Family Factors as a Risk Factor for Suicide in People in Residential Treatment for Substance Use

Jorge Gabriel Chan Coob[1], David De Jesús Santoyo Manzanilla[1], Alondra Anahí Ordaz Cuevas[2]

[1]Universidad Autónoma de Yucatán.

[2]Centro de Tratamiento en Adicciones Arca de Noé.

RESUMEN

Introducción: diversos factores de riesgo de suicidio se han estudiado en la literatura de poblaciones en tratamiento de adicciones; sin embargo, estos estudios se centran en el suicidio como un constructo, ya sea como pensamientos o ideación suicida. Por lo tanto, es importante analizar los factores de riesgo de la conducta suicida y profundizar en los factores familiares que modulan esta relación, especialmente en poblaciones en rehabilitación por consumo de sustancias. **Objetivo:** analizar la influencia de los factores familiares en los intentos de suicidio en una población de internos en un centro de tratamiento y rehabilitación de adicciones. **Método:** se realizó un estudio retrospectivo de casos y controles con una muestra de 40 personas que habían intentado suicidarse y 59 personas control. **Resultados:** se aplicó un cuestionario de 12 preguntas a través de una aplicación móvil a 99 participantes. El 79.8% de los participantes eran hombres y el 20.2% mujeres; se encontró una alta prevalencia de intentos de suicidio en los hombres. Los antecedentes familiares de suicidio son un factor de riesgo que multiplica la probabilidad de suicidio hasta siete veces, mientras que ser hombre la sextuplica. La educación es un factor protector contra el suicidio. Los hombres calificaron su propia salud emocional como buena, mientras que la mayoría de las mujeres la calificaron como regular. **Discusión y conclusiones:** la población en centros de tratamiento y rehabilitación de adicciones presenta un perfil complejo de riesgo de suicidio, influenciado por factores como el género, los antecedentes familiares de suicidio y el bajo nivel educativo. Se destaca la importancia de las evaluaciones individuales y los programas de intervención específicos para abordar las necesidades particulares de cada género en este contexto.

Palabras clave: consumo de sustancias, suicidio, salud mental.

ABSTRACT

Introduction: various risk factors for suicide have been studied in the literature in populations undergoing addiction treatment; these studies, however, focus on suicide as a construct, either as suicidal thoughts or ideation. Therefore, it is important to analyze the risk factors for suicidal behavior and delve deeper into the familial factors that modulate this relationship, especially in populations undergoing rehabilitation for substance use. **Objective:** to analyze the influence of familial factors on suicide attempts in a population of inmates at an addiction treatment and rehabilitation center. **Method:** a retrospective case-control study was conducted with a sample of 40 people who had attempted suicide and 59 control people. **Results:** a 12-question questionnaire was applied through a mobile app to 99 participants. Of the participants, 79.8% were men and 20.2% were women; a high prevalence of suicide attempts was found in men. A family history of suicide is a risk factor that multiplies the likelihood of suicide up to sevenfold, while being male increases it sixfold. Education is a protective factor against suicide. Men rated their own emotional health as good, while the majority of women rated it as average. **Discussion and conclusions:** the population at the treatment and rehabilitation center for addictions presents a complex suicide risk profile, influenced by factors such as gender, family history of suicide, and low educational level. The importance of individual assessments and specific intervention programs to address the particular needs of each gender within this context is highlighted.

Keywords: substance use, suicide, mental health.

Corresponding Author:
Jorge Gabriel Chan Coob. Carretera Tizimin-Cholul Km1, C.P. 97305, Mérida, Yucatán, México. E-mail: chan_672@hotmail.com
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INTRODUCTION

According to the United Nations Office on Drugs and Crime's 2023 World Drug Report (UNODC, 2023), it was estimated that one in 17 people had used some drug in the last year and that 296 million people are regular drug users, representing 5.8% of the world's population aged 15 to 64. In some regions of the Americas (United States, Cuba, Chile, Mexico, for example), prevalence rates of mental and substance use disorders were higher than in Europe (Castaldelli-Maia & Bhugra, 2022). In Mexico, 2.3% of the population between 12 and 65 years or older reported having used illicit drugs in the previous 12 months; marijuana and cocaine were the most commonly used substances, and the main consumers were mostly men between 18 and 29 years of age, mainly from the northeastern region of Mexico. Low levels of education were significantly associated with substance use, abuse, and dependence (Medina-Mora et al., 2006). During the COVID-19 pandemic, it was found that 30% of people living in the United States presented harmful levels of alcohol consumption, 22% of the population reported drug use, and 38% reported severe drug use.

