



Suicidal Risk in Penitentiary Facilities in Bucaramanga (Colombia): A Logit Model for Early Detection

Riesgo Suicida en Centros Penitenciarios de Bucaramanga (Colombia): un Modelo Logit para la Detección Temprana

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Highlights

- The prevalence of suicidal risk in prisons in Bucaramanga, assessed using the Plutchik scale, was nearly 70%.
- Evidence shows that suicidal ideation and self-harm are strong predictors of suicidal risk.
- Psychosomatic factors, rather than socioeconomic variables, have a greater impact on the probability of suicidal risk.
- Participation in INPEC's Life Preservation Programs reduces the average probability of suicide by 21.9 percentage points.

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Riesgo de Suicidio; Persona Privada de Libertad; Ideación Suicida; Autolesión.

ABSTRACT

Introduction. People deprived of liberty are exposed to multiple risk factors that lead to physical and emotional deterioration, thereby increasing their vulnerability to suicide. It is imperative to identify reliable warning signs to prevent this issue and to guide the implementation of life-preserving interventions. **Objectives.** To analyze sociodemographic, penitentiary, and psychological factors associated with suicidal risk among individuals incarcerated in correctional facilities in Bucaramanga. **Materials and Methods.** The SCL-90 Symptom Inventory and the Plutchik Suicide Risk Scale were administered to a non-random sample of 73 incarcerated individuals who voluntarily agreed to participate. In addition to descriptive analyses and tests comparing means and proportions across groups defined by suicide risk status, a logit model was estimated to identify variables influencing the probability of suicidal risk. **Results and Discussion.** The prevalence of suicidal risk in the sample was 70%. The presence of suicidal ideation (AME = 18.96 pp, $p = 0.042$), together with certain psychosomatic dimensions—such as obsessive-compulsive behavior (AME = 24.46 pp, $p = 0.029$) and sensitivity (AME = 21.82 pp, $p = 0.004$)—emerged as relevant indicators for early detection of suicidal risk. **Conclusions.** The findings are consistent with prior studies reporting a high incidence of suicidal risk in this population, significantly influenced by psychosomatic factors and suicidal ideation. Life preservation programs (AME = -21.91 pp, $p = 0.061$) may contribute to mitigating this issue.

RESUMEN

Introducción. Las personas privadas de libertad se enfrentan a una serie de factores de riesgo que conducen al deterioro físico y emocional y pueden aumentar su vulnerabilidad hacia el suicidio. Es imperativo identificar señales de alerta útiles que permitan prevenir el problema y orientar las acciones de un programa de preservación de vida. **Objetivos.** Analizar factores sociodemográficos, penitenciarios y psicológicos que alertan acerca del riesgo suicida en personas reclusas en establecimientos carcelarios de Bucaramanga. **Materiales y Métodos.** Se aplicó el inventario de síntomas SCL-90 y la escala de riesgo suicida de Plutchik a una muestra no aleatoria de 73 personas privadas de libertad dispuestas a participar en el estudio. Además del análisis descriptivo y las pruebas de comparación de medias y proporciones entre grupos definidos por riesgo suicida, se recurre a un modelo logit para determinar las variables que inciden en la probabilidad de riesgo de suicidio. **Resultados y Discusión.** La prevalencia de riesgo suicida en la muestra fue de 70%. La presencia de ideación suicida (AME=18,96pp, $p=0,042$), junto con algunas dimensiones psicósomáticas, como el comportamiento obsesivo compulsivo (AME=24,46pp, $p=0,029$) y el sensitivismo (AME=21,82pp, $p=0,004$) pueden ser indicadores relevantes para la detección temprana de riesgo suicida. **Conclusiones.** Los resultados son consistentes con los reportados en otros estudios en cuanto a la alta incidencia de riesgo suicida en este tipo de población, significativamente influenciado por factores psicósomáticos e ideación suicida. Los programas de preservación de vida (AME=-21,91pp, $p=0,061$) pueden contribuir a prevenir esta problemática.

