

ORIGINAL ARTICLE

Partner relationship quality predicts later postpartum depression independently of the chronicity of depressive symptoms

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Objective: Given the lifelong implications of extended postpartum depression (PPD), research is needed to examine the social factors implicated in its development (such as relationship quality) and associated predictors. This study sought to examine the association of partner relationship quality (PRQ) and decline of sexual life (DSL) with maternal PPD at 12-15 months after childbirth.

Methods: Prospective study of 294 low-income postpartum women. A structured questionnaire and the Patient Health Questionnaire-9 (PHQ-9) captured responses for the main outcome variable and covariates.

Results: The prevalence of the main outcome (PPD at 12-15 months) was 19.1%. Using logistic regression models, low PRQ (risk ratio [RR] = 1.58, 95%CI 1.01-2.49) and DSL (RR = 1.97, 95%CI 1.23-3.15) were associated with PPD at 12-15 months even after controlling for perinatal depression.

Conclusions: Late PPD (12 to 15 months after giving birth) is very common among low-income women, and is independently associated with different aspects of the couple's relationship. Improving PRQ may prevent late PPD. Future investigations are warranted.

Keywords: Partner relationship quality; marital relationship; marital dissatisfaction; sexual functioning; postpartum depression; perinatal depression

Introduction

Postpartum depression (PPD) affects 13% of women worldwide.¹ The prevalence is even higher in low-income and middle-income countries, where PPD affects one in every five women.² The presence of PPD has been linked to disturbances in mother-child interactions³ and impairments of cognition, behavior, and social development in the child.^{4,5} PPD interferes with women's quality of life, as well as their social and occupational functioning.^{5,6} There are also negative consequences of unrecognized and untreated depression for the family, such as impaired mental health for the partner.^{7,8} Prospective studies showed that 36% of women with elevated depressive symptoms in the early postpartum period will continue to show depressive symptoms at 18 months after childbirth⁹; for some, depressive symptoms can persist for up to 2 years after delivery.¹⁰ Nevertheless, PPD after the first year of the child's life has drawn less attention than perinatal depression (i.e., that occurring during pregnancy and up to 12 months postpartum). Several biological, sociodemographic, and psychological risk factors are known to be associated with PPD.^{11,12} Previous psychiatric

illness and antenatal depression (AD) are among the most important. However, poor partner relationship quality (PRQ) has also been suggested as a risk factor for the development of maternal depression.^{13,14}

To further explore the essential factors associated with PPD, three aspects – relationship satisfaction, duration of depressive symptoms, and sexual satisfaction – should be considered. First, previous studies evaluating the association between marital dissatisfaction and PPD have largely been conducted during the first weeks¹⁵⁻¹⁸ or months^{19,20} after delivery. Evaluating relationship dissatisfaction 6 months after delivery is recommended because a couple's relationship may deteriorate following childbirth due to the significant changes that occur during this time, especially for first-time parents. Infant care during the first few months of life can place great strain on some couples, leading to higher levels of parenting frustration and stress as well as lower marriage satisfaction. An Australian study examining the prevalence of and risk factors for relationship dissatisfaction in women during the first year after childbirth showed that the period from birth to age 5 months is critical for satisfaction in a couple's relationship in comparison with the period of

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6 to 12 months postpartum.²¹ Similar findings were reported in a U.S. study.²²

Second, many cross-sectional^{16,23} and prospective^{24,25} studies have not controlled for the confounding effect of the persistence of depressive symptoms lasting from pregnancy into the postpartum period. A prospective study of predictors of PPD from pregnancy to 6 weeks postpartum found that the critical predictor is AD; other psychological measures, including marital satisfaction, appear to contribute no significant additional predictive power.²⁶

Third, previous studies about the association between relationship quality and PPD have used diverse measures of depression (diagnostic criteria vs. elevated symptoms) and domains of relationship quality (marital harmony, social support, happiness in relationship), making comparisons somewhat difficult. In relation to assessing the couple's relationship, one approach is to capture distinct interpersonal aspects rather than an unidimensional concept.²⁷ Women's perceptions of PRQ and sexual life after childbirth – important aspects of a good dyadic relationship – may be used to explore this association with later PPD.

