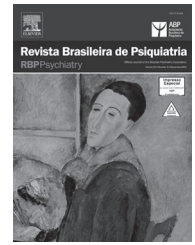




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ORIGINAL ARTICLE

## Prevalence of suicide risk and comorbidities in postpartum women in Pelotas

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### DESCRIPTORS

Postpartum Depression;  
Suicide Risk;  
Maternal Depression;  
Anxiety Disorders;  
Woman.

### Abstract

**Objectives:** To evaluate the prevalence of suicide risk and comorbidities in postpartum women. **Methods:** This is a cross-sectional study of postpartum women. The sample comprised mothers who have received prenatal care from the Brazilian National System of Public Health in the city of Pelotas. Suicide risk and other mental disorders were evaluated using the Mini International Neuropsychiatric Interview (MINI). A yes answer on one of the six interview questions was considered a sign of suicide risk. **Results:** The sample consisted of 919 postpartum women. The 11.5% suicide prevalence was 4.62 (CI 2.45, 8.73) times higher in women with low educational levels. Women with comorbid depression or an anxiety disorder showed a 17.04 (CI 2.27; 19.96) times greater risk of suicide than those who did not suffer from any mood disorder. **Conclusion:** Lower education levels and psychiatric disorders are associated with suicide risk. Bipolar disorder is the psychiatric disorder with the highest impact on suicide risk.

**DESCRITORES:**

Depressão pós-parto;  
Risco de suicídio;  
Depressão maternal;  
Transtornos de  
ansiedade;  
Mulher.

**Prevalência do risco de suicídio e de comorbidades em mulheres pós-parto em Pelotas****Resumo**

**Objetivos:** Avaliar a prevalência do risco de suicídio e de comorbidades em mulheres pós-parto. **Métodos:** Este foi um estudo em corte transversal com mulheres pós-parto. A amostra foi constituída de mães que receberam cuidados pré-natais prestados pelo Sistema Nacional de Saúde Pública do Brasil na cidade de Pelotas. O risco de suicídio e outros transtornos mentais foram avaliados pela *Mini International Neuropsychiatric Interview* (MINI). Uma resposta afirmativa a qualquer das seis perguntas é considerada um risco de suicídio. **Resultados:** A amostra consistiu de 919 mulheres pós-parto. A prevalência do risco de suicídio foi de 11,5%. Ela foi 4,62 vezes mais alta (IC de 95% 2,45; 8,73) em mulheres de baixo nível educacional. Mulheres apresentando qualquer comorbidade para depressão e transtornos ansiosos tiveram uma chance 17,04 vezes maior (IC 95% 2,27; 19,96) àquelas que não apresentaram nenhum transtorno afetivo. **Conclusão:** Um nível educacional mais baixo e a presença de um transtorno psiquiátrico se associam ao risco de suicídio. O transtorno bipolar é o diagnóstico psiquiátrico com maior impacto sobre o risco de suicídio.

**Introduction**

In 2008, according to the World Health Organization (WHO), there were 9,206 suicide deaths in Brazil, which corresponds to 22 deaths per day. The suicide incidence is on average 4.8 deaths per 100,000 inhabitants. Compared with other countries, the suicide rate in Brazil is low; however, the absolute number is high because of its large population.<sup>1</sup> Rio Grande do Sul is the Brazilian state with the highest suicide incidence (mean = 10.2 suicide deaths/100,000 inhabitants).<sup>2</sup> This rate has motivated scientists from different research areas, such as the social and health sciences, to examine ethnicity, culture, social crises and even regional climate as potential factors that may affect this problem.<sup>2,3</sup>

There are difficulties in assessing suicide risks, particularly the lack of uniformity in classifying the features of this behavior. Suicidality involves both suicidal ideation and suicidal behaviors. Suicidal ideation includes the thoughts and feelings that are often associated with suicidal behavior (e.g., developing a suicide plan, preoccupation with thoughts of death, etc.). Suicidal behavior involves the deliberate attempt to take one's own life.<sup>4</sup> Most suicidal individuals have at least one psychiatric disorder, and 20% to 30% have made a previous suicide attempt.<sup>5</sup>

