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Original Research

Anxiety in the Perinatal Period: Associated Factors

Rocío Navas-Arrebola[1,*], Susana Blanco-López[2], Laura Peteiro-Mahía[2], Noelia López-Castiñeira[2], Sonia Pertega-Díaz[3,4,5,6], Teresa Seoane-Pillado[3,4,5,6]

[1]Department of Midwifery, Centro de Salud de Baena, 14850 Córdoba, Spain
[2]Department of Delivery Room, Lucus Augusti University Hospital, 27003 Lugo, Spain
[3]Department of Research Support, Complexo Hospitalario Universitario de A Coruña (CHUAC), Sergas, University of Coruña (UDC), 15006 A Coruña, Spain
[4]Department of Nursing and Healthcare Research Group, Complexo Hospitalario Universitario de A Coruña (CHUAC), Sergas, University of Coruña (UDC), 15006 A Coruña, Spain
[5]Department of Rheumatology and Helth Research Group, Complexo Hospitalario Universitario de A Coruña (CHUAC), Sergas, University of Coruña (UDC), 15006 A Coruña, Spain
[6]Instituto de Investigación Biomédica de A Coruña (INIBIC), Complexo Hospitalario Universitario de A Coruña (CHUAC), Sergas, University of Coruña (UDC), 15006 A Coruña, Spain
*Correspondence: rocionavasarrebola@gmail.com (Rocío Navas-Arrebola)
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Abstract

Background: Attention to mothers during pregnancy, childbirth, and postpartum has focused on the physical aspects, overlooking mental health, which is critical to maternal well-being and childbirth. The aim of this study was to analyze the levels of anxiety experienced during labor and within the first 24 hours post-delivery, in order to identify the associated social and clinical factors associated with such anxiety. **Methods**: We performed a prospective observational follow-up study involving 448 women. Validated state and trait anxiety questionnaires, namely State-Trait Anxiety Inventory (STAI), which were employed in the study participants. All tests were performed with a bilateral approach. The p-values < 0.05 were considered significant. Statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS, v.22.0, IBM Corp, Chicago, IL, USA). **Results**: State anxiety was more frequent among primiparous pregnant women, individuals who did not attend maternal education classes, and those with a history of prior abortion or cesarean section. Additionally, a significant association was observed with a history of mental disorder. Concerning Trait anxiety, significantly higher levels of anxiety were found in women with lower levels of education and in patients with a history of mental health issues. At 24 hours postpartum, elevated anxiety was more frequent in primiparous and significantly more frequent in patients with difficult deliveries, women whose infants were admitted to the Neonatal Intensive Care Unit (NICU), those lacking skin-to-skin contact, and those with previous mental health disorders. **Conclusions**: Insufficient maternal education, along with a complicated birthing process requiring infant hospitalization, both contribute to elevated levels of postpartum anxiety.

Keywords: perinatal anxiety; anxiety disorders; pregnancy; parturition; postpartum period; mental health

1. Introduction

Psychological factors, specifically stress, high level of anxiety and fear, can exert an impact on the course of childbirth. In 1994, DeMartini *et al*. [1] elucidated the mechanism by showing that fear induces muscle tension, impeding dilation and subsequently leading to increased pain during labor, thereby establishing the fear-tension-pain circle. This has the potential to affect the overall experience of the birthing process [1].

Maternal care has predominantly concentrated on the physical aspects, often neglecting the mental processes associated with motherhood and childbirth. Anxiety disorders are very common, disabling (both physical and psychological), and often underdiagnosed. Common symptoms associated with this disorder include restlessness, fatigue, difficulty concentrating, irritability, muscle tension, and sleep disturbances [1].

According to the International Classification of Primary Care (ICPC), revised second version (ICPC2), an anxiety disorder is defined as clinically significant anxiety that is not restricted to a particular environmental situation. It includes diagnoses of anxiety attacks, generalized/persistent anxiety, and mixed forms of anxiety disorders. These disorders represent the most prevalent mental health problem in Spain, impacting 6.7% of the population (8.8% in women, 4.5% in men). Its frequency is relatively stable throughout adulthood. Between 10% and 12% of women aged between 35 and 84 have reported experiencing this disorder [2].

