



## Article

# Prevalence of Suicidal Ideation among Pregnant Women in Gran Canaria

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**Abstract:** Suicidal ideation represents a significant predictor of completed suicide. Recent research indicates that it is the leading cause of maternal mortality during pregnancy in industrialized countries, as well as in the 12 months following childbirth, with prevalence rates among pregnant women ranging from 3% to 33%. This study aimed to estimate the prevalence of suicidal ideation among pregnant women in Gran Canaria. A cross-sectional, descriptive, and observational study was conducted at the University Hospital Complex Insular Materno-Infantil of Gran Canaria (CHUIMI). Consecutive non-probabilistic sampling was employed among pregnant women in their 20th to 22nd week of pregnancy. Participants completed the PHQ-9 questionnaire, the Paykel Scale, and a sociodemographic questionnaire to assess associated risk factors. A total of 9.57% of pregnant women reported experiencing some level of suicidal ideation. Factors that increased the risk of suicidal ideation included employment status ( $p$ -value = 0.031), prior abortions/misconceptions ( $p$ -value < 0.001), educational level ( $p$ -value = 0.005), and having living children ( $p$ -value = 0.018). This study suggests that the prevalence of suicidal ideation among pregnant women in Gran Canaria may be higher than previously reported in the literature. Therefore, early identification of suicidal ideation is crucial for timely intervention.

**Keywords:** suicide; suicidal ideation; pregnancy; prevalence

## 1. Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), suicide is defined as death resulting from a deliberate act of self-harm intended to be fatal. It arises from the complex interplay of multiple factors, with depression being the most common and significant risk factor, though not the sole one [1]. Suicidal behaviour is seen as a continuum, spanning from ideation to completed suicide [2]. Suicidal ideation (SI) is recognized as a key predictor of completed suicide [3]. Globally, suicide remains a pressing public health concern, as underscored by the World Health Organization (WHO) [4].

According to the most recent WHO report from June 2021, approximately 703,000 individuals worldwide die by suicide each year, with even higher numbers of people attempting or contemplating suicide [5]. The latest Mental Health report from the Spanish Ministry of Health reveals an overall prevalence of mental health issues in Spain at 27.4%, with a higher prevalence among women (30.2%) aged over 20 [5,6].

The Suicidal Behaviour Prevention Program in the Canary Islands, published in 2022, provides specific data on suicide rates and suicidal ideation. It ranks the Canary Islands as the third Spanish region with the highest suicide rate, with Gran Canaria having the highest prevalence of suicidal ideation. Notably, females exhibit a higher incidence of suicidal ideation [7].

The prevalence of suicidal ideation during the perinatal period is a relatively underexplored phenomenon. Pregnancy represents a transformative phase in the lives of women and their close circles, characterized by significant physical, mental, and emotional changes that impact maternal well-being. In general, negative thoughts and emotions during pregnancy are often stigmatized, with suicidal behaviour remaining a highly sensitive and seldom-discussed topic [8]. The multifaceted changes experienced by pregnant women necessitate significant adaptation and resilience. Therefore, it is crucial to provide support to mitigate the potential adverse consequences of their unvoiced and unattended suffering [8,9]. Emerging research suggests that the prevalence of suicidal ideation may be even higher among pregnant women [8,10,11]. Recent studies indicate that SI is a relatively common occurrence during pregnancy worldwide, to the extent that it is identified as the leading cause of maternal mortality in industrialized countries during pregnancy and in the 12 months following childbirth [8,10,12].

The prevalence of SI during pregnancy varies depending on the available evidence, with variations observed among countries and risk factors. Most research has primarily focused on the postpartum period, often limited to studying suicide attempts rather than the broader spectrum of suicidal behaviours. The most recent and comprehensive epidemiological review to date reports a prenatal SI prevalence of 10% [13], which aligns with an earlier review that indicated a range from 3% to 33% [10].

Generally, estimates of prepartum SI prevalence vary significantly across countries and regions. European countries have reported a prevalence of 2.7% among pregnant women, while Latin American estimates range between 8.5% and 15.8%, with some reaching as high as 39% in African women [8].

Identifying risk factors in pregnant women is crucial. It empowers healthcare professionals to conduct comprehensive assessments of each woman's situation, enabling the development of prevention strategies and the identification of at-risk profiles. Current scientific literature recognizes multiple risk factors, which can be organized within a complex model that fits under a biopsychosocial framework to explain the emergence and persistence of suicidal ideation in this population group [14–16].