The onset of mental disorders is associated with stressful life events.<sup>6</sup> Significant changes such as the birth of a child may be related to the brain's stress response and can cause postpartum depression (PPD).<sup>6</sup> PPD is a common complication of childbearing, and has increasingly been identified as a major public health problem. The prevalence of PPD ranges from 10% to 20% according to most studies.<sup>7-11</sup>

Depressed mothers often have suicidal ideation<sup>12</sup> and although suicide rates associated with postpartum depression (PPD) are lower than the rates in the non-childbearing population, suicide is responsible for 28% of all female deaths during the first postpartum year. In addition, suicide is considered one of the three major factors in maternal mortality rates.<sup>13-16</sup> Studies of maternal deaths in Australia (1994-2002)

have suggested that maternal psychiatric illness was a leading cause of maternal death; the majority of suicides occurred violently.<sup>17</sup> The Office for National Statistics (ONS), a record linkage study in the U.K. identified over 40 additional maternal deaths in the triennium from 1997 to 1999 from suicide or violent causes; this discovery made suicide the leading cause of indirect maternal deaths after these cases were added to the National Institute for Health and Clinical Excellence (NICE) report statistics.<sup>15,18</sup> A similar finding was also found in a Finnish linkage study of maternal deaths, which reported 73 suicides associated with pregnancy between the years 1987 and 1994.<sup>19</sup> In Denmark, between 1985 and 1994, 35.5% of the maternal deaths were suicides.<sup>20</sup> In Brazil, 5.7% of the population is at high risk for suicide.<sup>21</sup>

A well-established risk factor for suicidal behavior is the presence of mental disorders, particularly mood disorders,<sup>3,4</sup> However, it is also important to investigate anxiety disorders.<sup>22</sup> One previous study has emphasized the importance of comorbid anxiety disorders and symptoms in increasing the suicide risk in depressed patients.<sup>23</sup> Although there has been significant interest in whether anxiety disorders are risk factors for suicidal behavior, it remains a controversial topic. One study has shown that 37.7% with major depressive episodes also had a comorbid anxiety disorder.<sup>24</sup>

Mental disorders occurring in the postpartum period could have serious consequences and, if not treated early, can even affect the quality of child care. Mental disorders can also lead to cognition and behavior disorders, poor social interaction and impaired physical development in the first year of a child's life.<sup>25</sup>

The objective of this study was to verify the prevalence of suicide risk and comorbidities in postpartum women. We hypothesized that the comorbidity between mood disorders and anxiety disorders increases the suicide risk.

**Method**

This was a cross-sectional study of women whose children were born in the period from July 2007 to March 2008 in maternity wards in the city of Pelotas. The mothers received

prenatal care provided by the Brazilian National System of Public Health. The assessment was performed out within a 30 to 90-day postpartum period.

Suicide risk and other mental disorders were assessed using the Mini International Neuropsychiatric Interview (MINI). MINI is a short structured interview with adequate validity and reliability.<sup>26</sup> The suicidality module inquires about several components of suicide risk (suicidal thinking and/ or suicidal attempts) and comprised the following questions. Over the last month, 1) Have you wished you were dead?; 2) Have you wanted to harm yourself?; 3) Have you thought of committing suicide?; 4) Have you planned how to commit suicide?; 5) Have you attempted suicide? and 6) Have you ever attempted suicide? The MINI assesses the suicide risk according to the criteria outlined in the DSM-IV; therefore, a "yes" answer on one of the six answered questions is considered a suicide risk.<sup>27</sup>

