Original Article

Depressive symptoms during pregnancy: associated factors and association with exclusive breastfeeding

Sintomas depressivos na gravidez: fatores associados e associação com aleitamento materno exclusivo

Síntomas depresivos en el embarazo: factores asociados y relación con la lactancia materna exclusiva

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Abstract

Objective: To analyze prevalence and factors associated with depressive symptoms during pregnancy and their relationship with exclusive breastfeeding practice for six months.

Methods: This is a longitudinal, analytical and exploratory study, conducted in two stages. In the first, a cross-sectional study was carried out within a cohort, in which depression during pregnancy was investigated. The second stage was carried out six months after birth to verify the relationship between depressive symptoms during pregnancy and exclusive breastfeeding. It was conducted in a municipality in the state of Paraná, from October 2019 to November 2020, with the participation of 150 women interviewed in the third trimester of pregnancy and again six months after giving birth. Data were analyzed using descriptive statistics and Poisson regression with robust variance.

Results: Prevalence of depressive symptoms was 32.7%. Depression was significantly associated with not working outside the home, not being happy with the pregnancy and idealizing abortion. No association was observed between depressive symptoms and duration of exclusive breastfeeding.

Conclusion: Prevalence of depressive symptoms during pregnancy was high and explained by factors that can be modified which, when identified early, can contribute to implementing interventions that result in better outcomes for women during pregnancy and postpartum.

Resumo

Objetivo: Analisar a prevalência e os fatores associados a sintomas depressivos na gestação e sua relação com a prática do aleitamento materno exclusivo por seis meses.

Métodos: Estudo longitudinal, analítico e exploratório, conduzido em duas etapas. Na primeira realizou-se um estudo transversal aninhado a uma coorte, no qual foi investigada a depressão na gravidez. A segunda etapa foi realizada seis meses após o parto para verificar a relação entre sintomas depressivos na gestação e aleitamento materno exclusivo. Foi conduzido em município do estado do Paraná, no período de outubro de 2019 a novembro de 2020, com a participação de 150 mulheres entrevistadas no terceiro trimestre de gestação e novamente seis meses após o parto. Os dados foram analisados por estatística descritiva e regressão de Poisson com variância robusta.

Resultados: A prevalência de sintomas depressivos foi 32,7%. A depressão apresentou associação significativa com não trabalhar fora, não ficar feliz com a gravidez e idealizar o aborto. Não foi observada associação entre sintomas depressivos e tempo de aleitamento materno exclusivo.

Conclusão: A prevalência de sintomas depressivos durante a gravidez foi elevada e explicada por fatores passiveis de modificação, que ao serem identificados precocemente podem contribuir com a implementação de intervenções que resultem em melhores desfechos para a mulher no período gravídico e puerperal.

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Conflicts of interest: nothing to declare.

Resumen

Objetivo: Analizar la prevalencia y los factores asociados a síntomas depresivos en el embarazo y su relación con la práctica de la lactancia materna exclusiva por seis meses.

Métodos: Estudio longitudinal, analítico y exploratorio, llevado a cabo en dos etapas. En la primera se realizó un estudio transversal anidado en una cohorte, en el que se investigó la depresión en el embarazo. La segunda etapa se llevó a cabo seis meses después del parto para verificar la relación entre los síntomas depresivos en el embarazo y la lactancia materna exclusiva. El estudio se realizó en un municipio del estado de Paraná, durante el período de octubre de 2019 a noviembre de 2020, con la participación de 150 mujeres entrevistadas en el tercer trimestre del embarazo y nuevamente seis meses después del parto. Los datos fueron analizados por medio de estadística descriptiva y regresión de Poisson con varianza robusta.

Resultados: La prevalencia de síntomas depresivos fue del 32,7 %. La depresión presentó una relación significativa con no trabajar fuera de casa, no estar feliz con el embarazo e idealizar el aborto. No se observó relación entre síntomas depresivos y tiempo de lactancia materna exclusiva.

