Depression during pregnancy in the Brazilian public health care system

Depressão durante a gravidez no sistema público de saúde brasileiro

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Abstract

Objective: To estimate the prevalence of depression and correlate clinical and demographic characteristics in pregnant women assisted by the public health system in the city of Pelotas, RS, Brazil. **Method:** We performed a cross-sectional study focused on pregnant women assisted by the public health service. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for depression. **Results:** In a sample of 1,264 pregnant women aged 12-46 years, 21.1% (n = 255) presented a depressive episode during pregnancy. The presence of depression was associated with older age, lower education, lack of a cohabiting partner, not being primiparous, planned pregnancy, abortion thoughts, psychological or psychiatric treatment, smoking and alcohol consumption during pregnancy, and stressful events. **Conclusion:** Pregnant women assisted by the Brazilian public health system presented a high prevalence of depression. Psychiatric history, lack of support, and stressful events increase the probability of antenatal depression.

Descriptors: Depression; Pregnancy; Health systems; Probability; Public health

Resumo

Objetivo: *Estimar a prevalência de depressão, bem como fatores clínicos e características demográficas associados em grávidas assistidas por meio do sistema público de saúde da cidade de Pelotas, RS, Brasil.* ***Método:*** *Foi realizado um estudo transversal tendo como população-alvo as grávidas assistidas pelo sistema público de saúde. Para o rastreio da depressão foi utilizada a* Edinburgh Postnatal Depression Scale. ***Resultados:*** *Em uma amostra de 1.264 mulheres grávidas com idade de 12 a 46 anos, 21,1% (n = 255) apresentaram episodio depressivo durante a gravidez. A presença de depressão foi associada com ter mais idade, menor grau educacional, não morar com companheiro, não ser primigesta, ter planejado a gestação, idealizar o aborto, ter feito tratamento psicológico ou psiquiátrico, consumir tabaco e/ou álcool durante a gravidez e ter sofrido algum evento estressor.* ***Conclusão:*** *As mulheres grávidas acompanhadas pelo sistema público de saúde apresentaram alta prevalência de depressão. História psiquiátrica, baixo suporte e eventos estressores aumentam a probabilidade de depressão no período pré-parto.*

Descritores: *Depressão; Gravidez; Sistema de saúde; Probabilidade; Saúde pública*

Introduction

Pregnancy is a period in the life of a woman that requires special attention. It involves physical, hormonal, psychological, and social alterations that can have a direct effect on the woman's overall condition.[1] Studies have reported the risks of not identifying and treating depression during pregnancy. In addition to affecting the psychological health, depressive symptoms during pregnancy are also associated with increased obstetric risk.[2-4] Maternal depression during pregnancy has been found to predict low birth weight[5,6] and postpartum depression.[7-10] The early detection of symptoms can facilitate the timely treatment and prevent the deterioration of the condition.

The scientific literature is vast and comprehensive in relation to the causes of major depression in the general population. However, the evidence on specific predictors of depression in women during the pre and postnatal periods is scarce. In Brazil, this is the first study aimed at furthering the understanding of depression in a significant sample of pregnant women.

Considering the possible adverse effects of depression in pregnant women, there is a need for information on the prevalence of antenatal depression and the factors associated with it. This study was aimed at estimating the prevalence of depression correlated characteristics in pregnant women

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assisted by the public health system in the city of Pelotas, RS, Brazil.

Method

This is a cross-sectional study focused on pregnant women assisted by the public health system in the city of Pelotas-RS, Brazil. Pregnant women who did not live in the urban area and who were unable to understand or to complete the questionnaire were excluded from the study. Pelotas has approximately 350,000 inhabitants and more than 96% of them live in the urban area.

We contacted potential participants who were enrolled in the Brazilian National System of Public Health (SIS – Pré-Natal) as well as in two services that are not part of that system. These data cover the prenatal assistance in 38 Basic Health Units, representing the whole of the public assistance within the urban area of Pelotas, which is responsible for delivering assistance to 51% of all pregnant women in the city.[11] Between 2006 and 2008, candidate participants were informed about and invited to take part in the study. Only pregnant women who signed the informed consent to participate were enrolled. Pregnant women presenting with depression were referred to psychiatric treatment. The research protocol was approved by the ethics committee of the Universidade Católica de Pelotas.