Anxiety disorder is more prevalent than commonly perceived, often escaping noticed [3] or being masked by postpartum depression, which is the most studied mental disorder during the postpartum period [4].

Depression and anxiety are the most prevalent mental health disorders during pregnancy, with approximately 12% of women experiencing depression and 13% anxiety at some point, and a considerable number of women experiencing both conditions simultaneously. Furthermore, these pathologies also impact 15–20% of women during the first year after childbirth [5].

The months following childbirth represent a period of transition and psychological change for all parents, proving to be particularly challenging for those with psychosocial risk factors. Situations of obvious psychological difficulties can have a profound impact on the psychological and emotional development of the child. Among these difficulties, postpartum depression is the most prevalent, but the overall risk of developing mental disorders is generally higher in the perinatal period [5].

Anxiety during pregnancy has many adverse effects, both for maternal mental health and for the childbirth outcome, while also posing a risk factor for postpartum depression [6].

As the neural systems affected by postpartum anxiety and depression overlap and interact with those involved in maternal care behaviors, the mother-infant interaction becomes highly susceptible. Therefore, there is a close interaction between maternal mental health, the mother-infant relationship, and the neurobiological mechanisms mediating them [7].

One study has suggested that postpartum anxiety is associated with lower rates and/or shorter duration of breastfeeding and overeating [8]. Currently, the detection and treatment of this disorder are not prioritized in our hospital and clinics during maternal care, despite the psychosocial and emotional consequences it entails. The psychosocial consequences are unavoidable and are maintained over time. Addressing all these aspects contributes to improving care for mothers and families throughout pregnancy, childbirth, and the postpartum period.

The objective of this study was to analyze the level of anxiety during childbirth and after 24 hours of delivery, as well as to identify associated social and clinical factors.

2. Materials and Methods

This was an observational prospective follow-up study performed in the Hospital Universitario Lucus Augusti (third level hospital in Lugo-Spain). The selected cohort were pregnant women who attended prenatal care consultations between gestational weeks 37 and 40 and who provided consented to participate until the required sample size was achieved. Our study included pregnant women in the gestational weeks between 37 and 40, who attended prenatal care education, and whose deliveries took place during the study period. Pregnant women $<$18 years of age and those with language barriers were excluded from the study. Study recruitment continued until reaching a sample size of 448 women. All participants provided informed consent. The study obtained approval from the Clinical Research Ethics Committee of Galicia (2015/261).

The variables recorded were: those related to personal history (age, educational level, partner, or profession), medical history, pre-pregnancy conditions (diabetes, hypertension, hypothyroidism, cancer, and autoimmune diseases), gestational comorbidities (gestational diabetes, gestational hypothyroidism, gestational hypertension, preeclampsia, and infertility), current smoking habit, parity, previous abortions, and cesarean sections, mental health history, aspects related to pregnancy progression and attendance at birth preparation classes, clinical variables related to the beginning, progression, and completion of labor, information on whether the newborn required admission to the intensive care unit or was able to stay with the mother, and whether there was skin-to-skin contact.

Anxiety was diagnosed based on the State-Trait Anxiety Inventory (STAI) questionnaire [9–11], which consists of 20 items for State anxiety and 20 items for Trait anxiety, as follows:

- Anxiety as a state (AS): evaluates a transient emotional state characterized by subjective feelings, consciously perceived, of attention and apprehension, and autonomic nervous system hyperactivity. In the current study, AS is classified using the STAI-AS component.
- Anxiety as a trait (AT): indicates a relatively stable anxious propensity, which characterizes individuals with a tendency to perceive situations as threatening. In the current study, AS is classified using the STAI-AT component.

STAI is one of the most frequently used questionnaires to measure anxiety in the general population, as well as in pregnant women [9], and has been validated for use during the prenatal stage with good results [10,11]. The response type is a Likert scale with four response options. Some items are inversely coded and the responses are added to obtain the total scores. Higher scores indicate greater symptom severity. The score is obtained using a template, counting the points from both positive and negative anxiety items. Once the questionnaire scores are obtained, the score is transformed into percentile scales according to the table of scales attached to the instrument manual, and categorizing the percentiles into levels of anxiety.

