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FACTORIAL VALIDITY AND CUTOFF SCORE OF THE POSTPARTUM DISTRESS MEASURE

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Screening for postpartum mental health has a crucial role in identifying women needing psychological support. The present study aims to evaluate the psychometric properties of the Postpartum Distress Measure (PDM) in Italian women in the first six months postpartum (n = 818). The PDM is a 10-item self-report questionnaire composed of two subscales assessing general distress and obsessive-compulsive symptoms. CFA supported the two-dimensional structure of the PDM, showing good fit indices as well as high internal consistency. Furthermore, ROC analysis revealed high sensitivity and specificity of the PDM in detecting possible cases of postnatal distress with an optimal cutoff of 9. Given its good psychometric properties and its sensitivity, the PDM may be confidently used as a screening tool for maternal distress in the first six months postpartum, covering a wide range of typical perinatal psychological symptoms.

Keywords: Maternal distress; Postnatal depression; Obsessive-compulsive; Postnatal risk factors; Confirmatory factor analysis.

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Postpartum depression is one of the most frequent clinical disorders that may affect maternal mental health, occurring after 10-15% of deliveries (Cox, Murray, & Chapman, 1993; Kumar & Robson, 1984; Leahy-Warren, McCarthy, & Corcoran, 2011). Despite the undiscussed paramount contribution of postnatal depressive symptoms to maternal distress, in recent years, researchers have highlighted the importance of also considering the role of anxiety as a complication of childbirth (Falah-Hassani, Shiri, & Dennis, 2016; Miller, Hoxha, Wisner, & Gossett, 2015; Wenzel, Haugen, Jackson, & Brendle, 2005). Postnatal depression is similar to major depression in nonpregnant nonpuerperal women, but distinctive elements can be retrieved (Abramowitz, Schwartz, Moore, & Luenzmann, 2003). Mothers frequently report concerns about their parenting ability and different levels of anxiety related to the health of the newborn, up to obsessional fears (e.g., suffocating or hurting the newborn) and compulsory behaviors (e.g., checking the baby multiple times). Intrusive thoughts of harming their babies occur in 41% of mothers with major depression (Fairbrother, Thordarson, Challacombe, & Sakaluk, 2018; Jennings, Ross, Popper, & Elmore, 1999), suggesting a certain comorbidity of depression and obsessive-compulsive symptoms. Distressing, intrusive thoughts are fairly common in nonclinical samples on a continuum of severity from normal to pervasive. Most women easily dismiss their unwanted thoughts as inconsequential, but these intrusions might develop into clinical symptoms when their meaning construction involves self-worth implications (Abramowitz, Schwartz, & Moore, 2003; Giuntoli et al., 2019). For example, a mother thinking, “I am going to throw my

baby out of the window" may charge the meaning of such an intrusive thought with inferences about her own inner evil nature. For this reason, it is important to readily assess maternal distress and provide psychological support to new mothers.

The Postpartum Distress Measure (PDM; Allison, Wenzel, Kleiman, & Sarwer, 2011) was developed to extend the assessment of significant postpartum psychological symptoms over and above depression. The PDM is a 10-item self-rating scale that assesses general distress covering depressive symptoms (feeling sad and hopeless) and distress (feeling overwhelmed), as well as obsessive-compulsive symptoms (scary thoughts about the baby, checking the baby multiple times during the night). The PDM showed satisfactory psychometric properties, including good convergent and divergent validity. The original study identified a two-dimensional structure of the PDM by means of a principal component analysis, with Items 1-6 loading on the general distress factor (PDM-D) and Items 7-10 loading on the obsessive-compulsive factor (PDM-O). Given the wide range of symptoms assessed and the shortness of the scale, the PDM could represent a valid screening tool to assist clinicians in appropriately identifying women who should be further assessed.