Starting with the biological dimension, several factors have been noted, including insomnia, extreme maternal age (especially the youngest), lifestyle-related factors (such as active smoking and alcohol consumption), complications from previous pregnancies like caesarean sections or severe perineal trauma, and chronic medical conditions (e.g., women with HIV who experience stigma, a social factor associated with an increased likelihood of perinatal suicidal ideation [10,12,15,17]).

In the psychological dimension, certain risk factors related to perinatal SI have been identified. Miscarriages and unplanned pregnancy have been linked to an increased risk of perinatal SI, with the latter doubling the likelihood [15]. Furthermore, having mental health comorbidities, such as depression, anxiety, post-traumatic stress disorder, or a history of suicidality, has been recognized as a potent risk factor for SI. Suffering from clinically significant depressive symptoms during pregnancy, as measured by the Edinburgh Postnatal Depression Scale, has been associated with a staggering seventeen-fold increase in the odds of experiencing suicidal ideation [10]. Lastly, in terms of psychological

risk factors, a history of childhood and adulthood physical abuse, as well as intimate partner violence, have been found to elevate the probability of perinatal SI [10,12].

In the social dimension, social risk has been associated with a statistically significant factor with SI. Thus, in relation to the employment situation, there are studies that report that unemployed women, and therefore those with a lower household income, had a greater risk of SI [15]. Another significant factor was the education to which the woman had access, with those with higher or secondary education having less risk [10]. Also under the sociodemographic framework is marital status, and it was observed that living without a partner increased the risk of perinatal suicide, reporting that single, widowed, and divorced women were up to 2.8 times more likely to experience suicidal ideation compared to women who were married [15,17]. Finally, both the country of origin [18] and the presence and frequency of gender violence were reported as significant indicators of perinatal SI risk. Especially with respect to the latter, figures found that up to 43% of women exposed to gender violence more than once a week experienced SI compared to 13% of women who experienced it less than once a month [15].

While research traditionally emphasizes the study of risk factors, it is equally important to explore protective factors against SI. These include high levels of self-esteem and self-efficacy in pregnant women [12], previous successful pregnancies, pregnancies following assisted reproductive techniques for infertility [18], perceived social support, and marital satisfaction [19].

There is evidence regarding the effects of maternal mental health on the development of newborns. Specifically, exposure to maternal depression and stress is associated with impaired cognitive performance [20].

With respect to SI, although data are scarce, the results of the largest epidemiological review to date, carried out in 2016, stated that children of mothers who reported depressive symptoms associated with SI weighed approximately 239.5 g less in average in relation to mothers who reported depressive symptoms without SI [10]. These results were later confirmed in another study, where they observed that women with SI were almost four times more likely to have a small-for-gestational-age newborn [21]. Furthermore, other research showed that SI can negatively affect children's cognitive development, specifically verbal and visual skills [20].

Midwives play a fundamental role in detecting possible emotional and mood disorders during pregnancy and postpartum. This is mainly due to the close monitoring of pregnancy and the trust that develops between pregnant women and midwives [8]. Therefore, it is essential to identify the risk factors associated with SI adequately. This will enable the screening of vulnerable women and provide them with the necessary support, thus preventing devastating consequences for both themselves and their children [18,22].

All of this highlights the need to carry out adequate SI screening and a careful evaluation of all pregnant women, as well as to provide professionals involved in the healthcare of future mothers with tools and training resources that facilitate the detection of both risk and protective factors [9]. As of now, Spain lacks a specific screening protocol for identifying SI risk, even though it is considered one of the primary predictors of future suicide attempts [18].

Given the limited information on SI in the Spanish pregnant population, the objective of this study was to establish the prevalence of SI in pregnant women on the island of Gran Canaria, as well as to identify the possible risk factors associated with it.

## 2. Materials and Methods

### 2.1. Type of Study

The present study is an observational cross-sectional prevalence study to determine the risk of suicidal ideation in the pregnant population of the island of Gran Canaria at the specific moment in which it was conducted.

## 2.2. Study Population and Sample Size Calculation

A non-probabilistic sampling method was employed due to the time constraints faced by the researchers in data collection. A consecutive non-probabilistic sampling was conducted among pregnant women with a gestational age between 20 and 22 weeks who attended the Prenatal Diagnostic Unit (PDU) of the University Hospital Complex Insular Materno-Infantil of Gran Canaria (CHUIMI), located in the Canary Islands, Spain. Pregnant women were recruited while attending their second trimester routine ultrasound in the public health system, as this is a common point of care for the majority of pregnant women in Gran Canaria.