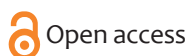


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INTRODUCTION

People deprived of liberty (PDL) are exposed to multiple risk factors that lead to physical and emotional deterioration and may heighten their vulnerability to suicide. Among these factors are social isolation, exposure to violence, stigma, psychological pressure from their environment, and a history of adversities such as trauma, untreated mental health conditions, and socioeconomic difficulties.

Correctional facilities constitute environments conducive to self-harm and suicide due to the stress generated by confinement ⁽¹⁾. According to the World Health Organization (WHO) ⁽²⁾, suicide is a public health problem, particularly among individuals aged 15–29 years, with a prevalence in correctional institutions up to 17 times higher than in the general population ⁽³⁾.

Suicidal risk (SR) among PDL is not an inevitable consequence of incarceration. Preventive measures and targeted intervention strategies can effectively help identify and address this risk. Mental health professionals and multidisciplinary teams in correctional facilities play a crucial role in early detection, risk assessment, treatment, and follow-up of individuals at risk of suicide. In this regard, in correctional institutions in Bucaramanga, the Colombian National Penitentiary and Prison Institute (INPEC) ⁽⁴⁾ has implemented a life preservation program, which develops monitoring strategies for individuals presenting suicidal behavior. According to data provided by psychosocial staff, two to three cases of self-harm and suicidal ideation are attended daily, highlighting the urgent need to implement strategies to mitigate this growing problem.

To better understand the factors influencing SR among PDL and to strengthen the actions undertaken by this program, the present study analyzes suicidal risk in a sample of incarcerated individuals in Bucaramanga. Specifically, it seeks to answer the following research question: Which factors can serve as early warning signs of suicidal risk in the prison population, thereby informing the strategies of the life preservation plan? Accordingly, the objective of this study is to analyze the sociodemographic, penitentiary, and psychological factors associated with suicidal risk among people deprived of liberty in Bucaramanga, using a logistic regression model.

MATERIALS AND METHODS

This was a non-experimental, observational cross-sectional study. Data collection took place in 2019 through the administration of surveys in three penitentiary facilities belonging to INPEC's Eastern Regional Directorate. A non-probabilistic sample of 73 incarcerated individuals who voluntarily expressed their willingness to participate after being informed about the objectives, scope, and terms of the study was included.

All participants were registered in the records provided by the Life Preservation Program: 22 individuals from the High and Medium Security Prison of Girón (CPAMSGIR), commonly known as Palogordo; 23 from El Buen Pastor Women's Prison; and 28 from the Medium Security Prison of Bucaramanga (CPMSBUC), known as La Modelo. Data collection was contingent upon several factors: the participants' willingness to participate and sign informed consent, security protocols for facility access, and disturbances in the prison yards. For the protection of the research team, the presence of a corrections officer was required, which limited progress according to the availability of security staff.

Considering the complexity of suicide as a phenomenon, this research focused specifically on suicidal risk (SR). The following instruments were used for data collection:

SCL-90-R: This psychometric instrument was developed at Johns Hopkins University in 1983 by Derogatis ⁽⁵⁾ and validated in Colombia by Londoño et al. ⁽⁶⁾. It comprises 90 psychological symptoms grouped into nine dimensions: somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism, which are assessed in individuals with or without clinical symptomatology. Participants rate the presence of each symptom on a scale from 0 (not at all) to 4 (extremely). The instrument also identifies the Positive Symptom Total (PST), facilitating the interpretation of the overall pattern and breadth of psychopathology; its reliability coefficient is 0.80 ⁽⁵⁾. This instrument is widely used for mental health assessment and has been translated into multiple languages, including Spanish.

Once the data were collected, a scoring table was used to calculate total scores for each dimension and a global score. Interpretation was based on comparing each participant's scores with normative population averages. A score was considered clinically significant if it exceeded the established cutoff value for that dimension, indicating the presence of a clinically relevant symptom.