The aim of the present study was to provide evidence on the goodness of the psychometric properties of the PDM. The main objective of the present study was to assess the factorial validity of the PDM by means of a two-factor confirmatory factor model. Furthermore, we assessed the convergent and divergent validity of the PDM compared with other established measures of postnatal distress, depression, anxiety, stress, positive functioning, and positive and negative affectivity. Finally, we provided a potential cutoff score for the PDM to assess postnatal distress by means of receiver operating characteristic (ROC) analysis. The reference criteria to conduct the ROC analysis was the Edinburgh Postnatal Depression Scale (EPDS; Benvenuti, Ferrara, Niccolai, Valoriani, & Cox, 1999; Cox, Holden, & Sagovsky, 1987), that is the most widely used screening tool for postnatal distress. Both the PDM and the EPDS do not exclusively measure depression, but anxiety too (Brouwers, van Baar, & Pop, 2001; Miller, Pallant, & Negri, 2006). With respect to the EPDS, the PDM contextualizes anxiety in the form of obsessive thoughts and compulsive behaviors toward the newborn.

Once the construct validity of the PDM was established, we assessed the sensitivity of the PDM in detecting differences in maternal distress on potential risk factors identified in our sample: mode of delivery, parity, and type of feeding. There is no consensus on the influence of delivery mode on postnatal mental health. Several studies reported that women who underwent a caesarean delivery showed an increased risk of postnatal depressive symptoms than women who had a vaginal delivery (Ryding, Wijma, Wijma, & Rydhstrom, 1998; Zanardo et al., 2017; Zanardo et al., 2018). By contrast, a large cohort study failed to find any relationship between postnatal distress and type of delivery (Adams, Eberhard-Gran, Sandvik, & Eskild, 2011). Several studies support the evidence that breastfeeding is a protective factor for postpartum depression (Dias, & Figueiredo, 2015; Figueiredo, Canário, & Field, 2013; Hatton et al., 2005). In particular, mothers who succeed in breastfeeding as they planned decrease their risk for depression, while not being able to breastfeed increases depressive symptoms (Borra, Iacovou, & Sevilla, 2014). Another potential vulnerability factor for postnatal distress is parity. Several studies reported increased postpartum distress in pluriparous compared to primiparous women (Hung, 2004; Skari et al., 2002), while other studies did not find any difference related to the number of children (Bågedahl-Strindlund, & Börjesson, 1998; Josefsson, 2002). On the other hand, primiparous women experience more psychological adjustment difficulties such as emotional reactivity (e.g., fear) and higher values of somatization, phobic anxiety, and paranoid ideation (Gameiro, Moura-Ramos, & Canavarro, 2009).

METHOD

Participants

Participants were enrolled by means of adverts posted on websites and social network groups dedicated to pregnancy and postpartum. The study was conducted in accordance with the Declaration of Helsinki. Women were informed about the confidential nature of the data collection and provided their electronic informed consent prior to completing the online questionnaire. A total sample of 818 women in the first six months postpartum (M = 3.3, SD = 1.7) and without a self-reported history of mental health problems, completed the PDM. A subsample of 249 respondents also completed additional measures in a different data collection session. Table 1 illustrates the sociodemographic characteristics of both the total sample and the subsample.

TABLE 1
Sociodemographic characteristics of the participants

	Total sample (N = 818)		Subsample (N = 249)	
	N (%)	M (SD)	N (%)	M (SD)
Age		31.3 (4.9)		31.9 (4.5)
Education				
Middle school	89 (10.9%)		28 (11.2%)	
High school	414 (50.6%)		119 (47.8%)	
University	315 (38.5%)		102 (41%)	
Employment status				
Employed	518 (63.3%)		155 (62.3%)	
Unemployed	300 (36.7%)		94 (37.7%)	
Civil status				
Single	32 (3.9%)		8 (3.2%)	
Married	436 (53.3%)		139 (55.8%)	
Cohabiting	342 (41.8%)		102 (41%)	
Divorced	8 (1%)		0 (0%)	

Procedure

The PDM was adapted for Italy using a translation/back-translation process. Two independent translators translated the original English version of the PDM into Italian. The first author compared the two translations and reconciled minor discrepancies. The Italian version of the PDM (Appendix A) was then translated back to English independently by a native English speaker who was blinded to the original questionnaire. The back translation to English was then compared with the original English version, confirming the adequacy of the Italian version of the PDM.

Measures

The following measures were completed by a subsample of 249 women.