The following inclusion, exclusion, and withdrawal criteria were considered:

- Inclusion criteria: Pregnant women between 20 and 22 weeks of gestational age who attended the Prenatal Diagnostic Unit of CHUIMI for a pregnancy control appointment within the public health system.
- Exclusion criteria: Individuals who were not fluent in both reading and writing in Spanish.
- Withdrawal criteria: Participants who declined to provide informed consent, failed to complete the questionnaires, or pregnant women who wished to withdraw from the study after signing the informed consent.

The sample size calculated using the GRANMO [23] sampling calculator estimated that, based on the number of women treated in the PDU in 2021 (4894 women), a random sample of 119 women would be sufficient to estimate a prevalence of approximately 2.6% with a 95% confidence interval and a precision of  $\pm 3$  percentage units. This prevalence is based on the findings of the study by Castelao et al. [18]. The expected margin of error was set at 10%.

## 2.3. Study Variables

The following variables were studied:

- Prevalence of suicidal ideation in pregnant women, measured by the score of item 9 on the PHQ-9 and/or the Paykel scale.
- Sociodemographic variables: age, continent of origin (Europe/North America/Latin America/Africa/Asia/Oceania), education level (primary/secondary/higher), employment status (Active/Unemployed/Housewife), disability status, marital status (single/married/living with a partner/widowed/divorced).
- Obstetrical, gynaecological and clinical variables: gestational age, previous pregnancies (Yes/No), number of living children, number of births, number of caesarean sections (measured in whole numbers), number of miscarriages or abortions, type of conception (spontaneous/assisted reproductive technique (ART)\*), desired pregnancy (Yes/No), history of prior depression (Yes/No), presence of any disease (Yes/No), use of non-pregnancy related prescribed medication (Yes/No), experience of gender violence (Yes/No).

\*(ART) "Assisted Reproductive Technology: refers to treatments and procedures to achieve pregnancy. These complex procedures may be an option for individuals who have already undergone various infertility treatments but have not yet achieved pregnancy.

## 2.4. Instruments and Data Collection Methods

Data collection took place from 2 January to 14 March 2023. During this period, participants completed three self-administered questionnaires: two assessed suicidal ideation and one questionnaire, created 'ad hoc', gathered sociodemographic, obstetrical, gynaecological, and clinical variables of the pregnant women. We chose to estimate the prevalence of suicidal ideation using the 'Patient Health Questionnaire (PHQ-9) [24] and the Paykel scale [25].

The PHQ-9 is a tool used to assess the progression and severity of depressive states during the pre- and postpartum periods. It comprises 9 items, each requiring Likert

scale responses ranging from 0 to 3 points. Notably, item number 9 of this instrument specifically measures suicidal ideation (SI). Numerous studies have demonstrated the validity and reliability of the PHQ-9 when administered to pregnant women of various nationalities, including Spanish-speaking populations. The Spanish version of the PHQ-9 exhibits satisfactory reliability, as indicated by its internal consistency ( $\alpha = 0.81$ ) [24].

The Paykel scale is a tool used to assess the severity of suicidal thoughts, distinguishing between thoughts of death and suicidal ideation. It comprises five statements, arranged in order of increasing severity, with dichotomous responses (yes/no), where 'yes' scores as 1 and 'no' as 0. Consequently, a higher total score indicates greater severity. Suicidal ideation is evaluated using items 3, 4, and/or 5. The psychometric properties obtained from the analysis of the validation study for the Spanish version demonstrated satisfactory levels of reliability, with an Omega value of 0.82 [25]. Both exploratory and confirmatory factor analyses revealed an essentially unidimensional structure.

The criteria for indicating a positive risk of suicidal ideation included a response greater than 0 on Item 9 of the PHQ-9 questionnaire and/or an affirmative response to Items 3, 4, or 5 of the Paykel questionnaire.

### 2.5. Statistical Analysis and Data Interpretation

For quantitative variables, we calculated mean, standard deviation, median, and the 25th and 75th percentiles. For qualitative variables, we determined frequencies and percentages. To assess the normality of the data, we employed the Kolmogorov–Smirnov or Shapiro–Wilks tests based on the sample size. We compared medians between two groups using the Mann–Whitney U test and examined the relationship between qualitative variables with the Fisher exact test. Risk factors were determined using the Odds Ratio, with a 95% confidence interval. A significance level of  $p < 0.05$  was considered statistically significant. Statistical analysis was performed using R Core Team<sup>®</sup> 2022, version 4.2.2.

