

Association between childhood trauma and postpartum depression among Brazilian puerperal women

Elton Brás Camargo Júnior¹

 <https://orcid.org/0000-0001-5148-1703>

Ana Carolina de Sousa Andrade²

 <https://orcid.org/0000-0003-0826-7781>

Maria Neyrian de Fátima Fernandes³

 <https://orcid.org/0000-0001-7626-9733>

Edilaine Cristina da Silva Gherardi-Donato⁴

 <https://orcid.org/0000-0001-7475-6650>

Highlights: **(1)** High prevalence (36.8%) of postpartum depression (PPD) among puerperal women. **(2)** Significant association between all childhood trauma and PPD. **(3)** Emotional abuse was the childhood trauma with the greatest influence on PPD. **(4)** In the co-occurrence of traumas, emotional abuse remained associated with PPD. **(5)** There is a need for Nursing professionals to assess childhood trauma during pregnancy.

Objective: to evaluate the association between different forms of childhood trauma and postpartum depression in Brazilian puerperal women. **Method:** this cross-sectional survey included 253 puerperal women who were evaluated using the Edinburgh Postnatal Depression Scale and the Childhood Trauma Questionnaire. Multivariate logistic regression analyses were performed to verify the association of different types of trauma and the co-occurrence of forms of abuse and neglect with postpartum depression. **Results:** postpartum depression was identified in 93 women (36.8%; 95% Confidence Interval: 30.8-42.7). All forms of childhood trauma assessed (emotional abuse, emotional neglect, physical abuse, physical neglect and sexual abuse) were independently associated with postpartum depression after adjusting for confounding variables. Emotional abuse remained associated with postpartum depression when the co-occurrence of all forms of childhood trauma was analyzed. **Conclusion:** the results suggest an association between the different forms of childhood trauma and postpartum depression. In this sense, childhood trauma is an indicator for Nursing professionals to screen for risk factors of postpartum depression during obstetric follow-up.

Descriptors: Postpartum Depression; Depressive Disorder; Adverse Childhood Experiences; Women's Health; Child Abuse; Emotional Abuse.

¹ Universidade de Rio Verde, Faculdade de Enfermagem, Rio Verde, GO, Brazil.

² Universidade de Rio Verde, Faculdade de Medicina, Rio Verde, GO, Brazil.

³ Universidade Federal do Maranhão, Departamento de Enfermagem, Imperatriz, MA, Brazil.

⁴ Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto, PAHO/WHO Collaborating Centre for Nursing Research Development, Ribeirão Preto, SP, Brazil.

How to cite this article

Camargo EB Júnior, Andrade ACS, Fernandes MNF, Gherardi-Donato ECS. Association between childhood trauma and postpartum depression among Brazilian puerperal women. Rev. Latino-Am. Enfermagem. 2024;32:e4170 [cited ]. Available from: . <https://doi.org/10.1590/1518-8345.6761.4170>

Introduction

The traumas experienced during childhood increases the risk of developing mental disorders during adulthood⁽¹⁾, especially in women who are in the gestational process or postpartum period⁽²⁾. In addition, postpartum hormonal changes, physical recovery from childbirth and increased demand for care can reactivate very early memories of the care that a woman received in childhood and when there is trauma resulting from abuse in childhood, there is a high risk of developing postpartum depression (PPD)⁽³⁾.

PPD is a relevant public health problem due to its consequences for health and the relationship between mothers and children, in addition to the significant prevalence observed in low- and middle-income countries⁽⁴⁾. PPD also harms partners and family members, which can cause personal distress, damage to social, emotional and physical functioning, and low quality of life for family members. In addition, children of mothers with PPD may experience delays in language development and in cognition, as well as emotional or behavioral problems, increasing their propensity to develop anxiety and depression in adulthood⁽⁵⁾.

A recent meta-analysis showed that the global prevalence of PPD is 17.22% and that it can reach 38.79% in developing countries⁽⁴⁾, which shows the magnitude of the problem in countries such as Brazil. Due to the high rates and consequences of PPD, a number of studies have explored the potential risk factors for its development, including genetic and environmental ones⁽⁶⁾.

In recent years, the discovery of epigenetic mechanisms has resulted in the need to evaluate biological and environmental interactions, and how environmental variables influence the development of depression⁽⁷⁻⁸⁾. Childhood trauma is a potent environmental risk factor for depression. A meta-analysis identified an association between different forms of childhood trauma and depression, and that the strength of this association varies according to the type of childhood trauma⁽⁹⁾. Therefore, it is necessary to evaluate the different types of trauma in childhood to identify the extent to which trauma may be responsible for this association and the effects of the concurrent occurrence of trauma.