The aim of the present study is to evaluate the association of PRQ and decline of sexual life (DSL) after childbirth with PPD from 12 to 15 months after childbirth, taking into account perinatal depression and other maternal and child characteristics. We hypothesized that both aspects of marital life (perception of PRQ and of DSL after childbirth) would be associated with PPD persisting at 12-15 months, independently of perinatal depression.

Methods

Design and sample

A sample of 517 women at high risk for PPD at 6 to 8 months after giving birth was used in a secondary analysis of data originally collected as a cluster randomized trial (Program for the Management of Depression during Pregnancy, PROGRAVIDA) that aimed to evaluate the impact of a depression management program on pregnant women with symptoms of depression. The methodology has been described elsewhere.²⁸ The postpartum women were 17 years of age or older and had received antenatal care through the public Unified Health System. The study excluded postpartum women whose children were over 9 months old and those who could not be reached for postpartum evaluation. The current analysis was conducted in 12 primary care units (Unidades Básicas de Saúde) across five neighborhoods in the North End of the capital of the state of São Paulo, Brazil, all of which have implemented the Family Health Strategy (Estratégia Saúde da Família). The Strategy is a robust approach to providing primary care for defined populations by deploying interdisciplinary health care teams.²⁹ Only low-risk cases (no obstetric or clinical complications) are treated by these teams; high-risk women are referred to obstetricians at the primary health care units or to hospital services as needed. Low-complexity postpartum care, including contraceptive counseling, prevention of cervical and breast cancers, and gynecological appointments, were also provided at the units.

Measurements

Dependent variable

PPD at 12 to 15 months after childbirth was assessed using the Patient Health Questionnaire-9 (PHQ-9). This is a diagnostic tool for depression that enables probable diagnosis according to the DSM-IV criteria for depressive disorder. The presence and intensity of each of the nine items in the 2 weeks preceding the interview were determined at 6 to 9 months postpartum. The scores range from 0 (not once) to 3 (almost every day), and the total score can range from 0 to 27. Scores of 10 or more were considered cases of PPD in accordance with the original instrument validation.³⁰ The PHQ-9 was validated in Brazil using a structured interview based on the DSM-IV (gold standard) and can differentiate between probable cases and non-cases of depression.³¹ The specificity of the PHQ-9 suicide screening item was 0.84, and sensitivity was 0.69 for the sample as a whole.³² The reliability coefficient (Cronbach's alpha) for the PHQ-9 total score was 0.84.³³

Independent variable

Quality of the partner relationship – Two aspects of the partner relationship were evaluated at 6 to 8 months after childbirth: women's perception of PRQ and women's evaluation of DSL after childbirth. Direct questions to the participants were used to evaluate both aspects. PRQ was ascertained through the following question: "How would you rate your relationship with your partner/husband?" Options for responses were terrible, poor, fair, good, and excellent. According to the answers, two groups were formed: high-quality relationship (high PRQ, answers of good and excellent) and low-quality relationship (low PRQ, answers of regular, bad, and terrible). Self-evaluation of sexual life was ascertained through one direct question to the mother: "Considering your sexual life before pregnancy, how would you describe your present sexual life: improved, the same, or worse?" According to the answers, two groups were formed: women who answered improved or the same were classified as no DSL and women who answered worse were classified as having experienced DSL.

Covariates

Perinatal depression – Depression was assessed during pregnancy and 6 to 8 months after childbirth. The PHQ-9 was used for both assessments. We used the same criteria for the evaluation of PPD at 12-15 months; therefore, a score of 10 or more was considered positive for AD or PPD at 6 to 8 months after childbirth (PPD 6/8). Based on these results, three groups were created: Group 1 (No AD/No PPD 6/8); Group 2 (Yes AD or PPD 6/8); and Group 3 (Yes AD/Yes PPD 6/8). The aim of this classification was to differentiate isolated cases of depression during pregnancy or the postpartum period from chronic cases of depression during pregnancy and the postpartum period.

