

# Impact of postnatal maternal depressive symptoms and infant's sex on mother-infant interaction among Bangladeshi women

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## ABSTRACT

**Aim:** To investigate the impact of postnatal depressive symptoms and infant sex on perceived and observed mother-infant interaction among rural Bangladeshi women. **Methods:** Fifty women with depressive symptoms and their infants at 2 - 3 months were compared with 50 women without depressed symptoms and their infants, matched on geographic areas, parity and infant sex. The Edinburgh Postnatal Depression Scale assessed depressive symptoms, the Postpartum Bonding Questionnaire assessed the mother's perception of bonding with the infant and mother-infant interactions were videotaped and analyzed with the Global Rating Scale. **Results:** Mothers with depressive symptoms were poorer, were less educated and rated lower infant bonding than mothers without depressive symptoms ( $p = 0.03$ ), yet objective observation revealed no difference between the two groups regarding maternal interactive behavior ( $p = 0.57$ ). However, infants, particularly boys ( $p = 0.002$ ), of mothers with depressive symptoms fretted more in mother-infant interaction than infants of mothers without depressive symptoms ( $p = 0.009$ ). **Conclusion:** Although mothers with depressive symptoms did not show less sensitivity in interactive behavior at 2 - 3 months than those without depressive symptoms, our results indicate that infants, particularly boys, of mothers with depressive symptoms may be negatively influenced by depressive symptoms.

**Keywords:** Postpartum Depressive Symptoms; Mother-Infant Interaction; Bonding; Bangladesh

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## 1. INTRODUCTION

Maternal depressive symptoms related to childbirth are common in both high- and low income countries [1, 2]. However, socially disadvantaged populations show higher depression rates than wealthy industrial nations [3]. A systematic review from low- and lower-middle income countries showed a prevalence of 19.8% of common mental disorder postpartum [4]. In South Asia, the prevalence of depression has been reported to be 12% - 28% postpartum, including the low prevalence of 12% found in Nepal [5-8].

Depression is a disabling disorder with symptoms such as low mood, lack of energy and interest, poor concentration and sometimes thoughts of suicide or death, all of which are likely to interfere with a mother's parenting capacity. Indeed, there is convincing evidence that maternal depression during the postnatal period is associated with negative effects on the infant's mental, cognitive and socio-emotional development [9-11]. An explanation for these developmental adversities could be disturbances in the early mother-infant relationship [12]. The relational behavior of depressed mothers in high-income countries has been characterized by low sensitivity, a restricted range of affective expression and inconsistent support of the infant's growing social engagement [13]. A mother's emotional communicative skill is very important during the first postpartum period to regulate the infant's states of arousal and emotion. Ineffective regulation generates extreme states of arousal and affect that could disrupt the infant's engagement with people and the environment [3]. Although there is a mismatch of emotions and intentions in all mother-infant interaction, the mismatch is quickly repaired in normal interactions. Mismatches generate negative affect in the infant, whereas restoration to a matching state is associated with positive affect, leading to a sense of mastery and control [3]. Stein

*et al.* [13] suggest that maternal preoccupation is a factor that contributes to the adverse effect on development among infants of mothers with depressive symptoms. Preoccupation refers to the process of recurrent negative thinking that is characteristic of depression and interferes with the mother's attention and responsiveness towards the infant [13]. A study in Bangladesh exploring maternal depressive symptoms and infant development reported that maternal depressive symptoms interfered with the mothers' sensitivity and ability to provide stimulating play materials and thus, give the infant few opportunities for exploration and social engagement at home [14].

Only a few studies have investigated mother-infant interactions related to maternal depressive symptoms in low-income countries. In South Africa, Cooper *et al.* [15] found that depressed mothers in Khayelitsha, a periurban setting in the outskirts of Cape Town with high levels of poverty, were less sensitive to their infants in early face-to-face interactions, and their infants were less positively engaged with their mothers, than infants of non-depressed mothers.