It is important to note that, to date, research evaluating the impact of childhood trauma and its consequences during the perinatal period has been carried out in high-income countries⁽¹⁰⁻¹¹⁾ or in settings other than Brazil⁽¹²⁾, and that no study conducted in the Brazilian context has evaluated the relationship

between trauma and PPD. Brazil has a relevant scenario for carrying out this research, as it represents the sociocultural diversity and economic disparities that mark Latin American countries.

Furthermore, investigating the effects of childhood trauma as a risk factor for PPD deserves attention in low- and middle-income countries such as Brazil, given that evidence of childhood trauma is prevalent in many of these environments⁽¹³⁾ and Brazil has one of the highest child mistreatment estimates in the world⁽¹⁴⁾. Therefore, the objective of this study was to evaluate the association between different forms of childhood trauma and PPD among Brazilian puerperal women.

Method

Study design, sample and ethical aspects

This was a descriptive, cross-sectional and analytical study with a quantitative approach guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. The participants were recruited from a public maternity hospital located in a municipality in inland Goiás, Brazilian Midwest region.

Through convenience sampling, the participants recruited were women with children born at a public reference maternity hospital in inland Goiás, Brazil, during the data collection period between February 15th and April 30th, 2022.

Two health professionals invited the postpartum women to participate in the research when they were authorized to be discharged from the hospital, according to the following inclusion criteria: being over 18 years old and having live-born children. Upon accepting participation in the research, their cell phone number was requested to send the questionnaire through a message app. The online collection procedure followed the recommendations of the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) to ensure reliability of the results. This systematic approach was applied in all the study phases, from research planning to data analysis. CHERRIES offers a robust framework for bias control and prevention of data duplication, ensuring quality and integrity of the results presented in this article.

A total of 320 parturient women were assisted by the maternity hospital during the collection period; however, it was not possible to contact 12 (3.75%) puerperal women due to an error in the telephone contact number and 50 (15.62%) filled out less than 20% of the instrument, making it impossible to analyze

the variables of interest; in this sense, the sample totaled 253 (79.06%) puerperal women. There were no refusals among the puerperal women who approached to participate in the research. Completion of the instrument varied between the second and fifth postpartum day.

All participants provided their free and informed consent before they had access to the collection instruments. After answering the instrument, the puerperal women received information about the locations and contacts of the public mental health services. Pregnant participants were not required to disclose their personal information for research participation. The collection of telephone numbers served the sole purpose of identifying potential duplicated answers. This research was approved by the Research Ethics Committee (Certificate of Presentation for Ethical Appraisal 29673520.5.0000.5077).

Data collection instruments

PPD was assessed using the Edinburgh Postnatal Depression Scale (EPDS)⁽¹⁵⁾. This instrument has been validated and shown satisfactory psychometric properties in the Brazilian context⁽¹⁶⁾. The scale consists of 10 self-assessment items with four answer options each, scored from 0 to 3 according to presence or intensity of symptoms, in which the final score can vary from 0 to 30 points. Presence of PPD was determined using a cut-off score ≥ 13 , as recommended by the authors of the instrument⁽¹⁵⁾, for having shown validity evidence in identifying PPD in the validation study⁽¹⁶⁾ due to the values of 0.66 sensitivity and 0.95 specificity⁽¹⁷⁾ and as adopted by studies in international^(10,18) and national⁽¹⁹⁻²⁰⁾ contexts. In the current study, the reliability measure, evaluated using McDonald's Omega, of EPDS was 0.89. It is important to note that EPDS serves as an indicative tool for assessing PPD, however, for a definitive diagnosis, specialized evaluation is essential to confirm and validate the results.

The childhood traumas were assessed using the Childhood Trauma Questionnaire (CTQ)⁽²¹⁾, translated and validated into Brazilian Portuguese⁽²²⁾. The instrument has psychometric properties that confirm its validity and reliability in different Brazilian samples⁽²³⁾. CTQ consists of 28 items that assess the experience of five types of trauma during childhood: emotional, physical and sexual abuse, and emotional and physical neglect. The items were rated on a Likert-type scale from 1 (Never) to 5 (Very frequently). The results obtained in the instrument were analyzed using a general trauma score calculated by means of a continuous variable, as were the continuous scores for

the types of trauma. In addition, the instrument allows categorizing participants according to the score in each type of trauma, using moderate or severe exposure levels to define puerperal women with presence of the different types of trauma evaluated, as recommended by the authors of the instrument⁽²⁴⁾. In addition, exposure to one or more trauma subtypes was used to create a dichotomous variable that reflected any history of maternal childhood trauma. The instrument reliability results showed McDonald's Omega values for the total tool ($\omega=0.95$) and for the emotional abuse ($\omega=0.88$), physical abuse ($\omega=0.86$), sexual abuse ($\omega=0.93$), emotional neglect ($\omega=0.89$) and physical neglect ($\omega=0.58$) subscales.