### 2.6. Ethical Considerations

Women's autonomy in deciding their participation in the study was ensured. Participation required both verbal and written informed consent. The research received approval from the Las Palmas Drug Research Ethics Committee (CEIm) with registration number 2022-463-1. Participants' anonymity was maintained. Personal data obtained through informed consent were accessible only to the researchers.

Due to the sensitive nature of the topic, data collection and analysis were conducted every 48 h. In cases where a high risk of suicidal ideation was identified, consent data were used to access medical history and contact information. In such instances, participants were contacted by phone, informed about the identified risk based on screening, and offered the option of a comprehensive clinical assessment. Researchers did not have access to the results of this evaluation.

## 3. Results

### 3.1. Descriptive Analysis of the Sample

The final sample of the study consisted of 115 pregnant women ( $n = 115$ ), which accounted for 29.56% of the patients attending their ultrasounds at weeks 20–22 of gestational age at the Prenatal Diagnostic Unit consultation, at the University Hospital Complex Insular Materno-Infantil of Gran Canaria (CHUIMI), from 2 January to 14 March 2023.

The average age of the participants was  $30.8 \pm 4.72$  years, with a minimum age of 19 years and a maximum age of 40 years. In terms of ethnicity, 90.43% ( $n = 104$ ) were of European origin, followed by 5.22% ( $n = 6$ ) of Latin Americans, 3.48% ( $n = 4$ ) of North Americans, and 0.87% ( $n = 1$ ) of African origin. Regarding educational attainment, 40.87% ( $n = 47$ ) of the pregnant women in the sample had completed higher education, while 26.96% ( $n = 31$ ) had completed secondary education, and 32.17% ( $n = 37$ ) had completed primary education.

Regarding the history of depression, 7.89% ( $n = 9$ ) reported a previous diagnosis of this condition, while 92.11% ( $n = 105$ ) confirmed not having been diagnosed with any previous mental illness. Finally, in the analysis of experiences with gender violence, 88.7% of pregnant women had not encountered this situation, while 11.3% reported having experienced it.

Table 1 summarizes the sociodemographic characteristics of the sample, including their frequencies and percentages:

**Table 1.** Sociodemographic characteristics of the sample (frequencies and percentages).

Variables	Frequency (Percentage %)
Origin	
Europe	104 (90.43%)
North America	4 (3.48%)
Latin America	6 (5.22%)
Africa	1 (0.87%)
Asia	0 (0.00%)
Oceania	0 (0.00%)
Education	
Primary	37 (32.17%)
Secondary	31 (26.96%)
Higher	47 (40.87%)
Employment Status	
Active	95 (82.61%)
Unemployed	12 (10.43%)
Housewife	7 (6.09%)
Disability status	1 (0.87%)
Marital Status	
Single	38 (33.04%)
Married	31 (26.96%)
Living with a partner but not married	44 (38.26%)
Widowed	0 (0%)
Divorced	2 (1.74%)
Medication <sup>1</sup>	
No	92 (80.7%)
Yes	22 (19.3%)
Gender Violence	
No	102 (88.70%)
Yes	13 (11.30%)
First Pregnancy	
No	58 (50.43%)
Yes	57 (49.57%)
Living Children	
No	68 (59.13%)
Yes	47 (40.87%)
Previous Miscarriage/abortions	
No	89 (77.39%)
Yes	26 (22.61%)
Type of Conception	
Spontaneous	95 (82.61%)
Assisted Reproductive Technique	20 (17.39%)
History of Prior Depression <sup>1</sup>	
No	105 (92.11%)
Yes	9 (7.89%)
Desired Pregnancy <sup>1</sup>	
No	6 (5.26%)
Yes	108 (94.74%)
Age	30.8 ± 4.72 <sup>2</sup>

<sup>1</sup> = Frequencies and Percentages in  $n = 114$ . <sup>2</sup> = Mean and standard deviation.

### 3.2. Prevalence of Suicidal Ideation

The overall prevalence of pregnant women with suicidal ideation in the sample, measured as a positive response to the PHQ-9 (item 9) and/or the Paykel scale, was found to be 9.57% ( $n = 11$ ).