The Edinburgh Postnatal Depression Scale (EPDS; Benvenuti et al., 1999; Cox et al., 1987) is a 10-item self-report measure, with a total score ranging from 0 to 30 on a 4-point Likert scale. Higher scores are indicative of increased distress. The EPDS is a reliable tool for identifying probable cases of depression in puerperium with an optimal cutoff point of 14 (Gollan et al., 2017).

The Depression Anxiety Stress Scale 21 (DASS-21; Bottesi et al. 2015; Lovibond & Lovibond, 1995) is composed of seven items measuring depression (DAS-D; e.g., hopelessness, anhedonia), seven items measuring anxiety (DAS-A; e.g., autonomic arousal), and seven items measuring stress (DAS-S; e.g., difficulty relaxing). Responses are scored on a 4-point Likert scale assessing the severity and frequency of symptoms.

The Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996; Sica & Ghisi, 2007) is a self-rating scale composed of 21 items that evaluate key symptoms of depression. The respondents use a 4-point Likert scale to indicate the severity of their symptoms (0 = *least*, 3 = *most*). Total score ranges between 0 and 63, with higher total scores reflecting increased severity of depression symptoms.

The Scale of Positive and Negative Experience (SPANE; Diener et al., 2009; Giuntoli, Ceccarini, Sica, & Caudek, 2017) is a 12-item two-dimensional scale. Six items assess positive affect (SPANE-P), and six items assess negative affect (SPANE-N). Respondents rate how often they had experienced the feelings indicated by each item over the past four weeks by means of a 5-point Likert scale (from 1 = *very rarely or never* to 5 = *very often or always*). The total SPANE-P and SPANE-N scores range from 6 to 30 and are scored separately because they measure independent feelings.

The Flourishing Scale (FS; Diener et al., 2009; Giuntoli et al., 2017) is an 8-item scale assessing positive psychological functioning. Typical items include: "I lead a purposeful and meaningful life," "My social relationships are supportive and rewarding," and "I am engaged and interested in my daily activities." Responses are scored on a 7-point Likert scale, with total scores ranging from 8 to 56.

Data Analysis

All the analyses were conducted with the software R (R Core Team, 2018). Confirmatory factor analysis (CFA) was performed by means of the R package lavaan (Rosseel, 2012) to assess the factorial validity of the PDM. Next, convergent and divergent validity of the PDM and its subscales were evaluated, calculating their bivariate Pearson's correlations with several measures of well-being and distress. Finally, a receiver operating characteristic (ROC) analysis was performed by means of the R package pROC (Robin et al., 2011). The area under the ROC curve (AUC) determined the accuracy of the PDM in predicting postnatal distress using the EPDS. The optimal cutoff point for the PDM total score was determined by means of Youden's index.

RESULTS

Preliminary Analysis

Prior to the CFA, we checked item distributions in order to apply an appropriate estimation method. The PDM responses to the items are scored on a 4-point Likert scale; thus, it was important to take into

account the ordinal nature of the data. Furthermore, skewness and kurtosis exceeded the absolute value of 1 for five out of 10 items, indicating a departure from normal distribution (Lei & Lomax, 2005). Given the nonnormality of the data and the ordinal nature of the item response format, CFA was used with the diagonally weighted least squares estimation method.

Confirmatory Factor Analysis

The 10 items of the PDM were subjected to a CFA. We specified two correlated factors with the PDM-D items (Items 1, 2, 3, 4, 5, and 6) loading on one factor, and the PDM-O items (Items 7, 8, 9, and 10) loading on the other. We also attempted to test a one-factor model that combined the PDM-D and the PDM-O items into a single factor. This model failed because the covariance matrix could not be inverted.

