Original Article

The Effect of Postpartum Depressive Symptomatology on the Quality of Early Mother-Newborn Interactions in Morocco.

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ABSTRACT

Background

The maternity pathway, which extends throughout pregnancy, undergoes a turning point during the stay in the delivery suite: a place for the installation of early mother-newborn interactions. ***Objectives:*** the study aimed is to investigate how depressive symptomatology (DS) affects the quality of early interactions within the dyad.

Materials and methods

This retrospective study included 102 mother-newborn dyads admitted to the post-natal Unit of the Orangers Maternity Hospital, CHU IBN SINA, Rabat, during the period from April to June 2016. The evaluation utilized the Lille grid, with modifications, to assess the quality of initial bonding, along with the Mother Infant Bonding (MIB) maternal self-questionnaire and the Edinburgh Postnatal Depression Scale (EPDS) for screening postpartum depressive symptomatology (DS).

Result

The findings indicated that 49% of interactions demonstrated harmony, while 51% exhibited disruptions in the establishment of these interactions, with a prevalence rate of depressive symptomatology (DS) at 38.20%. Disturbances in bonding scores (MIB) were found to be correlated with the mother's emotional stability ($p<0.05$) and the quality of the baby's attachment during breastfeeding ($p<0.05$). Depressive symptomatology scores (EPDS) were associated with the mother's understanding of the newborn's behaviors ($p<0.05$), gaze appearance ($p<0.05$), interpretation of crying ($p<0.05$), and the mother's availability and affective security ($p<0.05$). The statistical significance of the effect between maternal depressive symptomatology and issues with early mother-newborn bonding was confirmed ($p<0.05$), although the magnitude of this effect was relatively low in our sample (Phi V de Cramer=0.248).

Conclusion

the quality of early interactions depends essentially on the mother's ability to recognize her place as a mother and her child's needs.

Keywords

early mother-newborn interaction; depression; post-partum; mother-newborn bond; Morocco.

INTRODUCTION

For an extended period, infants were often considered passive beings influenced primarily by their environment and, most significantly, their mothers[1]. However, research by Brazelton in the United States and European researchers such as Soulé, Kreisler, Lebovici, Stern, and Cramer has challenged this notion, revealing that babies are active partners capable of influencing and being influenced by their surroundings[2]**.** Early mother-infant interaction is a dynamic, bidirectional, and primitive communication process encompassing behavioral, affective, and phantasmal elements between the mother and baby. This interaction involves the exchange of messages, with the

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infant responding through both verbal and non-verbal means, contributing to the emergence and construction of the toddler's sense of self.

Early assessment of the mother-newborn relationship in maternity holds significant importance as a predictor for various aspects of the child's development, including academic skills[3] memory self-esteem[4] empathy[5] brain development[6] cognitive abilities[7] and psychobiological development[8] as well as for the prevention of maltreatment[9]. The reduction in hospital stays for mothers and newborns has increased the complexity of this task, leading to the development of practical tools to facilitate early assessment [11] Disturbances in mother-baby interaction are often early indicators of developing difficulties and disorders in the baby, prompting the standard practice of assessing them using interaction grids[13].

After giving birth, most mothers naturally experience a surge of affection for their children and initiate breastfeeding and caregiving activities. However, in some cases, mothers may not feel these emotions or may even have aversions to their infants, leading to challenges in bonding and providing adequate maternal care. Various risk factors have been suggested, including marital status, employment status, social desirability, adult attachment, mode of delivery, maternal personality, social support during pregnancy, and perceptions of the mother's upbringing [14]. Child-related risk factors include night crying and, in cultures favoring boys, being a girl[15].

Despite being an internationally accessible subject in perinatal care and behavioral psychoanalysis, early mother-newborn interactions appear to receive limited attention at the national level in Moroccan literature. This study aims to fill this gap by evaluating the impact of maternal depressive symptomatology on the quality of early mother-newborn interactions.