Sociodemographic and obstetric questionnaire

Mothers' sociodemographic and behavioral characteristics, as well as obstetric information, were obtained through a structured questionnaire. The information obtained directly from the participants included age (17-24; 25-29; 30 years or more), years of schooling (0-4; 5-9; 10 or more); monthly household income (0-397; 398-680; > 680 USD); partner status (yes or no); and self-described skin color (white or non-white). Alcohol intake was assessed using the following question: "Since the birth of the baby, do you drink (at least once a week)?" Tobacco use was evaluated with a single question: "Have you smoked since the baby was born?" Responses for alcohol and tobacco use were scored as no, yes, or refused to answer.

Obstetric histories were obtained from the PROGRAVIDA study (control or intervention) and included type of delivery (vaginal or cesarean section); whether pregnancy was planned (yes or no); parity (first birth or two or more births); gender of the infant (female or male); gestational age at delivery (preterm if \leq 37 weeks or full-term if > 37 weeks); and birth weight (low if \leq 2,500 g or normal if > 2,500 g).

Procedures

All eligible postpartum women from the PROGRAVIDA study who had a live child 6 to 9 months of age ($n=517$) were invited to participate in the study through telephone contact. Fourteen women refused to participate and 140 could not be located for this assessment. Additionally, seven women had data missing for the outcome variable and were excluded. This left a total of 356 participants who were interviewed at home by a previously trained field researcher. Among the participants, 165 (64%) had been allocated to the intervention group and 191 (72.2%) to the control group (Figure 1). The second assessment, performed between 12 and 15 months postpartum, reached 143 women (55.8%) from the intervention group and 151 (57.8%) from the control group. During the first home visit, which took place 6 to 9 months after childbirth, the participants signed a consent form and answered all questionnaires/instruments.

Statistical analysis

Descriptive analysis was performed. All variables were categorized. We used the chi-square test or the chi-square test for linear trend when the categories were ordered. Comparisons between participants' and non-participants' characteristics were done using the chi-square or Fisher's exact test, as appropriate. Risk ratios (RRs) with 95% confidence intervals (95%CI), estimated using Poisson regression with robust variance, were used to assess the association between the explanatory variables (PRQ and DSL) and PPD at 12-15 months. Multivariate analysis was performed by using a stepwise backward selection procedure in which variables of interest (covariates) were inserted into the adjusted model. To be included as potential confounders, variables

had to be associated with PPD at 12-15 months and statistically significant ($p < 0.20$). The randomization group during pregnancy was included in all adjusted analyses. The main confounding variable was perinatal depression. Variables with $p < 0.05$ using the likelihood ratio test were retained in the model. Statistical analysis was performed in STATA 12 software.

Ethics statement

The study procedures were approved by the institutional review board at the Universidade de São Paulo (CEP/FMUSP 084/10, Nov 30, 2011). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All participants provided written informed consent.

Results

Of the 517 eligible postpartum women, 356 were interviewed at home 6 to 9 months after childbirth and gave information about the main exposure variables (PRQ and DSL) and perinatal depression. Comparison of the two groups, participants and nonparticipants ($n=161$), revealed that the former had higher levels of education and household income compared to nonparticipants. Taking into account the randomization process during pregnancy in the cluster study, there was no difference in AD, self-described skin color, number of children, or marital status between participants and nonparticipants. However, women from the intervention group who returned for the present study had a higher level of education and family income compared to nonparticipants. Between 12 and 15 months postpartum, 294 women gave information about the main outcome (PPD at 12-15 months). There were no significant differences between the characteristics of the sample at 6 to 9 and at 12 to 15 months after delivery. Losses to follow-up did not significantly change the characteristics of samples at 6 to 9 months and 12 to 15 months after delivery (Table 1).