Conclusión: La prevalencia de síntomas depresivos durante el embarazo fue elevada y explicada por factores sujetos a modificación, que si se identifican tempranamente pueden contribuir con la implementación de intervenciones y así obtener un mejor desenlace para las mujeres durante el embarazo y el puerperio.

Introduction

Human milk (HM) provides numerous benefits to newborns (NB), as it has nutritional and immunological components which assist in adequate nutrition and protection against diseases that could affect it, and are therefore capable of impacting infant mortality indicators.[1,2] In the long term, breastfeeding has an important role in protecting against the development of overweight, obesity as well as childhood leukemia and maternal breast and ovarian cancer.[3,4]

Numerous factors contribute to the failure and discontinuity of breastfeeding, such as lack of knowledge about the importance of breastfeeding and/or lactation management, negative experiences and lack of family history of breastfeeding, fragility of the support network and psychological factors, such as depression.[5,6]

Depression is among the most common disorders that affect women during pregnancy worldwide. Postpartum not only affects the mothers, but also has broader implications for the family and the children's development, which can lead to prematurity and low birth weight.[7,8] Furthermore, depression during pregnancy is strongly associated to postpartum depression. [9]

The effects of depression during pregnancy are variable, with worse results being identified in low- and middle-income countries. Among the factors that contribute to the emergence of depression at this stage of life are history of previous or family depression with mental disorders, lack of social support, unemployment, current or previous occurrence of abuse or violence, including psychological violence, perpetrated by a partner or family member and smoking.[8,10]

A systematic review that analyzed the relationship between depressive symptoms in the perinatal period and breastfeeding highlighted the need for research that validates the use of appropriate and effective tools for assessing depression during prenatal care. The authors considered that the Edinburgh Postnatal Depression Scale (EPDS) has the potential to meet this objective and considered the importance of it being applied longitudinally. The same study also highlighted the need for research in low-income regions, in order to explore the influence of social factors and the relationship between depressive symptoms during pregnancy and breastfeeding (BF) characteristics.[11]

Considering the importance of BF for child health, the possibility that a reasonable number of women experience depressive symptoms during pregnancy and postpartum and that these interfere with BF practice, it is considered relevant to identify the presence of these symptoms during pregnancy so that specific measures can be adopted to reduce rates of early weaning and infant and maternal morbidity and mortality. Therefore, this study aimed to analyze the prevalence and factors associated with depressive symptoms during pregnancy and their relationship with exclusive breastfeeding (EBF) practice for six months.

Methods

This is a longitudinal, analytical and exploratory study, carried out in a municipality in the north-

west of the state of Paraná, conducted in two stages. Firstly, a cross-sectional study was carried out within a cohort, focusing on investigating prevalence of depressive symptoms during pregnancy and associated factors. The second stage was carried out six months after childbirth with the aim of verifying whether the presence of depressive symptoms in the third trimester of pregnancy impacted exclusive breastfeeding practice. STRengthening the Reporting of OBservational studies in Epidemiology (STROBE) was used to guide the research report preparation.

During data collection, the municipality had an estimated population of 88,922 inhabitants, had 19 Basic Health Units (BHU), 24 Family Health Strategy (FHS) teams, with coverage of 93.69% of the area covered.[12] To select the sample, the number of pregnant women monitored in the 19 BHU was verified and, proportionally, the number of pregnant women was established, considering a sample size of 150, with an increase of 15% for possible losses.

Initially, women aged 18 years or older and with a gestational age (GA) between 30 and 37 weeks were included, thus avoiding loss to follow-up. Women with twin pregnancies, users of illicit drugs, HIV positive, foreigners and those who did not have the ability to read and understand the data collection instruments were not included.

Before the contact carried out six months after childbirth, the medical records of all participants in the first stage were consulted, as mothers with childbirth before the 36th week of gestation and mothers whose NB had presented any problem/change that could interfere with BF practice , such as Apgar in the fifth minute less than seven, hospitalization in the Neonatal Intensive Care Unit, congenital malformation, among others, were excluded.

Finally, at the time of the interview that took place six months after childbirth, the discontinuity criterion applied was the failure to locate the mothers by telephone and/or home visit in at least three attempts on different days and times. In total, 170 pregnant women agreed to participate in the study, but 20 were excluded, 11 due to data inconsistency, six due to change of address and three due to premature birth.