The participants were individually informed about all the aspects related to the study. They were provided with a questionnaire with sociodemographic variables, attendance to maternal education in primary care and the STAI survey. 24 hours after delivery, patients were contacted while in the obstetric unit to complete the anxiety survey once again.

A descriptive analysis of the registered variables was conducted. The qualitative variables were expressed through absolute and relative frequencies, while the quantitative variables were expressed with their mean value and standard deviation. Chi-square or Fisher's exact analysis

was performed to assess any association between the categorized responses to the questionnaire and the qualitative variables recorded.

The level of anxiety pre and postpartum was compared using the marginal homogeneity test. Multivariate logistic regression models were adjusted to explore the association between anxiety, sociodemographic, and clinical variables. All tests were performed with a bilateral approach. The p-values < 0.05 were considered significant. Statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS, v.22.0, IBM Corp, Chicago, IL, USA).

3. Results

The mean age of the participants was 33.6 ± 4.7 years; 43.5% were aged 35 years or older; 71.1% had a partner; 87.4% had a professional career; and 50.8% had higher education.

Regarding medical history, 34.6% of the pregnant women presented some form of comorbidity. 8% suffered from thyroid disease, 5.6% suffered from some autoimmune or degenerative disease, 4% were diabetic, and 2% hypertensive. A total of 12.3% of the women were smokers.

82 women (18.3%) had a mental health consultation prior to pregnancy; among them, 49.4% were diagnosed with anxiety, 19.8% with depression, 21.0% had both diagnoses (anxiety and depression), 4.9% suffered from insomnia, 2.5% suffered from eating disorders, and 2.5% had adjustment disorders. Among patients with mental health consultations, 90.1% were prescribed psychotropic treatment.

A total of 3.6% participants underwent treatment for infertility, of which 87.5% underwent *in vitro* fertilization (IVF) and 12.5% underwent ovarian stimulation. During pregnancy, 15.6% of the participants had some form of comorbidity; 9.4% were diagnosed with gestational hypothyroidism, 6.5% with gestational diabetes, and 1 patient had gestational hypertension.

69% of the participants were primiparous, 10.0% had a previous cesarean section, and 27.0% had at least one abortion. In the cohort, 39.5% were deemed high-risk pregnancies. Among these, labor started spontaneously for 5.5%, with 52.8% being spontaneous deliveries, 20.2% undergoing instrumental delivery, and 27.0% undergoing cesarean sections. 2% experienced threatened premature delivery, 1.1% were diagnosed with intrauterine growth restriction (IUGR), and 1.3% were classified as small for gestational age (SGA).

The median duration of labor was 3.0 hours (range: 0–15). A total of 77.8% of the women opted for the use of epidural analgesia as a method for pain relief. As related to the newborns, 6.4% were admitted to the Neonatal Intensive Care Unit (NICU) due to premature delivery. Regarding to skin-to-skin contact, 67.2% of the newborns had contact with the mother and 15.6% had contact with the father.

Next, we evaluated the levels of anxiety pre and postpartum using the questionnaire and its components, STAI-AS and STAI-AT (Table 1). Regarding AS in the prepartum period, 12.6% of the women reported severe anxiety, 63.1% mild or moderate, and 24.3% minimal anxiety. AS in the postpartum was 10.9%, 51.3%, and 37.8%, respectively. AT in the prepartum period was severe in 8.3%, moderate or mild in 48.0%, and minimal in 43.7% of the cohort.

A significant change was observed in the level of anxiety in the pre and postpartum periods using the marginal homogeneity test: 20.0% of the participants with a high level of anxiety before childbirth reported no anxiety after childbirth, and 56.0% reported a moderate level of anxiety. We determined that 30.4% of pregnant women who initially presented with a moderate degree level of anxiety at screening showed no anxiety 24 hours after delivery (Table 2).