Plutchik Suicidal Risk Scale: This assessment tool, developed by Robert Plutchik, measures suicidal risk. It comprises a list of questions evaluating different risk factors, including the presence of suicidal ideation, severity of depressive symptoms, impulsivity, and history of previous attempts. Each item is rated from 0 (factor absent) to 4 (factor present to a severe degree). The scale consists of 15 items with Yes/No responses. Total scores range from 0 to 15. The instrument demonstrates high internal consistency ($\alpha = 0.90$), reliability (0.89), and sensitivity and specificity of 88%. The Plutchik Suicidal Risk Scale has been validated in numerous studies and has proven to be a useful tool for assessing suicidal risk across diverse populations, including inpatients, outpatients, and adolescents, and for designing appropriate treatment plans.

Sociodemographic Data Sheet: To characterize participants, a data sheet was administered with questions regarding age, sex, marital status, reason for charges, length of sentence, and two questions related to suicidal ideation and self-harming behaviors.

Data Analysis: Data analysis was performed using Stata version 15.1 (StataCorp LLC, College Station, TX, USA). In addition to basic descriptive statistics, Student's t-tests were used to compare means and proportions between groups defined by the presence of suicidal risk. To analyze the effects of different factors on the probability of suicidal risk and to identify potential predictors, multivariate analysis was conducted. Specifically, a logistic regression model was estimated, expressed as follows:

$$\text{Log} (P/(1-P)) = X' B + U$$

where P represents the vector of probabilities of occurrence of the suicidal risk (SR) event, and (1-P) denotes the probability of non-occurrence; X is the matrix of explanatory variables; β is the vector of parameters to be estimated; and U is the random disturbance term, assumed to follow a normal distribution with mean zero and variance (0, σ^2).

This methodology is appropriate for modeling binary outcomes, as in this case, where the dependent variable is dichotomous and takes value 1 if the individual presents SR and 0 otherwise. The explanatory variables considered were classified into three groups:

Socioeconomic variables: age, sex, educational level, marital status, and previous occupation. Penitentiary variables: reason for incarceration, participation in the Life Preservation Program, and length of sentence. Psychosomatic variables: somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, hostility, anxiety, phobic anxiety, paranoid ideation, and psychoticism, in addition to self-reported suicidal ideation and self-harming behaviors.

However, only those variables demonstrating significant differences between groups defined by SR status were included in the final model. The Shapiro–Wilk test was applied to assess the normality of residuals.

The research was conducted in five phases: (i) identification of INPEC's needs and recording of study agreements and commitments; (ii) presentation of the project to the PDL, based on information provided by professionals in the Life Preservation Program, and collection of voluntary consent to participate; (iii) administration of the instruments in each prison yard, according to participants' location and in compliance with institutional protocols; (iv) statistical analysis; (v) delivery of the final report.

RESULTS

Sociodemographic and Correctional Context

The sample mainly comprised women, young individuals, and single persons whose educational attainment was, at most, primary education. Before incarceration, more than half were engaged in various trades (e.g., manual labor, crafts), although a substantial proportion reported involvement in criminal activities. The most frequent charges were theft, followed by homicide and drug trafficking, with a relatively long average sentence. A high percentage of participants were enrolled in INPEC's life preservation programs. Based on the results of the Plutchik Scale, suicidal risk was identified in nearly 70% of participants, with scores above the cutoff point (six) ([Table 1](#)).

When comparing these variables across SR groups, individuals presenting risk showed a slightly higher proportion of women (70.59% vs. 63.64%), a greater proportion with at most primary education (62.75% vs. 54.55%), and a lower mean age (29.5 vs. 32.5 years) compared to those without risk. No relevant differences were observed in occupational background or type of offense between groups. Overall, no statistically significant differences were found for most variables, except for participation in the life preservation programs. Indeed, although the majority of incarcerated individuals were enrolled in these programs (65.75%), this proportion was significantly higher among those presenting suicidal risk (86.36%).