The two-factor model showed adequate fit indices: $\chi^2(34, N = 818) = 62.92$, $p = .002$; $\chi^2/df = 1.85$; CFI = .994; TLI = .992; RMSEA = .032, 95% CI [.019, .045]; SRMR = .057. All the fit indices met the suggested cutoff criteria, with values greater than .95 for CFI and TLI, less than .06 for RMSEA, and less than .08 for SRMR (Hu & Bentler, 1999). As reported in Figure 1, PDM-D was moderately related to the PDM-O dimension ($\phi = .52$). Internal consistency was calculated by means of categorical omega (Green & Yang, 2009), that is, a method to calculate coefficient omega (McDonald, 1999) for categorical items. Coefficient omega (ω) is interpreted as the proportion of total true score variance associated with a multidimensional scale (Gignac, 2014). Results indicated a ω coefficient of .84, suggesting a good internal consistency of the PDM. Furthermore, we computed the composite reliability of the PDM based on its two subscales. The ω coefficients were .83 for the PDM-D and .63 for the PDM-O.

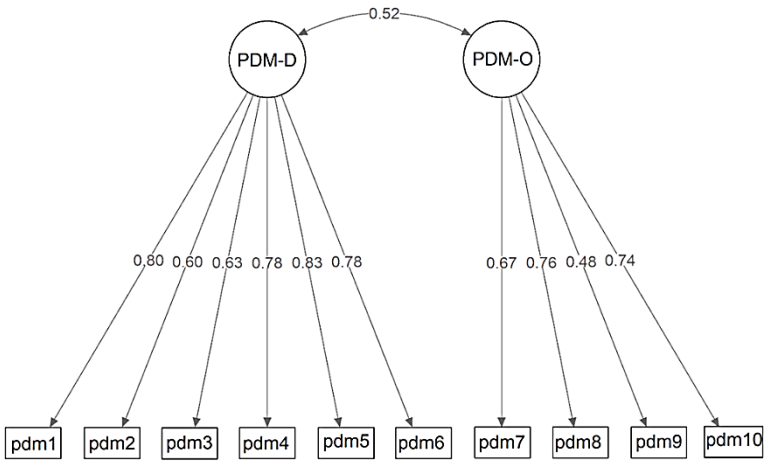

FIGURE 1
Confirmatory factor model of the PDM based on a two-factor solution: general distress (PDM-D) and obsessive-compulsive (PDM-O).

Descriptive Analysis on the Subsample

A subgroup of 249 participants completed additional measures of postpartum depression (EPDS), depressive symptoms (BDI-II; DAS-D), anxiety (DAS-A), stress (DAS-S), negative affect (SPANE-N),

positive affect (SPANE-P), and positive psychological functioning (FS). The mean scores of the employed measures are reported in Table 2. Based on the PDM total scores, 22.5% of participants scored equal to or greater than 9 (80th percentile), 10% scored equal to or greater than 12 (90th percentile), and 6% scored equal to or greater than 16 (95th percentile). When considering the subscales, the 80th, 90th, and 95th percentiles for the PDM-D are as follows: 6, 8, and 10. The 80th, 90th, and 95th percentiles for the PDM-O are as follows: 4, 5, and 6.

The PDM-D and the PDM-O subscales' intercorrelations were relatively low (r = .43), suggesting that they measure different constructs. A Steiger's (1980) z test was performed to test for differences in the magnitude of the correlations between the PDM-D and the PDM-O subscales, and the EPDS. The correlation between the PDM-D subscale and the EPDS (r = .84) was significantly stronger than the correlation between the PDM-O subscale and the EPDS (r = .50), z = 8.36, p < .001. Furthermore, the 95% CI constructed around the difference between the correlations (Zou, 2007) did not include zero [.250, .435]. Overall, the PDM-D subscale showed high correlations with depression measures; moderate correlations with anxiety, stress, and affect measures; and a low correlation with positive psychological functioning. Conversely, the PDM-O subscale showed different patterns of correlations with the other measures: low correlations with depression, anxiety, and stress, and negligible correlations with positive affect, negative affect, and positive psychological functioning (see Table 2).