Below, the estimated prevalence of suicidal ideation is detailed according to the responses obtained for each of the instruments used in the evaluation, as well as the inferential analysis carried out in each case.

According to the scores obtained with item 9 of the PHQ-9, the prevalence of pregnant women who reported some level of suicidal ideation was 6.09% [95%CI = 2.48–12.14%] ( $n = 7$ ). Analysing these 7 pregnant women who scored positive for some type of suicidal ideation, 71.42% ( $n = 5$ ) reported having these thoughts ‘Several days’, 14.28% ( $n = 1$ ) experienced them ‘More than half the days’, and an additional 14.82% ( $n = 1$ ) reported having these thoughts ‘Almost every day’ ( $n = 3$ ).

When we analysed the relationship between the sociodemographic and clinical variables with the positive score for SI on the PHQ-9, we found that when analysing the level of education, it seems that as the educational level increases in women, suicidal ideation decreases (16.20% of women with primary education compared to 3.20% of women with secondary education and no cases of suicidal ideation were reported among pregnant women with higher education) with a  $p$ -value = 0.005.

Likewise, it was found that having living children could be related to the increase in SI (OR: 9.8; 95%CI: 1.14–84.37;  $p$ -value = 0.018).

Regarding the diagnosis of depression, there may be a potential association with an increased risk of suicidal ideation (OR: 5.71, 95% CI: 0.94–34.92;  $p$ -value = 0.095), although this association did not reach statistical significance in our sample. The rest of the variables analysed were not statistically significant in our sample, so it seems that they are independent variables and are not related to an increased risk of suicidal ideation (Table 2).

**Table 2.** Relationship of the PHQ-9 (item 9) with sociodemographic and clinical variables. Odds ratio, 95% confidence intervals and  $p$ -value.

	Odds Ratio	95% Confidence Interval	$p$ -Value
History of Prior Depression	5.71	0.94–34.92	0.095
Living Children	9.80	1.14–84.37	0.018
Medication	0.83	0.09–7.47	1.000
Having experienced Gender Violence	3.53	0.61–20.39	0.179
First Pregnancy	0.15	0.02–1.33	0.114
Type of Conception	Inf	Nan-Inf	0.603
Desired Pregnancy	Inf	Nan-Inf	1.000
Previous illness	0.89	0.10–7.89	1.000
Previous miscarriage/abortions	2.77	0.58–13.27	0.190

Nan-inf: Not a number-incalculable value (no subject that met the characteristics of the table or it is an incalculable value).

Regarding the results obtained from the Paykel Scale, the prevalence of pregnant women with suicidal ideation was 7.83% [95% CI = 3.64–14.34%] ( $n = 9$ ). A positive score is defined as a positive response to any of items 3, 4, and/or 5 on the Paykel scale. The following table provides a breakdown of the number of items answered positively by these 9 participants (Table 3).

**Table 3.** Pregnant Women with Suicidal Ideation on the Paykel Scale and Number of Positively Answered Items.

Number of Items Answered Positively (Paykel)	Frequency (Percentage %)
1 item	6 (66.67%)
2 items	1 (11.11%)
3 items	2 (22.22%)
Total	9 (100%)

The inferential analysis of sociodemographic and clinical variables in relation to scores on the Paykel scale found the following:

When analysing employment status, housewives appeared to have higher levels of suicidal ideation compared to pregnant women who worked outside the home, with percentages of 42.90% ( $n = 3$ ) and 6.30% ( $n = 6$ ), respectively ( $p$ -value = 0.031). Depression and a history of previous abortions/miscarriages were positively associated with suicidal ideation as measured by the Paykel scale. Regarding experiences of gender violence, there were marginally significant differences ( $p$ -value = 0.064), suggesting that gender violence may be related to suicidal ideation among the pregnant women in the sample (OR: 4.8; 95% CI: 1.04–22.2). In terms of protective factors, when analysing the variable “number of pregnancies”, the first pregnancy appeared to be a protective factor (OR: 0.11; 95% CI: 0.01–0.92) against suicidal ideation in pregnant women ( $p$ -value = 0.032). The remaining variables analysed, such as age, origin, educational level, etc., did not show statistical significance in our sample, indicating that they are likely independent variables unrelated to an increased risk of suicidal ideation. The following table provides statistical parameters for the inferential analysis between Paykel scale scores and various sociodemographic and clinical variables (Table 4).