A prenatal information questionnaire was used for data collection, containing standardized questions about maternal age, education, marital status, pregnancy planning, abortion thoughts, alcohol consumption (CAGE)[12] and others. Socioeconomic status was defined using the criteria of the *Associação Brasileira de Empresas de Pesquisa* (ABEP), which determines the socioeconomic status according to a comfort index.[13]

Depression in pregnancy was screened with the Edinburgh Postnatal Depression Scale (EPDS), a self-rated scale composed of 10 topics with scores ranging from 0 to 3 to describe the presence or intensity of depressive symptoms. The questions refer to depressive and dysphoric mood, sleep disorders, loss of pleasure, thoughts of death or suicide, reduction of performance, and guilt. The scale has been validated to assess the prevalence of depression with a 60% positive predictive value for the cutoff point of 13 (59.5% sensitivity; 88.4% specificity).[14]

To ensure data integrity, the EpiInfo 6.04d software[15] was used to customize the input of data and to automatically validate their amplitude and consistency. Statistical analyses were carried out using the Stata 9 software.[16]

After obtaining the simple frequencies of all variables, a gross analysis was performed using the chi-square test. In the adjusted analysis, Poisson regression was used to evaluate the prevalence ratio of the independent variables associated with the outcome (depression), because depression prevalence was higher than 10%.[17] Since the etiology of depression is not well established and many explanatory factors can be involved, the independent variables were stratified into three hierarchical levels for the multivariate analysis.[18] The first level included sociodemographic variables; the second included obstetric variables, substance use during pregnancy, and a history of psychological or psychiatric treatment; and the third level referred to experiences of stressful events in the previous year.

All the variables with p-values < 0.2 in the gross analysis were included in the adjusted analysis. The model of analysis used was adjusted to check for effects remaining between variables in order to ensure that, after adjusting for the first level, variables that did not keep p-values < 0.2 were not included in the analysis of the second hierarchical level. The same procedure was carried out for the variables of the second level in order to set the third hierarchical level. After the adjusted analysis, the statistical significance was consistently evaluated using the level of 0.05 (two-tailed) as indicative of statistical significance.

Results

A total of 1,340 pregnant women were identified. Seventy-six (6%) refused to take part or were excluded from the study. Overall, 1,264 women were enrolled, out of which 268 (21.2%) were diagnosed with depressive disorder (EPDS ≥ 13) during pregnancy.

The mean age of participants was 25 years old (SD=6.5) and the mean gestational age was 27.7 weeks (SD=9.4). With regard to the other variables, 42.4% had not finished elementary school, 73.7% were married or lived with a partner, 53.6% belonged to the medium socioeconomic class, and 69% were not working. Moreover, 56.5% of the participants were primiparous, 58.8% had planned the pregnancy, 8.4% had considered an abortion, 84.2% were not in therapy with a psychologist or a psychiatrist, 19.1% were smokers, 8.2% consumed alcohol, and 61.3% had suffered stressful events in the previous year (Table 1).

In the gross analysis, the associations between pregnancy and depression were related to older age ($p > 0.05$), lower education ($p < 0.001$), marital status [no cohabiting partner ($p < 0.001$)], lower socioeconomic status ($p < 0.001$), not being at work ($p < 0.05$), more than one pregnancy ($p < 0.001$), planned pregnancy ($p < 0.001$), thoughts of abortion ($p < 0.001$), being in therapy with a psychologist or a psychiatrist ($p < 0.001$), smoking ($p < 0.001$), alcohol consumption during pregnancy, and stressful events ($p < 0.001$).

Table 2 shows the Poisson regression in which all variables except socioeconomic and work status were associated with depression.

Discussion

This is the first study to investigate a population of pregnant women assisted by the public health system in a Brazilian city; therefore, it can bring an important contribution to the understanding of the depressive phenomenon during pregnancy.

The prevalence of depression found was high (21.2%) for pregnant population. It was also higher than the prevalence rates reported in two review papers published in 2004 and 2005 (6.5% and 12.9%).[19,20] However, the presently found rate was similar to the 20.5% prevalence found in a Thai study using the same methods[21] and lower than the one observed in a study carried out in Brazil using the same methods, with low income women in a small hospital sample (37.9%).[22]

