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The protective role of postpartum resilience on anxiety rates of Brazilian mothers during the COVID-19 pandemic

O papel protetor da resiliência pós-parto nas taxas de ansiedade de mães brasileiras durante a pandemia de COVID-19

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ABSTRACT

Objective: We evaluated the protective effect of postpartum resilience (measured before the pandemic onset) on the prevalence of moderate to severe anxiety symptoms during the coronavirus disease (COVID-19) pandemic. **Methods:** The sample included 589 mothers from a longitudinal study in southern Brazil. Three months after delivery we assessed maternal resilience through the Resilience Scale (RS). The Generalized Anxiety Disorders 7-item (GAD-7) was used to assess anxiety symptoms during the COVID-19 pandemic. **Results:** The prevalence of severe to moderate anxiety symptoms in this sample was 28.4% (95% CI: 25.0; 32.0). Resilience showed to be a protective factor against moderate to severe anxiety symptoms during the pandemic (OR: 0.98; $p < 0.001$). **Conclusions:** The results showed that postpartum resilience is a factor associated with lower odds of a more intense manifestation of anxiety during pandemic periods. Thus, strengthening resilience by reinforcing appropriate coping strategies can prevent mental health problems.

KEYWORDS

COVID-19, mental health, maternal anxiety, anxiety, resilience, psychological.

RESUMO

Objetivo: Avaliou-se o efeito protetor da resiliência pós-parto (medida antes do início da pandemia) sobre a prevalência de sintomas de ansiedade moderados a graves durante a pandemia da doença por coronavírus (COVID-19). **Métodos:** A amostra incluiu 589 mães de um estudo longitudinal do Sul do Brasil. Três meses após o parto, avaliou-se a resiliência materna por meio da *Resilience Scale* (RS). O *Generalized Anxiety Disorders 7-item* (GAD-7) foi usado para medir os sintomas de ansiedade durante a pandemia de COVID-19. **Resultados:** A prevalência de sintomas de ansiedade moderados a graves nessa amostra foi de 28,4% (IC 95%: 25,0-32,0). A resiliência mostrou-se um fator protetor para os sintomas de ansiedade moderados a graves durante a pandemia (RC: 0,98; $p < 0,001$). **Conclusões:** Os resultados revelaram que a resiliência pós-parto é um fator associado a menor chance de uma manifestação mais intensa da ansiedade durante os períodos pandêmicos. Dessa forma, fortalecer a resiliência, reforçando estratégias de enfrentamento apropriadas, pode prevenir problemas de saúde mental.

PALAVRAS-CHAVE

COVID-19, saúde mental, ansiedade materna, ansiedade, resiliência, psicológica.

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INTRODUCTION

The coronavirus disease (COVID-19) pandemic has so far caused more than 630,000,000 contamination cases worldwide, leading to more than 6,590,000 deaths until early November 2022¹. In Brazil, the impact of the pandemic has also been devastating: until the same period, more than 34,800,000 people were infected since the beginning of the pandemic and more than 680,000 people died as a result of COVID-19¹. With high transmission, strategies for combating the spread of the virus have been applied in several countries since the first half of 2020.

The confinement measures have led families with children to face greater challenges related to managing their home office and the care and activities of their children. Being a woman, living with a partner or other people, as well as having children have been considered risk factors for anxiety in this period^{2,3}. An increase in anxiety rates was observed in the Brazilian population during this period, where one study reported a 2.4-fold increase in the prevalence of anxiety among mothers⁴.

Some intrinsic factors are important to mitigate the anxiety experienced in highly anxiogenic situations, such as a pandemic. For instance, resilience is a two-dimensional “dynamic process wherein individuals display positive adaptation despite experiences of significant adversity or trauma”⁵. Based on this, resilient individuals can display adaptive behaviors in response to stressful situations, reducing the chances of developing mental disorders⁶.

Some studies revealed a direct relationship between mental health and resilience during the COVID-19 pandemic, showing that the greater the potential for resilience, the lower the scores of anxiety and stress in the general population^{7,8}. Similar results were found in a few studies with pregnant and postpartum women, as well as parents of children aged 0-18 years^{9,10}. Ultimately, resilience can mediate the impact of the pandemic on mental health^{7,8,11}, proving to be a possible ally in psychological treatment.