Table 1 describes the final sample characteristics. Among the 294 participants (56.8% of eligible women), 83.3% were married or living with a partner, 88 (30.1%) were white, and 41 (14.0%) had more than 12 years of education. Ninety-two (31.3%) had a monthly family income of less than 397 USD. Maternal age ranged from 17.9 to 45.7 years, with a mean of 26.5 years. Seventy-eight women (26.5%) were aged 30 or older. Almost two-thirds of the women had two or more children at home. Only 77 women (26.3%) classified their pregnancy as planned. Regarding obstetric data, 9.1% and 12.2% of infants were born preterm and had low birth weight, respectively. The most frequent route of delivery was vaginal (either natural or forceps-assisted) (56.8%). Among all 356 participants, two women did not give information and 31 women (8.7%) refused to classify their current sexual life at 6 to 8 months after delivery, leaving a

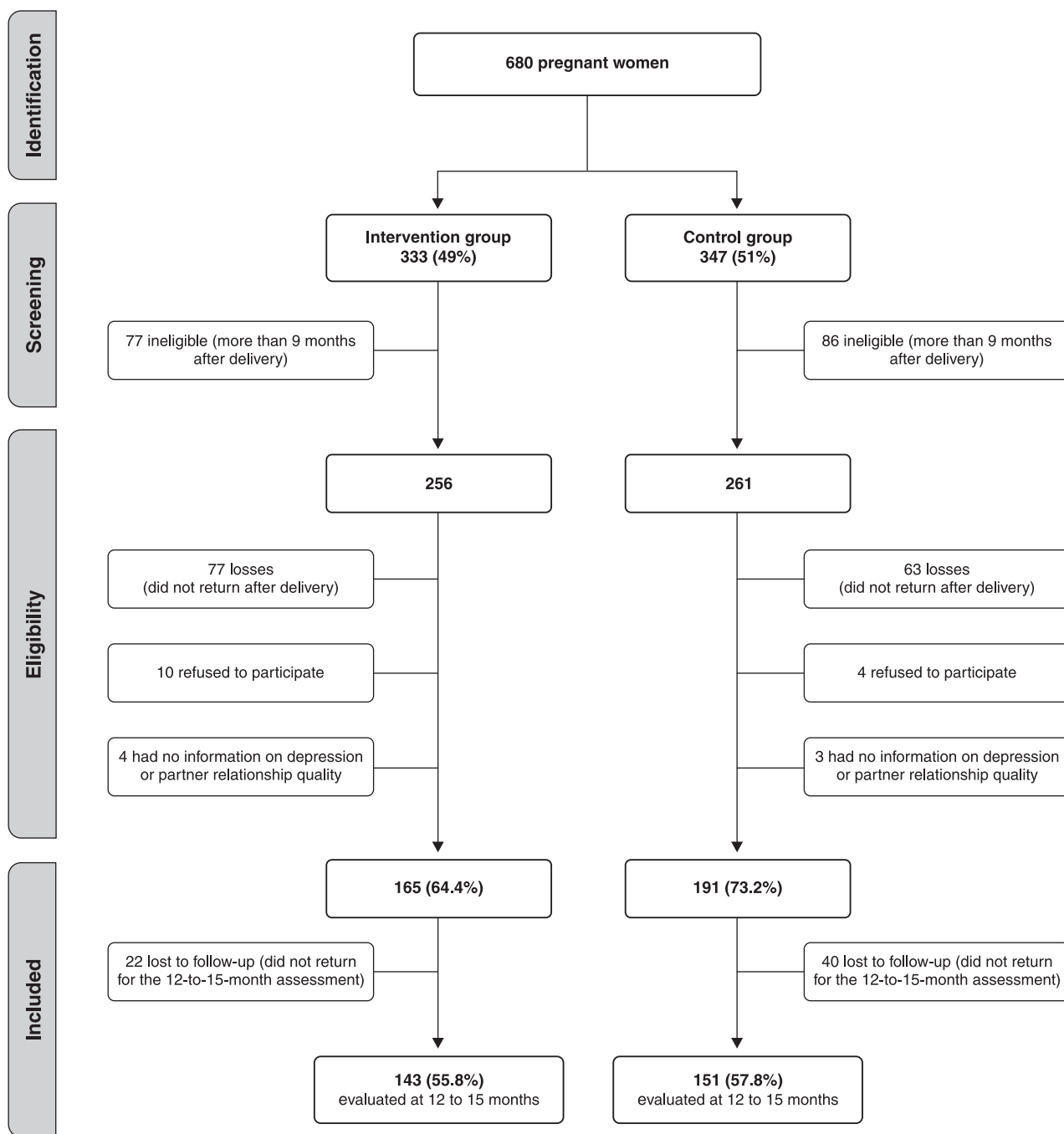


Figure 1 Flow diagram of participant inclusion.