The sociodemographic variables evaluated were the puerperal women's age (continuous), skin color (black, brown, white, other), geographic area of residence (urban or rural), schooling level (Elementary School, High School, Higher Education), employment (outside the job market or active in the job market), and monthly income (less than one minimum wage, from one to two minimum wages, or three or more minimum wages). The puerperal women's relationship situation was analyzed using a question regarding the existence of a steady partner (yes or no) and the context of the partner living in the same house (yes or no).

The puerperal women's obstetric and clinical variables included gestational follow-up (not performed or performed), number of deliveries (primiparous or ≥ 2), complications during pregnancy (yes or no), type of delivery (normal or C-section), gestational weeks until delivery (≤ 35 weeks or ≥ 36 weeks), miscarriage history (yes or no) and depression history (yes or no).

Data analysis

The outcome variable (PPD) was evaluated as categorical. The data related to different types of childhood trauma were analyzed using continuous variables and were categorized as absent or present according to the cut-off points reported in the method.

The analyses are presented through the description of the sample and, subsequently, the association analysis is performed by means of the chi-square or Fisher's exact test between the categorical variables to verify the association of possible confounding variables related to sociodemographic and clinical conditions with PPD. The effect size of significant associations using the chi-square test was evaluated using Cramer's V or Phi statistics, depending on the type of contingency table.

Data normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. To analyze the

continuous variables, Mann-Whitney U tests for independent samples were performed to investigate the extent to which the independent continuous variables were different between those who had PPD and those who did not. Bootstrapping procedures were performed (1,000 resamplings; 95%CI BCa) to increase reliability of the results, to correct deviations from normality of the sample distribution, and differences between the sizes of the groups with and without PPD. The effect size of the difference between both means was evaluated using the *r* statistic⁽²⁵⁾.

Bivariate and multivariate logistic regression analyses were performed to calculate the unadjusted and adjusted odds ratios, considering presence of PPD, with 95% confidence intervals (CIs). Variables with a significance level of $p < 0.2$ in the unadjusted analysis were added to the adjusted analyses to control for possible confounding factors⁽²⁶⁾. In the multiple regression model, the significant variables were inserted into blocks, in which the sociodemographic variables were introduced into the first block, the clinical variables into the second block, and the variables related to trauma in the third block, based on a conceptual model proposed by national researchers⁽¹⁹⁾. To create the regression models, the assumptions of absence of outliers and non-multicollinearity were analyzed and fulfilled with variance inflation values from 1.07 to 2.37.

The analyses were performed using the Statistical Package for the Social Sciences (SPSS) program, version 24.

Results

Characteristics of the sample

The current study evaluated a sample of 253 puerperal women, who were between the second and fifth postpartum days, with a mean age of 25.75 (± 5.67) years old. Of the puerperal women evaluated, 177 (70%) were primiparous, 240 (94.9%) lived in urban areas, 225 (88.9%) had a steady partner, 207 (81.8%) lived with their partner and 183 (72.3%) were brown-skinned. In terms of schooling, more than half of the sample (142 [56.1%]) had graduated from High School, 141 (55.7%) were out of the job market, and 122 (48.2%) earned monthly family incomes between one and two minimum wages. Almost all women (250 [98.8%]) underwent prenatal care and 200 (79.1%) had no complications during their pregnancies. The predominant type of delivery was C-section (153 [60.5%]), with the vast majority (97.2%) of the deliveries occurring after 36 gestational weeks. Miscarriage history was observed in 34 (13.4%) women, and 91 (36%) reported depression history (Table 1).

Table 1 also presents the data regarding childhood trauma, and it can be observed that more than half of the puerperal women (133 [52.6%]) experienced at least one type of trauma. Emotional abuse was the most common childhood trauma (87 [34.4%]), followed by emotional neglect (68 [26.9%]), physical neglect (65 [25.7%]), sexual abuse (58 [22.9%]) and physical abuse (46 [18.2%]).

Table 1 – Characteristics of the sample and descriptive statistics of the puerperal women (n*=253). Rio Verde, GO, Brazil, 2022

Variable	Sample (253)	% (95%CI) [†]
Age – Mean (SD)[‡]	25.75 (5.67)	
Skin color		
Brown	183	72.3 (67.2-77.5)
Black	18	7.1 (4-10.3)
White	43	17 (12.6-21.3)
Other	9	3.6 (1.6-5.9)
Geographical area of residence		
Urban	240	94.9 (92.1-97.2)
Rural	13	5.1 (2.8-7.9)
Schooling levels		
Uneducated	17	6.7 (3.6-9.9)
Primary/Elementary School	41	16.2 (11.5-20.6)
Secondary/High School	142	56.1 (49.4-62.1)
Tertiary/University	53	20.9 (16.2-26.1)