The patients were classified using the 75th percentile as the cut-off point to determine the presence of an anxiety disorder. According to this classification, in the bivariate analysis, it was observed that presenting with high levels of State anxiety at the time of initial screening was significantly associated with having a medical history of mental health issues (23.2% *vs*. 10.2%; $p = 0.001$). Moreover, we found that 25.0% of patients on psychotropic medication exhibited high levels of anxiety, compared to 0.0% of pregnant women without medication.

Among primiparous women, 13.4% reported a high level of anxiety compared to 10.8% in the multiparous subgroup ($p = 0.442$). In patients who did not attend maternal education classes, 14.1% exhibited a high level of anxiety compared to 11.9% of those who did attend childbirth classes. High levels of stress were more frequent in pregnant women with previous abortions (15.8% *vs*. 11.4%; $p = 0.209$) and cesarean sections (15.6% *vs*. 12.3%; $p = 0.526$) (Table 3).

Regarding the STAI-AS, we found an association at the limits of significance with 31.2% of pregnant women without higher education showing high levels of STAI-AT compared to 22.8% of pregnant women with higher education ($p = 0.051$). Of patients with a medical history of mental health issues, 40.7% showed high levels of STAI-AT compared to only 23.7% in the subgroup without this diagnosis ($p = 0.002$) (Table 3).

In the multivariate analysis, it was observed that the only variable significantly associated with STAI-AS at the time of initial screening was having a history of some mental disorder (odds ratio (OR) = 2.571; 95% confidence interval (95% CI): 1.341–4.928). A similar result was obtained in estimating STAI-AT (OR = 2.190; 95% CI: 1.269–3.777).

Regarding the state of anxiety 24 hours after childbirth, we observed that in primiparous women, higher levels of anxiety were more frequent (12.9 *vs*. 6.6; $p = 0.063$). No significant differences were observed in labor time between women with high levels of anxiety and women with low

Table 1. Prepartum and postpartum anxiety.

STAI-AS (prepartum)			
According to percentiles	n (%)		n (%)
Percentile <25 (low anxiety)	108 (24.3)	Percentile ≤25 (low anxiety)	389 (87.4)
Percentile 25–75 (moderate anxiety)	281 (63.1)		
Percentile >75 (elevated anxiety)	56 (12.6)	Percentile >75 (elevated anxiety)	56 (12.6)
STAI-AT (prepartum)			
According to percentiles	n (%)		n (%)
Percentile <25 (low anxiety)	190 (43.7)	Percentile ≤25 (low anxiety)	318 (73.1)
Percentile 25–75 (moderate anxiety)	209 (48.0)		
Percentile >75 (elevated anxiety)	36 (8.3)	Percentile >75 (elevated anxiety)	117 (26.9)
STAI-AS (postpartum)			
According to percentiles	n (%)		n (%)
Percentile <25 (low anxiety)	149 (37.8)	Percentile ≤25 (low anxiety)	351 (89.1)
Percentile 25–75 (moderate anxiety)	202 (51.3)		
Percentile >75 (levated anxiety)	43 (10.9)	Percentile >75 (elevated anxiety)	43 (10.9)

STAI-AS, State-Trait Anxiety Inventory-Anxiety as a state; STAI-AT, State-Trait Anxiety Inventory-Anxiety as a trait.

Table 2. Relationship between prepartum and postpartum anxiety.

	STAI-AS (postpartum)			*p*
	Percentile <25 (low anxiety)	Percentile 25–75 (moderate anxiety)	Percentile >75 (elevated anxiety)	
Percentile <25 (low anxiety)	63 (67.02)	29 (30.9)	2 (2.1)	<0.001
Percentile 25–75 (moderate anxiety)	75 (30.40)	144 (58.3)	28 (11.3)	
Percentile >75 (elevated anxiety)	10 (20.00)	28 (56.0)	12 (24.0)	

STAI-AS, State-Trait Anxiety Inventory-Anxiety as a state.

