

POSTPARTUM MENTAL HEALTH: CAN DYADIC STRESS EXPLAIN THE ASSOCIATION BETWEEN MARITAL SATISFACTION AND POSTPARTUM DEPRESSION?

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Abstract

Introduction. A wide range of studies illustrated women's increasing incidence of postpartum depression. The mother's depression is related to multiple areas of the child's development: lower weight, sleep disturbances, speaking delays, lower IQ, and delays in behavioral acquisitions. Research illustrates that social and marital characteristics are related to postpartum depression, stress is also considered an essential predictor of postpartum depression, and most mothers are married or cohabiting. *Research purpose.* We are interested in exploring the mediating role of dyadic stress on the relationship between marital satisfaction and postpartum depression. *Methods.* Using a sample of 169 primiparous women (women at first birth) in the first year postpartum, we propose investigating the association between marital satisfaction, dyadic stress and postpartum depression and the mediating role of four categories of dyadic stress on the relationship between marital satisfaction and postpartum depression. *Results.* Significant correlations were found between marital satisfaction, postpartum depression and three of four categories of dyadic stress. Moreover, the minor internal stress of the couple is the one that can explain the connection between marital satisfaction and postpartum depression. *Discussion.* The outcomes underline the importance of the couple's aspects in the mothers' postpartum mental health.

Cuvinte-cheie: depresie postpartum, satisfacție maritală, stres diadic, primipare

Keywords: postpartum depression, marital satisfaction, dyadic stress, primiparous

1. INTRODUCTION

A wide range of studies, including a meta-analysis, illustrated the increasing incidence of postpartum depression in women (e.g., Gelaye *et al.*, 2016; Hahn-Holbrook *et al.*, 2018). The mother's depression is related to multiple areas of the child's development: lower weight, sleep disturbances (Gress-Smith *et al.*, 2012), speaking delays, lower IQ, and delays in behavioral acquisitions (Grace *et al.*, 2003). Thus investigating the mental health of mothers is crucial. Moreover, the previous data shows that postpartum depression has a higher impact on primiparous (mother at first birth) compared to multiparous (mother with previous births) (Tokumitsu *et al.*, 2020). However, little is known about the impact of

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couple's aspects on depression, given that the most postpartum women are married or cohabiting (Seefeld *et al.*, 2022). Thus, the importance of maternal postpartum depression requires deepening this concept and exploring the associated factors, which, once acknowledged, can diminish this vicarious circle. In this direction, we propose investigating the effect of marital satisfaction on postpartum depression through four mediators derived from dyadic stress: minor internal stress, major internal stress, minor external stress, and major external stress.

1.1 POSTPARTUM DEPRESSION

Postpartum depression is diagnosed as a major depressive disorder (The APrON Team *et al.*, 2017). It is characterized by a depressive mindset, decreased pleasure or appetite to engage in regular activities, sleeplessness or hypersomnia, agitation or psychomotor inactivity, exhaustion, modifications in appetite, sensations of depreciation, regret, reduced capacity to focus, and suicidal ideas. The symptoms start approximately one month after delivery and negatively affect the daily routine (American Psychiatric Association, 2013).

Previous research evidenced the possible predictors of postpartum depression as anterior episodes of depression and anxiety (The APrON Team *et al.*, 2017), stress during the pregnancy, poor social support (Kamalifard *et al.*, 2014; The APrON Team *et al.*, 2017), parenthood stress, insufficient finances (Beck, 2002; Goyal *et al.*, 2010; The APrON Team *et al.*, 2017). A recent review identified stress as one of the most important predictors of postpartum depression (Hutchens & Kearney, 2020). Beck (2002) grouped the predictors of postpartum depression identified in his meta-analysis and proposed three categories of factors that influence the occurrence of depression among postpartum mothers: individual aspects, child aspects, and relational aspects. Consisted literature analyzed individual aspects of postpartum depression, but still exists a notable gap concerning the deepening of relational characteristics.

1.2 MARITAL SATISFACTION AND POSTPARTUM DEPRESSION

In a recent longitudinal study, Nieh *et al.* (2021) used a large sample of mothers (4332 of women) and concluded that marital satisfaction represents an important predictor of postpartum depression. Similar results were found by Çankaya & Alan Dikmen (2022), studying 337 postpartum mothers. Furthermore, they suggest that a couple's characteristics and functions can be essential in preventing postpartum depression in women.

