Depression, Suicidal Ideation and Associated Factors in High-Risk Pregnant Women

Depressão, Ideação Suicida e Fatores Associados em Gestantes de Alto Risco

Depresión, Ideación Suicida y Factores Asociados en Gestantes de Alto Riesgo

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Abstract

This study aims to identify the prevalence of depression and suicidal ideation and their associated factors in pregnant women attending a high-risk prenatal care. A cross-sectional study was performed with a census-type sample of 215 high-risk pregnant women attended at a specialized outpatient clinic located in a hospital in the far south of Brazil. Participants completed a sociodemographic questionnaire and the Edinburgh Postnatal Depression Scale A prevalence of depression of 40.5% and suicidal ideation of 20%, respectively, was found. Associations were found between increased depression and personal history of mental illness (PR: 1.18; 95%CI: 1.07-1.36), social support considered good (PR:1.19; 95%CI: 1.05-1.36) and social support considered average or poor (PR:1.34; 95% CI: 1.20-1.51). Associations were found between a higher prevalence of suicidal ideation and living with HIV (PR 1.17; 95%CI: 1.02-1.34), personal history of mental illness (PR: 1.15; 95%CI: 1.06-1.23), good social support (PR: 1.16; 95%CI: 1.06-1.29), and social support perceived as average or poor (PR: 1.17; 95%CI: 1.07-1.29). The results highlight the need for psychological screening in specialized services, as well as strategies to improve family planning and social support in high-risk pregnancies.

Keywords: depression, high-risk pregnancy, prevalence, suicidal ideation

Resumo

Este estudo objetiva identificar a prevalência de depressão e ideação suicida e seus fatores associados em gestantes de um ambulatório de pré-natal de alto risco. Foi realizado um estudo transversal censitário com 215 gestantes de alto risco atendidas por um ambulatório especializado, localizado em um hospital no extremo sul do Brasil. As pacientes responderam ao questionário sociodemográfico e a Escala de Depressão de Edimburgo. Foi encontrada uma prevalência de depressão de 40,5% e de ideação suicida foi de 20%. Foram identificadas associações entre o aumento de depressão e histórico de doença mental (RP: 1,18; IC95%: 1,07-1,36), suporte social considerado como bom e suporte social considerado mediano ou ruim (RP:1,34; IC95%: 1,20-1,51). Foram encontradas associações entre maior prevalência de ideação suicida e viver com HIV (RP 1,17; IC95%: 1,02-1,34), história de doença mental (RP: 1,15; IC95%: 1,06-1,23), suporte social bom (RP: 1,16; IC95%: 1,06-1,29) e suporte social percebido como mediano ou ruim (RP: 1,17; IC95%: 1,07-1,29). Os resultados apontam para necessidade de triagem psicológica nos serviços especializados, bem como estratégias para melhorar o planejamento familiar e o suporte social na gravidez de alto risco.

Palavras-chave: depressão, gravidez de alto risco, ideação suicida, prevalência

Resumen

Este estudio tiene como objetivo identificar la prevalencia de depresión e ideación suicida y sus factores asociados en gestantes de un ambulatorio de prenatal de alto riesgo. Se realizó un estudio transversal censal con 215 mujeres embarazadas de alto riesgo atendidas en una clínica ambulatoria especializada, ubicada en un hospital en el extremo sur de Brasil. Las participantes completaron un cuestionario sociodemográfico y la Escala de Depresión Postnatal de Edimburgo. Se encontró una prevalencia de depresión del 40,5% y de ideación suicida del 20%. Se identificaron asociaciones entre el aumento de la depresión y historial de enfermedad mental(RP: 1,18; IC95%: 1,07-1,36), apoyo social considerado como bueno (RP: 1,16; IC95%: 1,06-1,29) y apoyo social considerado como mediano o malo (RP:1,34; IC95%: 1,20-1,51). Se encontraron asociaciones entre una mayor prevalencia de ideación suicida y vivir con VIH (RP 1,17; IC95%: 1,02-1,34), historia de enfermedad mental (RP: 1,15; IC95%: 1,06-1,23), apoyo

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social bueno y apoyo social percibido como mediano o malo (RP: 1,17; IC95%: 1,07-1,29). Los resultados indican la necesidad de un cribado psicológico en los servicios especializados, así como estrategias para mejorar la planificación familiar y el apoyo social en el embarazo de alto riesgo.

Palabras clave: depresión, embarazo de alto riesgo, ideación suicida, prevalencia

Introduction

Pregnancy is an important event in a woman's life and is accompanied by psychological and physiological changes (Ayano et al., 2019). This period can be one of joy and positive expectations but also of stress and physical and mental difficulty (Carvalho *et al*., 2021).