In addition to the diagnostic interview, each woman answered a questionnaire regarding her socioeconomic status, schooling, social support, stressful events during pregnancy, smoking, alcohol use and delivery. We used the Brazilian Association of Research Companies (ABEP) classification to assess the socioeconomic status of each family. This classification is based on the material wealth and education level of the head of household. The women were regrouped into high (A1, A2, and B1), medium (B2, C1, and C2) and low (D and E) socioeconomic levels.<sup>28</sup>

The data were double-typed in the EpiInfo 6,04d software and analyzed with the statistical software SPSS 10.0 and Stata 9. A Chi-square test was used to compare proportions. Because the etiology of suicide risk is not well established, and many explanatory factors can be involved, the independent variables were stratified into two hierarchical levels for the multivariate analysis. The first level comprised the sociodemographic variables (age, education level, socioeconomic status and living with a partner) and the second level involved reproductive and behavioral variables (abortion, social support, stressful events in pregnancy, alcohol abuse, smoking and comorbidities). We used a Poisson regression model to control for possible confounding factors. The variables with  $p$ -values  $< 0.2$  in the gross analysis were included in the adjusted analysis. The analysis model was adjusted to obtain the remaining effects between the variables to ensure that after adjusting for the first level, the variables with  $p$ -values  $< 0.2$  were not included in the second hierarchical analysis. After the adjusted analysis, statistical significance was consistently evaluated using the level of 0.05 (two-tailed) to indicate statistical significance.<sup>29</sup>

All of the subjects provided written informed consent for the analysis and the anonymous publication of the research findings. The study was approved by the Ethics Research Committee of the Universidade Católica de Pelotas, in accordance with existing regulations (CONEP-Res196/96).

## Results

A total of 1,053 pregnant women were identified. However, 12.7% ( $N = 134$ ) were not found or refused participation in the study. Therefore, 919 postpartum women were enrolled in the study. We found an 11.5% prevalence of suicide risk in the postpartum period. Our sample had the following demographics: predominantly middle class (54.5%), aged 20 to 34 years (69.9%) and low education levels (43.5%). Additionally, 74% had partners; 9% had considered abortion; 88.5% had

social support; 26.8% suffered one stressful pregnancy-related event; 6.8% were alcoholics; and 23.3% smoked (Table 1). The raw analysis showed a significant difference in the suicide risk according to schooling, living with a partner, considering abortion, social support, stressful events, smoking and comorbidity for depression and anxiety disorder ( $p > 0.05$ ). After adjusting for possible confounding variables first level = education level and living with a partner; second level = thought about abortion, social support, stressful events in pregnancy, alcohol abuse, currently smoking and comorbidities), the suicide risk remained associated with education level ( $p < 0.001$ ) and comorbidity for depression and anxiety ( $p = 0,001$ ). The mothers who had not finished elementary school showed a 4.62 [95% confidence interval (CI), 2.45, 8.73] chance of showing signs of suicide risk when compared to the ones who had finished high school. The women with comorbidities of depression and an anxiety disorder showed a 17.04 (CI 2.27; 19.96) times higher risk for suicide than those who did not suffer from any mood disorder.

Table 2 shows the association between suicide risk and psychiatry disorders in postpartum women. Depressive episodes, hypo(manic) and mixed episodes, panic disorders, social phobia, generalized anxiety disorder (GAD), obsessive compulsive disorder (OCD), and posttraumatic stress disorder (PTSD) were associated with suicide risk ( $p \leq 0.001$ ). The number of anxiety disorders was also associated with suicide risk. The mothers who experienced depressive episodes showed a 12.57 (6.99, 22.59) times greater risk for presenting with suicidal signs. The women who had hypomanic episodes were 7.01 (3.54, 13.88) times more likely to show signs of suicide risk compared to those without hypomanic episodes. The women with mixed episodes showed a 38.67 (19.52, 76.57) times greater risk than those who did not suffer from mixed episodes. The suicide risk was 5.42 (3.73, 7.89) times greater in mothers who were diagnosed with panic disorder compared with those who did not present with such an episode during the postpartum period and 4.56 (3.11, 6.70) times greater in the mothers who had social phobia compared with those. The prevalence of suicide risk was 4.32 (3.08, 6.07) times greater in women who suffered from a GAD compared with those who did not. The mothers who had OCD were 3.96 (2.65, 5.93) times more likely to show signs of suicide risk and women with PTSD had a 5.49 (3.80, 7.94) times greater risk of showing suicidal signs compared with those who did not have PTSD. We found that women who had two or more anxiety disorders were 12.34 (7.12, 21.39) times more likely to show suicidal signs.