Whisman *et al.* (2011) explored the link between marital satisfaction and perinatal depression in a sample of 113 women. The results revealed that marital satisfaction predicts depressive symptomatology. Precisely, a lower marital satisfaction predicts a high level of postpartum depression. These results confirm the other research outcomes (Davila *et al.*, 2003; Małus *et al.*, 2016; Pebryatie *et al.*, 2022; Whitton *et al.*, 2008). It seems that the relationship is bidirectional. Marital satisfaction impacts postpartum depression (Figueiredo *et al.*, 2018), and, in turn, postpartum depressive symptomatology predicts marital satisfaction up to two years after birth (Garthus-Niegel *et al.*, 2018). Women with low marital satisfaction reported increased severity of depressive symptomatology. In this line, mothers who declare low marital satisfaction also report sleeping and eating

disruptions, anxiety and insecurity, emotional instability, confusion, loss of self, culpability, embarrassment, and suicidal thoughts (Małus *et al.*, 2016).

Qi *et al.* (2022) found that marital satisfaction directly affects postpartum depression. Using a sample of 817 women from China in their six weeks postpartum, the authors concluded in their study that social support mediates the link between marital satisfaction and postpartum depression.

1.3 THE MEDIATING ROLE OF DYADIC STRESS

Studies focused on general depression revealed several mediators of the relationship between marital satisfaction and depression in women: spousal support (Davila *et al.*, 1997), emotional reactivity (Bartle-Haring *et al.*, 2019), aggressive conflict resolution style (Du Rocher Schudlich *et al.*, 2011), self-silencing (inability to express one's own needs) (Uebelacker *et al.*, 2003). Recent research showed that external stress (stress that originates outside the couple) represents an important mediator of the relationship between postpartum depression and child development (Fredriksen *et al.*, 2019), between perceived negative emotionality of child and marital satisfaction (Berryhill *et al.*, 2016), or between anxiety and postpartum depression (Fernandes *et al.*, 2021).

At the moment, research illustrates that (a) stress is considered an essential predictor of postpartum depression (Hutchens & Kearney, 2020), (b) social characteristics are also important predictors of postpartum depression (Beck, 2002), and (c) the majority of mothers are married or cohabiting (Seefeld *et al.*, 2022). Thus, we are interested in exploring the role of dyadic stress which represents a particular form of social stress derived from the relationship between spouses (Randall & Bodenmann, 2009) on postpartum depression. Dyadic stress implies common problems, emotional closeness, and the upkeep of the intimate connection between the partners. Specifically, dyadic stress represents a stressful situation or circumstance involving both spouses. It can affect the spouses directly when the source of the stress is from inside the couple, and both confront it, or indirectly when the stress of one partner affects the other (Bodenmann, 2005). In function of three criteria, Randall & Bodenmann (2009) identified three categories of dyadic stress: internal stress versus external stress, depending on the locus of the stress, minor stress versus major stress, counting on the intensity and acute stress versus chronic stress, hanging on the duration of stress. Randall & Bodenmann's review (2017) focused on stress as a dyadic construct. Summarizing 26 empirical studies, the authors concluded that both internal and external dyadic stress negatively correlates with marital satisfaction.

1.4 THE PRESENT STUDY

The main goal of the present research is to deepen the association between marital satisfaction and postpartum depression, which was widely reported (e.g., Çankaya & Alan Dikmen, 2022; Davila *et al.*, 2003; Figueiredo *et al.*, 2018; Małus *et al.*, 2016; Nieh *et al.*, 2021; Pebryatie *et al.*, 2022; Whisman *et al.*, 2011) through to the mediating role of the dyadic stress. Thus, the first hypothesis was that *marital satisfaction is negatively associated with postpartum depression in primiparous mothers (H1)*. Based on the Zare *et al.* (2014) results that marital satisfaction is related to general stress in postpartum, we hypothesized that *marital satisfaction is negatively associated with minor internal stress (H2.1), major*

internal stress (H2.2), minor external stress (H2.3) and major external stress (H2.4). A recent meta-analysis revealed that, alongside low marital satisfaction, stress is one of the most common factors of postpartum depression (Hutchens & Kearney, 2020). So, the third hypothesis supposes that the four types of stress, respectively minor internal (H3.1), major internal (H3.2), minor external (H3.3), and major external (H3.4), are positively related to postpartum depression. The main hypotheses are that the association between marital satisfaction and postpartum depression is mediated by minor internal stress (H4.1), major internal stress (H4.2), minor external stress (H4.3), and major external stress (H4.4).