Literature shows a high prevalence of mental disorders among pregnant women. The global prevalence of depression in pregnant women varies from 18.1% to 30.1% (Yin *et al*., 2021). However, in high-risk pregnant women, the prevalence of depression ranges from 12.5% in Malaysia (Lee *et al.,* 2019) to 39% in Brazil (Souza *et al*., 2022) in outpatients and from 22.3% in Colombia (Vergel *et al.,* 2019) to 59,5% in Brazil (Carvalho *et al.,* 2021) in hospitalized pregnant women. Pregnant women who are hospitalized tend to have a higher prevalence of symptoms due to the separation from their families and the interruption in their activities. In addition, hospitalization can be interpreted as a personal "failure" (Palma et al., 2020).

According to previous studies, factors associated with higher rates of depression in high-risk pregnant women are low income and schooling, being black or brown, not having a partner, not having a religion, young or advanced maternal age, a history of miscarriage or neonatal death, a family history of mental illness, uncontrolled blood sugar and high blood pressure (Abeb e *et al*., 2022; Acheanpong *et al*., 2022; Ribeiro et al., 2022; Eid *et al*., 2021; Lee *et al*., 2019; Mandell *et al*., 2022; Qin *et al*., 2019; Soares et al., 2023; Soltsman *et al*., 2021; Tasnim *et al*., 2022).

The prevalence of suicidal ideation (SI) in pregnant women varies from 5.1% in China (Shi *et al*., 2018) to 19.8% in South Africa (Garman *et al*., 2019). In pregnant women with HIV, the prevalence found in the literature ranges from 8.2% in Ethiopia (Zewdu *et al*., 2021) to 39% in South Africa (Rodriguez *et al*., 2018). SI in people living with HIV (PLWH) is a response to diagnosis, and is related to opportunistic infections, the stigmatizing nature of the disease and many psychiatric illnesses associated (Rooks-Peck et al., 2018; Zewdu, 2021). As a result, people with HIV are twice as likely to die by suicide as the general population (Croxford et al., 2017). Maternal suicide is the second leading cause of death during pregnancy in the UK and Ireland and the leading direct cause of death between 6 weeks and 1 year after the end of pregnancy (National Perinatal Epidemiology, 2020). Unplanned pregnancies, common mental disorders, poor social support, and SI throughout life are associated with higher rates of SI (Kubota *et al*., 2020; Belete *et al*., 2021). In Brazil, there are no data on maternal deaths by suicide, according to the Mortality Information System (Ministry of Health, 2025).

Depressive disorders and SI are associated with pregnancy and postpartum complications. Research has shown that pregnant women with depression have a higher risk of premature birth, cesarean delivery (Hermon *et al*., 201 9), low birth weight (Soltsman *et al.,* 2021; Gelaye *et al*., 2018), and nonadherence to antiretroviral therapy (ART) (Abebe *et al.,* 2022). Suicidal behaviors during pregnancy are associated with an increased risk of placental abruption, antepartum and postpartum hemorrhage, preterm delivery, fetal growth restriction, and stillbirth (Zhong *et al*., 2018).

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Most studies reporting a higher prevalence of depression among high-risk pregnant women have been conducted in Brazil (Borges *et al.*,2021; Carvalho *et al.,* 2021; Faisal-Cury *et al*., 2021). Despite evidence from international studies indicating a high prevalence of suicidal ideation in this population, there are no official data in Brazil regarding SI among high-risk pregnant women. Additionally, there are no records on the number of pregnant women who attempt or die by suicide (Ministry of Health, 2025). Early identification of pregnant women at risk for suicide is therefore essential for the prevention of both suicide attempts and deaths, ultimately contributing to the reduction of risks for both mother and fetus.

Considering the gap identified in the literature on this population, this study aimed to identify the prevalence of depression and SI in high-risk pregnant women at a specialized outpatient clinic in the far south of Brazil and to identify possible factors associated with a higher risk of these outcomes.

Method

Study Design and Setting

A cross-sectional study was performed in an outpatient clinic specializing in high-risk prenatal care (HRPC) located in the extreme south of Brazil in the city of Rio Grande, which is a reference point for three other municipalities in the region: São José do Norte, Santa Vitória do Palmar and Chuí, serving high-risk pregnant women from a population of 254,588 people. Rio Grande is located on the coast of Rio Grande do Sul, Brazil. It has a population of 191,900 and has the 4th highest GDP in the state, with a Human Development Index (HDI) of 0.744 (IBGE, 2022).