The relevance of these results lies in that antenatal depression is

Table 1 – Factors correlated with the prevalence of depression during pregnancy

Variable	Participants N (%)	EPDS ≥ 13 N (%)	Gross analysis PR (95% CI)	p-value
Age				0.095*
12 to 18 years old	232 (18.6)	43 (18.5)	1.00	
19 to 34 years old	912 (71.5)	193 (21.2)	1.14 (0.85; 1.54)	
35 to 45 years old	120 (9.9)	32 (26.7)	1.44 (0.96; 2.15)	
Education				< 0.001*
Incomplete elementary school	539 (42.4)	147 (27.3)	2.21 (1.63; 3.00)	
Complete elementary school or incomplete high school	341 (27.2)	72 (21.1)	1.71 (1.22; 2.40)	
Complete high school or undergraduation	373 (30.4)	46 (12.3)	1.00	
Socioeconomic status				0.001*
High (A + B)	123 (9.8)	16 (13.0)	1.00	
Medium (C)	674 (53.6)	133 (19.7)	1.51 (93.7; 2.46)	
Low (D + E)	461 (36.6)	118 (25.6)	1.97 (1.21; 3.19)	
Cohabiting partner				0.001
No	338 (26.3)	93 (27.5)	1.47 (1.18; 1.83)	
Yes	925 (73.7)	173 (18.7)	1.00	
Work				0.031
No	871 (69.0)	199 (22.8)	1.32 (1.03; 1.70)	
Yes	381 (31.0)	66 (17.3)	1.00	
Pregnancy period				0.880*
Up to 14 weeks	146 (12.6)	25 (17.1)	1.00	
From 15 to 28 weeks	380 (32.7)	93 (24.5)	1.43 (0.96; 2.13)	
29 or more weeks	694 (54.7)	139 (20.0)	1.17 (0.79; 1.72)	
First pregnancy				< 0.001
No	711 (56.5)	189 (26.6)	1.85 (1.46; 2.35)	
Yes	544 (43.5)	78 (14.3)	1.00	
Planned pregnancy				< 0.001
No	528 (42.2)	78 (14.8)	1.00	
Yes	733 (58.8)	190 (25.9)	1.75 (1.38; 2.23)	
Abortion thoughts				< 0.001
No	1141 (90.6)	207 (18.1)	1.00	
Yes	119 (9.4)	60 (50.4)	2.78 (2.24; 3.45)	
Psychological or psychiatric treatment				0.000*
Never	1008 (5.3)	169 (16.8)	1.00	
Yes, in the past	219 (78.9)	83 (37.9)	2.26 (1.82; 2.81)	
Yes, in the present	20 (15.8)	12 (60.0)	3.58 (2.44; 5.25)	
Cigarette consumption during pregnancy				< 0.001
No	1019 (80.9)	179 (17.6)	1.00	
Yes	244 (19.1)	88 (36.1)	2.05 (1.66; 2.54)	
Alcohol consumption during pregnancy (CAGE ≥ 1)				< 0.001
No	1105 (91.8)	220 (19.9)	1.00	
Yes	99 (8.2)	35 (35.4)	1.78 (1.33; 2.38)	
Stressful events in the previous year				< 0.001
No	461 (38.7)	60 (13.0)	1.00	
Yes	718 (61.3)	190 (26.5)	2.03 (1.56; 2.65)	
Total	**1264 (100)**	**268 (21.2)**		

** p-value for linear tendency.*

the highest risk factor for postpartum depression.[10] Furthermore, when identified as a risk factor, it can be treated.

"Two relevant limitations of this study can be pointed out. The first is for possible update errors occurred in the central administration. The second limitation of this study is the presupposition that pregnant women with a severe depression would seek antenatal assistance. Unfortunately we could only minimize the first limitation. For this, the date was gathered within the Brazilian National System of Public Health and within public health services in the city of Pelotas."

In our sample, the social and demographic characteristics associated with depression during pregnancy were increased

Table 2 - Adjusted analysis for characteristics correlated with depression during pregnancy

Variable	Adjusted PR (95% CIs)	p-value
First hierarchical level		
Age		0.002*
12 to 18 years old	1.00	
19 to 34 years old	1.49 (1.10; 2.02)	
35 to 45 years old	1.82 (1.21; 2.74)	
Education		< 0.001*
Incomplete elementary school	2.08 (1.50; 2.88)	
Complete elementary school or incomplete High School	1.69 (1.19; 2.38)	
Complete high school or undergraduation	1.00	
Socioeconomic status		0.406*
High (A + B)	1.00	
Medium (C)	1.20 (0.74; 1.94)	
Low (D + E)	1.26 (0.77; 2.07)	
Cohabiting partner		< 0.001
No	1.50 (1.20; 1.87)	
Yes	1.00	
Work		0.227
No	1.18 (0.91; 1.53)	
Yes	1.00	
Second hierarchical level		
First pregnancy		0.016
No	1.42 (1.07; 1.89)	
Yes	1.00	
Planned pregnancy		0.003
No	1.00	
Yes	1.47 (1.14; 1.90)	
Abortion thoughts		< 0.001
No	1.00	
Yes	1.70 (1.34; 2.16)	
Psychological or psychiatric treatment		< 0.001*
Never	1.00	
Yes, in the past	1.99 (1.60; 2.48)	
Yes, in the present	2.63 (1.79; 3.87)	
Cigarette consumption during pregnancy		< 0.001
No	1.00	
Yes	1.53 (1.22; 1.91)	
Alcohol consumption during pregnancy (CAGE ≥ 1)		0.021
No	1.00	
Yes	1.35 (1.05; 1.75)	
Third hierarchical level		
Stressful events in the previous year		< 0.001
No	1.00	
Yes	1.69 (1.29; 2.21)	