2. METHOD

2.1 PROCEDURE

Primiparous women were invited to complete a series of questionnaires disseminated on parenting groups on Facebook, like *Mothers of little kids (Mamici de pitici)*, *In the arms of mom (In brate la mami)*, *Breastfeeding support (ParentIs Sprijin pentru alaptare)*. They were informed about the main scope of the study, the possibility of giving up any moment and the data confidentiality. They also were asked to inform other primiparous women about our research. The participants received the instruments in a randomized order. The participants should complete all items before returning the questionnaire. In this way, we did not have missing answers. The University Ethics Committee approved the design of the present study.

2.2 PARTICIPANTS

One hundred sixty-nine primiparous women, aged between 19 and 43 years, with a mean age of 27.65 (SD=4.98) completed the three questionnaires described below. 55.5% of participants live in rural areas and 44.5% in urban areas. Ninety-six percent of them were married, and 4% were cohabiting. The children's age was between 2 and 11 months, with a mean of 6.28 (SD=2.72). All participants come from an emerging country.

2.3 INSTRUMENTS

Demographic data. The participants completed several demographic data, such as age, the environment of origin, marital status, and the age of the child.

Couples Satisfaction Index (CSI16; Funk & Rogge, 2007) measured mothers' marital satisfaction. It represents a short form of the original scale (32 items) and contains 16 items distributed on six and seven Likert scales, ranging from 0 to 5 or 6. A sample of items are: 'In general, how often do you think that things between you and your partner are going well?', 'Our relationship is strong,' 'In general, how satisfied are you with your relationship?'. The total score was obtained by summing the individual's answers. The original study presents very good properties for convergent, divergent and construct validity and excellent internal consistency of scale ($\alpha = .98$). We also obtain outstanding reliability in our sample, with alpha Cronbach .93, similar to other studies on similar populations (Candel & Turliuc, 2019).

The Multidimensional Stress Questionnaire (MSQ-P; Bodenmann *et al.*, 2008) measured the dyadic stress perceived by mothers. It contains 30 items on a four-point Likert scale, ranging from 1 (not stressful) to 4 (very stressful). The questionnaire includes four dimensions: minor internal stress (e.g., 'Difference of opinion with your partner'), major internal stress (e.g., 'Infidelity'), minor external stress (e.g., 'living situation'), and major external stress (e.g., 'Serious illness or death of the partner or someone close'). The instrument addresses the acute stress from the last seven days and chronic stress from the last 12 months. The subscales scores were obtained by summing the specific items for internal versus external stress, minor versus major and acute versus chronic, resulting in eight subscales. For the present study, we used the four dimensions of acute stress. Recent studies illustrate good subscale reliability, with alpha Cronbach .82 for chronic internal stress and .66 for chronic external stress (Merz *et al.*, 2014). In our sample, alpha Cronbach takes values between .80 and .92 for each dimension.

Edinburgh Postnatal Depression Scale (EPDS; Cox *et al.*, 1987) was used to measure postpartum depression in primiparous women. It includes ten items, ranging from 0 (like always) to 3 (not at all), referring to the participants' feelings from the last seven days (e.g., 'I have blamed myself unnecessarily when things went wrong', 'I have been so unhappy that I have had difficulty sleeping'). After reversing the indirect items, the total score was calculated by summing the participants' answers. The scale present excellent psychometric properties, and good predictive validity (Cox *et al.*, 1987; Smith-Nielsen *et al.*, 2018; Vázquez & Míguez, 2019). In our sample of primiparous, alpha Cronbach is .84.