Participants

This study included all pregnant women who entered the HRPC between September 12, 2022, and April 27, 2023, obtaining a census-type sample.The exclusion criteria were being under the age of 18 years, women whose ongoing pregnancy was the result of sexual violence, women deprived of their liberty, and women unable to understand the instruments and answer them verbally, clearly, or consistently. During the data collection period, 232 pregnant women were included in this study. However, 14 (6%) pregnant women refused to participate in the study, and three (1.3%) patients were lost, bringing the total number of participants to 215.

Outcome Measure and Procedure

Depression and suicidal symptoms were the outcomes of the study, which was measured using the Edinburgh Postnatal Depression Scale (EPDS). The EPDS was used to assess depression. This is a self-administered instrument made up of 10 items about how the woman felt in the last seven days. Scores ≥ 11 indicate probable depression. Item 10 assessed thoughts of self-harm characterized by SI.

The research team consisted of interviewers who had been trained to apply the instruments. A structured questionnaire was developed to collect sociodemographic data, including clinical information and habits. Data on per capita family income, presence of a partner,

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age, schooling, personal and family history of mental health, and obstetric history were collected. In this questionnaire, social support was assessed using the question "How do you perceive the support of the people around you at this moment during your pregnancy?". The answer options were "very good," "good," "average, " and "bad." Pregnancy data were collected from multi-professional medical records.

Pregnant women were invited to take part in the survey before or after their first appointment at HRPC. To minimize losses, two more attempts were made at subsequent appointments if they were unable to answer the questionnaires on the day they entered the service. On each day of the HRPC service, two interviewers worked on the collection. The instruments were applied Monday to Thursday in the morning and Wednesday in the afternoon. The interviewers administered the sociodemographic questionnaire and gave instructions on how to apply the EPDS, which are self-administered. When necessary, all the items on each instrument were read out to the pregnant woman. Each interview took an average of 10 minutes.

The data collection was interrupted only after the previously calculated sample N was reached. The risk classification was performed by the service's obstetric nurse, based on the Ministry of Health's scoring table, where up to 04 points was considered low risk, between 05 and 09 points moderate risk, and above 10 points, the pregnant woman was considered high risk, requiring specialized follow-up and remaining in the HRPC outpatient clinic until the end of prenatal care.

Statistical Analysis

The sample size was calculated using the statistical program Epi Info 7.2.5.0. (Centers for Disease, Control and Prevention, GA, USA). The prevalence of depression and SI was assumed to be 36% and 11%, respectively. A confidence level of 95% and a margin of error of 5% were considered. The prevalence of depression in sample N was 209, and that of SI was 110.

A consistency analysis was then performed, followed by the categorization of variables and the creation of the derived variables. Prevalence rates were calculated for depression and SI. The internal consistency of the composite set of independent variables used in the multivariable model was assessed using Cronbach's alpha, which produced a coefficient of 0.3525.

In the bivariate analysis, the prevalence ratio (PR) was calculated with their respective 95% confidence intervals and Pearson's chi-square, adopting a two-tailed test with a p-value <0.05. Poisson regression was used as it provides accurate estimates and is a better alternative for the analysis of cross-sectional studies with binary outcomes than logistic regression, given that the prevalence ratio is more interpretable and easier to communicate to non-specialists than the odds ratio (Barros & Hirakata, 2003). The adjusted analysis used a Poisson regression with robust variance adjustment, following a previously defined three-level hierarchical model using the backward method. Following this method, the variables were placed in the model according to their hierarchical level, and in the end those with a p-value ≤ 0.20 were kept, considering values with $p \leq 0.05$ to be significant. A hierarchical model was employed, structured across three levels. At the first level were sociodemographic variables (maternal age, skin color, and presence of a partner) and socioeconomic variables (per capita family income and maternal schooling). The second level included obstetric and prenatal

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variables (planned pregnancy, hospitalization during the current pregnancy, HIV status, and gestational risk classification). At the third level, psychosocial variables were considered: family history of mental illness, personal history of mental illness, and social support.

To minimize the risk of type I error due to multiple comparisons in the bivariate analysis, Bonferroni correction was applied. Given that 12 independent comparisons were conducted, the corrected significance threshold was set at $p < 0.0042$ (i.e., 0.05/12). Analyses were performed using the Stata 15.0 program (StataCorp, College Station, TX, USA).