Data collection for the first stage was carried out between October 2019 and March 2020 at the municipality's BHUs when pregnant women attended prenatal consultations. After reading and signing the Informed Consent Form, participants were instructed to fill out the data collection instrument, consisting of two parts: the first with questions addressing a) sociodemographic and health characteristics: age group (up to 34 years and 35 or more); self-reported skin color (white and others – black, brown or yellow); marital status (without and with partner); lives with partner (yes/no); income (enough for: less than basic needs, for basic needs, more than basic needs); works outside the home (no/yes); and uses alcohol and/or tobacco (no/yes); b) obstetrical characteristics: planned pregnancy (no/yes); was happy with the pregnancy (no/yes); high gestational risk (no/yes); believe you have some barrier and/or difficulty BF (no, yes and do not know); and thought about having an abortion (no/yes), which were considered independent variables.

The second part of the instrument consisted of EPDS, which assessed the presence of depressive symptoms during pregnancy, identified with a cut-off point ≥ 10 in the EPDS considered the outcome variable.[13-15]

EPDS allows identifying depressive symptoms in the gestational and postpartum period. This scale consists of ten items, with responses on a four-point Likert scale. The final score ranges from zero to 30, with higher scores indicating the presence and greater intensity of depressive symptoms.

The research was continued until November 2020, in order to cover 180 days after the childbirth of all women included in the first stage of the study. On this occasion, a telephone interview was carried out, covering child nutrition from birth until that moment, in order to identify the existence of an association between depressive symptoms during pregnancy and EBF. EBF was considered an outcome when children received only breast milk, directly from the breast or expressed, and no other liquid or solid, with the exception of drops or syrups of vitamins, minerals and/or medications up to six months of age.

The data were collected by a team consisting of the main researcher, academics, nursing technicians and nurses, all duly trained for this purpose. Training was carried out by the main researcher (nurse trained in BF and master's student in nursing), and included an on-site course lasting 90 minutes and individual monitoring of each collector in at least two interviews, in addition to periodic supervision, through weekly visits to all BHUs, when checking the completed instruments and clarifying doubts from data collectors.

Analyzes were carried out using the Statistical Package for the Social Sciences (SPSS) version 26.0. Absolute and relative frequencies were used to describe categorical variables, and the mean and standard deviation were used for numerical variables, according to adherence to the normal distribution verified by applying the Shapiro Wilk test. When analyzing the associations between the exploratory variables and the investigated outcome, Pearson's chi-square and Fisher's exact tests were used, considering a significance level of 5%, and relative risks and respective 95% confidence intervals were estimated.

Initially, the occurrence of multicollinearity was verified through the variance inflation factor (VIF). Next, in the multiple analysis, the Poisson Regression model with robust variance was used to determine the associations between predictor variables and depression. The variables were entered into the model using the stepwise backward method and quality of fit was checked by analyzing standardized residuals and Akaike information criterion (AIC). Adjusted RRs were calculated, adopting 95% CI as a measure of accuracy.

When developing the study, the guidelines of Resolution 466/2012 of the Brazilian National Health Council were respected. The study was authorized by the Municipal Health Department of the city and approved by the signatory institution's Research Ethics Committee, under Protocol 4,611,345 (Certificate of Presentation for Ethical Consideration (*Certificado de Apresentação para Apreciação Ética*) 20430819.6.0000.0104).

Results

Prevalence of depressive symptoms in the third trimester was 32.7%. Of the 150 pregnant women participating in the research, the majority were no more than 34 years old, had a non-white skin color, had a partner and lived with him, and had a family income that met the family's basic needs. Less than half of them had paid work outside the home (Table 1). In the bivariate analysis, prevalence of depressive symptoms was only positively associated with the variable working outside the home (Table 1).