2.4. DATA ANALYSES STRATEGY

We analyzed the data using Jamovi (R Core Team, 2021; The jamovi project, 2021), IBM SPSS 20 tool and Process v3.5 (Hayes, 2013). First, we conducted descriptives and correlational analyses in Jamovi and SPSS 20 to effectuate the preliminary analyses. Second, we ran parallel mediation analyses using Model 4 from Process v3.5 to test the hypotheses of the present study. To expand previous outcomes, we included a dyadic perspective of stress as the mediator. The mediating analysis offers a nuanced point of view of the relationship between variables. In our case, the mediating role of dyadic stress helps us comprehend why not all primiparous mothers with low levels of marital satisfaction suffer from postpartum depression (Goldfarb & Trudel, 2019). The primary conceptual model involves marital satisfaction as the independent variable, postpartum depression as the dependent variable and four types of stress as mediators: minor internal stress, major internal stress, minor external stress, and major external stress. We estimate 95% confidence by creating bootstrap-based confidence intervals, assuming 5000 bootstrap samples (Preacher & Hayes, 2004). We analyzed the total (c) and the direct (c') effect of marital satisfaction on postpartum depression and the indirect (a*b) effects through the four types of stress (Figure no. 1). We also evaluated the alternative models: the predictor was replaced with the criteria and vice-versa (1), the stress was considered the predictor (2) and then the criteria (3). In this way, we rule out the alternative models.

3. RESULTS

3.1 PRELIMINARY ANALYSES

Firstly, we calculated the mean, standard deviation and Pearson correlation between the main variables of the present study. Complete details are illustrated in Table no. 1. The variables present significant medium bivariate correlations, except for major external stress and postpartum depression association which association is not statistically significant ($r = .094$, $p = .223 > .05$). A high correlation is established between marital satisfaction and minor internal stress ($r = -.670$, $p < .001$).

Table no.1
Descriptives statistics and correlation matrix

	Mean	Std. dev.	1	2	3	4	5	6
1. Marital satisfaction	68.6	12.1	—					
			—					
2. Minor internal stress	16.2	5.12	-.670 ***	—				
			< .001	—				
3. Major internal stress	4.65	1.65	-.360 ***	0.455 ***	—			
			< .001	< .001	—			
4. Minor external stress	14.0	4.16	-.377 ***	0.535 ***	0.386 ***	—		
			< .001	< .001	< .001	—		
5. Major external stress	12.8	5.89	-.201 **	0.262 ***	0.307 ***	0.385 ***	—	
			0.009	< .001	< .001	< .001	—	
6. Postpartum depression	18.4	5.11	-.346 ***	0.473 ***	0.174 *	0.295 ***	0.094	—
			< .001	< .001	0.024	< .001	0.223	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

3.2 PATH ANALYSIS

The total effect of marital satisfaction on postpartum depression

Marital satisfaction negatively correlates with postpartum depression ($r = -.34$, $p < .001$) and the total effect of marital satisfaction on postpartum depression is statistically significant ($c = -.14$, $p < .001$). So, the first hypothesis is confirmed, marital satisfaction is negatively associated with postpartum depression in primiparous mothers (H1).

The direct effect of marital satisfaction on the four types of stress

The a_1 path from marital satisfaction to minor internal stress is negative and significant ($a_1 = -.28$, $p < .001$), so H2.1 is confirmed. The a_2 path from marital satisfaction to major internal stress is significantly negative ($a_2 = -.05$, $p < .001$), so H2.2 is confirmed. The a_3 path from marital satisfaction to minor external stress is negative and significant ($a_3 = -.13$, $p < .001$), so H2.3 is confirmed. The a_4 path from marital satisfaction to major external stress is negative and significant ($a_4 = -.10$, $p < .01$) and H2.4 is confirmed.

The direct effect of the four types of stress on postpartum depression

The b_1 path from minor internal stress to marital satisfaction is positive and statistically significant ($b_1 = .42, p < .001$), so H3.1 is confirmed. The b_2 path from major internal stress to postpartum depression is insignificant statistically ($b_2 = -.19, p = .44 > .05$), so H3.2 is infirmed. The b_3 path from minor external stress to postpartum depression is not significant ($b_3 = .10, p = .33 > .05$), and H3.3 is infirmed. The b_4 path from major external stress to postpartum depression is negative but statistically insignificant ($b_4 = -.03, p = .57 > .05$), so H3.4 is denied.