Sample Size and Power Analysis

Using a sample size of 215 and an alpha error of 0.05, the power of the sample for depression was 90% for a prevalence found of 40% and expected of 25%. Using the same parameters, the power of the sample for suicidal ideation was 99% for a prevalence found of 20% and expected of 5%. In relation to the variables associated with depression, the one with the lowest sample power was skin color with 81% and the highest history of mental illness 99%. In relation to the variables associated with suicidal ideation, the one with the lowest power in the sample was not planning a pregnancy with 80%, and all the other significant variables had a power of 99%.

Ethical Considerations

This study was approved by the Research Ethics Committee (CEP) of the Federal University of Rio Grande under Opinion No. 5.562.889 on 04/08/2022, CAEE 58951522.7.00002324. All participants signed a Free and Informed Consent Form (FICF).

Results

A total of 215 pregnant women were included in this study; 44.1% were aged between 26 and 34 years, 67% reported having white skin color, 90.7% reported having a partner, 72% reported having studied up to high school, and 75.1% had a *per capita* income of more than one minimum monthly wage. Regarding obstetric characteristics, almost half of the women were in their third trimester of pregnancy at the time of the survey (47.2%), and most had not planned their current pregnancy (63.1%). The majority had previous pregnancies (73.2%) and no history of pregnancy loss (71.4%) or hospitalization during the current pregnancy (82.6%). Of the total samples, 10.2% were living with HIV, and the majority (62.8%) scored 11 points or more on the gestational risk classification. Regarding psychosocial aspects, 82.2% reported perceiving their support as very good or good during pregnancy and 17.8% reported perceiving their social support as average or poor. The majority denied having a personal history of mental illness (73.8%), a family history of mental illness (66.4%), or undergoing psychological or psychiatric treatment at the time of the survey (86%) (Table 1).

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Table 1

Description of the Sample of High-Risk Pregnant Women in the Far South of Brazil 2022/2023

Variable	Sample description	
	n	%
Maternal age (N=215)		
≥ 35 years	50	23,3
26 to 34 years old	95	44,1
≤ 25 years	70	32,6
Skin color (N=215)		
White	144	67,0
Brown or black	71	33,0
Partner (N=215)		
Yes	195	90,7
No	20	9,3
Maternal schooling (N=214)		
≥ 13 years	60	28,0
≤ 12 years	154	72,0
Per capita family income (N=209)		
≤ 1 MW	157	75,1
≥ 1.1 MW	52	24,9
Planned Pregnancy (214)		
Yes	79	36,9
No	135	63,1
Hospitalization during the current pregnancy (N=213)		
Yes	37	17,4
No	176	82,6
HIV-positive (N=215)		
No	193	89,8
Yes	22	10,2
Gestational risk classification (N=212)		
10 points	79	37,2
11- 15 points	72	34,0
16 or more	61	28,8
Family history of mental illness (N=214)		
No	142	66,4
Yes	72	33,6
History of mental illness (N=214)		
No	158	73,8
Yes	56	26,2
Social support (N=214)		
Very good	97	45,3
Good	79	36,9
Average or poor	38	17,8

The prevalence of depression in the study population was 40.5%. After the adjusted analysis, we found that individuals with a history of personal illness were 18% more likely to experience depression compared to those without such a history (PR: 1.18; $CI_{95\%}$: 1.07-1.36).

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Similarly, social support was the factor most strongly associated with depression. Women who reported good social support comprised 19% (PR:1.19; $CI_{95\%}$: 1.05-1.36), and those with average or poor social support were 34% more likely to be depressed than those with very good support (PR:1.34; $CI_{95\%}$: 1.20-1.51) (Table 2).

Table 2

Crude and Adjusted Analysis of Factors Associated With Depression in High-Risk Pregnant Women in the Far South of Brazil 2022/2023