Table 1. Association between sociodemographic variables and occurrence of depressive symptoms in pregnant women enrolled in Basic Health Units

Variables	Total n(%)	Depressive symptoms		PR (95%CI)	p-value
		Yes n(%)	No n(%)		
Age group					
< 35 years	120(80.0)	38(31.7)	82(68.3)	1.16 (0.68-1.98)	0.601*
≥ 35 years	30(20.0)	11(36.6)	19(63.3)		
Ski color					
White	66(44.0)	23(34.8)	43(65.2)		
Non-white*	84(56.0)	26(31.0)	58(69.0)	0.89 (0.56-1.45)	0.614*
Marital status					
With partner	11 (79.3)	38(31.9)	81(68.1)	0.95 (0.71-z1.26)	0.707*
Without partner	31(20.7)	11(35.5)	20(64.5)		
Lives with partner					
Yes	125(83.3)	38(30.4)	87(69.6)		
No	25 (16.7)	11(44.0)	14(56.0)	1.45 (0.86-2.42)	0.186*
Income					
Not enough for basic needs	17(11.3)	7(41.2)	10(58.8)	1.15 (0.47-5.78)	0.999†
Enough for basic needs	119(79.3)	37(31.1)	82(68.9)	0.87 (0.41-1.85)	0.937†
More than enough for basic needs	14(9.3)	5(35.7)	9(64.3)		
Works outside the home					
Yes	65(43.3)	14(21.5)	51(78.5)		
No	85(56.7)	35(41.2)	50(58.8)	1.91 (1.13-3.24)	0.011*

*Pearson's chi square test; † Fisher's exact test; **Black, brown and yellow people were included

The majority of women did not use alcohol or tobacco, did not plan their pregnancy, but expressed being happy with it. Furthermore, the majority were not stratified as high-risk pregnant women and, during pregnancy, did not believe they had any barrier and/or difficulty BF, and did not consider having an abortion (Table 2). In bivariate analysis, prevalence of depressive symptoms was positively associated with not being happy with the

pregnancy and considering the possibility of having an abortion. Pregnant women who were not happy with their pregnancy had twice prevalence of depression compared to those who were happy. Among pregnant women who considered abortion, the prevalence was three times higher when compared to those who did not think about abortion. Not working outside the home was also associated with depressive symptoms (Table 2).

Table 2. Association between sociodemographic variables, behavioral habits, obstetric data and occurrence of depressive symptoms in pregnant women enrolled in Basic Health Units

Variables	Total n(%)	Depressive symptoms		PR (95%CI)	p-value
		Yes n(%)	No n(%)		
Consumed alcohol					
Yes	32(21.3)	13(40.6)	19(59.4)	0.75 (0.46-1.24)	0.279*
No	111(74.0)	36(30.5)	82(69.5)		
Never had it	7(4.7)				
Smoked tobacco					
Yes	9(6.0)	5(55.6)	4(44.4)	1.77 (0.87-3.61)	0.8306†
No	90(60.0)	28(31.1)	62(68.9)	0.99 (0.60-1.65)	0.974*
Never smoked	51(34.0)	16(31.4)	35(68.6)		
Planned pregnancy					
Yes	62(41.3)	19(30.6)	43(69.4)		
No	88(58.7)	30(34.1)	58(65.9)	1.11 (0.69-1.79)	0.658*
Was happy with pregnancy					
Yes	128(85.3)	36(28.1)	92(71.9)		
No	22(14.7)	13(59.1)	9(40.9)	2.10 (1.35-3.28)	0.004*
High gestational risk					
Yes	62(41.3)	22(35.5)	40(64.5)	0.86 (0.55-1.37)	0.537*
No	88(58.7)	27(30.7)	61(69.3)		
Barrier and/ or difficulty breastfeeding					
Yes	18(12.0)	7(38.9)	11(61.1)	1.46 (0.53-4.04)	0.714†
No	114(76.0)	38(33.3)	76(66.7)	125 (0.52-3.01)	0.843†
Do not know	18(12.0)	4(22.2)	14(77.8)		
Thought of having an abortion					
Yes	13(8.7)	10(76.9)	3(23.1)	3.10 (1.14-8.41)	<0.001*
No	137(91.3)	39(28.5)	98(71.5)		

*Pearson's chi square test; † Fisher's exact test

There was no association between depressive symptoms during the third trimester of pregnancy and EBF (p=0.665; PR=0.95 (CI= 0.76-1.19). In the analysis adjusted the variables, working outside the home and being happy with pregnancy remained associated with the occurrence of depression. Not having a job outside the home increased prevalence of depression by 72%. Women unhappy with pregnancy had a 1.36 times higher prevalence of depressive symptoms when compared to happy women (Table 3).