or moderate levels (high level: mean = 2.0 hours (range: 0–14); low or moderate level: mean = 3.0 hours (range: 0–14)). Among 21.1% of patients undergoing instrumental delivery, 12.9% who underwent cesarean section, and 6.3% of women with spontaneous delivery, high levels of anxiety were observed ($p = 0.001$). A total of 23.1% of the women with infants who required admission to the NICU reported a state of severe anxiety, compared to 9.6% of the mothers with infants who stayed with them ($p = 0.042$). Additionally, a significant association was observed with skin-to-skin contact; 20.6% of women whose babies had not had contact (with the mother or father) had high levels of anxiety compared to 8.7% of women whose babies had been in contact ($p = 0.005$). High levels of stress were significantly more frequent in patients with a mental health consultation (21.1%) than those without a consultation (8.7%) ($p = 0.002$). After implementing a multivariate model, it was observed that having a mental health consultation was associated to a significant increased risk of suffering from severe anxiety 24 hours after childbirth (Table 4).

4. Discussion

Generalized anxiety disorders are more frequent in women in the perinatal period, and even more so during the postpartum period [7,12–14], as compared to the general population [15]. Previous studies have described the negative impact of this disorder, confirming that maternal anxiety is associated with a greater probability of depression and has effects on breastfeeding, impacting mother-infant bonding, all of which affecting well-being and may lead to behavioral disorders later in life [15–18]. Nevertheless, we believe that perinatal anxiety disorders have earned less attention than postpartum depression. Therefore, this study aimed at bringing visibility to this recurrent problem with a great psychosocial impact.

The STAI questionnaire, used to assess anxiety in this study, ensures a clear distinction between the anxious process and the patients' depressive status. State-anxiety is an immediate and transient "emotional state", a concept linked to feelings of tension, apprehension and nervousness, disturbing thoughts and worries, along with physiological changes. On the other hand, Trait-anxiety refers to the personality characteristics of each individual that are relatively stable and influence the likelihood of manifesting anxiety [19]. According to the data obtained at the initial consultation, the majority of the participants presented a moderate-low level of anxiety, both in the STAI-AT scale and in the STAI-AS scale. Similar results were observed in the postpartum period. Our results align with the previously published study by Heron *et al.* [20], who also reported a

Table 3. Factors associated with the level of prepartum anxiety.

		STAI-AS (prepartum)-elevated anxiety					STAI-AT (prepartum)-elevated anxiety				
		n (%)	OR-raw (95% CI)	*p*-value	OR-adjust (95% CI)	*p*-value	n (%)	OR-raw (95% CI)	*p*-value	OR-adjust (95% CI)	*p*-value
Age	<35 years	32 (12.7)					72 (29.1)				
	≥35 years	24 (12.4)	0.966 (0.549–1.701)	0.905	1.247 (0.676–2.301)	0.480	45 (23.9)	0.765 (0.496–1.179)	0.224	0.869 (0.541–1.399)	0.564
Higher education	No	32 (14.7)					67 (31.2)				
	Yes	24 (10.6)	0.691 (0.392–1.216)	0.198	0.673 (0.360–1.255)	0.213	50 (22.8)	0.654 (0.426–1.002)	0.051	0.737 (0.459–1.185)	0.208
Couple	No	14 (10.9)					37 (29.6)				
	Yes	42 (13.4)	1.268 (0.667–2.413)	0.468	1.612 (0.805–3.226)	0.178	79 (25.6)	0.820 (0.512–1.302)	0.400	0.925 (0.558–1.531)	0.760
Professional career	No	10 (18,5)					17 (32.7)				
	Yes	45 (12.1)	0.606 (0.285–1.287)	0.188	0.761 (0.331–1.751)	0.521	94 (25.8)	0.714 (0.382–1.334)	0.290	1.157 (0.583–2.298)	0.676
Maternal education	No	21 (14.1)					44 (30.1)				
	Yes	35 (11.9)	0.824 (0.461–1.473)	0.512	0.889 (0.451–1.754)	0.735	72 (25.1)	0.776 (0.499–1.209)	0.262	0.859 (0.507–1.454)	0.571
Comorbidity before pregnancy	No	39 (13.4)					82 (29.0)				
	Yes	17 (11.0)	0.802 (0.437–1.470)	0.475	0.552 (0.254–1.197)	0.132	35 (23.0)	0.733 (0.464–1.158)	0.182	0.599 (0.337–1.066)	0.081
Mental health consultation	No	37 (10.2)					84 (23.7)				
	Yes	19 (23.2)	2.657 (1.436–4.917)	0.001	2.571 (1.341–4.928)	0.004	33 (40.7)	2.210 (1.332–3.667)	0.002	2.190 (1.269–3.777)	0.005
Gestational comorbidity	No	49 (13.1)					94 (25.7)				
	Yes	7 (10.0)	0.392 (0.134–1.148)	0.478	0.801 (0.336–1.911)	0.617	23 (33.3)	1.447 (0.832–2.515)	0.189	0.747 (0.407–1.371)	0.347
Primiparous women	No	15 (10.8)					39 (29.3)				
	Yes	41 (13.4)	1.279 (0.682–2.398)	0.442	1.572 (0.756–3.269)	0.226	78 (25.8)	0.839 (0.533–1.321)	0.449	0.927 (0.537–1.598)	0.784
Previous abortions	No	37 (11.4)					83 (26.1)				
	Yes	19 (15.8)	1.464 (0.805–2.662)	0.209	1.524 (0.756–3.071)	0.239	34 (29.1)	1.160 (0.724–1.858)	0.537	1.345 (0.772–2.342)	0.295
Previous caesarean sections	No	49 (12.3)					107 (27.4)				
	Yes	7 (15.6)	1.320 (0.559–3.118)	0.526	1.234 (0.419–3.634)	0.703	10 (22.2)	0.756 (0.362–1.579)	0.455	0.704 (0.273–1.814)	0.467