MATERIALS AND METHODS

Study population: population size was 102 mother-newborn dyads, Mothers aged 18-42 years, and babies are in day 2, in the post-natal Unit of the Orangers Maternity Hospital, CHU IBN SINA, Rabat, during the period from April to June 2016.

Inclusion criteria: All women who had given birth at the Orangers maternity hospital and who stayed in the postnatal care unit with their newborn in normal condition.

Exclusion criteria: Mothers whose babies were transferred for medical reasons, mothers who lost their babies after birth, mothers who delivered premature babies, mothers who refused to participate in the study.

Study instruments

Mother infant bonding questionnaire

The MIB is an eight-item questionnaire assessing mothers' feelings towards their babies [16] Scores range from 0 to 24. A high score indicates a disturbance in the mother-baby bond. The questionnaire is short and simple. The questionnaire was validated in French in 2008 by Bienfait. No threshold is defined in the Anglo-Saxon version of the MIB, but defines the threshold for the diagnosis of difficulty in the mother-child bond at 2, with a sensitivity of 0.9 and a specificity of 0.8 (90% chance of being positive when carrying the "disorder" (in this case, difficulties in the bond) and 80% of being negative when carrying no disorder). In addition, it evaluates the risk of having a disorder knowing that the test is positive (PPV) at 40.9%, if the score obtained is greater than 2, and 98.1% of being healthy if the test is negative.

Edinburgh Postnatal Depression test (EPDS)

a scale developed by Cox et *al.* This scale has been translated into several languages and validated in various populations**.** In Tunisia, it has been translated into Arabic and validated by [4]. The EPDS is a 4-Likert scale comprising 10 items, scored from 0 to 3, in ascending order of severity. The total score of the EPDS thus ranges from 0 to 30, and we considered that a score of 12 or above in a parturient indicates the probable presence of a clinically significant depressive disorder, with good sensitivity (0.80) and specificity (0.92).

The Lille early bonding assessment grid, developed by the perinatal team of Lemaitre V at the Lille CHRU with adaptation.

Item 1: Mum's identification of baby's needs (eating, sleeping, etc.). Item 2: Mum's understanding of baby's behavior. Item 3: Handing quality. Item 4: Holding quality. Item 5: The gaze between the mother-baby. Item 6: The mother's ability to calm her baby. Item 7: Interpretation of crying. Item 8: Pleasure shared between mother and baby during feeding. Item 9: The mother's availability and affective security in relation to her baby. Item 10: Mother's emotional stability. Item 11: Emotional and affective communication between

the mother-child dyad. Item 12: The quality of the baby's attachment to his mother during breastfeeding. Item 13: Quality of the family context observed (will she be alone with her child).

Reliability analysis shows that Cronbach's alpha equals 0.837 > 0.6, which indicates that our evaluation grid for early mother-child interactions is reliable, and that the internal consistency of the observation grid items is acceptable.

METHODOLOGY

This is a retrospective study took place 3 months: between the month of April and the month of June 2016 in the postpartum unit of the maternity and reproductive health hospital les ORANGERS of the university hospital center IBN SINA of RABAT.

Within 24 to 48 hours postpartum, and after the mother's agreement and consent, the MIB and EPDS questionnaires will be distributed to her to complete within 15 to 30 minutes. If the mother is unable to do so for pathological reasons, or is illiterate, she is asked to fill in the information on the questionnaire. As for the evaluation grid, it was filled in based on observation of the different reactions between the mother-child dyads.

Ethical Clearence

This study was approved by the Scientific Committee of CHU Ibn Sina, RABAT, Morocco. All mothers signed an informed consent form at the time of enrolment, and were informed of the course of the study, its objective, and the guarantee of their anonymity.

Data processing and analysis

Qualitative variables were presented as percentages, while quantitative variables were reported as means ± standard deviations in descriptive analyses. To identify correlations between variables, Pearson's correlation test was used.