Table 3. Multiple analysis of factors associated with the occurrence of depressive symptoms in pregnant women enrolled in Basic Health Units

Variables	PR (95%CI)	p-value*
Marital status		
With partner	1.00	
Without partner	1.22 (0.77-1.93)	0.398
Works outside the home		
Yes	1.00	0.035
No	1.72 (1.04-2.85)	
Was happy with pregnancy		
Yes	1.00	0.234
No	1.36 (0.82-2.25)	
Thought of having an abortion		
Yes	1.00	0.003
No	2.14 (1.30-3.52)	

*Poisson regression with robust variance

Discussion

Prevalence of depressive symptoms identified in the third trimester of pregnancy in the present study was higher than that found in other national studies that considered the same gestational period.[15-18] A study of 10 systematic reviews published between 2007 and 2018 that included 306 primary studies and a total of 877,246 pregnant women found that worldwide prevalence of depression during prenatal care varies from 15 to 65%, being higher among low-income countries.[8] However, in the United States and Italy, prevalence of depression during prenatal care was 9.0% and 6.4%, respectively.[19,20] It is important to highlight that the COVID-19 pandemic may have worsened this scenario, with a 38.1% increase in depressive symptoms being identified in pregnant women during the pandemic.[19]

Therefore, it is clear how discrepant the data on depressive symptoms in pregnant women can be, making it necessary to consider social, economic, cultural characteristics and the gestational period. It also highlights the importance of defining a single cutoff point for all studies, aiming to standardize and enable the comparison of results, as differences are observed in the literature.[9,14-16,18-20]

Among the maternal sociodemographic variables, not working outside the home had a statistically significant association with the presence of depressive symptoms. In the literature, there is evidence of an association between other socioeconomic characteristics and depressive symptoms, such as unemployment, poverty, marital dissatisfaction, having more children and less education, with evidence that a high socioeconomic level can reduce the chances of depression during pregnancy by up to five times.[10,15,20,21] These findings reinforce how the lack of emotional, social or economic support during pregnancy can imply the presence of depressive symptoms and, therefore, must be considered by professionals in all consultations and care provided during the pregnancy period.

Unplanned pregnancy did not result in an association with depressive symptoms, however not being happy with the pregnancy and thinking about having an abortion during pregnancy, aspects related to unwanted pregnancy, showed a significant association. This result corroborates that of a longitudinal study that followed 1,928 pregnant women from the beginning of pregnancy until one year after childbirth, which identified that women who reported an unplanned pregnancy maintained depressive symptoms throughout all gestational trimesters and after childbirth.[22] Likewise, a meta-analysis found that the risk of depression symptoms was 1.86 higher in women who did not plan a pregnancy when compared to those who wanted it.[10]

Due to great shame, some women with depressive symptoms do not seek help or, if they do, the resources available in health networks are scarce.[10] In this way, prenatal care is characterized as an opportunity to access diagnosis and follow-up during care; however, it is clear that due attention is not given to psychiatric disorders, such as depression, during prenatal care.[8]

Considering these results, the role of healthcare professionals during prenatal care becomes clear, whether identifying an unwanted pregnancy, which may be a cause of depression, or even the presence of depressive symptoms, which may be the result of an unwanted pregnancy. The importance of family planning actions and tracking of depressive symptoms during pregnancy is highlighted, which, when adequately treated, can avoid or at least minimize symptoms of depression during pregnancy and after childbirth as well as their consequences.