Although Field [16] claims that interaction disturbances among depressed mothers and their infants appear to be universal across cultures and socioeconomic groups, the pressure on a mother in conditions of extreme poverty could differ from those facing a mother in high-income countries. Since several studies have reported on gender preference in favor of boys in some Asian cultures [17,18] and how giving birth to a female baby is a risk factor for depressive symptoms [19], it is important to explore if the sex of the infant influences the mother-infant interaction. Therefore, this study aims to investigate the relationship between maternal depressive symptoms and the infant's sex 2 - 3 months postpartum on perceived and observed mother-infant interaction in rural Bangladesh.

## 2. METHOD

### 2.1. Design and Setting

This is a nested-case control study of a prospective-cohort study of postnatal depressive symptoms and infant development carried out in two rural subdistricts of the Mymensingh district, 120 km north of the capital city of Dhaka in Bangladesh. This district is typical of deltaic Bangladesh and is a predominantly agricultural community characterized by homogeneity in terms of ethnicity, culture and language. For the prospective-cohort study, 720 women were recruited during their third trimester of pregnancy, and the women and their infants were followed up at birth, 2 - 3 months and 6 - 8 months postpartum. At 2 - 3 months postpartum, 673 mothers with infants remained in the study. The reasons for attrition (6.5%) were outmigration (n = 9), maternal death at

childbirth (n = 2), stillbirth (n = 25) and neonatal death (n = 11). As in other rural areas of Bangladesh, the majority of the women was poor and had domestic work and child care as their primary occupations. Approximately 40 per cent of the population lived below the poverty line [20].

### 2.2. Participants

Of the 673 mothers remaining in the cohort study at 2 - 3 months postpartum, 95 mothers (14%) showed depressive symptoms (*i.e.*, scored 10 or more on the Edinburgh Postnatal Depression Scale, or EPDS). As soon as a mother was identified as having depressive symptoms at 2 - 3 months, she was approached and asked to participate together with her infant in a video observation of a mother-infant interaction. In case of consent, a mother without depressive symptoms (control, *i.e.*, scored less than 10 on the EPDS) was identified and requested to participate with her infant. Thus, 50 mothers and their infants were consecutively selected as cases, and 50 as controls. The control mothers were matched with the cases by geographic area, parity and the infant's sex. All 100 mothers were informed of the aim of the study, procedures of the video recording and that participation was voluntary. None of the mothers declined participation. The sample size was chosen at a significance level of 5 per cent, a power of 80 per cent and an effect size of 60 per cent to detect differences in the mother-infant interaction between cases and controls.

### 2.3. Data Collection and Procedures

The background data were taken from the prospective cohort study, which was collected by trained, female interviewers through structured interviews in the respondents' homes. These female interviewers were trained over two weeks; all questionnaires were discussed and pretested outside the study site. Information was collected during pregnancy on demographics, including maternal age and socioeconomic status (SES) indicated by educational level, primary occupation, involvement in income-generating activities, land ownership by household and daily expenditure on food in the respondent's household.

Obstetric and child information were measured by parity, mean number of living children and having more than four children. Family characteristics and support included the women's perceived relationship with husband and mother-in-law and practical help received during pregnancy. Intimate partner violence encompassed physical violence ever and/or during pregnancy and forced sex. At 2 - 3 months postpartum, information was obtained on low birth weight of the infant ( $\leq 2.5$  kg), pre-term delivery ( $\leq 37$  pregnancy weeks), exclusive breast-

feeding, the mother's perception of the infant's care (easy, in-between, difficult), the mother's bonding with her infant and maternal depressive symptoms.