RESULTS

1) Evaluation of mother-newborn bonding:

It can be observed that 51% of the dyads studied had interaction problems, although 49% of the mothers were able to establish harmonious, dynamic interactions with their newborns (figure 1).

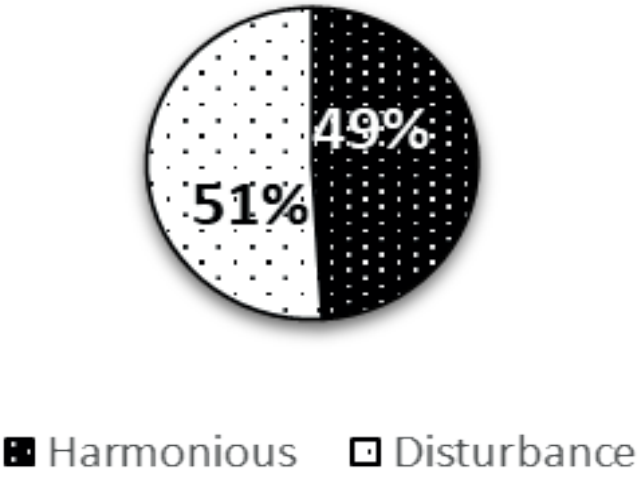

Figure 1: Distribution of the population by MIB test

2) Prevalence of depressive symptoms according to the EPDS:

The prevalence of postpartum depressive symptoms according to the EPDS scale was 38.20% at 48 hours postpartum in our sample, while more than half were normal (61.8%) (figure 2).

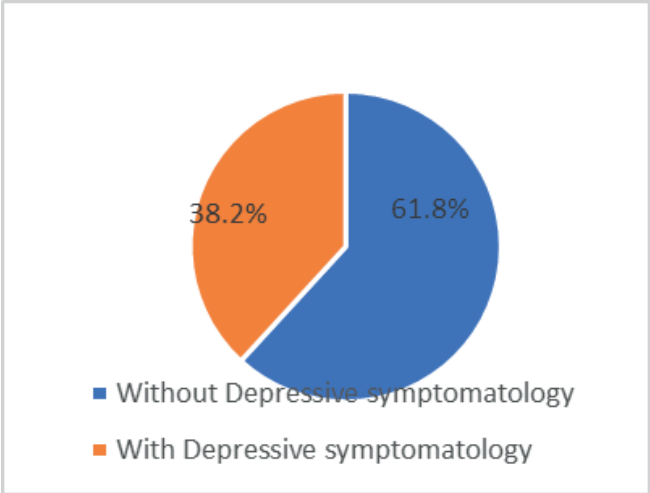

Figure 2: Distribution of the population according to depressive symptomatology

3) Evaluation of early mother-newborn interactions using the grid of Lille:

The assessment of early mother-newborn interaction, using the Lille grid, indicates a range of quality from good to poor, with predominant satisfactory quality.

Good quality: Rates vary between 16.7% and 53.9% for item 11, representing emotional and affective communication between the dyad, and item 10,

representing emotional stability in the mother.

Low quality: Rates vary between 4.9% and 33.3%, representing respectively item 12, which is the quality of attachment of the baby at the time of breastfeeding, and item 10, which is emotional and affective communication between the dyad.

Satisfactory quality: Rates vary between 22.5% and 64.7%, representing respectively item 10, which is the mother's emotional stability, and item 7, which is the interpretation of the baby's cries.

For item 13, we deemed it unnecessary to interpret it, since 74.5% of mothers were

alone with their babies at the time of the evaluation (Table 1).

4) Correlation between disruption of maternal feelings and the quality of mother-newborn interactions:

The correlational analysis between the evaluation grid and the MIB (Table 2) revealed a positive correlation between the disturbance of maternal feeling and items 10, 12, which are respectively:

- Emotional stability in the mother (item 10) ($p= 0.014<0.05$; $r=0.243$),
- The quality of the baby's attachment to his mother at the time of breastfeeding (item 12) ($r=2.51$; $p<0.05$), as shown in Table 2.

