted 1–2 hours and were conducted exclusively by the first author.

Self-poisoning was defined as the intentional self-administration of a dose higher than that prescribed of any drugs or non-ingestible chemicals such as pesticides. Alcohol and “recreational” drug intoxication were not included unless associated with any self-poisoning types mentioned above. Near-fatal was defined as requiring emergency care due to the potential risk of death by assessment of a trauma physician or emergency specialist (10); (11)

Sociodemographic data and clinical information were collected from interviews and medical records.

We used Beck's Suicide Intent Scale (SIS), which allows a quantitative assessment of intent to die (12). The median score was used to define two groups: a group with lower suicide intention (score < 18) and a group with higher suicide intention (score  $\geq$  18), according to previous criteria established in the literature(13).

A semi-structured face-to-face interview was conducted in a single session, addressing the reasons to choose a chemical agent, and the individual awareness of health problems if they survived. All interviews were voice recorded and manually transcribed. A content analysis was performed involving a) transcription of the interviews, b) reading of the transcribed interviews to grasp ideas and meanings, c)

identification of the themes related to the object of study, d) categorization, and e) interpretative analysis and discussion.

## 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 generated nine categories: death without suffering (cited by 7), the expectancy 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 command 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 reflections 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	F!9.2	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, venlafaxine
13	F,31		F32.2 + F60.3	Quetiapine, clonazepam, omeprazole, midazolam
14	F,51	13	F29	Ethyl alcohol and pesticide
15	F,47	14	F32.2 + F60.4	Analgesics, captopril, 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.				

## Discussion

Few studies have been investigated the reasons for choosing poisoning as a suicide method(15) (16), and no studies were conducted in Brazil.

The expectance of death without suffering was noticed in studies investigating self-poisoning(8), hanging(17), and the use of vehicular gas(18). In our study, the expectation of death without suffering was cited by seven participants. 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 think I took medication because I don’t want to die, called me coward, but I want to die as soon as possible. I only insist on this because I know I will not suffer, I will die in my sleep, what I suffer in my life is enough”. (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 lethality method, in this study, seven patients cited the choice of chemicals based on their supposed high efficacy as a lethal method:

“I had read the package insert before, I saw how dangerous these drugs are, if you read the package insert before you take it, you even lose your nerve, imagine the amount I took, I was sure 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 consumption psychotropic drugs with alcoholic beverages (n = 1).

Easy access is a leading factor in choosing a suicide method (20). In the present study, easy access was mentioned by six participants, and five stated that they used medications available in their homes.

Preserving physical appearance represents a relevant factor for choosing a suicide method (17). For three patients, the preservation of the physical appearance was justified by concern that family members participate in the wake without embarrassment:

“With medication, it just takes it and bury it, the aesthetic vision is better, without blood, without a rope. I could be buried like 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 had a second option to take medicine, but I had already done it, and it didn’t work, so I looked for something that would work better (...) I don’t like knives, cutting 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, intoxications may simulate natural death, and some reported 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.

For P4, the choice of ethanol fuel associated with crack resulted from the option of a cheap method.

Few studies have been published on the correlation between the suicide method and individual considerations of clinical damage if 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). In our study, no participants considered health risks or harm if they survived. The majority (n = 12) acted on impulse, and others cited misinformation about the toxic threat of chemical agents. Paradoxically, twelve participants reported that they avoided using violent methods that could leave "broken, sequel, dependent on third parties.”

These results may reflect two possibilities: 1) they considered the chemical agents harmless and therefore did not anticipate any health risks (which could indicate low intentionality, as SIS verified in most of the sample) 2)they had the certainty of death and thus not considered the possibility of not dying.

The limitation of access to drugs results in reduced mortality from suicide attempts (6). The finding that most people who used paracetamol in suicide attempts were unaware of the liver risks changed the UK's public health strategy (8). Consequently, an extensive announcement of these risks and reducing the over-the-counter painkiller package reduced paracetamol overdose-related mortality and liver transplantation rates (29).

Thus, information on possible health damage caused by an overdose of medications can be implemented by health teams in Brazil for people at risk of suicide. In addition, digital media can leverage health literacy by redirecting search engine tools for terms like poisoning, overdose, or suicide to websites that report on health risks caused by an overdose of chemical agents.

## Conclusions

The small number of participants in this study is a limitation. It represents the challenge of patient selection for semi-structured interviews in the 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 finding indicated a previous and elaborated conception about the choice of the method.

In conclusion, our findings suggest that early personal experiences are the key drivers for choosing to poison. The expectation of dying without suffering as a reward for painful life was the most reported reason. Importantly, although almost half the sample had clinical complications related to the use of chemical agents, none had considered the associated risks. The impulsivity and misinformation about the hazardous effects of chemicals agents impaired the perception of potential health risks. Therefore, preventive strategies informing about the possible health damages related to the use of these agents should be implemented for people at risk of suicide.

## **Declarations**

### **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.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

No funding to declare

## Authors' 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.

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