There are differences between men and women in terms of psychosocial factors associated with substance use: women start using substances at a younger age, are divorced, and experience sexual abuse. Men, on the other hand, have less schooling, are married, and experience more physical and emotional abuse. For men, a source of income related to substance use was drug trafficking, while for women it was family income or prostitution (El Habiby et al., 2020). Men are more likely to associate excessive substance use with social factors such as peer pressure and the traditional norms of masculinity; women, on the other hand, tend to associate substance use with emotional factors such as stress, anxiety, and depression (Kostadinov et al., 2024).

One of the most important concerns in the study of substance use is its effect on mental health, especially on suicide risk. On average, 35% of people with a substance use disorder have had suicidal ideations, and 20% have had at least one suicide attempt in the past 12 months (Armoon et al., 2021). Adults with a substance use disorder are four times more likely to be at risk of suicidal thinking and three times more likely to be at risk of suicide planning and attempting (Jones et al., 2023). Although suicide rates are high among adults seeking treatment for substance use disorders, adults with prior suicide attempts showed less improvement in drug use severity from post-treatment to six months post-treatment (Kelly et al., 2020).

There are differences in the reasons for suicide in men and women; for men, economic problems (Stack, 2000), romantic breakups or family conflicts have a higher risk of suicide (Evans et al., 2016), and unemployment and/or work problems are significant risk factors for suicide in men (Milner et al., 2018). While for women, domestic violence (Kavak et al., 2018), depression and anxiety disorders (Hawton et al., 2013), as well as other psychiatric disorders are usually more closely linked to the risk of suicide (Bryan et al., 2014).

Among the general population, men have a risk of suicide rate up to 21 times higher than women (Coleman et al., 2020). A sample from a psychiatric center showed that women tend to have a risk up to 1.8 times higher than men (Listabarth et al., 2020). In samples of patients undergoing treatment for substance use, it was found that suicidal ideation was associated with an earlier age at the onset of substance use among men (Andersson et al., 2022). Completion of post-secondary education and a religious practice were significant protective factors in women, while unemployment and stressful life events were significantly associated with the increased risk of suicide attempts in men (Eisen et al., 2017) while low education showed a significant association with drug use, abuse and dependence for both genders (Medina-Mora et al., 2006). Completion of post-secondary education and religious practice were significant protective factors for women, and experiences of sexual abuse were risk factors. For men, family and partner support were protective factors, and unemployment and stressful life events were significantly associated with an increased risk of suicide attempts in men (Eisen et al., 2017). An important difference between genders and suicide attempts is that men react differently than women; women are generally more open about expressing their emotions and reporting their suicidal thoughts and attempts (Richardson et al., 2023).

Depression and substance use are not isolating events in the risk of suicide, that is, people with high substance use and who were also diagnosed with major depression are up to 16 times more likely to have suicidal ideation (Onaemo et al., 2022). Considering only depression as a risk factor, it was found that depression can increase suicidal ideation up to four times in young people (Souza et al., 2023); comorbidity between substance use and major depression presents a higher risk if we consider the family history suicide, which is on average up to three

times more than those who do not have such family history (Qin et al., 2002).

A family history of suicide is a risk factor for suicide and is also associated with a higher number of suicide attempts (Owliaey et al., 2024). For patients with a psychiatric illness, the risk of suicide is up to 2.6 times higher than it is for those without any psychiatric disorder; people with schizophrenia have a 15 times higher risk, followed by bipolar disorder (13 times higher), depressive disorders (7 times higher), anxiety disorders (6 times higher), and Attention-Deficit/Hyperactivity Disorder (2 times higher; Yeh et al., 2019).

