



Prevalence of Postpartum Depression and Associated Factors during the COVID-19 Pandemic: Evidence from a Cross-Sectional Study in a Medium-Sized City, Minas Gerais, Brazil

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To identify the prevalence and the factors associated with postpartum depression (PPD) during the COVID-19 pandemic, in Teófilo Otoni, MG, Brazil.

Methodology: This is a cross-sectional study that included 183 puerperal women aged 18 and 42 years, who were attended at the city's public maternity hospital, between the months of February and August 2021. The cut-off point used was ≥ 11 on the Edinburgh Postpartum Depression Scale (EPDS). The Microsoft Excel program was used to tabulate the data; subsequently, they were transported to the Jamovi program, version 1.6.23.0. Descriptive statistical analysis used measures of central tendency, dispersion and Pearson's chi-square test. The reliability analysis of the EPDS was performed with Cronbach's alpha (α).

Results: The prevalence of PPD was 35.5%. Only education level was the sociodemographic factor that obtained a significant association with PPD ($\chi^2(2) = 8.72, p = 0.013$). Anxiety about giving birth during the pandemic; fear of the child having COVID-19; fear of being infected in the hospital and desire not to be pregnant for fear of acquiring COVID-19 were associated factors with PPD. Multivariate analysis revealed that postpartum women experiencing anxiety during the pandemic had a 50% prevalence of PPD (cutoff ≥ 11), corresponding to a 2.46 times higher risk compared to those without anxiety. The results should be interpreted considering their limitations. As a cross-sectional study, it does not allow for the establishment of causality. Data were collected through a bedside questionnaire, which may have influenced participants' responses due to the fatigue experienced after childbirth.

Conclusion: The significant occurrence of PPD suggests that health providers should take the following measures: monitor the mental health of postpartum women more carefully; increase the number of psychologists working in the maternity hospital studied; and improve the counter-referral of these postpartum women with PPD so that they can be monitored in primary care in their home municipalities. On the other hand, policymakers should recognize the influence of extreme epidemiological events on the mental well-being of postpartum women and need to adopt structural measures to strengthen public education, ensuring that students develop up to university level.

Keywords: Depression; postpartum; Covid-19 pandemic; postpartum period; unified health system; women's health.

1. INTRODUCTION

The puerperium or postpartum period encompasses the eight weeks following the birth of a newborn. It is a period during which women undergo significant changes in their routines and physiology, particularly in their hormonal profiles. These changes are often accompanied by relative physical and emotional vulnerability. Therefore, postpartum women require care and attention that takes into account their unique circumstances, considering the multiple dimensions of the sociocultural environment that surrounds them (Fernandes et al. 2024, Estrela et al. 2020, Gutierrez et al. 2022, Trevisano et al. 2022, Silva et al. 2023).

Although pregnancy, childbirth and the postpartum period are socially perceived as moments of emotional well-being brought about by the arrival of a baby, various emotional disorders can affect women during these phases. From an epidemiological perspective, the

postpartum period is when women are most susceptible to psychiatric disorders, with postpartum depression (PPD) being one of the most prevalent conditions, affecting between 10% and 15% of women in the postpartum period worldwide (Dange and Biswas 2021, Mustafa (2023).

It is clear that PPD is a major public health problem, with an impact not only on postpartum women, but also on the general care provided to newborns. In most cases, symptoms appear one month after childbirth, intensifying until they reach their peak around six months postpartum. The most common symptoms include irritability, frequent crying, feelings of helplessness and hopelessness, lack of energy and motivation, loss of sexual interest, changes in appetite and sleep patterns, feelings of inadequacy and psychosomatic complaints such as headaches, back pain, vaginal irritation and abdominal pain without identifiable organic causes (Trevisano et al. 2022, Da Silva et al. 2021).