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Variable	Sample (253)	% (95%CI) [†]
Relationship status		
Without a partner	28	11.1 (7.1-15)
With a partner	225	88.9 (85-92.9)
Partner living in the same house		
No	46	18.2 (13.8-22.9)
Yes	207	81.8 (77.1-86.2)
Employment status		
Out of the job market	141	55.7 (49.4-62.1)
Active in the job market	112	44.3 (37.9-50.6)
Monthly income		
Less than one minimum wage (MW) [§]	109	43.1 (36.8-49.4)
1-2 MWs [§]	122	48.2 (41.9-54.2)
3+ MWs [§]	22	8.7 (5.5-12.3)
Pregnancy follow-ups		
No	3	1.2 (0-2.8)
Yes	250	98.8 (97.2-100)
Number of deliveries		
Primiparous	177	70 (64.4-75.5)
2 or more	76	30 (24.5-35.6)
Complications during pregnancy		
No	200	79.1 (73.9-84.2)
Yes	53	20.9 (15.8-26.1)
Type of delivery		
Normal	100	39.5 (33.6-45.8)
C-section	153	60.5 (54.2-66.4)
Gestational weeks		
35 weeks or less	7	2.8 (0.8-5.1)
36 weeks or more	246	97.2 (94.9-99.2)
Miscarriage history		
No	219	86.6 (81.8-90.5)
Yes	34	13.4 (9.5-18.2)
Depression history		
No	162	64 (58.5-70)
Yes	91	36 (30-41.5)
Childhood trauma		
None	120	47.4 (41.5-53.4)
1 or more	133	52.6 (46.6-58.5)
Emotional abuse		
No	186	65.6 (59.3-71.5)
Yes	87	34.4 (28.5-40.7)

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Variable	Sample (253)	% (95%CI) [†]
Physical abuse		
No	207	81.8 (77.1-86.6)
Yes	46	18.2 (13.4-22.9)
Sexual abuse		
No	195	77.1 (71.5-82.2)
Yes	58	22.9 (17.8-28.5)
Emotional neglect		
No	185	73.1 (67.2-78.3)
Yes	68	26.9 (21.7-32.8)
Physical neglect		
No	188	74.3 (68.8-79.4)
Yes	62	25.7 (20.6-31.2)

*n = Sample; [†]95%CI = 95% Confidence Interval; [‡]SD = Standard Deviation; [§]MW = Minimum wage in force in 2022 in Brazil (R\$ 1,212.00, equivalent to US\$ 214)

Postpartum depression

The number of women that met the criteria for presence of depressive symptoms was 93 (36.8%; 95%CI: 30.8-42.7), with scores ≥ 13 on the Edinburgh Postpartum Depression Scale, thus categorized as with PPD.

Table 2 presents the bivariate analyses between the independent variables and absence or presence of PPD. Performed by means of the chi-square test, the statistical analyses showed an association between PPD and skin color ($\chi^2(3)=8.04$, $p=0.04$, Cramer's $V=0.17$). The women who self-declared as having other skin color (Asian or indigenous) were significantly associated with PPD.

There were also significant associations between PPD and relationship status ($\chi^2(1)=3.82$, $p=0.05$, $\Phi=0.12$) and the "partner living in the same house" situation ($\chi^2(1)=4.24$, $p=0.03$, $\Phi=0.12$). In addition, postpartum women with depression history had a significantly higher presence of PPD ($\chi^2(1)=25.40$, $p<0.001$, $\Phi=0.31$) when compared to those without such history (57.1% vs. 25.3%) (Table 2).

The logistic regression analyses show that the "partner living in the same house" situation (OR: 1.95; 95%CI: 1.02-3.73) and previous depression history (OR: 3.93; 95%CI: 2.28-6.79) significantly increased the chances of PPD (Table 2).

Table 2 – Postpartum depression frequency and odds ratios according to sociodemographic and clinical variables among the puerperal women (n*=253). Rio Verde, GO, Brazil, 2022

Variable	Postpartum Depression		OR [†] (95%CI) [‡]	p [§]
	No 160 (63.2)	Yes 93 (36.8)		
Age – Mean (SD)	26.2 (5.79)	24.9 (5.38)	1.76 (0.91-1.00)	0.06
Skin color[¶]				
Brown	120 (65.6)	63 (34.4)	0.72 (0.37-1.44)	0.36
Black	13 (72.2)	5 (27.8)	0.53 (0.16-1.77)	0.30
White	25 (58.1)	18 (41.9)	Ref.**	
Other	2 (22.2)	7 (77.8)	4.86 (0.90-26.19)	0.06
Geographical area of residence				
Urban	152 (63.3)	88 (36.7)	Ref.**	
Rural	8 (61.5)	5 (38.5)	1.08 (0.34-3.40)	0.89