TABLE 2
Bivariate Pearson's correlations, means and standard deviations of the PDM total and subscales with other measures of distress and well-being (N = 249)

		PDM-total	PDM-D	PDM-O
Scale	*M* (*SD*)	5.88 (4.59)	3.55 (3.28)	2.33 (2.10)
EPDS	6.84 (5.70)	.83	.84	.50
BDI-II	11.87 (8.98)	.79	.81	.46
DASS-Depression	2.84 (3.76)	.72	.76	.39
DASS-Anxiety	2.07 (3.18)	.58	.56	.39
DASS-Stress	6.22 (4.71)	.66	.69	.36
SPANE-N	15.05 (4.34)	.51	.55	.26
SPANE-P	22.19 (3.89)	–.53	–.60	–.22
FS	43.24 (8.39)	–.40	–.40	–.24

Note. EPDS = Edinburgh Postnatal Depression Scale; BDI-II = Beck Depression Inventory-II; DASS = Depression Anxiety Stress Scale; SPANE-N = Scale of Positive and Negative Experience-Negative affect; SPANE-P = Scale of Positive and Negative Experience-Positive affect; FS = Flourishing Scale; PDM = Postpartum Distress Measure; PDM-D = Postpartum Distress Measure-Depression; PDM-O = Postpartum Distress Measure-Obsessive-compulsive.
All correlations are significant at p < .001.

Convergent and Discriminant Validity

To provide a proof of discriminant validity of the two PDM subscales, we specified a multivariate linear model (Figure 2) in which the demographic characteristics (age and parity) and the available measures of distress and well-being were regressed on the PDM-D and the PDM-O. The estimated regression coefficients can be interpreted as partial correlation coefficients by which the indirect effects due to the intercorrelations among any other variables in the model are partialled out. Results showed that the

PDM-D was distinctively associated with measures of depression (i.e., the EPDS and the BDI-II), whereas the PDM-O was associated both with depression (the EPDS and the BDI-II) and anxiety (DAS-A). The PDM-O was also associated to parity, with primiparous women showing higher PDM-O scores. Notably, the EPDS was strongly associated both with the PDM-D (β = .49) and with the PDM-O (β =.44), suggesting a good convergent validity of both the PDM subscales with the reference measure for postpartum distress.

To further evaluate the convergence of the PDM total scores with the EPDS total scores, we tested by means of Steiger's *z* test the difference of their correlation with a same criteria variable, that is, the BDI-II, the DAS-D, the DAS-A, and the DAS-S total scores. There was not a significant difference between the correlations of BDI-II and EPDS (r = .82), BDI-II and PDM (r = .79), nor between the correlations of DAS-A and EPDS (r = .63), and DAS-A and PDM (r = .58).

By contrast, the comparison of the DAS-D and EPDS (r = .80), and the DAS-D and PDM (r = .72) correlations yielded a significant difference between these pairs of correlations, z = –3.5, p < .001, 95% CI [–.128, –.034]. Furthermore, also the correlations of the DAS-S and EPDS (r = .76), and the DAS-S and PDM (r = .65) were significantly different, z = –3.91, p < .001, 95% CI [–.157, –.053].

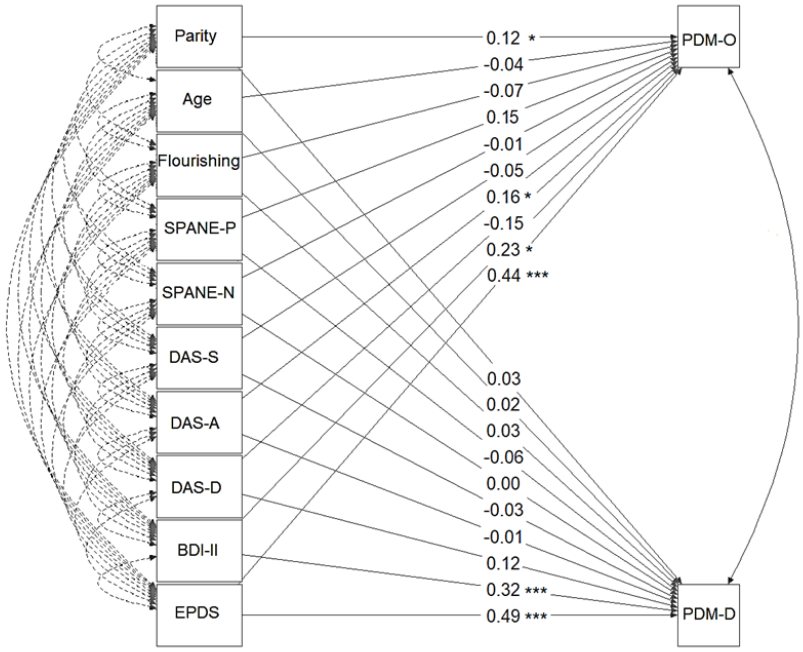

FIGURE 2
Multivariate linear model of parity, age, positive functioning (Flourishing), positive affect (SPANE-P), negative affect (SPANE-N), stress (DAS-S), anxiety (DAS-A), depression (DAS-D and BDI-II), and post-partum depression (EPDS).
* p < .05. ** p < .01. *** p < .001.