total of 323 women with complete information about DSL. Eighty-one (25.1%) complained of DSL after childbirth. Regarding perinatal depression, 78 (26.5%), 166 (56.4%), and 50 (17%) were classified as No AD/No PPD 6/8 (Group 1), Yes AD or PPD 6/8 (Group 2), and Yes AD and PPD 6/8 (Group 3), respectively. Among 295 partnered women, 49 (16.6%) classified their relationship as low-quality. At 12 months, 59 (20.1%) (95%CI 15.4-24.6) women were classified as having PPD.

On bivariate analysis, PPD at 12-15 months was associated with the following risk factors: low PRQ

(RR = 2.72; 95%CI 1.52-4.82); DSL (RR = 2.27; 95%CI 1.31-3.93); AD or PPD 6/8 (RR = 15.0; 95%CI 2.08-108.4); AD and PPD 6/8 (RR = 40.5; 95%CI 5.67-290.5); and having had more than one pregnancy (RR = 2.14; 95%CI 1.13-4.04). The only protective factor was planned pregnancy (RR = 0.37; 95%CI 0.17-0.83). The other variables – skin color, education, infant gender, partner status, maternal age, income, mode of delivery, alcohol use, low birth weight, tobacco use, and group allocation – were not associated with PPD at 12-15 months (Table 2).

Table 1 Descriptive characteristics of women enrolled in a depression intervention in the city of São Paulo, Brazil (n=294)

Explanatory variable	6-9 months postpartum	12-15 months postpartum
Randomization group		
Intervention	165 (46.4)	143 (48.6)
Control	191 (53.6)	151 (51.4)
Partner status		
No	61 (17.1)	49 (16.7)
Yes	295 (82.8)	245 (83.3)
Years of schooling		
0-8	66 (18.5)	55 (18.7)
9-12	239 (67.1)	198 (67.3)
More than 12	51 (14.3)	41 (14.0)
Monthly household income (USD)		
0-397	117 (32.9)	92 (31.3)
398-680	126 (35.4)	104 (35.4)
> 680	113 (31.7)	98 (33.3)
Skin color		
White	106 (29.9)	88 (30.1)
Non-white	249 (70.1)	205 (69.9)
Number of children		
1	126 (35.4)	104 (35.4)
2 or more	230 (64.6)	190 (64.6)
Planned pregnancy		
No	256 (72.1)	217 (73.8)
Yes	99 (27.9)	77 (26.2)
Mother's age (years)		
18-24	157 (44.1)	128 (43.5)
25-29	102 (28.6)	88 (30.0)
30 or older	97 (27.3)	78 (26.5)
Type of delivery		
Vaginal	207 (59.3)	163 (56.8)
Cesarean	142 (40.7)	124 (43.2)
Infant gender		
Male	182 (51.7)	109 (50.0)
Female	170 (48.3)	109 (50.0)
Low birth weight		
No	304 (87.4)	187 (87.4)
Yes	44 (12.6)	27 (12.6)
Relationship quality		
High	246 (83.4)	203 (82.9)
Low	49 (16.6)	42 (17.1)
Depression at 6 months		
No AD/No PPD	78 (26.5)	90 (25.3)
Yes AD or PPD	166 (56.5)	204 (57.3)
Yes AD/Yes PPD	50 (17.0)	62 (17.4)

Data presented as n (%).

AD = antenatal depression; PPD = postpartum depression; USD = U.S. dollars.

For multivariable analysis, only those variables that were significantly associated with PPD at 12-15 months were included in the models. Table 3 presents the unadjusted and fully adjusted models. After adjusting for all factors, low PRQ (RR = 1.58; 95%CI 1.01-2.49; p = 0.04) and DSL (RR = 1.97; 95%CI 1.23-3.15; p = 0.004) remained associated with PPD at 12-15 months after controlling for perinatal depression. Both classifications of perinatal depression (AD or PPD 6/8 and AD and

PPD 6/8) were retained in the adjusted model and showed the highest RRs (Table 3).