STAI-AS, State-Trait Anxiety Inventory-Anxiety as a state; STAI-AT, State-Trait Anxiety Inventory-Anxiety as a trait; OR, odds ratio; 95% CI, 95% confidence interval.

Table 4. Factors associated with the level of postpartum anxiety.

		STAI-AS (postpartum)				
		Elevated anxiety	OR-raw (95% CI)	*p*-value	OR-adjust (95% CI)	*p*-value
Age	<35 years	26 (11.8)				
	≥35 years	17 (9.8)	0.817 (0.428–1.560)	0.540	0.990 (0.444–2.205)	0.988
Higher education	No	19 (9.9)				
	Yes	24 (11.9)	1.235 (0.653–2.335)	0.516	1.451 (0.644–3.266)	0.369
Couple	No	15 (12.8)				
	Yes	28 (10.2)	0.771 (0.395–1.504)	0.444	0.703 (0.322–1.539)	0.378
Professional career	No	4 (8.2)				
	Yes	37 (11.2)	1.421 (0.483–4.176)	0.521	1.258 (0.378–4.181)	0.708
Mental health consultation	No	28 (8.7)				
	Yes	15 (21.1)	2.822 (1.417–5.622)	0.002	2.652 (1.126–6.244)	0.026
Start of labor	Spontaneous	19 (8.8)				
	Induced or scheduled cesarean section	21 (12.7)	1.509 (0.783–2.910)	0.249	1.485 (0.668–3.301)	0.529
Primiparous women	No	8 (6.6)				
	Yes	35 (12.9)	2.105 (0.946–4.673)	0.063	1.406 (0.487–4.061)	0.332
Type of delivery	Vaginal	28 (10.1)				
	Caesarean section	15 (12.9)	1.321 (0.677–2.577)	0.414	1.092 (0.357–3.337)	0.878
Completion of labor	Eutocic	13 (6.3)				
	Instrumental	15 (21.1)	3.977 (1.787–8.851)	0.001	2.349 (0.874–6.317)	0.091
	Cesarean section	15 (12.9)	2.205 (1.010–4.813)	0.047	-	
Fate of newborn	Nest	34 (9.6)				
	NICU	6 (23.1)	2.841 (1.068–7.558)	0.042	1.724 (0.444–6.692)	0.431
Epidural	No	9 (10.6)				
	Yes	33 (11.5)	1.097 (0.503–2.394)	0.816	0.925 (0.341–2.508)	0.879
Skin-to-skin	No	13 (20.6)				
	Yes	28 (8.7)	0.366 (0.178–0.755)	0.005	0.539 (0.170–1.705)	0.292