**Table 4.** Relationship of the Paykel Scale with sociodemographic and clinical variables. Odds ratio, 95% confidence intervals and  $p$ -value.

Risk Factors for SI	Odds Ratio	95% Confidence Interval	$p$ -Value
Depression Diagnosis	16.00	3.26–78.64	0.002
Having living Children	3.17	0.75–13.38	0.157
Medication	2.26	0.52–9.87	0.372
Having experienced Gender Violence	4.80	1.04–22.20	0.064
Type of Conception	1.75	0.21–14.81	1.000
Desired Pregnancy	Inf	Nan-inf	1.000
Previous illness	3.03	0.68–13.45	0.147
Employment Status (Housewife)	Nan-inf	Nan-inf	
Previous abortions/miscarriages	16.03	3.08–83.28	0.031
<b>Protective Factor for SI</b>			
First Pregnancy	0.11	0.01–0.92	0.032

Nan-inf: Not a number-incalculable value (no subject that met the characteristics of the table or it is an incalculable value).

#### 4. Discussion

In response to the main objective of the present study, a total prevalence of suicidal ideation of 9.57% was observed among pregnant women on the island of Gran Canaria. This prevalence aligns with the results obtained in the systematic review with meta-analysis conducted by Xiao et al., which reported an incidence rate of 10% in suicidal ideation during pregnancy [13]. It also corresponds with other studies conducted in Ethiopia, reporting rates of 9.30% and 11.80%, respectively [17,26]. However, this prevalence is significantly

higher than the 2.60% reported by Castelao et al. in the only study carried out in Spain. This study involved a sample of 1524 pregnant women from two tertiary public hospitals, although the gestational age of the participants (11.87 weeks of gestation) was significantly lower than in our study. Exploring the potential influence of gestational age on prevalence rates should be a focus in future studies on this topic. Similar to our study, Castelao et al. used the PHQ-9 measurement instrument to estimate the prevalence of suicidal ideation, specifically through item number 9. Additionally, two other questionnaires, PDPI-R and a form assessing sociodemographic variables, were used, the latter being developed “ad hoc” [18]. The Postpartum Depression Predictors Inventory—Revised (PDPI-R) is a tool that incorporates the most relevant risk factors described in the literature and has been widely employed in the Spanish context for pregnant women [18].

Other international studies conducted in Brazil and the United States reported prevalence rates of 5% and 2.70%, respectively [26,27]. This highlights the disparity in the prevalence rates of suicidal ideation in pregnant women as reported in the literature.

The variation in the prevalence of suicidal ideation in our study sample may be attributed to the high prevalence of mental health problems noted in the general population of the Canary Islands. In fact, the Canary Islands rank as the third region in Spain with the highest rate of suicidal ideation, with Gran Canaria having the highest figures at 11.70% [7]. Moreover, in the aforementioned studies, only a single screening tool was used, while our study opted to use two screening tools to enhance detection capacity. This could also account for the higher rate of suicidal ideation identified. Currently, there are no specific measurement instruments designed to assess suicidal ideation in pregnant women. The “Patient Health Questionnaire” (PHQ-9) is an instrument designed primarily to assess depression in pregnant women, with item 9 focusing on suicidal ideation [10]. On the other hand, the Paykel Scale is a tool used to evaluate the severity of suicidal thoughts, distinguishing between thoughts of death and suicidal ideation. Although this scale has been extensively employed among the younger population, its validation in the Spanish context pertains primarily to adolescents [25]. The absence of specific validated tools for the pregnant population underscores the imperative need to develop screening instruments for assessing suicidal ideation in pregnant women.

The results of our study align with those of Castelao et al. and underscore the urgent need for midwives to implement screening and preventive interventions tailored to pregnant women to mitigate the risk of associated suicidal behaviours [18]. At present, there is no routine screening for suicidal behaviour in the pregnant population at the national level, despite the alarming prevalence of this health problem.

Although the estimated sample size was not reached, and the study’s design did not specifically aim to establish risk factors, the inferential analysis of sociodemographic and clinical variables reveals associations with the presence of suicidal ideation.

When analysing the positive results of suicidal ideation for both scales in relation to the variable history of depression, a positive correlation was found. This finding is supported by the results of numerous studies because this illness can heighten feelings of vulnerability and helplessness during pregnancy [14,17,18,22,28].

On the other hand, it was discovered that a history of previous abortions/miscarriages was directly linked to the risk of thoughts of death, as described by other authors. This could lead to complicated grief, emphasizing the importance of acknowledging and not underestimating pregnancy losses [11,15,18,29].