Table 1: The quality of early mother-baby interactions according to the Lille grid:

	Perfect	Very good	Good	Satisfactory	Low	Absent
Item 1	0%	5.9%	26.5%	51%	16.7%	0%
Item 2	0%	4.9%	25.5%	52%	17.6%	0%
Item 3	0%	6.9%	33.3%	48%	11.8%	0%
Item 4	0%	5.9%	36.3%	44.1%	12.7%	1%
Item 5	0%	11.8%	43.1%	34.3%	10.8%	0%
Item 6	0%	3.9%	38.2%	52.9%	4.9%	0%
Item 7	0%	3.9%	17.6%	64.7%	13.7%	0%
Item 8	2%	6.9%	23.5%	53.9%	11.8%	2%
Item 9	1%	18.6%	32.4%	40.2%	7.8%	0%
Item 10	0%	16.7%	53.9%	22.5%	6.9%	0%
Item 11	0%	3.9%	16.7%	40.2%	33.3%	5.9%
Item 12	0%	18.6%	39.2%	36.3%	5.9%	0%
Item 13	0%	4.9%	7.8%	6.9%	5.9%	74.5%

Table 2: Pearson correlation between disruption of maternal feelings and the quality of early mother newborn interaction:

	Mean ± standard deviation	Signification
Item10 MIB	3.2±0.797 1.51±0.502	p = 0.014<0.05 r =0.243
Item12 MIB	3.29±0.839 1.51±0.502	p =0.011<0.05 r = 2.51

5) The quality of early interactions and depressive symptomatology:

Table 3 illustrates a positive correlation between depressive symptomatology and the following items:

- Mother's understanding of baby's behavior (Item 2).
- Aspect of glances between the mother-child dyad (Item 5).
- Interpretation of crying (Item 7).
- The mother's availability and affective security in relation to her baby (Item 9).
- The mother's emotional stability (Item 10).

Table 3: Correlation between depressive symptomatology and the quality of early mother newborn interaction

	Mean ± standard deviation	signification
Item 2 test EPDS	3.82±0.776 1.89±0.932	p = 0.026<0.05 r = 0.220
Item 5 test EPDS	3.44±0.839 1.89±0.932	p = 0.016<0.05 r = 0.239
Item 7 test EPDS	3.88±0.679 1.89±0.932	p = 0.02<0.05 r = 0.230
Item 9 test EPDS	3.35±0.908 1.89±0.932	p = 0,019<0.05 r = 0.232
Item 10 test EPDS	3.20±0.797 1.89±0.932	p = 0.00<0.001 r = 4.29

6) Correlation between disruption of maternal feeling and depressive symptomatology:

Correlational analysis revealed a significant correlation (P=0.023<0.05) between EPDS and MIB, as depicted in the above table. However, it's important to note that the correlation, with a magnitude represented by r=0.224 (Table 4), indicates an average effect size. Establishing a relationship of dependence between two categorical variables requires further examination, for which a Chi-square test will be employed.

7) The impact of depressive symptomatology on disruption of the mother-Newborn Bond:

Table 4: The correlation between maternal feelings and depressive symptomatology:

	Mean ± standard deviation	Signification
EPDS MIB	1.89±0.932 1.51±0.502	p = 0.023<0.05 r = 0.224

Since Pearson's chi-2 value of 0.044 which is less than 0.05, its can be concluded that depressive symptomatology has a positive influence on the disruption of the mother-newborn bond at 48 hours postpartum as indicated in Table 5.

Table 5: Influence of depressive symptomatology on disruption of the mother-Newborn Bond using ch-2 test

	Value	ddl	Significaton
chi-2 Pearson	6.269a	2	0.044
a. 0 cells (0.0%) have a theoretical population size of less than 5. The theoretical minimum number of students is 6.37.			