Table 1. Sample Characteristics

Variable	Category	Total	Suicidal Risk: Yes	Suicidal Risk: No	<i>p</i> -value
Sex at Birth					0.56
	Male	31.51% [n=23]	29.41% [n=15]	36.36% [n=8]	
	Female	68.49% [n=50]	70.59% [n=36]	63.64% [n=14]	
Marital Status					0.97
	Single	68.50% [n=50]	68.63% [n=35]	68.18% [n=15]	
	Other	31.50% [n=23]	31.37% [n=16]	31.82% [n=7]	
Educational Level					0.51
	Primary education or less	60.27% [n=44]	62.75% [n=32]	54.55% [n=12]	
	Secondary education or higher	39.73% [n=29]	37.25% [n=19]	45.45% [n=10]	
Participation in Life Preservation Programs					0.02
	Yes	65.75% [n=48]	86.36% [n=43]	56.86% [n=13]	
	No	34.25% [n=25]	13.64% [n=8]	43.14% [n=10]	
Previous Occupation					0.81
	Various trades	52.05% [n=38]	50.98% [n=26]	54.55% [n=12]	
	Criminal activities	28.77% [n=21]	29.41% [n=15]	27.27% [n=6]	
	Commerce and services	19.18% [n=14]	19.61% [n=10]	18.18% [n=4]	
Reason for Incarceration					0.51
	Theft	34.25% [n=25]	35.29% [n=18]	31.82% [n=7]	
	Homicide	26.03% [n=19]	23.53% [n=12]	31.82% [n=7]	
	Drug trafficking	20.55% [n=15]	21.57% [n=11]	18.18% [n=4]	
	Illegal weapons possession	9.59% [n=7]	7.84% [n=4]	13.64% [n=3]	
	Other	9.59% [n=7]	9.77% [n=6]	4.55% [n=1]	
Age (years)					0.11
	Mean	30.42	29.50	32.50	
	SD	-7.44	-7.12	-7.90	
Sentence Length (months)					0.87
	Mean	141.01	139.48	144.81	
	SD	-124.14	-121.45	-133.00	
Total Sample		100.00% [n=73]	69.86% [n=51]	31.51% [n=23]	

For categorical variables, percentages and counts are shown, with *p*-values testing equality of proportions. For continuous variables, means and standard deviations (SD) are shown, with *p*-values testing equality of means.

Identification of Psychosomatic Dimensions

Table 2 presents the results of the SCL-90 assessment overall and by SR group. Compared to the normative reference scores (see benchmark in the first numeric column of the table), the presence of clinically relevant symptoms exceeded expected levels across all dimensions. This was particularly notable for depression (mean score of 2.02 among those at risk and 1.32 among those not at risk, with a reference value of 0.55) and hostility (1.80 among those at risk and 1.07 among those not at risk, reference value 0.63). Only phobic anxiety showed a mean score below one.

The values of these dimensions were all significantly higher among individuals with suicidal risk, reflecting that incarcerated individuals had experienced clinical symptoms characteristic of depressive disorders, such as loss of desire, low mood, tearfulness, feelings of guilt, sadness, anhedonia, and feelings of loneliness and worthlessness. Similarly, participants reported thoughts, feelings, and behaviors associated with aggression, anger, irritability, rage, and resentment. Frequent risk factors included feelings of anger, loss of self-control, difficulty falling asleep, feelings of abandonment, and frequent use of tranquilizers. However, a considerable proportion of individuals did not perceive the future as hopeless. Out of the 90 general symptoms assessed, participants reported experiencing an average of 54 symptoms, indicating the presence of psychiatric morbidity.