Receiver Operating Characteristic Curve Analysis

The results of the multivariate linear model suggested that both the general distress and the obsessive-compulsive components of the PDM can be predicted by the EPDS scores. Furthermore, the PDM and the EPDS showed statistically equal associations with the BDI-II and the DAS-A. Thus, using the EPDS as

the criterion, we investigated the ability of the PDM total scores to categorize women at risk for postnatal distress. According to the EPDS cutoff score of ≥ 14, a total of 33 out of 249 participants (13% of the whole sample) showed postnatal depression symptoms. Based on Youden's index, the optimal cutoff point for the PDM total was 9, with a sensitivity of 91.67% and a specificity of 78.79% (see Table 3 and Figure 3). The PDM total showed high accuracy, with an AUC of 95.5%, 95% CI [93%, 98%].

TABLE 3
Sensitivity and specificity at various cut points

	Sensitivity			Specificity		
Cut points	Median %	Low %	High %	Median %	Low %	High %
> 6	100.00	100.00	100.00	75.00	68.98	80.56
> 7	96.97	90.91	100.00	81.02	75.46	86.11
> 8	90.91	78.79	100.00	87.96	83.33	92.13
> 9*	78.79	63.64	90.91	91.67	87.96	95.37
> 11	69.70	54.55	84.85	96.30	93.52	98.61
> 12	57.58	39.39	72.73	97.22	94.91	99.07
> 13	48.48	30.30	63.64	97.69	95.37	99.54
> 14	42.42	24.24	57.58	98.15	96.30	99.54
> 16	30.30	15.15	45.45	99.07	97.69	100.00
> 17	18.18	6.06	33.33	100.00	100.00	100.00

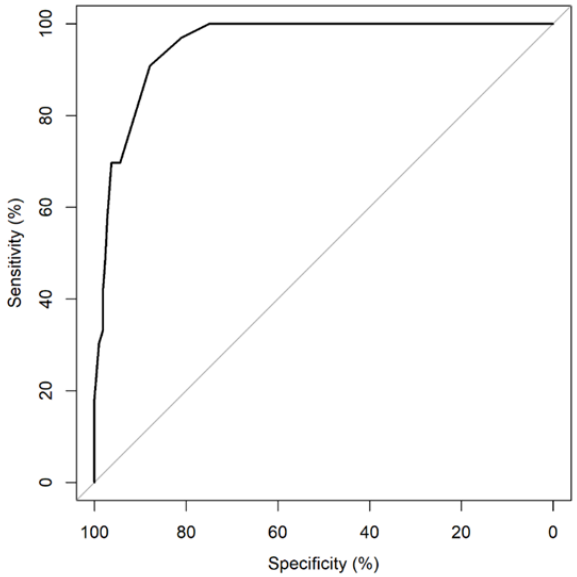

FIGURE 3
ROC curve for the PDM total scores.

Postnatal Distress Factors

Mode of delivery, parity, and type of feeding are potential distress factors in the first months postpartum. We investigated differences in the PDM total scores and in factor subscales by means of a series of independent *t*-tests (Table 4). Women who underwent a caesarean delivery showed higher scores of PDM-D than women who had a vaginal delivery, $t(816) = -2.42$, $p = .002$, while no significant differences were found in the PDM-O mean scores. There was not a significant effect of the number of children on the levels of PDM-D, but primiparous mothers scored significantly higher on the PDM-O subscale than pluriparous mothers, $t(816) = 4.24$, $p < .001$. Also, type of feeding was a significant predictor of distress, with mothers who breastfed their child showing significantly lower PDM-D, $t(816) = -3.63$, $p < .001$, and PDM-O scores, $t(816) = -4.10$, $p < .001$, than mothers who fed their infants with formula.