Variable	Prevalence of depression		Prevalence ratio (95%CI)		
	N	%	Crude	Poisson Adjusted	Bonferroni Adjusted
Maternal age (N=215)			p=0,655	p=0,774	p= 7,860
≥ 35 years	18	36,0	1,0	1,0	
26 to 34 years old	38	40,0	1,11 (0,71 – 1,73)	1,01 (0,91- 1,12)	
≤ 25 years	31	44,3	1,23 (0,78 – 1,93)	1,03 (0,92- 1,16)	
Skin color (N=215)			p=0,064	**p=0,039**	p= 0,768
White	52	36,1	1,0	**1,0**	
Brown or black	35	49,3	137 (0,99 – 1,88)	**1,09 (1,01 - 1,19)**	
Partner (N=215)			p=0,965	p=0,818	p=11,580
Yes	79	40,0	1,0	1,0	
No	8	40,5	1,01 (0,58 – 1,78)	1,02 (0,87- 1,19)	
Maternal schooling (N=214)			p=0,048	p=0,200	p= 0,576
≥ 13 years	18	30,0	1,0	1,0	
≤ 12 years	69	44,8	1,49 (0,97 – 2,28)	1,07 (0,96- 1,18)	
Per capita family income (N=209)			p=0,079	p=0,397	p= 0,948
≤ 1 MW	70	44,6	1,0	1,0	
≥ 1.1 MW	16	30,8	1,45 (0,93 – 2,26)	1,04 (0,94- 1,15)	
Planned Pregnancy (214)			p=0,279	p=0,476	p=3,348
Yes	28	35,4	1,0	1,0	
No	58	43,0	1,21 (0,85 – 1,73)	1,01 (0,97- 1,06)	
Hospitalization during the current pregnancy (N=213)			p=0,475	p=0,524	p= 5,700
Yes	13	35,1	1,0	1,0	
No	73	41,5	1,18 (0,74 – 1,89)	1,02 (0,96- 1,07)	
HIV-positive (N=215)			p=0,155	p=0,325	p= 1,860
No	75	38,9	1,0	1,0	
Yes	12	54,6	1,40 (0,92 – 2,14)	1,08 (0,93- 1,26)	
Gestational risk classification (N=212)			p=0,228	p=0,398	p= 2,736
10 points	31	39,2	1,0	1,0	
11- 15 points	25	34,7	0,89 (0,58- 1,34)	0,93 (0,84- 1,04)	
16 or more	30	49,2	1,25 (0,86 – 1,82)	1,02 (0,93- 1,12)	
Family history of mental illness (N=214)			p=0,135	p=0,424	p=1.620
No	52	36,6	1,0	1,0	
Yes	34	47,2	1,29 (0,93 – 1,79)	1,03 (0,95- 1,12)	

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Variable	Prevalence of depression		Prevalence ratio (95%CI)		
	N	%	Crude	Poisson Adjusted	Bonferroni Adjusted
History of mental illness (N=214)			**p<0,001**	**p=0,001**	**p=0,012**
No	53	33,5	**1,0**	**1,0**	
Yes	33	58,9	**1,76 (1,29 – 2,39)**	**1,18 (1,07 - 1,36)**	
Social support (N=214)			**p<0,001**	***p<0,001***	***p= 0,012***
Very good	24	24,7	**1,0**	**1,0**	
Good	35	44,3	**1,79 (1,17 – 2,74)**	**1,19 (1,05 - 1,36)**	
Average or poor	27	71,1	**2,87 (1,92 – 4,29)**	**1,34 (1,20 - 1,51)**	

Notes: *Adjusted linear trend; p ≤0.05 significantly associated; Prevalence ratios; 95% CI.

Among the women interviewed, 20% experienced SI. Pregnant HIV-positive women had 17% more SI than non-HIV-positive women (PR 1.17; $CI_{95\%}$: 1.02-1.34). A previous history of mental illness increased the risk of SI by 15% compared to patients without this history (PR: 1.15; $CI_{95\%}$: 1.06-1.23). Finally, those with good, average, and poor social support had 16% (PR: 1.16; $CI_{95\%}$: 1.06-1.29) and 17% higher risks of SI, respectively (PR: 1.17; $CI_{95\%}$: 1.07-1.29). (Table 3).

Table 3

Crude and Adjusted Analysis of Factors Associated With Suicidal Ideation in high-Risk Pregnant Women in the Far South of BRAZIL 2022/2023

Variable	Prevalence of SI		Prevalence ratio (95%CI)		
	n	%	Crude	Poisson Adjusted	Bonferroni Adjusted
Maternal age (N=215)			p= 0,190	p=0,204	p=2,28
≥ 35 years	8	16	1,0	1,0	
26 to 34 years	16	16,8	1,05 (0,48 – 2,29)	1,05 (0,98- 1,14)	
≤ 25 years	19	27,1	1,69 (0,81 – 3,56)	1,05 (0,97- 1,14)	
Skin color (N=215)			p=0,310	p=0,656	p=3,72
White	26	18,1	1,0	1,0	
Brown or black	17	23,9	1,33 (0,77 – 2,28)	1,02 (0,95- 1,09)	
Partner (N=215)			p=0,557	p=0,748	p= 6,684
Yes	38	19,5	1,0	1,0	
No	5	25	1,28 (0,57 – 2,89)	1,01 (0,95- 1,07)	
Per capita family income (N=209)			p=0,168	p=0,855	p=2,016
≤ 1 MW	35	22,2	1,0	1,00 (0,93- 1,08)	
≥ 1.1 MW	7	13,7	1,66 (0,78- 3,50)	1,0	
Maternal schooling (N=214)			p=0,054	p=0,060	p=0,648
≥ 13 years	7	11,7	1,0	1,0	
≤ 12 years	36	23,4	2,00 (0,94 – 4,25)	1,05 (0,99- 1,11)	
Planned Pregnancy			p=0,050	**p=0,012**	p=0,6
Yes	10	12,7	1,0	1,0	
No	32	23,7	1,87 (0,97 – 3,60)	**1,03 (1,00 - 1,06)**	