This situation can be further aggravated, both individually and collectively, by non-biological factors, such as political, economic, social and cultural issues. In fact, such a scenario emerged in 2020, and especially in 2021, the second year of the COVID-19 pandemic, during which this research was carried out. COVID-19, a high-impact infectious disease caused by the SARS-CoV-2 virus (Luo et al. 2020), has imposed profound changes on populations around the world, including the closure of businesses and factories, restrictions on mobility, social distancing measures, the mandatory wearing of masks, overexposure to tragic news and the daily experience of people falling ill, being hospitalized or dying. As a preventative measure, some maternity hospitals chose to isolate women giving birth before, during and after delivery. These measures, among many others, illustrate how the pandemic has disrupted women's routines in maternity hospitals, contributing to feelings of insecurity, loneliness, anxiety and, consequently, postpartum stress (Estrela et al. 2020, Luo et al. 2020, Kotabagi et al. 2020). Sahebi et al (2024), in a systematic review with meta-analysis, identified a prevalence of 25.27% of PPD during the COVID-19 pandemic. Vilarim et al (2024), in another systematic review with meta-analysis, found a 31% prevalence of PPD when comparing high, middle and low-income countries. Kabunga et al (2024) identified a prevalence of 28% in Uganda. In Brazil, on the other hand, during the COVID-19 pandemic, Galletta et al (2022) reported a 38.8% prevalence of PPD in puerperal women.

In view of the above, this study aims to identify the prevalence of PPD and the factors associated with it during the COVID-19 pandemic. This is an original and unprecedented study. No prior scientific investigations have addressed this topic within the Northeast Health Region of Minas Gerais, which includes the territory of the Mucuri River Valley, as well as the territory of the Middle and Lower Valley of the Jequitinhonha River. These are all regions of high social vulnerability, with a Human Development Index (HDI) of between 0.66 and 0.68. (Almeida et al. 2023).

2. MATERIALS AND METHODS

2.1 Procedures

This is a cross-sectional study carried out in a public maternity hospital in the city of Teófilo Otoni, Minas Gerais, Brazil. The municipality is in the located in the Mucuri River Valley

Mesoregion. It is a medium-sized city, with a population of approximately 134,745 inhabitants and a Municipal Human Development Index (MHDI) of 0.701 (IBGE (2024)).

Teófilo Otoni is the headquarters of the health network of the Northeast Health Region in the state of Minas Gerais. This region has 57 municipalities and approximately 1 million inhabitants. Due to its strategic location, the city centralizes highly complex health services, including those related to pregnancy and childbirth. Its maternity hospital offers urgent and emergency obstetric care and highly complex services through the Unified Health System (SUS) and private service providers Malachias et al. 2010).

The puerperal women were recruited randomly at the bedside, in the rooms of the Maternity Hospital's rooming-in unit, the day after they had given birth. Respecting all ethical precepts, our team invited them to take part in the study. After all their questions had been answered, the puerperae signed the Informed Consent Form (ICF).

The questionnaires were administered between February and August 2021, during the COVID-19 pandemic. Data collection was limited to patients hospitalized in the public sector. During the data collection period, 1,937 women gave birth at the hospital. However, the data collection team only had access to 440 of these women, as they were the ones hospitalized on the days when the team was present. Additionally, restrictions on the circulation of people within the maternity ward due to COVID-19 pandemic protocols further limited the ability to approach all eligible women.

Those hospitalized in the private sector were not allowed to participate. The inclusion criteria were: being aged 18 or over, voluntarily agreeing to take part in the study and signing the Informed Consent Form (ICF). Women whose newborns had congenital malformations or had died were excluded from the study. In addition, 13 participants who did not complete the Edinburgh Postnatal Depression Scale (EPDS) and one participant who did not indicate her age were excluded (Oliveira et al. 2022).