Table 2. Psychosomatic Dimensions Assessed by the SCL-90 Scale

Dimensions	Description	Reference Values		Suicide Risk		<i>p</i> -value
		SCL-90	Total	Yes	No	
		M (SD)	M (SD)	M (SD)	M (SD)	
Somatization	Symptoms related to bodily dysfunction.	0.57 (0.55)	1.27 (0.83)	1.39 (0.85)	0.97 (0.71)	0.04
Obsessive-Compulsive	Behaviors, thoughts, and impulses that are difficult to resist and cause distress.	0.68 (0.58)	1.59 (0.78)	1.79 (0.76)	1.12 (0.64)	0.00
Interpersonal Sensitivity	Feelings of inferiority, hypersensitivity to others' opinions and attitudes, inhibition in interpersonal relationships.	0.45 (0.46)	1.22 (0.75)	1.34 (0.68)	0.97 (0.86)	0.07
Depression	Clinical signs and symptoms characteristic of depressive disorders.	0.55 (0.50)	1.80 (0.89)	2.02 (0.84)	1.32 (0.83)	0.00
Hostility	Thoughts, feelings, and behaviors associated with aggression, anger, irritability, and resentment.	0.63 (0.69)	1.58 (1.10)	1.80 (0.98)	1.07 (1.23)	0.02
Anxiety	Signs of emotional tension and psychosomatic manifestations related to clinical anxiety.	0.56 (0.52)	1.36 (0.88)	1.57 (0.89)	0.89 (0.69)	0.00
Phobic Anxiety	Persistent, irrational, and disproportionate fear of a person, animal, place, or object.	0.22 (0.35)	0.74 (0.74)	0.85 (0.82)	0.49 (0.46)	0.02
Paranoid Ideation	Projective thinking, suspiciousness, delusional ideation, hostility, and need for control.	0.52 (0.57)	1.57 (0.87)	1.74 (0.79)	1.17 (0.95)	0.02
Psychoticism	Psychotic spectrum ranging from schizoid and mild schizotypal traits to psychosis.	0.33 (0.45)	1.26 (0.82)	1.42 (0.80)	0.91 (0.79)	0.02

Values are presented as mean (M) and standard deviation (SD) overall and by SR group. Psychosomatic variables were measured using the SCL-90 scale. Reference scores are based on N=460. Equality of means between groups was tested.

The results also suggest a high incidence of suicidal ideation and a tendency toward self-harm, as reported by the participants themselves (Table 3), with significantly higher percentages among those with suicidal risk. Specifically, among all respondents, 68.49% reported suicidal ideation, of whom 84.31% were classified as at risk. Additionally, 65.75% acknowledged engaging in self-harming behaviors, with 78.43% of these individuals also classified as at risk. Overall, individuals reporting suicidal ideation or self-harm presented a higher likelihood of suicidal risk.

Table 3. Suicidal Ideation and Self-Harming Behavior

Variable	Description	Values	Global	Suicide Risk		
				Yes	No	<i>p</i> -value
Suicidal Ideation	Self-reported presence of suicidal ideation, assessed via the sociodemographic questionnaire	Yes	68.49%	84.31%	31.82%	0.00
		No	31.51%	15.69%	68.18%	
Self-Harm	Self-reported occurrence of self-harming behaviors, assessed via the sociodemographic questionnaire	Yes	65.75%	78.43%	36.36%	0.00
		No	34.25%	21.56%	63.64%	

Equality of proportions between Suicide Risk groups was tested.

Logit Model

For the estimation of the final logistic regression model, only those factors that exhibited statistically significant differences in SR during the descriptive analysis were included. As shown in (Table 4), participation in life preservation programs demonstrated a substantial average marginal effect (AME), reducing the mean probability of suicide by nearly 22 percentage points (pp). Likewise, suicidal ideation and self-harm emerged as strong predictors of suicidal risk, as their presence was associated with a statistically significant increase in the probability of suicidal risk, with AMEs of 18.96 pp and 17.41 pp, respectively. Regarding psychosomatic dimensions, obsessive-compulsive behavior proved to be a relevant factor in suicidal risk, with an AME close to 25 pp, followed by interpersonal sensitivity (AME = 21.82) and anxiety (AME = 19.31). The remaining dimensions were not significant predictors. However, it should be noted that the relatively small sample size limits the ability to detect effects at more stringent significance thresholds.

The model demonstrated a high overall classification accuracy, very high sensitivity (i.e., the ability to correctly predict positive cases), and an acceptable level of specificity (i.e., the ability to correctly predict negative cases). The relationship between the proportion of true positives and false positives is illustrated in the ROC curve presented in (Figure 1).