In Mexico, Marín-Navarrete et al. (2016) found a high prevalence of concurrent psychiatric disorders among people receiving treatment for substance use in residential centers. Substance use can increase the risk of suicidal ideation and planning up to five times and suicide attempts up to six times. This work focused on studying the comorbidity of other disorders associated with substance use, and although it focuses on a population in rehabilitation, suicide attempt is considered a comorbidity. It is necessary to conduct studies in samples of people in rehabilitation for substance use who have also made at least one suicide attempt. Therefore, the objective of this work is to analyze the influence of familial factors on suicide attempts in a population currently residing at an addiction treatment and rehabilitation center (ATRC).

METHOD

Design

A retrospective case-control study was conducted. The cases consisted of a sample of 40 people who have had at least one suicide attempt and who have expressed it directly in their rehabilitation treatment sessions. The control group were people (n = 59) who were also in rehabilitation but without a history of suicide attempts. The study is considered retrospective since suicide attempt is a behavior that already occurred before the study was conducted (Abbott et al., 2016). Since the control group was from within the same population and due to the diversity of the individuals, it was not possible to guarantee a match between the study sample and the control group.

Participants

The entire inpatient population for addictions of one therapeutic community participated in this study. The population is made up of 99 people, of which 79 (79.8%) were men and 20 (20.2%) were women. The average age of the entire population was 30.65, SD = 9.87 years, the youngest person was a 15-year-old and the oldest person was a 64-year-old. Regarding sex, the mean average age of men was 31.46, SD = 9.99, and 27.45, SD = 8.92 of women. The average time that a person had been in rehabilitation was 1.275, SD = 2.17 years. Most men (40.5%) had a secondary, school education level, while most women (47.4%) had a high school education level. 17% of the population had a bachelor's degree, and 2% has a postgraduate degree.

The ATRC is located in a vulnerable population area and is strategically positioned to have a social impact. It is considered a therapeutic community, that is, patients live and actively participate in a residential environment that functions as a small community, where both staff and residents collaborate in the recovery process. All participants have a support activity and some of them remain in the community for many years. It is also possible to find career-oriented people hospitalized for some addiction or emotional discomfort and who provide their services to the community as part of their treatment and who, in turn, as a community, contribute their knowledge to the ATRC.

Instrument

A questionnaire of 12 multiple choice questions was designed with variables of interest for our research objective. They were asked their full name, gender, age, date of admission, the main reason for being admitted to the rehabilitation center, what they consider to be their main problem, if there is a family history of suicide, if they have attempted suicide, who is the most important person in their life, their education level, how they rate their current emotions, and if they have taken medication for depression and/or anxiety. This questionnaire was applied through a mobile application for Android called the *Sistema de Información Estadística de México*. Since this study is exploratory and descriptive in nature and the questionnaire does not measure specific constructs, it was decided not to carry out any validation process of the instrument used

Procedure

Through the College of Psychologists of the State of Yucatán, contact was made with the ATRC and access was granted so the authors could conduct their evaluations. Once the mobile application was presented to the management team and psychology

professionals, work was coordinated between the psychologists of the ATRC and the psychologists of the College of the State Yucatan, and training was provided by teaching the team how to access the app, save the participants' answers, what to do if the participant leaves the app, what the questionnaire questions refer to if a participant has doubts, etc., so that they were prepared for any inconvenience while using the app. A team of 10 psychologists both from the College and the rehabilitation center carried out the evaluations in a space provided for this purpose.

The assessment began by explaining the objective of the study and its importance, and it was completed in five minutes. Participants were then given a mobile device containing the assessment questions and were provided with assistance during their responses. The questionnaire was administered in the morning, between 9:00 a.m. and 1:00 p.m., five days a week, until the entire study population was reached.

Data Analysis

Three types of statistical analysis were performed. First, a chi-square test was used to analyze participants' responses. Second, two-by-two crosstabs were created to estimate association coefficients and odds ratios, which allowed for the identification of the protective or risk effects of the variables. Dummy variables were generated. For the question "reason for admission," the coding was "1" for addictions and "0" for the other options. To determine whether a protective factor existed for the question "most important person," there were 5 response options: Partner, Parents, Children, Other, Nobody. These options were grouped into 3 dummy variables: one variable compared the effect of parents (n = 43), another the effect of children (n = 26), and the third analyzed the joint effect of parents and child (n = 69) (See Table 1 and Table 2). The median test was performed to compare the education level of individuals who had attempted suicide and those who had not; due to the significance, a binary logistic regression model was performed to analyze the effect of education on suicide attempts.