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Variable	Postpartum Depression		OR [†] (95%CI) [‡]	p [§]
	No 160 (63.2)	Yes 93 (36.8)		
Schooling level				
Uneducated	12 (70.6)	5 (29.4)	0.96 (0.29-3.18)	0.95
Primary/Elementary School	22 (53.7)	19 (46.3)	1.99 (0.85-4.66)	0.11
Secondary/High School	89 (62.7)	53 (37.3)	1.37 (0.69-2.71)	0.35
Tertiary/University	37 (69.8)	16 (30.2)	Ref.**	
Relationship status[¶]				
Without a partner	13 (46.4)	15 (53.6)	2.17 (0.98-4.80)	0.05
With a partner	147 (65.3)	78 (34.7)	Ref.**	
Partner living in the same house[¶]				
No	23 (50)	23 (50)	1.95 (1.02-3.73)	0.04
Yes	137 (66.2)	70 (33.8)	Ref.**	
Employment status				
Out of the job market	86 (61)	55 (39)	1.24 (0.74-2.08)	0.40
Active in the job market	74 (66.1)	38 (33.9)	Ref.**	
Monthly income				
Less than 1 MW ^{††}	64 (58.7)	45 (41.3)	1.50 (0.56-3.99)	0.41
1-2 MWs ^{††}	81 (66.4)	41 (33.6)	1.08 (0.41-2.87)	0.87
3+ MWs ^{††}	15 (68.2)	7 (31.8)	Ref.**	
Pregnancy follow-ups				
No	2 (66.7)	1 (33.3)	0.85 (0.07-9.60)	0.90
Yes	158 (63.2)	92 (36.8)	Ref.**	
Number of deliveries				
Primiparous	112 (63.3)	65 (36.7)	0.99 (0.57-1.73)	0.98
2 or more	48 (63.2)	28 (36.8)	Ref.**	
Complications during pregnancy				
No	129 (64.5)	71 (35.5)	Ref.**	
Yes	31 (58.5)	22 (41.5)	1.28 (0.69-2.39)	0.42
Type of delivery				
Normal	64 (64)	36 (36)	Ref.**	
C-section	96 (62.7)	57 (37.3)	1.05 (0.62-1.78)	0.84
Gestational weeks				
35 weeks or less	4 (57.1)	3 (42.9)	1.30 (0.28-5.94)	0.73
36 weeks or more	156 (63.4)	90 (36.6)	Ref.**	
Miscarriage history				
No	143 (65.3)	76 (34.7)	Ref.**	
Yes	17 (50)	17 (50)	1.88 (0.90-3.89)	0.08
Depression history[¶]				
No	121 (74.7)	41 (25.3)	Ref.**	
Yes	39 (42.9)	52 (57.1)	3.93 (2.28-6.79)	<0.001

*n = Sample; [†]OR = Odds Ratio; [‡]95%CI = 95% Confidence Interval; [§]p = p-value of the Odds Ratio; ^{||}SD = Standard Deviation; [¶]Chi-Square (p<0.05); ^{**}Ref. = Reference Category; ^{††}MW = Minimum wage in force in 2022 in Brazil (R\$ 1,212.00, equivalent to US\$ 214)

Association between postpartum depression and childhood trauma

Table 3 presents analyses of childhood trauma as a continuous variable through the mean values of the total CTQ score and the abuse and neglect subtypes that significantly differentiate ($p < 0.05$) the groups with and without PPD. The effect sizes of the analyses were average for the total CTQ score ($r = 0.47$), emotional abuse ($r = 0.49$) and emotional neglect ($r = 0.41$) and small for physical abuse ($r = 0.29$), sexual abuse ($r = 0.18$) and physical neglect ($r = 0.25$).

The frequencies of types of trauma in relation to presence of PPD are shown in Table 3. In the analysis of the association with experiencing at least one type of trauma ($\chi^2(1) = 33.33$, $p < 0.001$, $\Phi = 0.36$), all types of abuse and neglect were significantly associated with PPD,

citing emotional abuse ($\chi^2(1) = 55$, $p < 0.001$, $\Phi = 0.46$), physical abuse ($\chi^2(1) = 16.7$, $p < 0.001$, $\Phi = 0.25$), sexual abuse ($\chi^2(1) = 9.02$, $p = 0.003$, $\Phi = 0.18$), emotional neglect ($\chi^2(1) = 25$, $p < 0.001$, $\Phi = 0.31$) and physical neglect ($\chi^2(1) = 9.10$, $p = 0.003$, $\Phi = 0.19$) (Table 3).