The Cramer statistic, with a value of 0.248 out of a maximum possible 1, suggests a modest association between maternal depressive symptomatology and the disruption of the mother-newborn bond. Interpreted in terms of a correlation coefficient, this value denotes a small effect size. The test's significance ($p < 0.05$) indicates a low likelihood of obtaining a 0.248 value by chance. Thus, we affirm the Chi-2 result, emphasizing that the statistical significance between maternal depressive symptomatology and disruption of the mother-newborn bond is present but of low magnitude in our sample (Table 6).

Table 6: Examining the effect size of the relationship Between Depressive Symptomatology and Disruption of the Mother-Newborn Bond using Cramer's V test

	Value	Signification
Phi V de Cramer	0.248	0.044

DISCUSSION

From the initial moments of a newborn's life and their encounter with the mother in the immediate post-partum period, the abilities of both parties to interact are developed and adjusted in moments rich with meaning and emotion. Our study sought to investigate the influence of depressive symptomatology on the formation of early mother-newborn interactions, and our findings affirm the significance of this assessment. We observed an association between disruptions in the bond and maternal sensitivity, underscoring the importance of understanding these dynamics in the early stages of the mother-newborn relationship.

The effect of maternal emotion disruption on Early Mother-Newborn interactions:

Based on the findings from our study, it can be inferred that disturbances in the bond between dyads, observed in 51% of the sample, positively influence the quality of the initial mother-newborn interactions. This is evidenced by a positive correlation, observed on day 2, between Mother-Infant Bond (MIB) scores and specific items on the evaluation grid, namely maternal emotional stability ($p<0.05$) and the quality of the baby's attachment during breastfeeding ($p<0.05$). Studies indicate that infants and young children tend to form stronger attachments to parents who are sensitive to their needs based on age[18] Comparing our results to existing literature, the prevalence of mothers experiencing bonding disorders with their newborns, across all severity levels, is estimated to be between 6 and 7% two weeks after delivery [19] Severe bonding disorders leading to child rejection are suggested to affect 0.5 to 1% of mothers [20] In a study by Bienfait (2017), 13% of mothers reported difficulties with the mother-child bond. Our results are concerning, and according to Bienfait (2017), it is crucial to conduct interviews with mothers to explore various factors. These include aspects related to the experience of pregnancy and childbirth, the surrounding environment, social support, and the relationship with the father. This approach aims to avoid false positives and gain a comprehensive understanding of

the complexities influencing the mother-child bond. Our objective was to examine the impact of maternal emotional disturbance on early interactions rather than pinpointing associated pathologies that could influence the bond. This focus arises from the time constraints of the typical maternity ward stay, which seldom allows for the diagnosis of a mother-child bond pathology. According to Brockington (2006), diagnosing such pathologies requires a minimum duration of symptoms of at least 1 week. However, the authors of the MIB test's validation study[16] contend that the narrow distribution of scores indicates the questionnaire's proficiency in detecting the most 'abnormal' responses rather than subtle deviations from the norm.

The Effect of Depressive Symptomatology on Early Mother-Newborn Interactions:

The findings further highlight a prevalent occurrence of maternal depressive symptomatology at 38%, indicating that depressive symptoms are a relatively common complication in Morocco on day 2 postpartum. This prevalence could be associated with the baby blues or the 3rd-day syndrome. This conclusion is supported by a robust and positive correlation between scores on the Edinburgh Postnatal Depression Scale (EPDS) and emotional stability in the mother (item 10) of the Lille evaluation grid($p<0.001$); This correlation reflects the intensity of maternal thymic variations and, consequently, maternal sensitivity.

In addition, a positive correlation was identified between EPDS scores and specific items on the Lille grid ($p<0.05$), including the mother's understanding of the baby's behaviors, the gaze appearance within the mother-child dyad, the interpretation of crying, and the mother's availability and emotional security. These correlations underscore that depressive symptomatology can act as a disruptive factor in early life interactions. A mother experiencing depressive symptoms may be less inclined to provide the quality care her newborn requires and may struggle to respond to the infant's requests for interaction. This disruption extends to the overall caregiving expression, as emphasized by [21]. It aligns with the fundamental need of the child, from birth, to form an attachment relationship with an adult meeting their needs for closeness and protection. According to Dugravier (2020), the mother's response and caregiving style shape the child's attachment style from as early as one year of age.