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Variable	Prevalence of SI		Prevalence ratio (95%CI)		
	n	%	Crude	Poisson Adjusted	Bonferroni Adjusted
Hospitalization during the current pregnancy (N=213)			p=0,556	p=0,699	p=6,672
Yes	6	16,2	1,0	1,0	
No	36	20,5	1,26 (0,57 – 2,77)	1,00 (0,97- 1,04)	
HIV-positive (N=215)			**p=0,002**	**p=0,027**	**p=0,024**
No	33	17,1	1,0	1,0	
Yes	10	45,5	**2,66 (1,53 – 4,62)**	**1,17 (1,02 - 1,34)**	
Gestational risk classification (N=212)			p=0,960	p=0,836	p=11,52
10 points	15	19,0	1,0	1,0	
11- 15 points	15	20,8	1,09 (0,58 – 2,08)	1,01 (0,94- 1,08)	
16 or more	12	19,7	1,04 (0,52 – 2,05)	0,98 (0,92- 1,06)	
Family history of mental illness (N=214)			p=0,296	p=0,744	p=3,552
No	25	17,6	1,0	1,0	
Yes	17	23,6	1,34 (0,78 – 2,31)	1,00 (0,95- 1,07)	
History of mental illness (N=214)			**p<0,001**	**p<0,001**	**p=0,0012**
No	22	13,9	1,0	1,0	
Yes	20	35,7	**2,56 (1,52 – 4,33)**	**1,15 (1,06 - 1,23)**	
Social support (N=214)			**p<0,001**	**p=0,001**	**p=0,0012**
Very good	13	13,4	1,0	1,0	
Good	12	15,2	**1,13 (0,55 – 2,34)**	**1,16 (1,06 - 1,29)**	
Average and Poor	17	44,7	**3,34 (1,80 – 6,19)**	**1,17 (1,07 - 1,29)**	

Notes: SI:suicidal ideation; p ≤0.05 significantly associated; Prevalence ratios; 95% CI.

Discussion

The rate of depression in this study was 40.5%, which is higher than that found in international studies but similar to other studies of high-risk pregnant women in outpatient settings in Brazil. A survey of 147 pregnant women living with HIV in Denmark, Finland, and Sweden found a 24% prevalence of depressive symptoms (Moseholm *et al.*, 2022). Hermon *et al*. (2019) reported a 28.3% prevalence of depression in a sample of 279 pregnant women hospitalized in high-risk pregnancy units. Poor countries have higher rates of depression; although Brazil is not among the poorest countries in Latin America, it is considered by the Pan American Health Organization (PAHO) to have the highest prevalence of depression. Vergel *et al*. (2019) found a depression prevalence of 22.3% in a sample of 112 pregnant women hospitalized for threatened premature birth in Colombia. In Chile, a study of 188 women hospitalized for high-risk pregnancies found a depression prevalence between 28.3% and 28.8% (Palma *et al.*, 2020). Notably, Hermon *et al*. (2019), Moseholm *et al*. (2022), Vergel *et al*. (2019), and Palma *et al*. (2020) used the EPDS to assess depressive symptoms in pregnant women, the same instrument used in our study. In Brazil, a study in Santa Catarina using the same scale (EPDS) in 184 high-risk pregnant women identified depressive symp-

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toms in 37.5% of the sample (Soares et al., 2023). In Pernambuco, Souza et al. (2022) used the Hospital Anxiety and Depression Scale and found a 39% prevalence of depression in a sample of 77 pregnant women with fetal malformations. We found a higher prevalence of depression than other international studies, including those in Latin America, but similar to Brazilian studies performed in different regions, not only because of the poverty of the majority of the population but also because of the difficulty in accessing mental health services and the strongly related stigma. Strong stigma was perceived during the data collection phase of the research when many pregnant women opted not to want to know the results of the instruments applied, did not accept an appointment with the psychologist at the HRPC, or were referred to an external service closer to their home. In Brazil, high tax rates combined with unemployment and under-employment can contribute to a worsening quality of life and a lack of time to seek health services. It should also be noted that this study was conducted at a specialized outpatient clinic in a public hospital. In addition, most participants had a *per capita* income of up to one minimum wage, with some receiving government benefits; the majority did not have higher education, and the data were collected in the aftermath of the COVID-19 pandemic.