2.2 Instruments

A sociodemographic questionnaire developed based on a literature review specifically for this study was used to collect sociodemographic

data. The questionnaire included questions about age, education level, occupation, marital status, family income, and stress perception due to affected family income during the pandemic. It also addressed aspects related to pregnancy and childbirth during the pandemic, such as whether the pregnancy was desired and planned, levels of anxiety about giving birth during the pandemic, emotional support received during delivery, length of postpartum hospital stay, type of breastfeeding practiced, fear of contracting COVID-19 during pregnancy, fear of infection for both the mother and the newborn, preference for delivering in a hospital that did not treat COVID-19 patients, and the desire not to be pregnant during the pandemic.

The Edinburgh Postnatal Depression Scale (EPDS) was used to assess the prevalence of postpartum depression (PPD). The EPDS is a self-administered scale consisting of 10 items rated on a four-point Likert scale (responses are scored 0, 1, 2, and 3, according to increasing severity of symptoms), assessing the presence and intensity of depressive symptoms over the past seven days. The EPDS was validated and adapted for use in Brazil by Santos et al. (1999). The total score ranges from 0 to 30. In this study, postpartum women with scores ≥ 11 were classified as having PPD, in accordance with the optimal cut-off point suggested by the validation study authors. Previous research with Brazilian mothers has demonstrated that the EDPS with a cutoff point of >11 exhibits 81% sensitivity (95% CI 69.1-89.8%), 66.3% accuracy (95% CI 59-73.1%), and 70% specificity (Santos et al. 2007).

2.3 Data Analysis

This statistical analysis included measures of central tendency (mean) and dispersion (standard deviation) for continuous variables, as well as absolute and relative frequency distributions for categorical variables. Missing data were reported for transparency but were subsequently excluded from the statistical analysis.

The reliability of the EPDS was assessed using Cronbach's alpha (α), with values ranging from 0.70 to 0.95 considered indicative of good internal consistency (Tavakol and Dennick 2011).

For bivariate analysis, Pearson's chi-square test or Fisher's exact test was used to evaluate associations between PPD and sociodemographic variables, as well as pregnancy- and childbirth-related factors.

Prevalence ratios (PR) and their 95% confidence intervals (CI 95%) were estimated using Poisson regression with robust variance, a method appropriate for cross-sectional studies. This approach allows for the estimation of PRs closer to the true values, particularly when disease prevalence is high (Coutinho et al. 2008, Bastos et al. 2015, Talbot et al. 2023).

A multivariate model was subsequently constructed using Poisson regression with robust variance, following a hierarchical entry method. All the sociodemographic and pregnancy- and childbirth-related variables with a significance level of $p \leq 0.05$ in the bivariate analysis were retained in the final model.

For all tests, a statistical significance level of $p \leq 0.05$ was adopted. Statistical analyses were performed using Jamovi software, version 1.6.23.0 (The Jamovi Project 2021).

2.4 Ethical Considerations

The study was approved by the Research Ethics Committee (CEP) of the Federal University of Jequitinhonha and Mucuri Valleys (UFVJM) under protocol number 4.514.565. Postpartum women gave their consent to participate in the study by signing the Informed Consent Form.

3. RESULTS

3.1 Sociodemographic Characteristics

The study included 183 postpartum women aged 18 to 42 years ($M = 26.5$; $SD = 6.21$). Regarding sociodemographic data, the majority were aged 18–25 years (46.4%), self-identified as mixed-race (75.4%), had completed high school (38%), were primarily homemakers (51.5%), were in a consensual union (74.1%), reported a family income of ≤ 1 minimum wage (53.5%), and indicated that their family income was negatively affected by the COVID-19 pandemic (62.6%). Among those whose income was affected, 52.3% reported experiencing stress.

Regarding pregnancy, most participants stated that it was desired (84.9%), though unplanned (56%). Concerning delivery, 53.3% reported anxiety due to giving birth during the pandemic. Emotional support during delivery was reported by 71.3% of participants. A significant proportion of the postpartum women (81.5%) were hospitalized for 48 hours or less. Exclusive breastfeeding was practiced by 78.1% of respondents.