The odds ratios presented in Table 3 show that, in bivariate models, the postpartum women who experienced at least one type of trauma were significantly more likely to develop PPD (OR: 5.10; 95%CI: 2.87-9.06; $p < 0.001$). Exposure to emotional abuse was the type of childhood trauma that had the highest chances of developing PPD (OR: 9.18; 95%CI: 4.54-14.71; $p < 0.001$), followed by emotional neglect (OR: 4.24; 95%CI: 2.36-7.62; $p < 0.001$), physical abuse (OR: 3.81; 95%CI: 1.95-7.42; $p < 0.001$), sexual abuse (OR: 2.46; 95%CI: 1.35-4.47; $p = 0.003$) and physical neglect (OR: 2.39; 95%CI: 1.34-4.26; $p = 0.003$).

Table 3 – Mean value of the total score and the Childhood Trauma Questionnaire subscales, frequency of postpartum depression and odds ratios according to childhood trauma among the puerperal women ($n^* = 253$). Rio Verde, GO, Brazil, 2022

Variable	Sample	Postpartum Depression		OR [†] (95%CI) [*]	p [§]
		No 160 (63.2)	Yes 93 (32.8)		
Score in the Childhood Trauma Questionnaire – Mean (SD)	44.39 (17.87)	38.5 (14.2)	54.5 (19.1)		
Childhood trauma[¶]					
No	120 (47.4)	98 (61.3)	22 (23.7)	Ref.**	
Yes (1+ traumas)	133 (52.6)	62 (38.8)	71 (76.3)	5.10 (2.87-9.06)	<0.001
Emotional abuse[¶]					
Mean (SD)	10.61 (5.36)	8.53 (3.97)	14.19 (5.56)		
No	166 (65.6)	132 (79.5)	34 (20.05)	Ref.**	
Yes	87 (34.4)	28 (32.2)	59 (67.8)	8.18 (4.54-14.71)	<0.001
Physical abuse[¶]					
Mean (SD)	7.63 (3.69)	6.79 (2.80)	9.06 (4.52)		
No	207 (81.8)	143 (69.1)	64 (30.9)	Ref.**	
Yes	46 (18.2)	17 (37)	29 (63)	3.81 (1.95-7.42)	<0.001
Sexual abuse[¶]					
Mean (SD)	6.98 (4.10)	6.29 (3.16)	8.16 (5.16)		
No	195 (77.1)	133 (68.2)	62 (31.8)	Ref.**	
Yes	58 (22.9)	27 (46.6)	31 (53.4)	2.46 (1.35-4.47)	0.003
Emotional Neglect[¶]					
Mean (SD)	11.12 (5.69)	9.42 (5.08)	14.04 (5.54)		
No	185 (73.1)	134 (72.4)	51 (27.6)	Ref.**	
Yes	68 (26.9)	26 (38.2)	42 (61.8)	4.24 (2.36-7.62)	<0.001

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Variable	Sample	Postpartum Depression		OR [†] (95%CI) [‡]	p [§]
		No 160 (63.2)	Yes 93 (32.8)		
Physical neglect[¶]					
Mean (SD)	8.05 (3.25)	7.49 (2.99)	9.02 (3.47)		
No	188 (74.3)	129 (68.6)	59 (31.4)	Ref.**	
Yes	65 (25.7)	31 (47.7)	34 (52.3)	2.39 (1.34-4.26)	0.003

*n = Sample; [†]OR = Odds Ratio; [‡]95%CI = 95% Confidence Interval; [§]p = p-value of the Odds Ratio; ^{||}SD = Standard Deviation; [¶]Mann-Whitney U (p<0.05); ****Ref.** = Reference Category

The multivariate logistic regression analyses revealed a significant association of all abuse and neglect subtypes with PPD, after adjustment for sociodemographic and clinical variables (Table 4). The results reveal that women who suffered childhood emotional abuse were 6.29 times more likely to develop PPD (OR: 6.29; 95%CI: 3.39-11.67; p<0.001) and that exposure to emotional neglect resulted in a 3.02 greater chance of PPD (OR: 3.02;

95%CI: 1.60-5.69; p<0.001). Physical abuse (OR: 2.91; 95%CI: 1.41-6.00; p<0.004), physical neglect (OR: 2.19; 95%CI: 1.18-4.07; p=0.013) and sexual abuse (OR: 1.97; 95%CI: 1.02-3.80; p<0.042) were also PPD predictors among the puerperal women evaluated.

When entering all trauma subtypes into the adjusted model, emotional abuse remained a significant PPD predictor (OR: 6.20; 95%CI: 2.80-13.73; p<0.001) (Table 4).