The indirect effect of marital satisfaction on postpartum depression through minor intern stress

The first indirect effect of marital satisfaction on postpartum depression through minor intern stress is statistically significant ($a_1 * b_1 = -.12, CI [-.1856; -.0674]$), so H4.1 is confirmed. The subsequent indirect effects are statistically insignificant ($a_2 * b_2 < .01, CI [-.0097; .0372]$, $a_3 * b_3 = -.01, CI [-.0429; .0119]$, $a_4 * b_4 < .01, CI [-.0088; .0193]$), so H4.2, H4.3 and H4.4 are denied. The direct and indirect paths are depicted in Figure no.1.

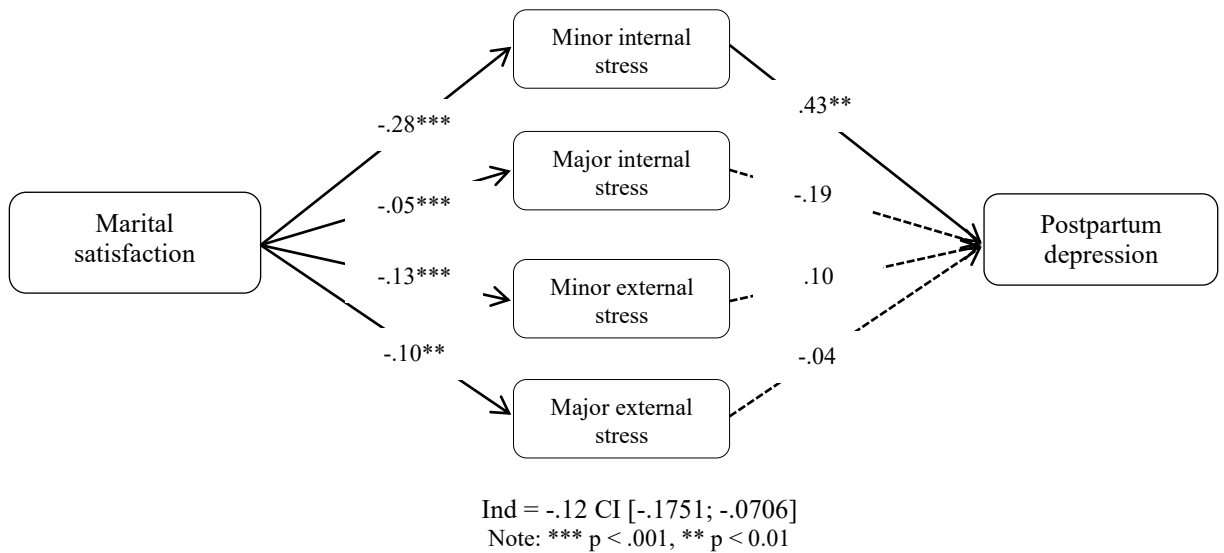


Figure no. 1 - The statistical model of parallel mediation analysis

Overall, the total indirect effect is significant statistically ($a * b = -.12, CI [-.1764; -.0714]$). The direct effect is statistically insignificant ($c' = -.02, p = .53 > .05$), so the mediation of minor intern stress between marital satisfaction and postpartum depression is total (see Figure no. 2). Complete details about total, direct and indirect effects are included in Tables no. 2 and no. 3.

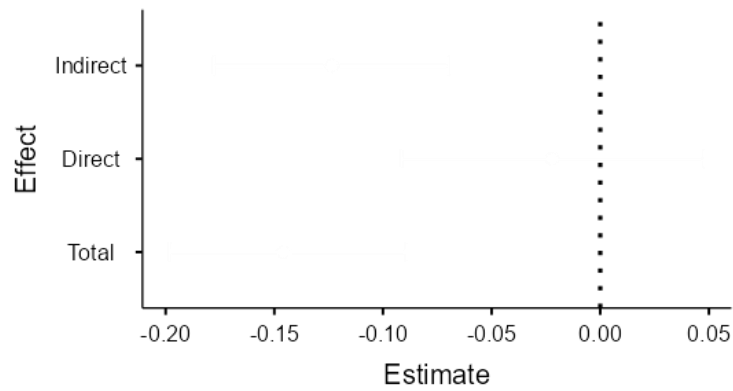


Figure no. 2 - The mediation effect of minor intern stress between marital satisfaction and postpartum depression. Estimate Plot