Table 1. Association between sociodemographic variables and postpartum depression in women, Teófilo Otoni, Brazil, 2022 (N=183)

Variable	N (%)	Prevalence n (%)	Crude PR (CI 95%)^a	p^b
Age range				
18-25	85 (46.4)	33 (38.8)	1	0.484
26-30	43 (23.5)	16 (37.2)	0.95 (0.58-1.53)	
31-42	55 (30.1)	16 (29.1)	0.74 (0.45-1.20)	
Race				
Brown	135 (73.8)	51 (37.8)	1	0.206
Black	20 (10.9)	9 (45)	1.19 (0.64-2.04)	
White	17 (9.3)	3 (17.6)	0.46 (0.15-1.07)	
Otherc	7 (3.8)	1 (14.3)	0.37 (0.04-1.36)	
Missing	4 (2.2)			
Education				
Elementary	35 (19.1)	17 (48.6)	4.04 (1.64-12.57)	0,013
High School	119 (65)	44 (37)	3.08 (1.33-9.25)	
Higher Education	25 (13.7)	3 (12)	1	
Missing	4 (2.2)			
Occupation				
Housewife	86 (47)	32 (37.2)	1	0.651
Urban Worker	49 (26.8)	14 (28.6)	0.76 (0,45-1,26)	
Rural Worker	21 (11.5)	9 (42.9)	1.15 (0.60-204)	
Otherd	11 (6)	4 (36.4)	0.97 (0.37-2.10)	
Missing	16 (8.7)			
Consensual Union				
Yes	117 (63.9)	36 (30.8)	1	0.127
No	41 (22.4)	18 (43.9)	1.42 (0.88-2.24)	
Missing	25 (13.7)			
Household Income				
≤ 1 SMe	84 (45.9)	30 (35.7)	1	0.574
> 1 SM	54 (29.5)	16 (29.6)	0.83 (0.49-1.34)	
Otherf	19 (10.4)	8 (42.1)	1.17 (0.59-2.15)	
Missing	26 (14.2)			
Income Affected				
Yes	109 (59.6)	39 (35.8)	1	

Variable	N (%)	Prevalence n (%)	Crude PR (CI 95%) ^a	p ^b
No	65 (35.5)	20 (30.8)	0.86 (0.54-1.32)	0.499
Missing	9 (4.9)			
Estresse em ter a renda afetada				
Yes	57 (52.3)	15 (26.3)	0.31 (0.20-0.44)	
No	19 (17.4)	7 (36.8)	1	0.381
Missing	33 (30.3)			

a: RP: Prevalence Ratio. CI 95%: 95% Confidence Interval.; b: p-value from Pearson's chi-square test or Fisher's exact test, as appropriate.; c: Indigenous and yellow (Asian). d: None, student, or unemployed.; e: MW: Minimum Wage (R\$1,100.00 during the study period).; f: Did not declare income.

Table 2. Association between pregnancy- and childbirth-related variables and postpartum depression in women, Teófilo Otoni, Brazil, 2022 (N=183)

Variable	N (%)	Prevalence n (%)	Crude PR ^a (CI 95%)	p ^b
Desired Pregnancy				
Yes	152 (83.1)	52 (34.2)	0.77 (0.47-1.31)	
No	27 (14.8)	12 (44.4)	1	0.307
Missing	4 (2.2)			
Planned Pregnancy				
Yes	80 (43.7)	24 (30)	0.76 (0.50-1.14)	
No	102 (55.7)	40 (39.2)	1	0.196
Missing	1 (0.5)			
Anxiety about giving birth during the pandemic				
Yes	84 (45.9)	42 (50)	2.28 (1.50-3.53)	
No	96 (52.5)	21 (21.9)	1	<0.001
Missing	3 (1.6)			
Emotional Support				
Yes	127 (69.4)	44 (34.6)	0.98 (0.63-1.55)	
No	51 (27.9)	18 (35.3)	1	0.935
Missing	5 (2.7)			
Time After Delivery				
≤ 48h	137 (74.9)	44 (32.1)	1	
>48h	31 (16.9)	14 (42.2)	1.40 (0.84-2.25)	0.168
Missing	15 (8.2)			
Type of Breastfeeding				