Considering the risk factors for anxiety found in previous studies and that national and international studies investigating the impact of postpartum resilience on the mental health of mothers during the COVID-19 pandemic are scarce, the main objective of this study was to evaluate the protective effect of resilience on anxiety symptoms during the pandemic in a sample of mothers in a city in southern Brazil. As a secondary aim, we described the prevalence of anxiety symptoms.

METHODS

Design and participants

This is a longitudinal study nested in a larger study that followed 983 women and their children since pregnancy. In 2016, 50% of the census sectors in the urban zone of the city of Pelotas (southern Brazil) was randomly drawn. All residences located in these census sectors were visited by a research team to identify pregnant women until the 24th week of pregnancy. The participants were assessed for resilience at 90 days postpartum between 2016 and 2019. At this time there was no exposure to the COVID-19 pandemic. Then, eight months after the onset of the pandemic, all mothers who agreed to participate in a telephonic assessment of their emotional state were assessed for anxiety ($N = 674$; 68.6% of the women evaluated at baseline). At this moment, the children’s ages ranged from 17 to 54 months (mean [M] = 34.28; standard deviation [SD] = 9.46; median [Mdn] = 34.00). In this study, we included only mothers that answered both anxiety and resilience instruments ($N = 589$).

Instruments

We used the Resilience Scale (RS) three months after delivery to evaluate resilience¹². This self-report scale is composed of 25 items that evaluate resilience on a 7-point scale from 1 (disagree) to 7 (agree) points. Since this scale has no validation studies for Brazilian adult mothers, we considered it a unidimensional scale, thus being included in the statistical analysis as a continuous variable. Therefore, the higher the score the greater the potential for resilience. The Cronbach’s alpha for our sample was 0.90.

Anxiety symptoms during the COVID-19 pandemic period were assessed through the Generalized Anxiety Disorders 7-item (GAD-7). This is a self-report instrument that measures the presence of anxiety symptoms in the last two weeks on a Likert scale from zero (not at all) to three (almost every day) points. We used the cut-off point of ≥ 10 points, indicating the presence of moderate to severe symptoms¹³.

We also applied a questionnaire with the following COVID-19-related variables: started working from home due to the pandemic, financial losses (got fired/had salary reduction), family income (in Reais – R\$) in the last month (in tertiles), confinement duration (time without leaving home in months), number of people that live in the house, have a family member that needs to leave home to work, maternal COVID-19 diagnosis, family member COVID-19 diagnosis,

death of family member due to COVID-19, follow all or almost all COVID-19 social distancing recommendations, and epidemiological weeks.

Ethical aspects

All procedures performed in our study were in accordance with the ethical standards of the Helsinki Declaration and its later amendments. The Research Ethics Committee of the Catholic University of Pelotas approved this project under protocol no. 47807915.4.0000.5339. The Free and Informed Consent Form was read to all participants who gave their verbal consent.

Statistical analysis

We calculated descriptive statistics through simple and relative frequencies for categorical variables and mean and standard deviation for numerical variables. We used the Chi-square test to compare proportions. The distribution of the numeric variable was tested through the Kolmogorov-Smirnov test. After verifying that it did not follow a normal distribution, we used the t-test for independent samples with a bootstrapping procedure (1000 resampling and bias-corrected and accelerated [BCa] bootstrap 95% interval) to correct distribution deviations. All variables that presented a p -value < 0.20 in bivariate analysis were conducted to multiple logistic regression. All analyses were performed using the IBM SPSS 23.0 software. We considered statistically significant the results that presented a p -value < 0.05 .

RESULTS

Of the participants, 28.4% (95% CI 25.0; 32.2) had anxiety symptoms considered moderate to severe during the COVID-19 pandemic. Sample characteristics are presented in Table 1.

We conducted a post-hoc sample power analysis to verify the statistical power of our sample. Considering a 95% confidence interval and the mean differences of resilience among mothers who presented and did not present moderate to severe anxiety symptoms, we found a statistical power of 99.7% in our sample.

Concerning COVID-19-related variables, none of them presented an association with anxiety symptoms ($p > 0.05$).

The total mean of resilience was 142.8 (SD 20.8). Mothers with no anxiety symptoms presented higher scores of resilience (145.39, SD 19.47) than mothers with anxiety symptoms (136.10, SD 22.61) ($p < 0.001$; $M_{diff} = 9.29$; BCa 95% CI: 5.38; 13.52) (Figure 1).