Ethical Considerations

It was requested that all participants had at least five months of rehabilitation treatment so that they could participate consciously and voluntarily. The invitation was made through the psychologists of the rehabilitation center. Clear and detailed information was provided about the purpose of the study, the procedures, risks, benefits, and confidentiality of the data, and participants responses were completely anonymous. The evaluation was limited to the study's questions, avoiding topics or questions that could re-victimize or generate emotional discomfort. In case of any discomfort, a team specialized in mental health and addiction issues was available to offer support and resources to participants during and after the study. Regarding minor, consent was obtained through their guardian at the rehabilitation center, since the minor has no contact with their parents as part of your treatment, and it was requested that the minor agree to participate of their own free will. At the ATRC, there is a figure called "The Godfather" who accompanies a specific group of people assigned to him during their treatment. This person was considered the minor's guardian due to their close relationship. For adults, consent was obtained directly after an explanation of the scope of the study results. A direct invitation was made to the individuals. At the time of the interview, the project was explained to them and informed consent was obtained. After this, the evaluation was carried out.

An Ethics Committee was formed by the Board of Directors of the rehabilitation center, who reviewed, validated and approved (Folio ARCN20241) the study after learning about the objectives and methodology. Informed consent was obtained specifically for this study and was prepared in accordance with the provisions of the Reglamento de la Ley General de Salud en Materia de Investigación en Salud (2014). Furthermore, the use and collection of information was in accordance with the Ley Federal de Protección de Datos Personales en Posesión de los Particulares (2025).

RESULTS

With the aim of describing the familial and sociodemographic background of the participants, Table 1 is presented with the frequencies and percentages of people in each of the response options. Since it is an addiction rehabilitation center, most of its population is admitted for addictions, however, people went there to receive treatment with regards to emotional discomfort, risk of suicide, or mental disorders. The main problems mentioned by the patients were family- and relationship-related. It should be noted that 34.7% of patients reported a history of suicide in their family, and that they had even attempted suicide.

The people considered to be most important by the participants were parents and children, however, it is worth noting that 15% mentioned the other

option, which refers to friends, other relatives, or pets, and 8% mentioned not having anyone important in their life. In general terms, most people reported feeling emotionally well during the evaluations.

Regarding the analysis of risk and protection factors, it was observed that people with a family history of suicide have a risk 2.7 times greater of attempting suicide in the future. As can be seen in Table 2, almost 56% of people who have a family history of suicide have also attempted suicide. In the gender

Table 1

Family background and sociodemographic characteristics of the therapeutic community

Question	*Option*	*Frecueny*	*Percentage*	χ^2	*p*
What is the reason for admission?	Addictions	77	78.6	150.571	< 0.001
	Emotional	9	9.2		
	Mental disorder	4	4.1		
	Risk of suicide	8	8.2		
	Work	8	9		
What is your main problem?	Economic	12	13.5	58.438	< 0.001
	Family	40	44.9		
	Romantic relationship	17	19.1		
	Legal	9	10.1		
	Health	3	3.4		
Do you have a family history of suicide?	No	64	65.3	9.184	< 0.001
	Yes	34	34.7		
Have you attempted suicide?	No	59	60.2	4.082	0.040
	Yes	39	39.8		
Who is the most important person in your life?	Partner	6	6.1	47.408	< 0.001
	Parents	43	43.9		
	Children	26	26.5		
	Other	15	15.3		
	Nobody	8	8.2		
How do you feel right now?	Good	48	49	22.796	< 0.001
	So-so	39	39.8		
	Bad	11	11.2		

Note: χ^2 refers to the chi-square test and *p* refers to the significance or *p*-value.

variable, it can also be observed that the risk of attempted suicide for men is six times higher (*OR* = 6.02; see Table 2) than it is for women. For the admission variables, a dummy variable was generated to analyze the effect of addictions as a risk factor. There is a homogeneous distribution between addictions and attempted suicide, that is, there is no evidence that addiction can be considered a risk for attempted suicide. The variable of "Who is the most important person in your life?" was divided into three dummy variables to be analyzed independently as a protective factor. Although the results in Table 1 suggest that parents and children are the most important people for the participants, a protective factor is not observed in any of them, even when considering both as a single variable.