Table 4. Logistic Regression Model Results

Variable	Coefficient (SE)	<i>p</i> -value	Average Marginal Effects- AME
Participation in life preservation programs	-20.415 (0.891)	0.0610	-21.91
Suicidal ideation	17.662 (0.9468)	0.0420	18.96
Self-harm	16.222 (0.5455)	0.0870	17.41
Somatization	11.927 (0.9286)	0.1990	12.80
Obsessive-compulsive behavior	22.792 (-10.443)	0.0290	24.46
Interpersonal sensitivity	20.331 (0.9939)	0.0410	21.82
Depression	0.8656 (0.9898)	0.3820	9.29
Anxiety	17.989 (0.9509)	0.0590	19.31
Hostility	0.1794 (0.5002)	0.7200	1.93
Phobic anxiety	12.077 (0.9084)	0.1840	12.96
Paranoid ideation	0.5571 (0.7533)	0.4600	5.97
Psychoticism	10.634 (0.8975)	0.2360	11.41
Constant	-11.163 (12.535)	0.3730	-
Overall correct classification			90.41%
Sensitivity			96.08%
Specificity			77.27%

Standard errors (SE). Dependent variable: suicidal risk (SR) as measured by the Plutchik scale. Coefficients and average marginal effects are reported.

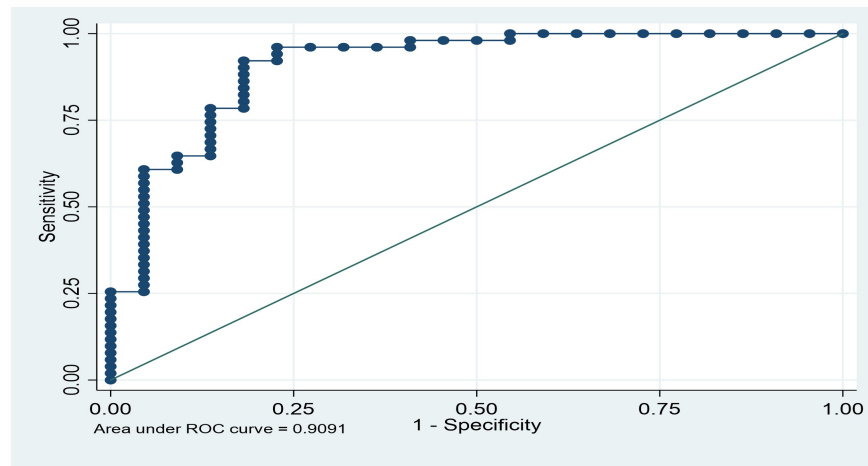


Figure 1. ROC Curve of the Logistic Regression Model. Relationship between sensitivity and specificity of the fitted logistic regression model

DISCUSSION

The results reveal a high incidence of suicidal risk within the sample, as well as the presence of clinically significant symptoms exceeding expected levels across all assessed dimensions. These findings highlight the complexity and severity of mental health challenges faced by incarcerated individuals.

This result is consistent with estimates reported for Colombia in 2019, according to which the suicide rate among incarcerated persons reached 236 per 100,000, with the 25–29 age group accounting for the highest proportion of cases (21.5% of the prison population) ⁽⁴⁾.

Indeed, numerous studies have documented that suicide rates among incarcerated individuals exceed those observed in the general population, making suicide one of the most common causes of death in prison settings ^(7–9). This phenomenon has been attributed to the heterogeneity of the incarcerated population, substandard facility conditions ⁽¹⁰⁾, and the accumulation of risk factors ⁽¹¹⁾.

Depressive and hostility symptoms stood out for their high scores, indicating the presence of depressive symptomatology among incarcerated individuals and the manifestation of emotions and behaviors associated with hostility, anger, and irritability. The findings confirm that experiencing psychological symptoms linked to mood and personality disorders increases the likelihood of suicidal risk. Therefore, individuals exhibiting symptoms such as interpersonal sensitivity, obsessive-compulsive behavior, or anxiety, for example, should be prioritized for psychological care and intervention.