Table 4 – Adjusted odds ratios and 95% confidence intervals of different trauma subtypes with postpartum depression (n*=253). Rio Verde, GO, Brazil, 2022

Variable	Model 1 [†] ORa [‡] (95%CI) [§]	p	Model 2 ^{**} ORa [‡] (95%CI) [§]	p
Emotional abuse	6.29 (3.39-11.67)	<0.001	6.20 (2.80-13.72)	<0.001
Physical abuse	2.91 (1.41-6.00)	0.004	0.81 (0.31-2.12)	0.672
Sexual abuse	1.97 (1.02-3.80)	0.042	0.96 (0.42-2.20)	0.928
Emotional neglect	3.02 (1.60-5.69)	<0.001	1.28 (0.54-3.03)	0.570
Physical neglect	2.19 (1.18-4.07)	0.013	1.01 (0.45-2.25)	0.979

*n = Sample; [†]Model 1 = Odds Ratio adjusted for Age, Relationship status, Partner living in the same house, Miscarriage history and Depression history; [‡]OR_a = Adjusted Odds Ratio; [§]95%CI = 95% Confidence Interval; ^{||}p = p-value of the Odds Ratio; [¶]Model 2 - Odds Ratio adjusted for Age, Relationship status, Partner living in the same house, Miscarriage history, Depression history and abuse and neglect subtypes; ******Model 2 = R² Nagelkerke = 0.33; Model adequacy by the Hosmer and Lemeshow test (p=0.97)

Discussion

This study showed high frequency of PPD and trauma experienced in childhood among postpartum women. The associations observed between PPD and childhood trauma have important clinical implications for the need to identify and treat women with PPD and should be analyzed with a view to devising actions to improve maternal mental health.

The prevalence of PPD in women observed in the current study was higher than the one found in other surveys conducted in Brazil using the same instrument and cut-off point (≥ 13). A study with women in the postpartum period between 0.1 and 12 months, from different Brazilian regions, identified 15.3% prevalence of PPD⁽⁴⁹⁾. When evaluating women during pregnancy, two studies with Brazilian pregnant women showed that the proportion of women with prenatal depression

was 16%⁽²⁷⁾ and 25.4%⁽²⁸⁾, values lower than the one observed in this study.

It is worth noting that the relatively high prevalence of Postpartum Depression (PPD) in this study may have been influenced by the data collection period coinciding with the Coronavirus Disease (COVID-19) pandemic. The literature has indicated worse mental health indices during this pandemic period⁽²⁹⁾. One of the few studies carried out in Brazil on PPD during the pandemic evaluated 184 women in the late postpartum period (mean of 56 days after birth) and identified a relative frequency of 38.8% of the sample with PPD when using an EPDS cut-off point lower than the one applied in our study (≥ 12)⁽³⁰⁾. In China, when evaluating 209 postpartum women during the pandemic, and using a lower EPDS cut-off point when compared to our study (≥ 10) to define PPD, the researchers detected 56.9% prevalence of PPD symptoms⁽³¹⁾, which shows worsening of the problem during the pandemic.

Our findings show a statistically significant difference when comparing the mean values of the total CTQ score and the childhood trauma subtypes between the groups of women without and with PPD. In addition, the bivariate logistic regression analyses showed that the different types of trauma experienced during childhood were significant PPD predictors. In contrast to the findings of our study, the research carried out with the objective of evaluating postpartum women in Belgium⁽³²⁾ did not indicate a predictive value of childhood trauma in PPD, which further characterizes the importance of conducting studies that evaluate this association due to the differences found in the literature.

Part of the published studies evaluated childhood trauma with a single construct^(10,32), not assessing the types of trauma. However, in this study we evaluated the types of trauma experienced in childhood differently, exploring other forms of abuse and neglect. In this sense, considering the associations between childhood trauma and PPD, all subtypes of abuse and neglect were PPD predictors after adjusting for sociodemographic and clinical variables.

Although the literature suggests a positive association between maternal history of childhood trauma and subsequent PPD symptoms, studies that have evaluated this association are inconclusive. A study carried out in Germany with women up to 16 postpartum weeks found associations with an increased PPD risk among those who had experienced severe emotional abuse (OR: 8.10; 95%CI: 2.22-29.51), severe sexual abuse (OR: 4.01; 95%CI: 1.35-11.90), moderate physical abuse (OR: 5.92; 95%CI: 1.55-22.61) and all degrees of emotional neglect ($2.76 \leq \text{OR} \leq 4.96$)⁽³³⁾. However, previously published studies evaluating women during the postpartum period did not show any direct relationship between different types of childhood trauma and PPD⁽³⁴⁾.

An important finding of our results is that, after adjusting for the co-occurrence of all types of childhood trauma, emotional abuse emerged above and beyond others as the significant PPD predictor variable, in which postpartum women who experienced this type of trauma were 6.20 times more likely to have PPD. This result is in agreement with the findings of another study that indicates a higher PPD risk among women exposed to emotional abuse when compared to those exposed to other types of abuse⁽³⁵⁾.