Discussion

To our knowledge, this is the first study providing a confirmatory factor study of the PDM with a potential cutoff score for postpartum distress. CFA supported the two-dimensional structure of the PDM and showed good internal consistency ($\omega = .84$). Furthermore, construct validity was supported by good convergent and divergent validity. Regarding convergent validity, the PDM-D subscale was strongly related to three measures of depression (EPDS, BDI-II, DAS-D). The two PDM subscales correlated differently with the same set of variables and they were both negatively correlated with measures of positive affect and positive psychological functioning, supporting the divergent validity of these dimensions.

To further evaluate the discriminant validity of the PDM-D with respect to the PDM-O, we examined a multivariate linear model in which the effects of all other variables had been partialled out from the associations between each pair of variables. Results showed that the PDM-O was distinctively associated with anxiety (DAS-A), meaning that anxiety predicts obsessive thoughts and compulsive behaviors in the postpartum period, and with parity, meaning that primiparous women feel more anxious and worried about their babies compared to pluriparous women.

Depression measured by means of the BDI-II was a stronger predictor of the PDM-D scores than of the PDM-O scores. However, postnatal distress measured by means of the EPDS demonstrated to be a good predictor of both the PDM-D ($\beta = .49$) and the PDM-O ($\beta = .44$) suggesting a good convergent validity of the two PDM subscales as measures of postnatal distress. Furthermore, when considering the PDM total scores results showed a good convergence with the EPDS, with similar correlations with depression measured by the BDI-II, and anxiety measured by the DAS-A.

The PDM total score was found to have sufficient specificity and sensitivity to categorize participants at risk for postnatal distress. Results from the ROC analysis identified a cutoff of 9.

Given the valuable psychometric properties of the PDM, we used its scales' total scores to detect individual differences in response to potential risk factors. The PDM was sensitive in revealing differences in postnatal distress associated with risk factors previously identified by the literature, such as delivery mode, parity, and type of feeding. Nonetheless, these mean differences are not clinically meaningful, because reported distress levels are within the range of normality for the general population.

The results of this study should be evaluated in terms of several limitations. A limited generalizability of our results should be underlined because they rely on an Italian online sample. The recruitment

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TABLE 4
Means, standard deviations, *t* statistics and Cohen's *d* of the PDM total and its subscales based on the total sample (N = 818)

Variable	Number of cases (percentage)	PDM total			PDM-D			PDM-O		
		Mean (*SD*)	*t*	*d*	Mean (*SD*)	*t*	*d*	Mean (*SD*)	*t*	*d*
Delivery										
Vaginal	603 (73.8%)	6.25 (4.53)			3.53 (3.21)			2.72 (2.24)		
Caesarean	215 (26.3%)	7.00 (4.76)	–2.07*	0.1	4.14 (3.34)	–2.42*	0.12	2.86 (2.24)	–0.75	0.04
Parity										
Primiparity	518 (63.3%)	6.82 (4.65)			3.81 (3.28)			3.01 (2.29)		
Pluriparity	300 (36.7%)	5.80 (4.44)	3.09*	0.15	3.47 (3.21)	1.47	0.07	2.33 (2.07)	4.24***	0.21
Feeding										
Breast	586 (71.6%)	5.99 (4.46)			3.43 (3.14)			2.56 (2.21)		
Formula	232 (28.4%)	7.60 (4.76)	–4.57***	0.23	4.34 (3.44)	–3.63***	0.18	3.26 (2.23)	–4.10***	0.2

Note: PDM = Postpartum Distress Measure; PDM-D = Postpartum Distress Measure-Depression; PDM-O = Postpartum Distress Measure-Obsessive-compulsive. Suggested cut-off for Cohen's *d* are as follows: 0.20 represents a small effect size, 0.50 a medium effect size, and 0.80 a large effect size.
*p < .05. **p <.01. ***p < .001.

method, based on online adverts, involved all the problems associated with convenience sampling, plus the possibility of access to the Internet being a potential barrier. Despite the limitations of the Internet convenience sampling, it should be highlighted that this approach, ensuring anonymity, minimizes the social desirability bias and could encourage participants to report their true feelings (Fricker, 2008; Jackson, Pietrabissa, Rossi, Manzoni, & Castelnuovo, 2018).