Another predictor of gestational suicidal ideation appears to be a history of gender violence, which can contribute to the development of unstable, dysfunctional intimate relationships and a bleaker outlook on life. This finding is supported by several of the studies we analysed [12,13,18,22]. Therefore, having an adequate perception of social support is of great importance and serves as a protective factor, as reflected in the studies conducted by Onah et al. and Supraja et al. [29,30].

Lastly, the presence of living children led to an increase in positive scores on the tools used to measure suicidal ideation in the pregnant women of the analysed sample, in line with the results obtained by Onah et al. [30].

We also identified other variables related to an increase in SI, although they did not reach statistical significance. Nevertheless, these findings align with the results of previous studies, such as a prior history of chronic disease and the use of medication unrelated to pregnancy [10,12,14,31].

Furthermore, in this study, two tools were employed to identify SI, each yielding different risk factors. Focusing on the evaluation of item 9 of the PHQ-9 Scale, we found that women with lower levels of education reported higher rates of ideation, a trend supported by several previous investigations [14,18,28,29,32].

In addition, being a primiparous woman was positively associated with the risk of SI, as found by Szpunar et al. in their study [14]. However, when evaluating the results of the Paykel scale, it was observed that multiparous women had higher rates of SI, a finding consistent with those obtained in other studies [10,30]. This suggests that the influence of parity on the prevalence of SI is not conclusively determined.

Regarding this latter tool, statistically significant differences were found, linking a greater risk of SI to women engaged in housework. This could be a risk factor worth exploring in future research, as no previous literature has been found to support this association. Backup data would be valuable in this regard.

Castelao et al. and O'Connor et al. found in their studies that pregnancies achieved through assisted reproductive techniques could be considered a protective factor. They justified this by hypothesizing that pregnant women who underwent in vitro fertilization (IVF) might have a higher socioeconomic status and a more robust support network compared to those who conceived spontaneously [18,22]. In the present study, we obtained similar results when analysing the Paykel scale, although these results did not reach statistical significance.

We must acknowledge the limitations of this research. The most apparent limitation was the inability to reach the calculated sample size, primarily because we fell short of the required sample size by four women.

Data collection encountered challenges, and the research team had limited time to gather data, which contributed to this issue. Another limitation of the present study was the type of sampling used. We opted for a non-probabilistic sampling approach for data collection because it was not feasible to employ a probabilistic assignment due to the requirement of involving all primary care centres on the island. However, we believe that collecting data at the island's primary care centre for pregnant women ensures the representativeness of the sample. On the other hand, considering that suicidal behaviour depends on the persistence of suicidal ideation over time, another limitation in the present study was the lack of a temporal follow-up of the persistence of SI in the analysed sample. In terms of strengths, this study represents the first investigation into suicidal ideation in pregnant women within the Canary Islands population. Furthermore, a notable strength lies in our use of two measurement tools. It is worth highlighting that we introduced a specific scale designed to assess suicidal ideation.

## 5. Conclusions

The present study estimates a prevalence of suicidal ideation in pregnant women in Gran Canaria of 9.57%. This figure is to be considered because it is the highest prevalence found so far in Spain within this population. It reinforces the risk factors identified in the literature, such as employment status, gender violence, history of depression, previous abortions, education level, and having living children. The early identification of these risk factors is of vital importance for implementing early interventions to address perinatal suicide, thereby preventing psychiatric morbidity during pregnancy and the postpartum period. More studies are needed to identify both the risk and protective factors related to

this mental health issue, which will aid in establishing more effective detection and early intervention protocols.

At present, there are no action protocols in Spain to address this issue. Therefore, it should be a priority to establish screening and evaluation strategies standardized by health services and carried out by healthcare professionals who have contact with women's health. Midwives are emerging as the key professionals for screening the risk of suicidal ideation in pregnant women due to the trust-based relationship they build during pregnancy and throughout a woman's life.

Finally, the PHQ-9 and the Paykel Scale are proposed as potential screening tools for maternal suicidal ideation. However, as a future research direction, there is a need for a specific scale designed to detect and evaluate suicidal ideation in the pregnant population, with adequate sensitivity and reliability that makes it suitable for use as a screening tool.

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**Data Availability Statement:** The data used in this research are confidential and are protected in a coded and anonymized database kept by the research group in accordance with Spanish regulations.

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