Discussion

In this sample, we found that almost one in every five postpartum Brazilian women reported depressive symptoms 12-15 months after childbirth. As our key contribution, this study also examined two different aspects of couples'

Table 2 Bivariate analysis of PRQ, DSL, sociodemographic variables, and obstetric characteristics with PPD 12-15 months after childbirth

	n	PPD 12-15 months, n (%)	IRR	95%CI	p-value
Relationship quality					0.001
High	203	32 (15.7)	1		
Low	42	18 (42.8)	2.72	1.52-4.82	
DSL					0.001
No	201	29 (14.4)	1		
Yes	70	23 (32.8)	2.27	1.31-3.93	
Perinatal depression					< 0.001
No AD/No PPD	78	1 (1.3)	1		
Yes AD or PPD	166	32 (19.3)	15.0	2.08-108.40	
Yes AD and PPD	50	26 (52.0)	40.5	5.67-290.50	
Skin color					0.38
White	88	15 (17.0)	1		
Black/mixed/other	205	44 (21.4)	1.25	0.70-2.26	
Years of schooling					0.63
0-4	55	12 (21.8)	1		
5-9	198	41 (20.7)	0.94	0.49-1.80	
> 10	41	6 (14.6)	0.67	0.25-1.78	
Infant gender					0.97
Male	147	29 (19.7)	1		
Female	143	28 (19.6)	0.99	0.59-1.67	
Partner status					0.74
No	49	9 (18.3)	1		
Yes	245	50 (20.4)	1.11	0.56-2.25	
Mother's age (years)					0.27
17-24	128	21 (16.4)	1		
Family income (USD)					0.97
0-397	92	19 (20.6)	1		
398-680	104	21 (20.2)	0.98	0.52-1.81	
> 680	98	19 (19.4)	0.94	0.49-1.77	
Number of pregnancies					0.007
1	104	12 (11.5)	1		
> 1	190	47 (24.7)	2.14	1.13-4.04	
Planned pregnancy					0.005
No	216	52 (24.1)	1		
Yes	77	7 (9.1)	0.37	0.17-0.83	
Mode of delivery					0.62
Vaginal	163	34 (20.8)	1		
Cesarean section	124	23 (18.5)	0.88	0.52-1.50	
Tobacco user					0.03
No	242	43 (17.8)	1		
Yes	52	16 (30.8)	1.73	0.97-3.07	
Alcohol user					0.19
No	250	4 (18.8)	1		
Yes	44	12 (27.2)	1.45	0.76-2.73	
Low birth weight					0.64
No	251	49 (19.5)	1		
Yes	35	8 (22.8)	1.17	0.55-2.47	
Premature					0.57
No	260	52 (20.0)	1		
Yes	26	4 (15.4)	0.77	0.27-2.12	

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Table 2 (continued)

	n	PPD 12-15 months, n (%)	IRR	95%CI	p-value
Randomization group during pregnancy					0.28
Intervention	143	25 (17.5)	1		
Control	151	34 (22.5)	1.28	0.77-2.15	

95%CI = 95% confidence interval; AD = antenatal depression; DSL = decline of sexual life; IRR = incidence rate ratio (relative risk); PPD = postpartum depression; USD = U.S. dollars.

* Significant variables for subsequent multivariable analysis include relationship quality, DSL, previous depression, number of pregnancies, smoking habits, and whether pregnancy was planned.

Table 3 Multivariable analysis of explanatory variables and PPD at 12-15 months after childbirth with crude and adjusted IRR, 95%CI, and p-values

	Unadjusted RR	95%CI	p-value	Adjusted* RR	95%CI	p-value
Relationship quality			0.000			0.04
High	1			1		
Low	2.72	1.52-4.82		1.58	1.01-2.49	
DSL			0.001			0.004
No	1			1		
Yes	2.27	1.31-3.93		1.97	1.23-3.15	
Perinatal depression			< 0.001			< 0.001
No AD/No PPD 6/8	1			1		
Yes AD or PPD 6/8	15.0	2.08-108.4		11.8	1.62-86.6	
Yes AD and PPD 6/8	40.5	5.67-290.5		27.0	3.73-195.4	

95%CI = 95% confidence interval; AD = antenatal depression; DSL = decline of sexual life; PPD = postpartum depression; RR = risk ratio.