Variable	N (%)	Prevalence (%)	Crude PR ^a (CI 95%)	p ^b
Exclusive	100 (54.6)	36 (36)	1	
Predominant	17 (9.3)	4 (23.5)	0.65 (0.25-1.39)	0.257
Artificial	11 (6)	6 (54.5)	1.51 (0.70-2.90)	
Missing	55 (30.1)			
Fear of contracting COVID-19 during pregnancy				
Yes	133 (72.7)	46 (34.6)	0.92 (0.60-1.45)	
No	48 (26.2)	18 (37.5)	1	0.717
Missing	2 (1.1)			
Fear of the child contracting COVID-19				
Yes	134 (73.2)	54 (40.3)	1.97 (1.15-3.64)	
No	44 (24)	9 (20.5)	1	0.017
Missing	5 (2.7)			
Fear of contracting COVID-19 in the hospital				
Yes	107 (58.5)	45 (42.1)	1.61 (1.06-2.52)	
No	73 (39.9)	19 (26)	1	0.027
Missing	3 (1.6)			
Preferred the hospital not to admit COVID-19 patients				
Yes	128 (69.9)	47 (36.7)	1.02 (0.66-1.60)	
No	50 (27.3)	18 (36)	1	0.929
Missing	5 (2.7)			
Wished not to be pregnant due to fear of contracting the virus				
Yes	50 (27.3)	27 (54)	1.83 (1.22-2.71)	
No	129 (70.5)	38 (29.5)	1	0.002
Missing	4 (2.2)			

a: CI 95%: 95% Confidence Interval; PR: Prevalence Ratio.; b: p-value from Pearson's chi-square test or Fisher's exact test, as appropriate.

Table 3. Final hierarchical model of factors associated with Postpartum Depression in women, Teófilo Otoni, Brazil, 2022 (N=183)

Variable	Prevalence n (%)	Adjusted PR (CI 95%)	p^b
Education			
Elementary	17 (48.6)	1.27 (0.32-6.16)	0.307
High School	44 (37)	1.86 (0.66-7.74)	0.740
Higher Education	3 (12)	1	
Stress from having income affected			
Yes	25 (41.7)	2.04 (0.95-4.97)	0.088
No	5 (17.9)	1	
Anxiety about giving birth during the pandemic			
Yes	42 (50)	2.46 (1.11-5.71)	0.032
No	21 (21.9)	1	
Fear of the child contracting COVID-19			
Yes	54 (40.3)	1.37 (0.55-3.65)	0.510
No	9 (20.5)	1	
Fear of contracting COVID-19 in the hospital			
Yes	45 (42.1)	0.63 (0.28-1.47)	0.278
No	19 (26)	1	
Wished not to be pregnant during the pandemic			
Yes	27 (54)	1.53 (0.76-2.98)	0.220
No	38 (29.5)	1	

a: CI 95%: 95% Confidence Interval; PR: Prevalence Ratio.; b: p-value from Poisson regression with robust variance.

There was notable concern about COVID-19, with 73.5% fearing contracting the disease during pregnancy, 75.3% fearing the newborn contracting the disease, and 59.4% fearing hospital-based infection. Perhaps due to these concerns, 71.9% expressed a preference for giving birth in a hospital without COVID-19 patient wards. Notably, 72.1% of postpartum women did not express a desire to avoid pregnancy during the pandemic.

3.2 Prevalence and Association between Sociodemographic Variables and Postpartum Depression in Women

Reliability analysis demonstrated good overall internal consistency for the EPDS ($\alpha = 0.86$). The prevalence of PPD was 35.5% (CI 95%: 28.9–42.7).