Regarding the factors associated with a higher risk of depression, a history of mental illness was associated with an 18% higher prevalence of depression during pregnancy. A meta-analysis by Gelaye *et al*. (2016), which included 51 articles on prenatal depression and 53 on depression during the puerperium in low- and middle-income countries, also found that a history of mental illness was associated with depression in both the prenatal and postnatal periods. Souza et al. (2022) found that high-risk pregnant women with a history of anxiety and depression were 5.4 times more likely to develop depression during their pregnancy. Understanding pregnancy as an event accompanied by many changes in a woman's life can be viewed as an opportunity to screen for mental health issues. It is also important to investigate known risk factors to prevent harm to pregnant women and their fetuses or newborns. Given the high recurrence of depressive episodes throughout life, the start of prenatal care can be considered as a space for the prevention or treatment of emotional demands. These demands are associated with obstetric issues and child development during the first few years of life. Care needs to be focused not only on the treatment of established mental disorders but also on health promotion and prevention based on risk factors. Thus, primary and specialized care services will be able to receive sufficient human resources to guarantee the rights of these women, given that data on the mental health of high-risk pregnant women are concerning. It is hoped that Law 14.721/2023, which extends the right to psychological assistance to pregnant, parturient, and puerperal women, will improve the care provided.

In our study, social support was most strongly associated with a higher prevalence of depression. The worse the perception of social support, the higher the prevalence of depressive symptoms. Thus, women who perceived their social support as only good had 1.19 times more depression, and those who perceived it as fair or poor had 1.34 times more depression than the reference group. In our sample, 71.1% of the pregnant women who reported average or poor social support were depressed, compared to 24% of those who reported very good social support and 44.3% of those who reported moderate social support. It should be noted that the presence of a partner alone was insufficient for a good perception of social support, as 90.7% of women reported having a partner. Social support is a protective factor

Programa de Mestrado e Doutorado em Psicologia, UCDB - Campo Grande, MS

against depressive symptoms in high-risk pregnant women (Ribeiro *et al*., 2022; Souza *et al.*, 2022; Yoon & Sung, 2021). Other studies have identified low social support as a risk factor for depression in pregnant women in low- and middle-income countries (Gelaye *et al*., 2016). Faisal-Cury *et al*. (2021) found that women who live without a partner are 2.16 times more likely to develop depression than those who live with a partner in Brazil. In our study, we assessed only the general perception of social support, and it was not possible to identify where the participants' social support network was the most fragile. This perception of loneliness is believed to have permeated different contexts since the World Health Organization created the International Commission on Social Connectedness in November 2023. During pregnancy, with all physical, emotional, and social changes possibly exacerbated in the high-risk context, these women may feel more fragile and vulnerable, requiring more care and support. Social support should be encouraged by both partners and family members and by health services, workplaces, and communities. To promote such care, it is essential to create community spaces that are easily accessible and free of charge.

Similar to depression, we observed a high rate of SI (20%). In a survey of 384 pregnant women without risk classification in Cape Town, Garman *et al*. (2019) found a 19.8% prevalence of SI. Only one study on SI in high-risk pregnant women has been reported in the literature. Benute *et al*. (2011) conducted a study in Brazil with a sample of 268 high-risk pregnant women, in which the risk of suicide was identified in 5% of participants using the Primary Care Evaluation of Mental Disorders (PRIME-MD). In a study by Benute *et al*. (2011), the only associated factor identified was not following a religion, which increased the risk of SI by 28.6%. However, studies have been conducted on SI in pregnant women with HIV infection. A study of 414 pregnant women living with HIV in Ethiopia reported an SI prevalence of 8.2% (Zewdu *et al*., 2021). In a study of 681 HIV-positive pregnant women in South Africa, the SI prevalence was 39% (Rodriguez *et al*., 2018). Few studies with widely divergent data indicate a lack of knowledge among this population despite the worrying prevalence of SI.