Several authors agree that the risk factors for suicidal behavior in incarcerated populations are similar to those observed in the general population, but their magnitude and frequency are substantially higher ⁽¹²⁾, particularly with regard to psychological disorders ⁽¹³⁾. A study conducted in Bucaramanga described the high prevalence of depression and anxiety among inmates, based on a sample of 112 incarcerated individuals assessed using the State-Trait Depression Inventory (IDER) and the State-Trait Anxiety Inventory ⁽¹⁴⁾. Similarly, Botero-Ceballos et al. ⁽¹⁵⁾ reported a significant correlation between depression and suicidal ideation.

Suicidal ideation was found to significantly increase suicide risk, a result consistent with previous research ^(16–18). Another relevant aspect is self-harming behavior, which also increased the probability of suicidal risk, as evidenced by Favril et al. ⁽¹⁹⁾, who noted that self-harm may reflect higher levels of hopelessness, impulsivity, emotional distress, and psychological pain. Consequently, suicide prevention programs should focus specifically on individuals presenting suicidal thoughts and/or self-harming behaviors.

Participation in prevention programs substantially reduced the probability of suicidal risk. This is an encouraging result, considering criticisms raised by researchers ⁽²⁰⁾ regarding the lack of effective suicide prevention initiatives in Colombian prisons and warnings about how the absence of social and emotional support increases the incidence of self-inflicted deaths ⁽¹⁵⁾. Indeed, prison conditions, social stigma, and limitations in access to mental health services are factors that could exacerbate risk. In the absence of structured programs within correctional facilities, family support may serve as an alternative protective mechanism ⁽²¹⁾. Nonetheless, contextual factors and prison policies vary significantly across countries, which may affect the prevalence of suicidal risk.

Overall, the study indicates that socioeconomic factors, the reasons for criminal charges, and sentence length did not have a significant impact on the probability of suicidal risk. This limited or absent association between such variables and suicidal risk has also been reported in other studies ⁽²²⁾. In Boyacá, these authors found a significant positive correlation between hopelessness, depression, and suicidal risk, but not with sociodemographic variables. By contrast, Rubio et al. ⁽²³⁾ in Tolima observed that risk decreased with higher educational attainment and having a partner and children, while Ruiz ⁽²⁴⁾ in Bogotá concluded that suicidal risk was associated with younger age, greater difficulty in adapting to institutional rules, a history of physical illness, and sexual difficulties.

It is important to note that among the limitations of this study are the relatively small sample size and the use of non-probabilistic sampling, which may affect the generalizability of the findings. Specifically, including only incarcerated individuals who voluntarily agreed to participate introduces the possibility of selection bias, limiting the applicability of the results exclusively to the study sample. This willingness to participate may itself be influenced by uncontrolled factors, such as a greater disposition to share personal experiences or heightened concern about one's mental health, which may not be representative of the broader incarcerated population.

Moreover, the information collected was based on self-reports, which may contain biases through over- or underreporting of experiences—a common challenge in surveys but especially sensitive in prison settings. For example, while self-harm can be a warning sign of suicidal risk, in the correctional context, self-inflicted injuries may also serve as a strategy to obtain certain benefits, such as time outdoors, interaction with others, a change of environment, or increased personal safety in the protective setting of the infirmary. Therefore, these reports must be interpreted with caution.

Nevertheless, it is possible to propose several public policy recommendations. For instance, implementing permanent mental health screening systems and prioritizing psychological care for incarcerated individuals at risk, with tailored interventions according to symptomatic profiles. To achieve this, it is essential to expand life preservation programs and train both program staff and custodial personnel in the detection and management of risk situations.

CONCLUSIONS

Despite the limitations of this study, the findings allowed the identification of several relevant factors that should be considered when developing early warning indicators and informing decision-making processes in mental health programs within correctional settings. A high prevalence of suicidal risk was observed in the sample according to the Plutchik scale (69.86%), which appears to be primarily driven by psychosomatic factors.