* Included number of pregnancies, smoking habits, and whether pregnancy was planned.

relationships: satisfaction and sexual decline. Even after controlling for perinatal depression, perceptions of low PRQ and DSL between 12 and 15 months after childbirth were associated with maternal depression. Moreover, this study confirms that some women experience persistent postpartum depressive symptoms beyond the postpartum period, which can have short- and long-term consequences on both mother-partner and mother-child relationships.³⁴ The transition to parenthood is a period of significant change for the couple, with increased demands of housework and possibly increased conflict.³⁵ The focus of attention shifts from the couple's needs to the infants' needs, such as breastfeeding, and sleep disturbance is common. This may limit opportunities for the couple to share leisure activities and intimacy. It is no surprise that marital satisfaction may decline after childbirth, making this transition even more complicated, considering that any additional stress at this time may have a considerable and longer-lasting impact on maternal well-being.³⁶ Conversely, a stable and supportive partner relationship can be particularly important to helping a woman overcome barriers and find available coping resources during the postpartum period.³⁷

The association between low PRQ and maternal depression found in the present study aligns with the findings of several previous studies and meta-analyses, although the magnitude of the association varies slightly. A meta-analysis of the risk for PPD³⁸ reported that marital dissatisfaction had a small effect on PPD, while other systematic reviews found a moderate effect.¹³ The difference may be explained by the method of assessment of marital relationship, whether via interview or via self-report:

the former was not as predictive as the latter. According to Robertson et al.,¹⁴ women may feel reluctant to discuss the nature of their relationships with an interviewer; the anonymity of a questionnaire is easier. Increased sensitivity in questionnaire measures is an additional explanation. A more recent meta-analysis of 203 studies published between 2005 and 2014 found that psychological factors and marital dissatisfaction have a moderate effect on PPD.¹¹

The association between DSL and maternal depression has been less studied, although an emerging evidence base suggests that a couple's sexual satisfaction is associated with lower levels of AD and PPD.³⁹ Conversely, a Brazilian cohort study reported negative impact of perinatal depression on women's sex life 12 months after childbirth.⁴⁰ While several studies have shown that many women may develop depression following childbirth, it is well established that women experiencing more than one risk factor are at higher risk.¹⁴ Among these PPD studies, few have included sexual satisfaction as a risk factor. Therefore, the need remains for prospective studies to evaluate this association, considering that women with PPD reported less interest in sex and less sexual satisfaction than mothers without depression.⁴¹

Our results showed that women's perceptions of a good relationship with their partner and no reported decline in sexual life after childbirth when evaluated between 6 and 8 months after delivery were associated with reduced odds of persistent depressive symptoms at 12-15 months after delivery. A possible explanation resides in the fact that a woman in a good partnership with sexual enjoyment may feel more able to face the

challenges of the postpartum period. The psychological and physical stress and demands associated with care of the infant may have a lower negative impact on mothers who can rely on a good relationship with their partner. On the contrary, low-satisfaction relationships would probably not buffer women from the stressors that can lead to depression.³⁶ We assume that women who report a good relationship and no sexual difficulties have better communication, closeness, and support from their partner compared with women who report a low-quality relationship and sexual problems. Therefore, our results are in agreement with the marital (or partner) discord model of depression, suggesting that marital problems increase the risk of mental illness and depression.⁴² Nevertheless, this association between low satisfaction in the couple relationship and maternal depression beyond the postpartum period is probably bidirectional.