In our study, living with HIV was not associated with a higher prevalence of depressive symptoms. However, HIV-positive women had 17% higher SI. We found a prevalence of SI in 45.5% of the women with HIV. This prevalence was more than twice that observed in HIV-negative women (17.1%). Rodriguez *et al*. (2018) found a 39% prevalence of SI in pregnant women with HIV in South Africa, with symptoms decreasing to 7% after 12 months. The high prevalence of SI in these women can be explained by several factors, such as living with HIV stigma, risk of vertical transmission, risk of fetal malformation due to ART, and side effects. Experiencing pregnancy with stigma and uncertainty likely causes hopelessness, leading to IS in this population. We should highlight that the location where our research was conducted is a reference for HIV/AIDS treatment in the four cities, which made it easier to compose a group of HIV-positive pregnant women for data collection.

Similar to depression, a history of mental illness increased the risk of developing IS by 15% in the present study. Kubota *et al*. (2020) also found that a history of depressive disorder increased the risk of SI by 2.16 times in a study of 430 pregnant Japanese women. This highlights the fact that mental disorders are often chronic or recurrent. Therefore, pregnancy should be considered a time of risk. Family members must be informed about the increase in depressive symptoms during the perinatal period, especially in women with a history of depression. In addition, from a societal perspective, pregnancy is still viewed as a beautiful pha-

Programa de Mestrado e Doutorado em Psicologia, UCDB - Campo Grande, MS

se in a woman's life; therefore, there is no room for suffering. This means that women often do not share their feelings or seek specialized help because they are ashamed of not feeling the way they think they should. The use of psychiatric medications during pregnancy is often stigmatized and abruptly discontinued without prior psychiatric evaluation. Pregnancy planning can help women with a history of mental illness plan the discontinuation of medication and adapt to the psychotropic drugs most suitable for pregnant women.

As with depression, the worse the perception of social support, the higher the prevalence of SI. In our sample, 15.2% of pregnant women who reported only good social support had SI, and 44.7% of those who reported average or poor social support had SI, representing a 16% and 17% higher risk, respectively, than women who reported perceiving their social support as very good. In a systematic review of pregnant women without risk classification, Arditi-Arbel *et al*. (2023) found that the perception of low social support received is associated with an increased risk of suicide. Kubota *et al*. (2020), in a study with pregnant women also without risk classification, who were followed up at the beginning, end of pregnancy and postpartum, identified social support as the only protective factor for SI (OR: 0.77; 95% CI: 0.60–0.99; p=.041). We found no data in the literature regarding the association between social support and SI among high-risk pregnant women. However, we believe that in the context of high-risk pregnancies, this association is stronger than that in low-risk pregnancies. This is because high-risk pregnant women have a higher prevalence of depressive and anxiety symptoms and require more obstetric and psychosocial care.

This study identified a high prevalence of depressive symptoms, including SI, among high-risk pregnant women in far south Brazil, highlighting the need for further studies on the mental health of this population. Based on the knowledge of these demands, it is hoped that it will be possible to propose care that encompasses the emotional needs of these women, which are permeated by biological and social issues and are, therefore, complex. Based on these data and further research, it is hoped that, in the future, it will be possible to reduce the risk of suicide in this population.

The limitations of this study include its small sample size, which is related to the difficulty in accessing this population and the assessment of suicidal ideation using only a single item from the EPDS. This choice was justified by the lack of other instruments evaluating this outcome in the studied population.Finally, we highlight the Cronbach's alpha coefficient of 0.3525, indicating low internal consistency among the items of the instrument. One of the strengths of this study is the census-type sample, which was collected over a period of eight months in a specialized outpatient clinic. Additionally, included the outcomes of SI in our study, for which data are scarce. We also looked for statistical associations with the outcomes studied to contribute to multi-professional prenatal care and reduce the suffering of pregnant women.

Conclusion

The high prevalence of depression and SI in high-risk pregnant women is concerning, at 40.5% and 20%, respectively, and is higher than that in low-risk pregnant women. This study demonstrates the need for greater attention to mental health during prenatal care. Finally, the presence of a personal history of mental illness and social support considered good or bad were the factors that most influenced the higher prevalence of depression and SI.

Programa de Mestrado e Doutorado em Psicologia, UCDB - Campo Grande, MS

For future research, we suggest cohort studies considering women's mental health throughout their life cycle to look for possible intervention factors even before the gestational period, as well as intervention proposals aimed at improving social support. It is hoped that studies with this population will improve public policies to provide improvements for pregnant women, fetuses, and newborns.

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Programa de Mestrado e Doutorado em Psicologia, UCDB - Campo Grande, MS

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Received on September 24th, 2024
Last review on August 5th, 2025
Final acceptance on August 5th, 2025

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Programa de Mestrado e Doutorado em Psicologia, UCDB - Campo Grande, MS