## Discussion

The prevalence of suicide risk in postpartum women was 11.5%. The main factors associated with the suicide risk were low schooling and psychiatric disorders. Moreover, mixed episodes were highly associated with suicide risk. Other studies have confirmed that mixed episodes increased the risk for suicide.<sup>5,30,31</sup> A study of postpartum women found an 11.1% prevalence suicide risk,<sup>21</sup> which corroborated our results. Botega et al. found a lifetime prevalence of 17.1% for suicidal ideation in the Brazilian population.<sup>32</sup>

This study showed an disorders and suicide risk in the postpartum period. Ninety percent of people who commit suicide also have a comorbid mental disorder.<sup>33</sup> Research indicates that mood disorders are related to suicide outcomes.<sup>34</sup> A

**Table 1** Distribution, prevalence rates (PR) and association test (p-value) in the sample sociodemographic characteristics and suicide risks

Variables	N (%)	Suicide risk prevalence	Crude PR (CI 95%)	p-value	Adjusted PR (CI 95%)	p-value
<i>First hierarchical level</i>						
<b>Age</b>				0.329		
13 to 19 years	181 (20.0)	13.8	1.92 (0.80; 4.63)			
20 to 34 years	633 (69.9)	11.4	1.54 (0.69; 3.46)			
35 to 45 years	91 (10.1)	7.7	1.00			
<b>Schooling *</b>				< 0.001		< 0.001
Incomplete Elementary School	386 (43.5)	17.1	4.62 (2.45; 8.73)		4.62 (2.45; 8.73)	
Incomplete High School	221 (24.9)	10.0	2.48 (1.19; 5.13)		2.48 (1.19; 5.13)	
Complete High School	281 (31.6)	4.3	1.00		1.00	
<b>Socioeconomic status</b>				0.554		
A + B	98 (10.9)	9.2	1.00			
C	492 (54.5)	11.0	1.22 (0.58; 2.56)			
D + E	312 (34.6)	52.4	1.45 (0.68; 3.12)			
<b>Living with a partner *</b>				< 0.001		0.096
No	235 (25.9)	18.7	2.35 (1.47; 3.75)		1.68 (0.91; 3.10)	
Yes	674 (74.1)	8.9	1.00		1.00	
<i>Second Hierarchical Level</i>						
<b>Considered abortion *</b>				<0.001		
No	828 (91.0)	9.1	1.00		1.00	0.213
Yes	82 (9.0)	27.9	5.49 (3.29; 9.16)		1.61 (0.76; 3.39)	
<b>Social support *</b>				0.030		0.701
No	101 (11.5)	17.8	1.86 (1.06; 3.25)		1.17 (0.53; 2.56)	
Yes (family and friends)	776 (88.5)	10.4	1.00		1.00	
<b>Stressful events in pregnancy*</b>				<0.001		0.155
None	393 (44.7)	6.1	1.00		1.00	
One stressful event	250 (28.4)	9.2	1.56 (0.86 ; 2.82)		1.60 (0.72; 3.59)	
Two or more events	236 (26.8)	21.2	4.13 (2.46; 6.94)		2.04 (0.99; 4.20)	
<i>Second Hierarchical Level</i>						
<b>Alcohol Abuse*</b>				0.156		0.540
No	699 (93.2)	11.0	1.00		1.00	
Yes	51 (6.8)	17.6	1.73 (0.81; 3.69)		1.39 (0.48; 4.01)	
<b>Currently smoking*</b>				0.002		0.663
Has never smoked	481 (53.9)	8.7	1.00		1.00	
No. Has smoked in the past	203 (22.8)	11.3	1.34 (0.78; 2.28)		1.40 (0.67; 2.92)	
Yes	208 (23.3)	18.3	2.34 (1.46; 3.75)		1.20 (0.61; 2.36)	
<b>Comorbidities*</b>				<0.001		<0.001
None	637 (74.2)	24 (3.6)	1.00			
Anxiety Disorders	46 (5.1)	6 (13.0)	4.06 (1.57; 10.49)		6.73 (2.27; 19.96)	
Mood Disorders	73 (8.0)	26 (35.6)	14.96 (7.98;28.06)		16.28 (7.10; 37.35)	
Anxiety and mood disorders	115 (12.7)	47 (40.9)	18.69 (10.77; 32.45)		17.04 (7.98; 36.37)	
*Variables used in the adjustment						