Regarding the association between sociodemographic variables and PPD (Table 1), only education level showed a significant association with PPD ($\chi^2 (2) = 8.72, p = 0.013$), with the highest prevalence observed among women with elementary education (48.6%).

Regarding the association between variables related to pregnancy, childbirth, and postpartum depression (PPD) (Table 2), significant associations were found between PPD and anxiety about giving birth during the pandemic ($\chi^2 (1) = 15.6, p = <0.001$); fear of the child contracting COVID-19 ($\chi^2 (1) = 5.70, p = 0.017$); concern about contracting COVID-19 in the hospital environment ($\chi^2 (1) = 4.87, p = 0.027$); and the desire not to be pregnant out of fear of contracting the virus ($\chi^2 (1) = 9.39; p = 0.013$). Among these variables, the highest prevalence of PPD was observed in postpartum women affected by anxiety during childbirth in the pandemic (50%); those who expressed fear of the newborn contracting COVID-19 (40.3%); those who reported concern about contracting COVID-19 in the hospital (42.1%); and women who wished they were not pregnant due to fear of contracting the virus (54%).

The multivariate Poisson regression analysis (Table 3) showed significance only for the variable "anxiety about giving birth during the pandemic." Postpartum women who experienced anxiety during the pandemic had a 2.46 times higher prevalence ratio for PPD (Adj. PR = 2.46; CI 95%: 1.11–5.71, $p = 0.032$) compared to those who did not experience this condition.

4. DISCUSSION

The data from this study reveal a significant prevalence of PPD among postpartum women (35.5%). This condition is associated with a low level of education and anxiety related to the COVID-19 pandemic.

The prevalence identified in this study is comparable to previous research carried out during the COVID-19 pandemic. This is the case of Mustafa (2024), who points out that the prevalence of PPD on a global scale is between 10 and 15%. For their part, Vilarim et al. (2024) found a prevalence of 31% in a systematic review that considered the average prevalence in high, middle and low income countries. Ostacoli et al. (2020) found an even higher prevalence of 44.2%, but in a referral hospital in the city of Turin, Italy. Dubey et al, (2021)], in a cross-sectional observational study in India, of a sample of 295 mothers, found a prevalence of 30.8% of PPD. Santana et al (2022), in an integrative literature review, found a prevalence of PPD of around 39.4% in the city of Vitória, in the state of Espírito Santo, Brazil. Galletta et al. (2022) reported a prevalence of PPD of around 38.8% among puerperal women who gave birth in two public referral hospitals linked to the University of São Paulo (USP).

It is possible to compare these prevalences of PPD during the COVID-19 pandemic with others found before it. Let's see: Lobato et al. (2011) identified a prevalence of PPD of 20% in Brazil; Hartman et al. (2017) found a prevalence of 14% in a medium-sized city in the far south of Brazil; Araújo et al. (2019) reported a prevalence of 19.8% in a maternity hospital in the city of Salvador, in the state of Bahia. These are much lower percentages when compared to the prevalence rates found during the COVID-19 pandemic. This reinforces the hypothesis that the pandemic is a factor associated with a higher prevalence of PPD.

The psychological burden of the pandemic exacerbated the risks of PPD, as reported by Nomura et al. (2021), who identified moderate to severe anxiety in 27.6% of pregnant women during this period. Preis et al. (2020) highlighted the unique challenges of the pandemic, such as fear of infection, restrictions in maternity wards and the interruption of antenatal care, which collectively increased maternal stress. Chmielewska et al (2020) point out that the COVID-19 pandemic has deteriorated maternal

and fetal outcomes, including an increase in PPD, stillbirths and healthcare disruptions.