Table no. 2
Path estimates of direct effects

				95% Confidence Interval						
				Label	Estimate	SE	Lower	Upper	Z	p
MS	→	MiIS	a ₁	-0.2831	0.0243	-0.3310	-0.2351	-.6695	< .001	
MS	→	MaIS	a ₂	-0.0498	0.0098	-0.0683	-0.0295	-0.3598	< .001	
MS	→	MiES	a ₃	-0.1294	0.0246	-0.1780	-0.0809	-0.3775	< .001	
MS	→	MaES	a ₄	-0.0974	0.0368	-0.1702	-0.0247	-0.2006	< .01	
MiIS	→	PD	b ₁	0.4277	0.1035	0.2233	0.6321	4.289	< .01	
MiIS	→	PD	b ₂	-0.1905	0.2477	-0.6795	0.2986	-0.0614	0.443	
MiES	→	PD	b ₃	0.1029	0.1056	-0.1057	0.3115	0.0837	0.331	
MaES	→	PD	b ₄	-0.0373	0.0657	-0.1670	0.0923	-0.0430	0.570	
MS	→	PD	c	-0.0244	0.0391	-0.1015	0.0528	-0.6233	0.533	

Note: MS=Marital satisfaction, MiIS=Minor intern stress, MaIS=Major intern stress, MiES=Minor extern stress, MaES=Major extern stress, PD=Postpartum depression

Table no. 3

Mediation Estimates. Total, direct and indirect effects

Effect	Label	Estimate	SE	95% Confidence Interval		Z	SE
				Lower	Upper		
Indirect	$a_1 \times b_1$	-0.1211	0.0303	-0.1870	-0.0669	-0.2871	0.0706
Indirect	$a_2 \times b_2$	0.0093	0.0121	-0.0103	0.0372	0.0018	0.0024
Indirect	$a_3 \times b_3$	-0.0026	0.0026	-0.0081	0.0022	-0.0316	0.0314
Indirect	$a_4 \times b_4$	0.0007	0.0013	-0.0016	0.0036	0.0086	0.0159
Indirect	$a \times b$	-0.1214	0.0262	-0.1751	-0.0706	-0.2880	0.0601
Direct	c	-0.0244	0.0391	-0.1015	0.0528	-0.6233	0.533
Total	$c + a \times b$	-0.1458	0.0306	-0.2062	-0.0853	-4.7620	< .001

The alternative models

In order to evaluate alternative explanations, we aimed to statistically test the mediation models in which the predictor was replaced with the criteria and vice versa (1), the stress was considered the predictor (2) and then the criteria (3).

The first alternative model in which postpartum depression represents the predictor and marital satisfaction constitutes the criteria is statistically significant ($a = .87$, $p < .001$; $b = -.46$, $p < .001$; $a*b = -.40$, CI [-.6560; -.2052]. Previous studies have already demonstrated the notable effect of postpartum depression on marital satisfaction (e.g., Garthus-Niegel *et al.*, 2018; Malus *et al.*, 2016).

The second alternative model is constituted by dyadic stress as the predictor, postpartum depression as the criteria and marital satisfaction as the mediator. The model is statistically significant, but the indirect effect is lower than the indirect effect of the conceptual model ($a = -.52$, $p < .001$; $b = -.09$, $p = 0.01$; $a*b = .04$, CI [.0116; .0895].

The third alternative model is composed by marital satisfaction as predictor, dyadic stress as criteria and postpartum depression as mediator ($a = -.14$, $p < .001$; $b = .47$, $p < .01$; $a*b = -.06$, CE [-.1304; -.0203]). The direct and indirect paths are significant, but the indirect effect is lower than the proposed model.

4. DISCUSSION

The main goal of the present research was to explore the mediating role of dyadic stress on the association between marital satisfaction and postpartum depression. In this line, we adopted Bodenmann's (2005) conceptualization of dyadic stress, which encompasses four types of stress depending on the sources (inside or outside of the couple) and severity (minor or major).