After adjusting for COVID-19-related variables (financial losses, family income in the last month, living with a partner, having a family member that needs to leave home to work, and death of a family member) only resilience was associated with anxiety symptoms during the pandemic (OR 0.98, 95% CI 0.97; 0.99, $p < 0.001$), evidencing it as a protective factor for the manifestation of moderate to severe anxiety symptoms during the pandemic. (Table 2) The model was statistically significant ($\chi^2(7) = 31.735$, $p < 0.001$; Nagelkerke $R^2 = 0.075$).

DISCUSSION

We sought to verify the effect of resilience on prevalence of anxiety symptoms during the COVID-19 pandemic in a sample of mothers in a city in southern Brazil. The prevalence of moderate to severe anxiety symptoms in mothers found in our study is in accordance with the rates described in the literature (ranging from 25.9% to 32.7%)^{4,14}. This reveals that this population is vulnerable in stressful periods, since social isolation strategies may have overloaded these women and impaired their mental health.

As the main result, we found that resilience presented a protective role in anxiety rates, being the only factor that remained associated after the adjusted analysis. Therefore, women with higher means of resilience presented lower anxiety rates during the COVID-19 pandemic. Resilience is related to the ability to overcome and cope with adverse situations, crises, or situations considered to be at risk for the development of mental disorders. For instance, the literature demonstrates that resilient individuals manage to maintain their emotional balance throughout life, with a lower probability of developing mental disorders⁶.

In this context, the COVID-19 pandemic has been considered a period of risk for mental illness in women, especially for mothers, who had to isolate themselves with their children at home and face the challenges related to routine, care, and other activities, providing higher levels of anxiety and stress. However, our results showed that resilience played a key role in reducing anxiety symptoms in these women. Thus, mothers in a resilient process seem to have been able to face the

Table 1. COVID-19-related variables and their association with anxiety symptoms in mothers during the pandemic in the city of Pelotas, Brazil, 2020-2021

Variables	N (%)	Anxiety symptoms N (%)	p-value
Age			0.948
Up to 27 years	182 (30.9)	50 (27.5)	
From 28 to 33 years	204 (34.6)	59 (28.9)	
34 years or more	203 (34.5)	58 (28.6)	
Started working from home**			0.675
No	204 (57.5)	54 (26.5)	
Yes	151 (42.5)	37 (24.5)	
Financial losses			0.082
No	415 (70.5)	109 (26.3)	
Yes	174 (29.5)	58 (33.3)	
Family income in the last month			0.063
Up to R\$ 1800	197 (33.4)	68 (34.5)	
From R\$ 1801 to R\$ 3100	191 (32.4)	48 (25.1)	
Above R\$ 3100	201 (34.1)	51 (25.4)	
Confinement duration			0.765
No confinement	185 (31.4)	49 (26.5)	
From one to four months	213 (36.2)	61 (28.6)	
Five months or more	191 (32.4)	57 (29.8)	
Living with a partner			0.097
No	132 (22.4)	45 (34.1)	
Yes	457 (77.6)	122 (26.7)	
Number of people living in the house			0.324
Up to three people	236 (40.1)	59 (25.0)	
Four people	190 (32.3)	57 (30.0)	
More than four people	163 (27.7)	51 (31.3)	
Have a family member that needs to leave home to work			0.072
No	173 (29.4)	58 (33.5)	
Yes	416 (70.6)	109 (26.2)	
Maternal COVID-19 diagnosis*			0.437
No	545 (92.7)	157 (28.8)	
Yes	43 (7.3)	10 (23.3)	
Family member COVID-19 diagnosis*			0.482
No	542 (92.2)	156 (28.8)	
Yes	46 (7.8)	11 (23.9)	
Death of family member due to COVID-19*			0.190
No	554 (94.2)	154 (27.8)	
Yes	34 (5.8)	13 (38.2)	
Follow all or almost all COVID-19 social distancing recommendations			0.854
No	105 (17.8)	29 (27.6)	
Yes	484 (82.2)	138 (28.5)	
Epidemiological weeks			0.349
From week 44/2020 to week 47/2020	177 (30.1)	57 (32.2)	
From week 48/2020 to week 1/2021	211 (35.8)	54 (25.6)	
From week 2/2021 to week 20/2021	201 (34.1)	56 (27.9)	
Total	589 (100.0)	167 (28.4)	

*Variable with missing data.