With regard to level of schooling, this study found a statistically significant association between low schooling and PPD. This association was also found by Dubey et al (2021), who showed a prevalence of PPD of around 30.8% and a high correlation ($P < 0.0001$) between PPD and mothers with no formal education. On the other hand, Santana et al (2022) point out that PPD is inversely related to the level paternal education. The prevalence of PPD was 36.4% in women whose husbands had between 0 and 4 years of formal education, while it was 22.9% in women whose husbands had more than 9 years of schooling. In France, Joannès et al (2023) observed that individuals with a lower level of education had a higher risk of depressive-anxiety states during the COVID-19 pandemic.

Even before the COVID-19 pandemic, studies had already shown the relationship between low educational level and higher prevalence of PPD. Wassif et al (2019) found a high association between PPD and low schooling. Matsumura et al (2019) showed that, in puerperal women, a lower level of education was also an independent risk factor for PPD. And they emphasize: education, as a determinant of health, remains an essential factor in mitigating the risks of PPD, especially during crises. Hartmann et al (2017); as well as Silva et al. (2017) and Morais et al. (2015), corroborate this relationship. Furthermore, they complement this by associating low levels of schooling with systemic inequalities, which limit access to healthcare, stable employment and social resources. These disparities exacerbate vulnerabilities, poor living conditions and inadequate social support, contributing to increased damage to mental health.

With regard to effective interventions for PPD, antidepressants and telecommunication therapy seem to be the most effective interventions, while physical exercise, hormonal therapies and cognitive-behavioral therapy remain equivocal (Chow et al. 2021). Freitas et al (2023) based on a systematic review with meta-analysis, also defend multidisciplinary approaches and the role of the nursing team in early identification and promotion of preventive measures as effective interventions.

The results of this study highlight the critical need to implement public health interventions that

address the social and psychological determinants of PPD, particularly in times of crisis, as was the case during the global pandemic. In addition, important measures include: monitoring the mental health of postpartum women more carefully; promoting early interventions; increasing the number of psychologists working in the maternity hospital studied; improving the counter-referral of these postpartum women with PPD so that they can be received in primary care in their municipalities; prioritizing equity in education and implementing policies that address these systemic barriers; providing tailored interventions centered on community support and accessible mental health care. All of these measures can provide critical relief to postpartum women.

5. STRENGTHS OF THE STUDY

Several strengths of this study should be noted. First, its originality, as no prior research in the available literature has attempted to assess the prevalence of postpartum depression (PPD) among postpartum women in Teófilo Otoni, the headquarters of the Northeast Macroregion Health Network of Minas Gerais. Second, its pioneering nature as a research field, as it opens a new thematic area for future efforts to further investigate this previously neglected phenomenon. Third, it represents an important epidemiological survey that can serve as a foundation for the development of public policies aimed at improving the well-being of postpartum women affected by PPD.

6. LIMITATIONS OF THE STUDY

Several limitations of this study should be considered. First, as a cross-sectional study, it does not allow for the establishment of causality. Second, the research used a self-reported questionnaire which may introduce bias in the results. Third, data were collected through a bedside questionnaire, which may have influenced participants' responses due to the fatigue experienced after childbirth.

Additionally, previous research indicates that the onset of PPD typically occurs after the first four weeks postpartum, with peak intensity within the first six months postpartum (Trevisano et al. 2022, Da Silva et al. 2021). Consequently, some participants in this study may have exhibited symptoms after data collection was completed.

7. CONCLUSION

The prevalence of postpartum depression (PPD) observed in this study underscores its role as a public health issue and highlights the need for careful monitoring of postpartum women. The significant association of PPD with higher levels of anxiety about giving birth during the pandemic and with low educational attainment reveals factors linked to negative impacts on maternal well-being.

Further research is necessary to understand the medium- and long-term consequences of the COVID-19 pandemic. Such studies can assist in planning preventive and therapeutic measures by healthcare professionals and policymakers during public health crises.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The authors declare that no generative Artificial Intelligence technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators were used during the writing or editing of this manuscript.

CONSENT

All authors declare that written informed consent was obtained from the patient for publication of this study. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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