Dissatisfaction with pregnancy can generate negative feelings, which can influence thoughts about terminating pregnancy. In this research, thinking about having an abortion at the end of pregnancy was associated with depressive symptoms. It is worth noting that abortion, threats of miscarriage and thoughts about abortion are important variables for the presence of depressive symptoms. Worldwide, the risk of spontaneous abortion, identified in a review study, was 15.3% among all recognized pregnancies, which could represent 23 million abortions per year. Its consequences can have physical and psychological consequences, such as depression and suicide.[23]

A review study on unsafe abortion in the country found, among other aspects, that this type of procedure is still common, especially in less developed regions and among more socially vulnerable women. Furthermore, mental disorders common during pregnancy and postpartum depression are more common in women who have unsuccessfully attempted to induce an abortion.[24]

In the present study, prevalence of depressive symptoms in the third trimester of pregnancy was not associated with early weaning, which supports the results of a population study carried out in the United States with 95,820 American mothers.[25] However, a systematic review that included 38 studies from 20 countries, published between 1988 and 2018, found that more than half of them (63%) identified a negative association between depressive symptoms during the perinatal period and a shorter period of EBF, leading the authors to conclude that pre-gestational depression or depressive symptoms during pregnancy significantly influence BF, showing an association with early interruption of EBF.[11]

Furthermore, studies indicate that the presence of depressive symptoms during pregnancy may be associated with postpartum depression, which in turn is associated with NBs' feeding characteristics. A prospective cohort study carried out in the city of São Paulo,

with 83 postpartum women being followed up at the BF outpatient clinic of a public institution, assessed the influence of postpartum depression on EBF. Data were collected monthly over seven months, finding that postpartum women with a cut-off point ≥ 10 points on EPDS stopped EBF, on average, ten days earlier compared to women with lower scores.[6]

The literature also points out that EBF and depression in the postpartum period may be related in a dubious way. In other words, if, on the one hand, EBF can be considered a protective factor for depression, on the other hand, the failure associated with EBF can contribute to depression during this period. This may be related to the fact that mothers create false expectations regarding BF, considering it as a natural and pleasurable action. However, faced with the difficulties that may arise during the process, they feel frustrated and guilty.[26-28]

Another aspect to be considered is a history of mental problems before pregnancy, which can increase the likelihood of premature interruption of BF. Therefore, depression diagnosis at the time of family planning and during pregnancy is essential.[8] Early diagnosis makes it possible to implement interventions in a timely manner, in order to promote women's health and well-being in the short and long term and, consequently, during pregnancy, the postpartum period and, even, in the relationship with their children.

Therefore, the importance of actions that act on the mental health of pregnant women, postpartum women and their partners is evident, through early screening, using simple and low-cost instruments, such as EPDS and investigation into the psychosocial environment of mothers and their support network.[29]

In this context, multidisciplinary monitoring developed within the scope of primary health care during the gestational period could greatly contribute to the early detection of depressive symptoms. Community health workers, for instance, given their proximity to the population, play a relevant role and emerge as an effective possibility for identifying these symptoms. They can also contribute to reducing the stigma and risks associated with depression, strengthening the promotion and prevention of women's mental health.[30]

The limitations of this study refer to the impossibility of generalizing the results, given the sample size and the criteria adopted in its composition, which did not allow the inclusion of women under 18 years old, illiterate and who received prenatal care in the private health network. Despite these deficiencies, the results found are significant and can support discussions on how to identify depressive symptoms during pregnancy and strategies to be adopted to minimize implications for maternal and child health.

Conclusion

Prevalence of depressive symptoms during pregnancy was high and was associated with not working outside the home, not being happy with the pregnancy and idealizing abortion. The early identification of these factors can contribute to implementing interventions that result in better outcomes for women during pregnancy and postpartum. It is noteworthy that no association was observed between depressive symptoms and EBF duration. These findings reinforce that, in order to promote maternal health in a comprehensive way, it is necessary to provide care that considers, in addition to pregnant women's biological aspects, also their social and economic conditions and available support network.

Collaborations

Nunes MSA, Ichisato SMT, Silva BSM, Santos LM, Rossa R, Takemoto AY, Toso BRGO and Marcon SS contributed to study design, data analysis and interpretation, article writing, critical review of relevant intellectual content and approval of the final version to be published.

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