**Table 2** Psychiatric disorders and suicide risks

Variables	N (%)	Suicide risk N (%)	PR (CI 95%)	p-value
<b>Mood Disorders</b>				< 0.001
None	727 (79.3)	31 (4.3)	1.00	
Hypo (Manic) Episodes	63 (6.8)	15 (23.8)	7.01 (3.54; 13.88)	
Depression	78 (8.5)	28 (35.9)	12.57 (6.99; 22.59)	
Mixed Episodes	49 (5.3)	31 (63.3)	38.67 (19.52; 76.57)	
<b>Anxiety Disorders</b>				
Panic Disorder				< 0.001
No	880 (96.6)	89 (10.1)	1.00	
Yes	31 (3.4)	17 (54.8)	5.42 (3.73;7.89)	
Social Phobia				< 0.001
No	837 (95.1)	85 (9.7)	1.00	
Yes	45 (4.9)	20 (44.4)	4.56 (3.11; 6.70)	
Generalized Anxiety Disorder				< 0.001
No	806 (87.7)	66 (8.2)	1.00	
Yes	113 (3.6)	40 (35.4)	4.32 (3.08; 6.07)	
Obsessive-compulsive Disorder				< 0.001
No	871 (94.8)	87 (10.0)	1.00	
Yes	48 (5.2)	19 (39.6)	3.96 (2.65;5.93)	
Posttraumatic Stress Disorder				< 0.001
No	886 (96.4)	88 (9.9)	1.00	
Yes	33 (3.6)	18 (54.5)	5.49 (3.80;7.94)	
Number of Anxiety Disorders				< 0.001
None	752 (82.6)	52 (6.9)	1.00	
One	89 (9.8)	20 (22.5)	3.90 (2.20; 6.91)	
Two or more	69 (7.6)	33 (47.8)	12.34 (7.12; 21.39)	

Brazilian study found a 71.9% prevalence of comorbid mental disorders in patients who had a previous suicide attempt.<sup>35</sup> The psychiatric problems most consistently linked to suicidality are mood and anxiety disorders.<sup>36</sup>

Our data are in agreement with some previous studies that have suggested an association between anxiety and depressive symptoms.<sup>37,38</sup> The results showed that the comorbidities of anxiety and mood disorders had the greatest impact on suicide risk. Comorbidity is an important consideration when the risk factors for suicidal behavior are being evaluated. Psychological disorders rarely occur alone, and anxiety disorders occur more frequently with depression (a strong risk factor for suicidality) than without it.<sup>39</sup> Furthermore, studies have emphasized that anxiety symptoms, rather than diagnoses, predict suicidal behavior.<sup>40</sup>

Regarding mood disorders, a limitation of our study is that the MINI does not evaluate past depressive episodes when there are no current symptoms of depression. Thus, we cannot determine if the hypomanic episodes observed were isolated episodes.