Specifically, the symptoms most significantly associated with suicidal risk were obsessive-compulsive behavior (AME = 24.46 pp), interpersonal sensitivity (AME = 21.82 pp), and anxiety (AME = 19.31 pp), with scores far exceeding the established clinical cut-off points of the SCL-90. This symptomatic pattern suggests a strong presence of untreated psychiatric morbidity that warrants immediate intervention. Suicidal ideation and self-harming behaviors, reported by 84.3% and 78.4% of individuals with suicidal risk, respectively, showed a statistically significant association with increased risk (AME = 18.96 pp and 17.41 pp), reinforcing their value as early warning signs that should be systematically assessed.

The reduction in suicidal risk among participants in life preservation programs (AME = -21.91 pp) underscores the need to maintain and expand these programs within correctional facilities, to provide incarcerated individuals with constructive opportunities such as educational activities, rehabilitation, and psychosocial support. These interventions can serve as protective factors in this challenging environment by integrating evidence-based strategies including structured psychotherapeutic care, clinical monitoring of individuals with a history of self-harm or suicidal ideation, and psychoeducational spaces to strengthen emotional regulation and social support within the prison setting.

Accordingly, public policy to reduce suicidal risk among incarcerated populations should incorporate the following components: (i) implement a systematic and periodic mental health screening protocol, emphasizing obsessive-compulsive symptoms, interpersonal sensitivity, and anxiety, to identify high-risk profiles; (ii) prioritize psychological care for individuals reporting suicidal ideation or self-harming behavior, as these are also predictive of suicidal risk; (iii) expand the life preservation program to ensure sufficient coverage for all incarcerated individuals and incorporate clear protocols for timely internal referrals to mental health services and differentiated interventions based on psychosomatic profiles; (iv) ensure that the success of this program includes training custodial staff and program personnel in the early detection and appropriate management of clinical signs of suicidal risk.

Although no significant effects were observed for some factors, such as socioeconomic variables, it should be emphasized that this study relied on data from a small non-probabilistic sample. It is expected that a representative sample would enable further investigation into potential interactions and nuances that may have influenced these results. However, the relevance of psychological factors underscores the urgent need to prioritize mental health care in correctional settings. In this regard, future studies with broader scope and, if possible, longitudinal designs incorporating information about incarceration conditions, family networks, and clinical data are recommended.

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ETHICAL CONSIDERATIONS

In accordance with Colombian regulations and Article 11 of Resolution 8430 of 1993, this study is classified as minimal risk, as it involved adult participants who provided most of the information through questionnaires. No interventions or modifications were performed on the participants, no biological samples were collected, and no procedures were applied.

A specific informed consent form was designed for this study and shared with voluntary participants. The principal investigator explained the study objectives, data collection instruments, and what participation entailed. Participants were given the opportunity to ask any questions and to receive clarification on all aspects of the research. They were informed of their right to participate or withdraw from the study at any time without any consequences within the institution. As this study was conducted as part of a consultancy by UDES in collaboration with INPEC, it did not require Ethics Committee approval.

Additionally, both the Declaration of Helsinki and the Belmont Report emphasize the need to respect and protect the rights of human subjects in research. The following principles were observed: *Confidentiality*: Participants were assured that any dissemination of results would not reveal their identity. Data were always presented in aggregate form without names. All records were entered into a coded database. *Respect for Human Dignity*: Throughout the study, respect for human dignity was upheld, and all participants were treated equally without discrimination based on socioeconomic, educational, cultural, or religious background. *Beneficence*: The results aim to improve understanding of factors associated with suicidal ideation, providing information that may inform further research and potential interventions to support the health and well-being of incarcerated individuals. If, during data collection, any risk factors or mental health concerns were identified, the research team committed to providing immediate feedback and, with authorization, notifying the relevant services for appropriate care. *Non-Maleficence*: The measurement of the proposed variables does not in itself pose a risk of physical or emotional harm to participants.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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