STAI-AS, State-Trait Anxiety Inventory-Anxiety as a state; OR, odds ratio; 95% CI, 95% confidence interval; NICU, Neonatal Intensive Care Unit.

very low percentage of anxiety pre and postpartum, with a decrease in the percentage of women with STAI-AS observed after childbirth. Furthermore, it should be noted that only a minority of the women studied did not present an anxious picture during pregnancy and postpartum.

Our results demonstrated an association between pre and postpartum anxiety, revealing that approximately 30% of women who presented a high or moderate level of anxiety in the initial consultation showed a decrease in anxiety after childbirth. These findings are consistent with other previous study [21]. We concluded that anxiety symptoms persist in the immediate postpartum period, but the level decreases over time. This observation could be psychosocially justified, as certain stressful factors during pregnancy, such as concern about having a healthy child or fear of childbirth, may find resolution in the immediate postpartum period. Additionally, there is a physiological justification, as cortisol levels are higher during pregnancy than during the postpartum period [22]. Furthermore, reduced levels of prolactin and oxytocin caused by irregularities in the hypothalamic-pituitary-adrenal axis could make mothers more susceptible to anxiety [23]. Other investigators have followed patients after childbirth and demonstrated that the state of anxiety at the time of delivery is a significant predictor of non-specific depression and postpartum anxiety [24–27]. Therefore, we consider it important to recognize the direct relationship between anxiety symptoms before, during, and after childbirth.

A history of mental health disorders and the consumption of psychotropic medications are related to high levels of anxiety at the initial screening, results that are consistent with previous studies [28,29]. However, the association between the level of anxiety and the duration of labor could not be demonstrated. Contradictory results have been obtained by several authors who associate STAI-AS with the prolonged duration of the birth process [30,31]. In this study, it was observed that patients with an abnormal labor showed high levels of anxiety. Investigators have confirmed the relationship between adverse circumstances in childbirth and anxiety [32]. Others have associated increased anxiety with a negative experience of childbirth [3,33], a result that is not shared by other researchers [4], and it is still contradicting, as their results demonstrated a non-significant association between postpartum anxiety and the type of delivery.

Women whose infants were admitted to the NICU report a statistically significant higher level of anxiety compared to mothers whose newborns remained with them. This circumstance has previously been studied [33], obtaining the same results. Similarly, the state of anxiety was significantly higher when skin-to-skin contact was not performed compared to when it was, which aligns with other studies that detected high levels of anxiety in patients who did not experience this practice [34–36].

In this study, we have highlighted the importance of anxiety at the time of initial consultation and immediately after delivery. Our results also revealed that the probability of suffering from postpartum anxiety increases when prepartum anxiety is high. Extending the follow-up period for such patients may help us better evaluate the duration of anxiety. We believe that postpartum depression has been extensively studied, but the direct consequences of the state of anxiety experienced by women during pregnancy, childbirth, and the puerperium, and its psychosocial impact on women and their families, have been underestimated.

5. Conclusions

Our observational study revealed that anxiety disorders are very common during the perinatal period. In addition, if not treated, anxiety may become more intense, particularly after childbirth, specially in the presence of complications during birth. Obstetricians, along with primary care providers, should be aware of this disorder and be prepared to discuss and offer treatment options. Moreover, childbirth education classes offered by hospitals or birth centers should be accessible to all pregnant women. Considering the scarcity of literature on postpartum anxiety, future research is warranted to identify risk factors and potential solutions.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author Contributions

LPM, SBL, RNA, NLC, SPD and TSP designed the research study. LPM, SBL, RNA, NLC performed the research. SPD and TSP provided help and advice in the correct execution of all phases of the project. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Santiago-Lugo (number: 2015/261).

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Conflict of Interest

The authors declare no conflict of interest.

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