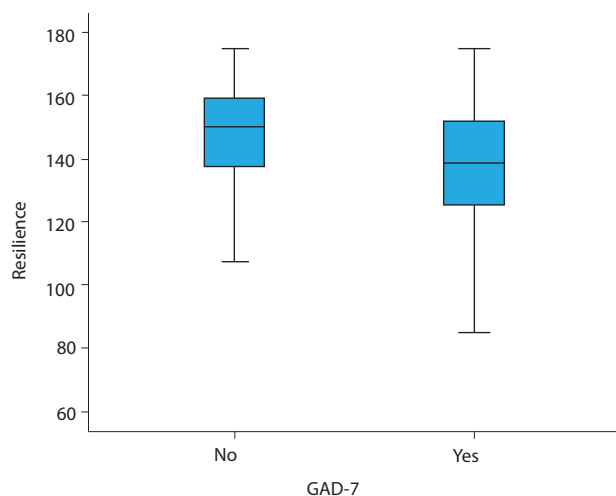
**Only those working before the pandemic.

Table 2. Logistic regression analysis of anxiety symptoms in mothers during the pandemic according to COVID-19-related variables in the city of Pelotas, Brazil, 2020-2021

Variables	OR	95% CI	p-value
Financial losses			
No	1.00		
Yes	1.31	0.89; 1.95	0.175
Family income in the last month			
Up to R\$ 1800	1.44	0.89; 2.31	0.136
From R\$ 1801 to R\$ 3100	1.01	0.63; 1.61	0.977
Above R\$ 3100	1.00		
Living with a partner			
No	1.17	0.71; 1.94	0.534
Yes	1.00		
Have a family member that needs to leave home to work			
No	1.05	0.67; 1.67	0.822
Yes	1.00		
Death of family member due to COVID-19*			
No	1.00		
Yes	1.65	0.79; 3.43	0.179
Resilience	0.98	0.97; 0.99	<0.001

OR: odds ratio;

95% CI: 95% confidence interval.

**Figure 1.** Resilience scores distribution among mothers with and without moderate to severe anxiety symptoms during the COVID-19 pandemic in the city of Pelotas, Brazil, 2020-2021.

pandemic period with less psychic suffering, showing fewer anxiety symptoms.

Resilience has been shown to be a consistent protective factor in the context of mental health in different populations. Despite studies with mothers are scarce, our findings are in conformity with the literature. A study with Australian

parents of 0-18 months children showed that resilience was a predictor of lower anxiety during the COVID-19 pandemic¹⁰. A similar result was observed in a North-American study with pregnant and 6-month postpartum women⁹.

The literature shows that resilience may also play a mediator role in the impact of COVID-19 stressors on anxiety^{7,8}. An Austrian study also revealed that the association between the perceived psychological impact of the COVID-19 pandemic and anxiety symptoms was moderated by resilience¹¹. However, the cross-sectional nature of the studies can lead to some bias, since the experience of stressful events can also strengthen resilience¹⁵.

Our findings must be interpreted in light of some limitations. First, the magnitude of the odds ratio was low, requiring further studies to confirm the results found. Second, the period of data collection may have influenced the rates of anxiety symptoms, since by the end of the second half of 2020 there was already greater knowledge about the virus, as well as studies on vaccines were already being conducted. Third, considering that resilience is not constant over time⁶, from the moment of the assessment of this construct (3 months postpartum) until the pandemic (at least 14 months of difference), the resilience capacity of the participants may have changed. And fourth, we only considered

anxiety as a measure for the participants' adaptation to the pandemic context, not including other possible negative adaptation constructs, such as depressive symptoms or substance abuse. Finally, it should be noted that resilience is not only the individuals' ability to maintain their mental health in the face of significant adversity but it is also related to their ability to recover it. Thus, during or after the moment of adversity experienced (in this case, the pandemic period), there is the possibility that some women have developed greater resilience, due to the fact that it is not a static characteristic. Thus, our study did not assess resilience in both assessments but indicated evidence of its positive role in attenuating severe manifestations of mental health problems. We should mention that there are certainly other factors related to maternal mental health that were not addressed in our study in addition to those controlled in our analyses. For instance, post-traumatic growth is a factor that should be considered. For this reason, we suggest that studies including these other variables should be conducted.

CONCLUSIONS

Despite the adversities of a pandemic, individuals with a higher potential for resilience seem to present lower levels of anxiety. This is particularly important because it shows that in situations of extreme stress, resilience makes a difference in mothers' mental health. Therefore, given the importance of this factor in highly stressful situations, such as the current pandemic, women should focus on maintaining and increasing resilience, through the implementation of strategies to reinforce adaptive behaviors and increase women's control in adverse situations.