Additionally, a low association was found between the reason for admission and the family history of suicide (χ^2= 11.66, p = .009, Φ = .345) of the total number of people who mentioned having been admitted for addictions; 23 of them (67.6%) said that there is a history of suicide in their family, and although there is a relation between these elements, this cannot be considered as a risk factor the odds ratio (*OR*) was 0.387, with a 95% confidence interval [CI 95% = 0.145, 1.03]. In summary, a family history of suicide is a risk factor for attempted suicide, but not for addictions. Participants were asked about

Table 2
Analysis of risk and protection factors for attempted suicide

		Was it a suicide attempt?						CI 95%	
Variable	*Option*	*No F (%)*	*Yes F (%)*	χ^2	*p*	Φ	*OR*	*Lower*	*Upper*
Family history of suicide	No	44 (68.7)	20 (31.2)	5.62	0.018	.240	2.78	1.18	6.57
	Yes	15 (44.1)	19 (55.8)						
Sex	Male	54 (91.5)	25 (64.2)	11.29	0.001	0.34	6.04	1.96	18.64
	Female	5 (.085)	14 (35.8)	58.438	< 0.001				
Addictions	No	10 (47.6)	11 (45.4)	1.76	0.184	-0.13	0.519	0.196	1.37
	Yes	49 (63.6)	28 (87.5)						
Who is the most important person in your life?									
Children	No	41 (56.9)	31 (66.1)	1.204	0.273	-0.11	0.588	0.226	1.52
	Yes	18 (69.23)	8 (30.7)						
Parents	No	33 (60)	22 (40)	0.002	0.963	-0.01	0.981	0.434	2.21
	Yes	26 (60.5)	17 (39.5)						
Parents/ children	No	15 (51.72)	14 (48.3)	1.23	0.266	-0.11	0.609	0.253	1.46
	Yes	44 (63.76)	25 (36.2)						

Note: χ^2 It refers to the chi-square statistic, *p* refers to the significance level of .05, Φ is the association statistic of the Phi analysis and OR refers to the Odds Ratio.

their current emotional state between the answers, with the variable answers fine, so-so, and bad. The gender analysis revealed that there are differences in how they perceive their current mental health (χ^2= 6.27, p = .043, Φ = .253), and that the majority of men rated themselves as fine (53.1%), while the majority of women rated themselves as so-so (42.1%).

In regards to the question, "What do you consider to be your main current problem?" similarities were found between men and women (χ^2= 5.15, p = .398, Φ = .241), where 40% of men and 63.15% of women mentioned that their main problem is related to their family, and 20% of men and 15.7% of women mentioned that their main problem relates to their romantic relationship. A dummy variable was generated, and "1" was coded for the people who mentioned that their main problem was related to either their families or romantic relationships, and "0" for other response options. With this new variable, a crosstab was generated with the question about possible family history of suicide. It can be observed that there is a link between having a family history of suicide and perceiving family and partners as the source of problems (χ^2= 5.05, p = .025, Φ = .227¸ *OR* = 2.727 [CI 95% = 1.12 – 6.87]). That is, a family history of suicide can increase the probability of having problems with family and/or partners in the future by up to six times if a person is admitted to an ATRC.

The education level is significantly different for people who have attempted suicide from those who have not attempted it (χ^2 = 4.49, p = .034). People who have not attempted suicide had a higher median education level, which was high school, while people who have attempted suicide had a median education level of secondary school. Generating a logistic regression model shows that schooling can be a protective factor for not attempting suicide (β = -.557, *SE* = 5.85, p = .016, *OR* = .573 [CI 95% = .365 - .90]). Schooling has a statistically significant effect on attempted suicide: in this case, 0.573 indicates that for each additional unit of level education, the odds of attempting suicide are reduced by 42.7% (1 - 0.573). As level education, increases, the odds of attempting suicide decrease.