The relationship between marital satisfaction and postpartum depression was already demonstrated (e.g., Çankaya & Alan Dikmen, 2022; Nieh *et al.*, 2021; Pebratie *et al.*, 2022), and our results confirm it. Thus, the study's first hypothesis is confirmed: marital satisfaction is negatively associated with postpartum depression in primiparous mothers (H1). The more satisfied a woman is with her relationship with her husband in the first months after the first birth, the less likely

she is to have depressive symptoms. The path analysis confirms the second hypothesis, and marital satisfaction is negatively associated with minor intern stress (H2.1), major intern stress (H2.2), minor extern stress (H2.3) and major extern stress (H2.4). Furthermore, the present study highlights medium associations between marital satisfaction and major intern stress, minor and major extern stress, and a high association between marital satisfaction and minor intern stress. Therefore, a low level of marital satisfaction is best associated with minor stressors which originate within the couple, such as unpleasant behaviors or different attitudes on the part of the husband. The results are in concordance with previous results. For example, Merz *et al.* (2014) included in their analysis marital satisfaction, internal stress and external stress. Their outcomes evidenced that marital satisfaction is lower associated with external stress and medium associated with internal stress. Therefore, the stress that originates inside the couple is better associated with marital satisfaction than the stress outside the couple. Analyzing the third hypothesis, the direct path between minor intern stress and postpartum depression is the only significant. However, significant positive correlations were established between major internal stress and postpartum depression and between minor external stress and postpartum depression. So H3 is partially confirmed. According to Bodenmann's conceptualization, minor stress refers to low-intensity stress (Bodenmann, 2005). DeLongis *et al.* (1982), Kanner *et al.* (1981) and Lazarus (1986) also described the significance of small but regular events that can generate stress, naming them *daily hassles*. According to them, daily hassles have a more significant impact on mental health than major events; while major events are rare, daily hassles often emerge. On the other hand, Selye (1974) proposed the *General Adaptation Syndrome (GAS)* model, which delivers three stress response stages: alarm, resistance, and exhaustion. The major stress is easily detected, and the body enters the alert stage, which helps it cope with the stressful situation. Stress is eliminated, and the body returns to normal physiological parameters. Contrariwise, minor stress, having a low intensity, may not be perceived, so the organism does not go into the alarm stage. In this way, prolonged exposure to minor stress is better associated with depressive symptoms than major stress, detected and combated by the body.

We included a dyadic perspective of stress in our study to expand previous outcomes. The results confirm the fourth hypothesis, and dyadic stress represents a significant mediator of the association between marital satisfaction and postpartum depression. Moreover, when we analyzed the moderating role of each type of dyadic stress, we found that only minor intern stress explains the associations between marital satisfaction and postpartum depression. We found support in the literature for our results. For example, Vento & Cobb(2011) illustrated that, in newlyweds women, the relationship between marital satisfaction and postpartum depression is influenced by intern stress and not by extern stress. The primiparous who have a low level of marital satisfaction perceive a high level of minor stressful situations, which originate within the couple and affect the experience of depressive symptoms. In contrast, women with a high level of marital satisfaction perceive the level of stress within the couple as low, the reason why they do not report depressive symptoms.

Our results highlight practical implications that could help women who want to become mothers, mothers, and couple and family counselors. First, they should know that the perceived level of marital satisfaction can influence the level of stress felt and the level of postpartum depression. Moreover, mothers who

perceive a low level of marital satisfaction feel a higher level of minor stressors that originate within the couple, affecting then mental health. Secondly, psychotherapists and couple and family counselors should focus on aspects of married life, such as marital satisfaction and dyadic stress, to prevent and treat postpartum depression.

The present study has some limitations. Firstly, our mediation analysis is developed on cross-sectional data. Then, we could not assure that dyadic stress's mediation effect is unchanged over time (MacKinnon & Fairchild, 2009). Future studies should use longitudinal designs to illustrate the stability of stress mediation over time. Secondly, we used auto-administered questionnaires, leading to social desirability and subjectivity. However, previous studies showed that digital administration could reduce social desirability (e.g., Peck *et al.*, 2016).

Despite these limitations, the study has several strengths. The study population is specific: mothers with one child under one. The study design offers a new perspective on the relationship between marital satisfaction, dyadic stress and postpartum depression. If previous research tested the effect of stress on marital satisfaction (e.g., Merz *et al.*, 2017), the present study evidenced that the relation is also reversed, and both internal and external stress affects marital satisfaction. We also analyzed stress originating inside the couple and stress generated outside the dyad, stress of minor intensity and stress of major intensity. The outcomes suggest that minor stress generated from inside the couple can explain the link between marital satisfaction and postpartum depression.

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