Furthermore, our sample is composed of women who did not report a history of mental health disorders; it may be important to assess the PDM psychometric properties in a clinical sample as well. Future research should generalize our findings to different populations (e.g., cross-national studies; clinical vs. healthy samples), for example, by means of multigroup factor analysis.

Another inherent limitation of our study design relies on its cross-sectional nature, thus we were not able to control for antenatal symptoms of distress. Future longitudinal studies should offer more reliable evidence on the possible role of mode of delivery, parity, and type of feeding as potential distress factors.

As a final remark, it is important to acknowledge that screening tools for postnatal distress are not sufficient alone to formulate a diagnosis of postpartum depression. In our study, we proposed a cutoff score for the PDM on the basis of a comparison with a similar screening tool for postpartum distress. Future studies should compare the incremental validity of the PDM and the EPDS in detecting probable cases of postnatal depression using different reference criteria such as structured and semistructured interviews.

In summary, our study showed that the PDM has good psychometric properties and produces similar outcomes compared to the EPDS. Compared to the EPDS, with the same number of items, the PDM assesses a broader range of symptoms by including obsessive thoughts and compulsive behaviors toward the newborn. Indeed, although anxiety and obsessive-compulsive symptoms in the postpartum period have received little attention in the past, recent literature has acknowledged their important role in disrupting maternal mental health (Pawluski, Lonstein, & Fleming, 2017). Clinicians can thus rely on a valid compact tool that is able to reliably detect postnatal distress through a variety of symptoms, including depression, anxiety, and obsessive-compulsive symptoms.

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Appendix A

Postpartum Distress Measure[1] – Italian translation

1) Mi sento triste e senza speranza [I feel sad and hopeless].
   0 No, questo non è vero [No, this is not true]
   1 Sì, questo è vero occasionalmente [Yes, this is true occasionally]
   2 Questo è vero a volte [This is true some of the time]
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
2) Piango più del solito [I am crying more than usual].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]
3) Non riesco a prendere decisioni o concentrarmi [I cannot make decisions or concentrate].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No this is not true]
4) Mi sento sopraffatta [I feel overwhelmed].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]
5) Ho paura che non mi sentirò mai meglio [I am afraid I will never feel better].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]
6) Penso che la mia famiglia starebbe meglio senza di me [I think my family would be better off without me].
   0 No, questo non è vero [No, this is not true]
   1 Sì, questo è vero occasionalmente [Yes, this is true occasionally]
   2 Questo è vero a volte [This is true some of the time]
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
7) Ho pensieri ricorrenti sul fatto che possa succedere qualcosa di male al mio bambino, alla mia famiglia, o a me stessa [I have recurring thoughts about harm coming to my baby, my family, or myself].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]

8) Ho pensieri ricorrenti sul fatto che il mio bambino possa ammalarsi o avere qualche tipo di problema [I have recurring thoughts about my baby getting sick or having some kind of problem].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]
9) Controllo il mio bambino molteplici volte durante la notte [I check on my baby multiple times throughout the night].
   3 Questo è vero la maggior parte delle volte [This is true most of the time]
   2 Questo è vero a volte [This is true some of the time]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   0 No, questo non è vero [No, this is not true]
10) Faccio pensieri sul mio bambino che mi spaventano [I have thoughts about my baby that scare me].
   0 No, questo non è vero [No, this is not true]
   1 Questo è vero solo occasionalmente [This is true only occasionally]
   2 Questo è vero a volte [This is true some of the time]
   3 Questo è vero la maggior parte delle volte [This is true most of the time]

NOTE

1. From “Development of a Brief Measure of Postpartum Distress,” by K. C. Allison, A. Wenzel, K. Kleiman, & D. B. Sarwer, 2011, *Journal of Women’s Health*, *20*(4), 617-623 (https://doi.org/10.1089/jwh.2010.1989). Copyright 2011, Mary Ann Liebert, Inc.. Reprinted with permission.