Marital satisfaction is related to social support, a key protective factor in the postpartum period. Women experiencing depressive symptoms are more likely to view their relationships negatively, experience conflict in their relationships, and utilize less social support than women not experiencing depressive symptoms.³⁶ Other studies have found that depressed mothers experience more difficulties not only with their partners, but also in their social relationships.⁴³ Additionally, in one sample, depressed mothers felt that they received lower quality social support than reported by nondepressed mothers.⁴⁴ The association between poor marital relationships and a lack of practical help and emotional support among depressed mothers was also observed in a qualitative study.⁴⁵ A bidirectional association between quality of marital relationship and depressive symptoms was found in a prospective Australian study of 3,694 women, who were followed for more than 14 years. Women were interviewed 3 to 5 days after delivery and again when the child was 6 months, 5 years, and 14 years of age. The authors found a consistent and strong relationship between these variables over time.²⁵

Our results may have clinical implications. To reduce the risk of later maternal depression, one should aim to enhance the couple relationship by addressing relationship and sexual problems. Improving the quality of the marital relationship, which includes sex life after childbirth, may help women avoid depression. Therefore, screening for dyad and sexual problems is recommended during this transition to motherhood. Although screening for perinatal depression is already established practice,⁴⁶ we believe there is still a need to conduct other psychosocial risk assessments of women in the perinatal period. Moreover, early identification of risk factors for maternal depression allows early intervention.³⁷ Effective preventive approaches for depression need to include factors that are amenable to change, such as the couple's relationship. The type and timing of the intervention is still a matter of debate. According to Pinquart & Teubert's meta-analysis,⁴⁷ couple interventions that include both antenatal and postnatal components are more likely to be effective in improving couple communication and psychological well-being. Another randomized trial found that a parenthood psycho-educational workshop improved the

couple's communication during conflict at 3 months after birth.⁴⁸

An important final aspect of this study relates to difficulties experienced by women and health professionals going through these types of problems. Women may not feel comfortable seeking help for depression¹³ or for sexual^{49,50} and relationship difficulties,^{21,50} and may avoid those topics during perinatal visits. Additionally, many health care professionals are reluctant to discuss sexuality, mental health, and relationship problems with their patients due to potential barriers such as cultural factors, lack of acknowledgement, and time limitations during clinical appointments.⁵¹ Relatedly, we found that planned pregnancies were protective, but women who have unplanned pregnancies might present differently in health care settings. For example, one study found that higher levels of education are associated with planned pregnancies,⁵² and women who have unplanned pregnancies might thus have greater health literacy needs.

This study has a number of strengths and limitations. One strength is the evaluation of the association between two different aspects of marital relationships and PPD at 12-15 months among low- and medium-to-low income postpartum women who had previously shown symptoms of depression during pregnancy. Regarding limitations, first, our findings are based on secondary data analysis of a sample of pregnant women who took part in a cluster trial designed to evaluate the efficacy of a psychosocial intervention to prevent PPD. Nevertheless, there was no association between the intervention during pregnancy and PPD at 12-15 months on bivariate or multivariate analyses. Second, our analysis was limited to 294 participants (56.8% of 512 eligible women) who gave information about depression symptoms 12-15 months after childbirth. Despite this high rate of attrition, there were no differences in sociodemographic, obstetric, or exposure variable characteristics between the women included and those lost to follow-up. Third, we assessed women's PRQ and DSL using two single direct questions instead of valid instruments. Use of this type of assessment is common: a meta-analysis about modifiable partner factors associated with perinatal depression showed that partner factors were predominately assessed using tools developed by the authors rather than validated measures.³⁹ Moreover, there is a risk of recall bias, considering that depressed women may evaluate their current sexual life and PRQ differently compared to women without depression. On the other hand, the fact that the PRQ was assessed (between 6 and 8 months after childbirth) before the PPD assessment helped mitigate reporting bias. Fourth, our sample included only heterosexual mothers. Future research about PRQ and perinatal depression should be more inclusive of same-sex couples. Additionally, it should evaluate different dimensions of support, either from a partner or from a family member. Finally, our results cannot be generalized to other female samples outside of a treatment trial setting.

In conclusion, we believe that our findings have clinical implications. PPD at 12-15 months is a major public health concern, with serious consequences for both child and mother. Despite the fact that persistent

maternal depression (during pregnancy and the postpartum period) is the stronger risk factor associated with PPD at 12-15 months, our data showed that two different aspects of partner relationship are also important and independent risk factors for this phenomenon. Therefore, screening for PPD at 12-15 months should include assessment of partner relationship quality and sexual life after childbirth. The early detection and treatment of relationship problems would have positive effects not only on the couple's lives but also on the mother's mental health.

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Disclosure

The authors report no conflicts of interest.

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