A recent meta-analysis that evaluated the association between childhood mistreatment assessed by a single measure, namely CTQ, showed that emotional abuse and emotional neglect had stronger associations with depression at any time of life⁽³⁶⁾. In this context, our findings contribute to clarifying this association, particularly regarding depressive symptoms in postpartum

women. The knowledge produced on this topic is still limited, especially in terms of studies evaluating this association during the early postpartum period.

Emotional abuse is characterized as experiences of rejection, verbal aggression, isolation or teasing, and may be more strongly related to internalizing symptoms and to the development of depression when compared to other types of childhood trauma⁽⁹⁾. Our findings, which show that emotional abuse has the strongest association with PPD, support previous research documenting that, among the various types of childhood trauma, emotional abuse exerts the most significant impact on the development of depressive disorders throughout life⁽³⁶⁻³⁷⁾.

It is important to note that there is a high probability for the co-occurrence of multiple childhood traumas⁽³⁸⁾. The results of the current research suggest that, when combined with the presence of other types of trauma, emotional abuse continues to significantly predict PPD.

The findings of this study should be analyzed within the context of its limitations. The study used a convenience sample of postpartum women from only one public maternity hospital, which may not be representative of the characteristics of the entire Brazilian maternal population. The cross-sectional design makes it impossible to conclude causal relationships between the variables, and the absence of a confirmed clinical diagnosis of depression can be considered a limitation of this study. Finally, parental support and possible domestic dysfunctions (for example, domestic violence and drug use by the partner) that may influence PPD were not evaluated.

While acknowledging its limitations, this study represents one of the initial attempts to investigate the correlation between various types of trauma and PPD in a middle-income country. In addition, we took into account the likely simultaneity of the various types of childhood mistreatment, allowing for a more accurate assessment of the association between types of childhood trauma and PPD.

The results of this study demonstrate the need for health professionals, mainly nurses, to devise screening strategies for PPD during pregnancy, as they are in charge of prenatal follow-up in Primary Health Care. In this way, we believe that the results of this study have the potential to support women's health care policies during the perinatal period, as they highlight the importance of an approach that emphasizes mental health and the history of abuse suffered in childhood to screen and prevent the PPD factors and its consequences.

In addition, it is necessary to incorporate interventions that include support groups for pregnant women and home monitoring through viable and available strategies, such as Telehealth. The objective of these interventions is that

mental health professionals can provide care focused on pregnant women's psycho-emotional needs, primarily for those who have experienced trauma during childhood, in order to mitigate the impacts that these traumas can cause during the postpartum period, reducing the risks of maternal mental illness and, consequently, favoring the development of a healthy affective bond between mother and child.

Conclusion

The findings of this study provide consistent empirical support in identifying the association between different types of childhood trauma and PPD among puerperal women during the immediate postpartum period. The history of different types of abuse and neglect was independently associated with the PPD. In the concurrent assessment of different types of childhood trauma, emotional abuse continued to be associated with PPD.

In addition to compromising postpartum women's health, PPD can exert a significant impact on the mothers' ability to establish an emotional connection with their newborns. Therefore, the assistance provided by health professionals should involve understanding women's current health status in its entirety, considering childhood experiences that represent certain predisposition to mental illness at this stage of the life cycle and, thus, ensure care that promotes health and prevents illness.

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Authors' contribution

Study concept and design: Elton Brás Camargo Júnior, Edilaine Cristina da Silva Gherardi-Donato. **Obtaining**

data: Elton Brás Camargo Júnior, Ana Carolina de Sousa Andrade. **Data analysis and interpretation:** Elton

Brás Camargo Júnior, Ana Carolina de Sousa Andrade, Maria Neyrian de Fátima Fernandes, Edilaine Cristina da

Silva Gherardi-Donato. **Statistical analysis:** Elton Brás

Camargo Júnior, Maria Neyrian de Fátima Fernandes, Edilaine Cristina da Silva Gherardi-Donato. **Drafting**

the manuscript: Elton Brás Camargo Júnior, Ana

Carolina de Sousa Andrade, Maria Neyrian de Fátima

Fernandes, Edilaine Cristina da Silva Gherardi-Donato. **Critical review of the manuscript as to its relevant**

intellectual content: Elton Brás Camargo Júnior, Ana

Carolina de Sousa Andrade, Maria Neyrian de Fátima

Fernandes, Edilaine Cristina da Silva Gherardi-Donato. **All authors approved the final version of the text.**

Conflict of interest: the authors have declared that there is no conflict of interest.

Received: Mar 17th 2023

Accepted: Jan 28th 2024

Associate Editor:

Regina Aparecida Garcia de Lima

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Corresponding author:

Elton Brás Camargo Júnior

E-mail: eltonbrasjr@unirv.edu.br

 <https://orcid.org/0000-0001-5148-1703>