** p-value for linear tendency.*

maternal age, lower education, and marital status. In regard to maternal age, our results differ from earlier evidence correlating youth and depression.[23] The lower prevalence of depression among younger women was similar to the rate found in an American study.[24] The absence of a spouse or domestic partner has been described as a risk factor for depression before[7,23,25] and is probably related to the lack of emotional and social support that can be provided by the presence of a companion.

In respect to the characteristics of pregnancy, women who had had a previous pregnancy, who planned the pregnancy, who considered having an abortion, and who suffered any stressful events during pregnancy had a greater probability of presenting a depressive episode in the antenatal period. In our study, women who thought about having an abortion were more likely to have depression, in consonance with the results of a Japanese multicenter study.[26] It remains to be cleared out whether such negative attitudes toward pregnancy can lead to depression or if pre-existing depressive features are the cause of these attitudes. Thoughts about having an abortion have already been suggested to be related to postpartum depression in one of our studies.[27]

The association between having planned the pregnancy and depression was an unexpected finding. We believe this can be a consequence of the expectations related to motherhood and of the intrinsic fears experienced during pregnancy. However, this is an inconclusive finding, since the predictive value could not be evaluated.

Studies indicate that the fact of having undergone psychological and/or psychiatric treatment at some point in the past can be a risk factor for depression during and after pregnancy.[10] At the same time that previous treatment may suggest that a group of pregnant women were properly assisted in terms of mental health care, it might also indicate that pregnancy can trigger recurrent depressive episodes. This finding underscores the necessity for health teams to have adequate instruments to correctly evaluate the occurrence of depressive episodes in the antenatal period and to provide adequate assistance in such cases.

Our results suggest that there is an association between cigarette use or dependence and depression during pregnancy. There is little evidence from previous studies in this regard.[28] This finding indicates that, although pregnant women may feel concerned about the negative consequences of tobacco consumption over the development of the embryo and the offspring, many of them do not quit using tobacco during pregnancy, possibly because nicotine can help to deal with some psychiatric symptoms. In this regard, it is important that health professionals can clarify the risks of nicotine use related to psychiatric disorders. It is also important to offer treatment alternatives to nicotine dependence, as well as to the associated psychiatric disorders.

The significant association between stressful events and depression found in this as well as in other studies performed in different countries is a clear indication that life events may cause depression.[7-25] Accordingly, health teams should try to identify

pregnant women exposed to such events and to devise strategies for evaluation and assistance.

Pregnant women assisted by the Brazilian public health system have a high prevalence of depression. The evidence related to the harms and negative consequences of antenatal depression available in the scientific literature suggests that the application of brief instruments to screen for severe depressive symptoms, such as the EPDS, the Beck depression Inventory (BDI), and the Hamilton Scale for women during prenatal assistance could be highly beneficial.

In conclusion, it can be stated that multiparous women at a higher age, with low education, not living with a spouse or domestic partner, who have planned their pregnancy, who have thought about an abortion, with a history of psychological and/or psychiatric treatment, and reporting the use of tobacco or alcohol or the experience of stressful events in the previous year should be evaluated for depression. Once significant depressive symptoms are identified, attention on the part of a mental health professional in close contact with the professionals responsible for the prenatal assistance is desirable.

Disclosures

Writing group member	Employment	Research grant[1]	Other research grant or medical continuous education[2]	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other[3]
Ricardo Azevedo da Silva	UCPel	-	-	-	-	-	-
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Luciano Dias de Mattos Souza	UCPel	-	-	-	-	-	-
Inácia Gomes da Silva Moraes	UCPel	-	-	-	-	-	-
Elaine Tomasi	UCPel	-	-	-	-	-	-
Giovanna Del Grande da Silva	UCPel	-	-	-	-	-	-
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Ricardo Tavares Pinheiro	UCPel	-	-	-	-	-	-

** Modest*
*** Significant*
**** Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.*
Note: UCPel = Universidade Católica de Pelotas.
For more information, see Instructions for authors.

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