INDIVIDUAL CONTRIBUTIONS

Carolina Coelho Scholl and Fernanda Teixeira Coelho – Contributed to the conception and design, data collection, data analysis, data interpretation, and the original draft preparation.

Bárbara Borges Rubin, Caroline Nickel Ávila, Isabela Petry, Kathreim Macedo da Rosa, Rayssa da Luz Martins, Victória Duquia da Silva, and Mariana Weizer – Contributed to data collection, data interpretation, and critical review of the manuscript.

Jéssica Puchalski Trettim and Mariana Bonati de Matos – Contributed to data analysis, data interpretation, and critical review of the manuscript.

Ricardo Tavares Pinheiro and Luciana de Avila Quevedo – Contributed to the conception and design, data interpretation, and critical review of the manuscript. All authors have read and agreed to this version of the manuscript.

CONFLICTS OF INTEREST

The authors declare they have no conflict of interest.

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REFERENCES

- BRASIL. Ministério da Saúde. Boletim Epidemiológico nº 138 – Boletim COE Coronavírus [Internet]. 2022. Available from: <https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/covid-19/2022/boletim-epidemiologico-no-138-boletim-coe-coronavirus.pdf/view>
- Shevlin M, McBride O, Murphy J, Miller JG, Hartman TK, Levita L, et al. Anxiety, depression, traumatic stress and COVID-19-related anxiety in the UK general population during the COVID-19 pandemic. *BJPsych Open*. 2020;6(6):e125.
- Fancourt D, Steptoe A, Bu F. Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: a longitudinal observational study. *The Lancet Psychiatry*. 2021;8(2):141-9.
- Loret de Mola C, Martins-Silva T, Carpena MX, Del-Ponte B, Blumenberg C, Martins RC, et al. Maternal mental health before and during the COVID-19 pandemic in the 2019 Rio Grande birth cohort. *Brazilian J Psychiatry*. 2021.
- Luthar SS, Cicchetti D. The construct of resilience: Implications for interventions and social policies. *Dev Psychopathol*. 2000;12(4):857-85.
- Shrivastava A, Desousa A. Resilience: A psychobiological construct for psychiatric disorders. *Indian J Psychiatry*. 2017;58(1):38-43.
- Rossi R, Jannini TB, Succi V, Pacitti F, Lorenzo G Di. Stressful Life Events and Resilience During the COVID-19 Lockdown Measures in Italy: Association With Mental Health Outcomes and Age. *Front Psychiatry*. 2021;12.
- Vos LMW, Habibović M, Nyklíček I, Smeets T, Mertens G. Optimism, mindfulness, and resilience as potential protective factors for the mental health consequences of fear of the coronavirus. *Psychiatry Res*. 2021;300:113927.
- Kinser PA, Jallo N, Amstadter AB, Thacker LR, Jones E, Moyer S, et al. Depression, Anxiety, Resilience, and Coping: The Experience of Pregnant and New Mothers During the First Few Months of the COVID-19 Pandemic. *J Women's Health*. 2021;30(5):654-64.

10. Mikocka-Walus A, Stokes M, Evans S, Olive L, Westrupp E. Finding the power within and without: How can we strengthen resilience against symptoms of stress, anxiety, and depression in Australian parents during the COVID-19 pandemic? *J Psychosom Res.* Jun;145:110433.
11. Traunmüller C, Stefitz R, Schneider M, Schwerdtfeger A. Resilience moderates the relationship between the psychological impact of COVID-19 and anxiety. *Psychol Health Med.* 2021;1-12.
12. Pesce RP, Assis SG, Avanci JQ, Santos NC, Malaquias JV, Carvalhaes R. Adaptação transcultural, confiabilidade e validade da escala de resiliência. *Cad Saúde Pública.* 2005;21(2):436-48.
13. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A Brief Measure for Assessing Generalized Anxiety Disorder. *Arch Intern Med.* 2006;166(10):1092.
14. Cameron EE, Joyce KM, Delaquis CP, Reynolds K, Protudjer JLP, Roos LE. Maternal psychological distress & mental health service use during the COVID-19 pandemic. *J Affect Disord.* 2020;276:765-74.
15. Crane MF, Searle BJ, Kangas M, Nwiran Y. How resilience is strengthened by exposure to stressors: the systematic self-reflection model of resilience strengthening. *Anxiety Stress Coping.* 2019;32(1):1-17.

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