DISCUSSION AND CONCLUSIONS

The people in the ATRC were mainly men. There is a relatively high prevalence (34.7%) of people with a family history of suicide and of individuals who have attempted suicide (39.8%). That is, four out of 10 people who are in the addiction treatment center have attempted suicide.

A family history of suicide is a risk factor that increases the probability of suicide up to seven times,

while being a man increases the probability up to six times. According to Owliaey et al. (2024), a family history of suicide is associated with a higher number of suicide attempts by a person, that is, family history can make a person persistent in their suicidal behavior.

Substance use alone does not represent a risk factor for suicide at least for this study population, although it is important to mention that many of the individuals have already finished their treatment. In most research, substance use is not reported on its own, but it is studied with another comorbidity variable; for example, Yeh et al. (2019) studied it considering psychiatric illnesses such as schizophrenia, and Qin et al. (2002), Souza et al. (2023), and Onaemo et al. (2022) studied it with other mental health symptoms such as depression. In and of itself, substance use was a risk factor for suicide, but only when measured as a construct through indicators such as suicidal thinking, suicidal planning and suicidal behaviors (Jones et al., 2023) but not with a history of suicide attempts. Another example would be Armoon et al. (2021), who found that on average, 35% of people with a substance use disorder have had suicidal ideation, and 20% have had at least one suicide attempt in the last 12 months; but these data are reported as a descriptive measure and not as a risk factor.

Although the participants mentioned that their parents or children are important in their lives, the results do not confirm that this relationship is a protective factor for suicide. Although a low association was found between admission to the ATRC and a family history of suicide. Family and relationship issues were the main problems of individuals rather than problems such as health, work or money; in fact, a family history of suicide is a risk factor for considering family and partners as the sources for future problems. These findings are important because the literature mentions that for men, family, money, relationship problems and breakups are among the main reasons for suicide (Evans et al., 2016; Milner et al., 2018; Stack, 2000). In this sense, these variables could be considered important in this study for suicide risk. On the other hand, there is the possibility that men have minimized their problems.

According to Richardson et al. (2023), men tend to be less likely to share their emotions and report their suicide attempts. In this sense, it is not surprising that the majority of men, despite being in a rehabilitation center, considered their emotional health to be good (53.1%), that is, they said they did not have any discomfort or concern; while the majority of women considered their emotional state to be "more or less good" (42.1%).

However, and perhaps more crucially in the context of suicide prevention, this result could also mask an underlying vulnerability. The trend noted in the literature that women, despite seeking help more frequently, may struggle to reveal the depth of their emotional distress due to factors such as guilt, shame, or fear of judgment is highly relevant here. A "so-so" could be a way of minimizing or normalizing experiences of distress, especially in a setting where the majority are men and group dynamics could influence emotional expression.

Furthermore, given the specific risk factors associated with suicide in women in the literature—such as gender-based violence, caregiving responsibilities, and mood disorders—it is possible that some of these women are dealing with significant emotional burdens that are not fully reflected in a superficial self-report.

The educational level was a protective factor that can reduce the risk of suicide by up to 42%. This finding is consistent with what was indicated by Eisen et al. (2017), where it is mentioned that post-secondary studies were a significant protective factor for suicide, while a low educational level showed a significant association with drug use, abuse and dependence (Medina-Mora et al., 2006).

The results indicate that for people undergoing addiction treatment, their gender and family history of suicide, not just their substance use disorder, should be considered an integral part of their individualized treatment. The results highlight the importance of considering psychosocial and family factors that contribute to suicide risk. Promoting mental health and strengthening family relationships are key to preventing future attempts.

Limitations of the Study

The main limitation of this study is that it has a cross-sectional design which implies that it can only analyses associations between variables, but cannot establish causal relationships. The study sample is made up of people who are in a rehabilitation center, which may not be representative of the general population of people who use substances or who have attempted suicide. The results may not be generalizable to other contexts or populations.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHORS CONTRIBUTION

Jorge Gabriel Chan Coob: conceptualization, methodology, formal analysis, data curation, writing original draft, writing review and editing.
David de Jesús Santoyo Manzanilla: methodology, exploratory analysis, validation, discussion, reviewing and editing.
Alondra Anahí Ordaz Cuevas: project methodology, study sample, evaluation resources.

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