The correlational analysis between Mother-Infant Bond (MIB) and Edinburgh Postnatal Depression Scale (EPDS) demonstrated a statistically significant correlation ($p<0.05$), albeit of moderate size ($r=0.224$). This finding was further substantiated by the chi-square test, which indicated a statistically significant but low-magnitude relationship ($p=0.044$) between depressive symptomatology and mother-infant bond disruption. Implementing effective programs and tools to prevent and alleviate depressive symptoms during the perinatal period is crucial. These interventions contribute to optimal medical and psychosocial management across the ante-postnatal continuum. Various factors, including traditions and Moroccan culture, may contribute to the expectation that mothers exhibit strength. However, it's noteworthy that some women may hesitate to openly discuss their distress, fearing societal judgment as inadequate mothers. Instead, they may choose to endure the challenges, perceiving their discomfort as a normal manifestation of the significant transition into motherhood. Additionally, considering that mothers are only on day 2 after childbirth, it's plausible to interpret the observed manifestations, whether mild or intense, as mood changes related to childbirth, potentially indicative of the common phenomenon known as the baby blues. Some mothers may not have experienced these mood changes yet, and understanding these variations within the context of the postpartum period is essential.

It is noteworthy that the research conducted by Bienfait (2010) and Lenseele (2011) did not identify a correlation between Mother-Infant Bond (MIB) scores and Edinburgh Postnatal Depression Scale (EPDS) scores at the same time as our study. Two other investigations on MIB demonstrated a weak correlation with maternal mood, although these studies utilized different assessment tools than EPDS[23] or assessed mood at a later time point [16]. The immediate postpartum period emerges as a sensitive phase for the onset of depression or depressive elements in mothers (38%). While temporary, depressive symptomatology can impact the initial development of the infant and early interactions by diminishing the mother's affective availability and creating a deficit in the emotional support provided to the child. It is crucial to underscore the prevalence of what can be termed latent or masked depression in young mothers. These mothers may continue their daily family activities but, particularly when alone with their baby, may experience episodes of depressive emotions.

Women of childbearing age are particularly susceptible to depression, with many experiencing high rates of social morbidity and depressive symptoms. Unfortunately, these symptoms often go unnoticed and untreated in Morocco, emphasizing the need for increased awareness and support for mental health issues in this population.

CONCLUSION

In conclusion, our study sheds light on the critical role of early mother-baby interactions and the impact of maternal emotional disturbance on this foundational bond. The findings emphasize the need for clinical tools, such as interaction scales, to be applied preventively and therapeutically to address challenges in securing a strong dyadic connection. Recognizing the significance of emotional communication from the first moments of a newborn's life, we advocate for the implementation of tailored prevention and follow-up programs for women at risk during pregnancy. The immediate postpartum period proves to be a sensitive time, with depressive symptomatology influencing the initial development of infants and their interactions. Overall, our work underscores the importance of nurturing a supportive environment for mothers and infants during this critical period.

Consent for Publication

The author reviewed and approved the final version and has agreed to be accountable for all aspects of the work, including any accuracy or integrity issues.

DISCLOSURE

The author declares that they do not have any financial involvement or affiliations with any organization, association, or entity directly or indirectly related to the subject matter or materials presented in this review paper. This includes honoraria, expert testimony, employment, ownership of stocks or options, patents, or grants received or pending royalties.

Data Availability

Information for this review paper is taken from freely available sources.

Authorship Contribution

All authors contributed significantly to the work, whether in the conception, design, utilization, collection, analysis, and interpretation of data or all these areas. They also participated in the paper's drafting, revision, or critical review, gave their final approval for the version that would be published, decided on the journal to which the article would be submitted, and made the responsible decision to be held accountable for all aspects of the work.

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