Some studies have analyzed the relationship between anxiety disorders and suicide risk. Panic disorder has been the most investigated anxiety disorder in relation to suicide. Studies have shown that subjects with a panic disorder that was comorbid with another mood disorder were more than twice

as likely to attempt suicide.<sup>41</sup> Another finding suggested that patients with panic disorders and comorbid major depression had higher suicide risks than patients with major depression alone.<sup>42</sup> Moreover, another study showed that after controlling for comorbid disorders, posttraumatic stress disorder was the only anxiety disorder that was significantly associated with suicide attempts.<sup>43</sup>

The risk factors for suicidal behavior in OCD patients have not received significant attention compared with other anxiety disorders. Nevertheless, significantly higher rates of suicidal behavior have been reported, which suggests that 10-27% of those suffering from an OCD may attempt suicide at least once in their lifetimes.<sup>44-45</sup>

As for social phobia, some data showed that depressed patients with comorbid social phobias presented with higher suicide attempt rates than those without such phobic disorders (19% versus 4%).<sup>46</sup> We also found that women who had two or more anxiety disorders had higher suicide risks. Note that suicide risk has a complex correlation with symptom severity.<sup>47</sup>

Low maternal schooling was associated with suicide risk. In Brazil, a suicide study conducted between 1980 and 2006 found a higher suicide rate in people with low schooling.<sup>48</sup> Similarly, a case-control study found that higher levels of schooling (measured in years of study) related to lower levels of suicidal ideation.<sup>49</sup> A recent Swedish study found that

suicide risks decreased as education levels increased. The authors stated that the correlation was robust, even after excluding individuals who had been hospitalized for mental health problems or drug-related diagnoses.<sup>50</sup>

There was a 12% attrition in our study sample, most likely because of address or phone number changes. It was not possible to identify the women who were not receiving SUS care; this finding was another limitation. The women who had their prenatal care provided through health plans or in private practices and those women who did not have prenatal care because of severe mental disorders or social situations were not included in the sample. Nevertheless, this study was able to include all the health units from the city of Pelotas. In addition, the assessment instrument was a standardized clinical interview, which enhanced the precision of the results.

Another limitation of our study relates to the women's treatment. Women who were diagnosed with depressive symptoms during pregnancy were referred to the psychiatric service. In the postpartum assessment, we did not ask about the treatment, (e.g., whether they sought treatment).

These findings indicate that women may show suicidal ideation during the postpartum period and should be treated. In this period, family members, partners, doctors and other health professionals should observe the presence of negative moods and affective changes. Note that the most common symptoms include persistent prostration or fatigue, guilt feelings, sleep disturbances, suicidal thoughts, decreases in appetite, libido, and mental functioning, the presence of obsessive or overrated ideas, and the sensation of being unable to deal with new situations.<sup>11,51</sup> When these symptoms are identified, the patient should be advised to see a mental health professional for an accurate diagnosis. The recommended treatment, whenever possible, is psychotherapy, given that the anti-depressive drugs may cause undesired effects in the infant through breastfeeding.<sup>52-54</sup>

Early detection may help the postpartum mother to relate positively to the child and prevent further psychiatric disorders. Public health policies in Brazil encourage pregnant women to seek prenatal care. However, these women are assisted only physically, not psychologically. There is no planning process concerning mental health assistance during pregnancy, which is the period when women more often seek these health units. Thus, this situation presents an opportunity for health professionals to assess such the mental health of pregnant women.

The decrease in suicide rates has become an international goal in mental health care. The World Health Organization prepared a manual for health professionals on how to prevent suicide and identify suicide risk and comorbidities early.<sup>33</sup> If some disorders are identified as risk factors for suicide, proper treatment will most likely reduce suicidal risk. In summary, depression diagnosis and treatment play an important role in suicide prevention.

## Disclosures

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\* 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.

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