Mother-infant interactions were video recorded. The recording took place at an office in the local setting by two specially trained Bangladeshi social science researchers. The mothers were offered transportation and food for their participation. The video sessions lasted for five minutes when the infants were alert and not hungry. The mothers were asked to interact or play with the infant as they would do at home. The infants were between 3 - 9 months old when the video recording took place. A camera on a tripod was placed in the room to the right side of a big mirror. The mothers were seated in front of the mirror and had a large pillow on their outstretched legs on which to put the baby, so that the infant's face and body would be seen in the camera. The camera was to the right of the mother, recording the mother's face and body to the hips and the infant's face and body. The mothers were left alone with their infants during the video recording. The Bangladesh Medical Research Council, Bangladesh, and the Regional Ethical Review Board at Karolinska Institute, Sweden, approved the study.

## 2.4. Instruments

*The Edinburgh Postnatal Depressive Scale (EPDS)* [21] was used to detect depressive symptoms. The EPDS is a 10-item questionnaire that has recently been validated in Bangladesh (EPDS-B), showing a sensitivity of 89 per cent, a specificity of 87 percent and a cutoff score of 9/10 [18]. For this study we used the same cutoff as Gausia *et al.* [22]. The items of the EPDS were rated on a scale of 0 - 3, and a high score indicated more depressive symptoms. Cronbach's alpha was 0.80 at 2 - 3 months postpartum.

*The Postpartum Bonding Questionnaire (PBQ)* [23,24] was used to assess mothers' perceptions of their emotional bonding with their infants. The PBQ consists of 25 items, rated on a scale of 0 - 5, high scores indicating greater bonding disturbances. Four subscales are included. Subscale 1 indicates *impaired bonding* between mother and infant (12 items) with a cutoff score of 11/12 identifying mild bonding problems. Subscale 2 indicates *rejection and anger* towards the infant (7 items) with a cutoff score of 12/13 identifying mothers with threatened rejection and 16/17 identifying those with established rejection, or more severe bonding problems. Subscale 3 indicates *anxiety about the care* of the infant (4 items), with a cutoff of 10/11. At subscale 4, there is a *risk of abuse* of the infant by the mother (2 items). In this study, the Cronbach's alpha on the total PBQ was 0.82, and on the subscales of impaired bonding it was 0.65, rejection

and anger 0.60, and anxiety about care 0.44—results that are similar to those reported by Brockington *et al.* [23]. Risk of abuse showed an excessively low Cronbach's alpha and was excluded from the analyses. The instrument was translated from English into Bangla and back from Bangla into English by two bilingual persons [25]. PBQ has been validated in China and was found to have satisfactory face and content validity and to be sensitive in detecting impairments of the mother-infant relationship as perceived by the mother with the cut-off scores suggested by Brockington *et al.* [26].

### *Analysis of mother-infant interaction*

*The Global Rating Scale (GRS) of infant-mother interaction* was used to assess infant-mother interaction [27]. This method has been found to be valid cross-culturally in four European countries [28] and in South Africa [15]. Two of the authors (ME and BH) were trained in the method at a research centre in Reading, England. The analyses were done blind as to the depressive status of the mothers, based on videos and English verbatim transcripts, which were translated from Bangla to English, English to Bangla and back again to English by two bilingual persons to ensure the reliability of the translation.

The mothers' behavior was assessed on 13 items, the infants' on 7 and dyadic behavior on 5. The items are scored on a 5-point scale from 1 (poor) to 5 (good) and clustered by summing up and form dimensions.

1) *The mother's good-poor dimension (sensitivity)* was measured by five items: warmth, acceptance, responsiveness, non-demanding behavior and sensitivity.

2) *The mother's intrusive dimension* was measured by her intrusive or nonintrusive behavior and speech.

3) *The mother's remote dimension* was assessed by her remote or non-remote and silent or non-silent behavior.

4) *The mother's affective behavior (depression)* was assessed by happiness, energy to engage with the infant, absorption in the infant and whether she was relaxed or tense during the interaction.

The infant's interactive behavior was also measured.

1) *The infant's good-poor dimension (engagement)* was measured by attentiveness towards the mother, active communication with body and voice towards the mother and positive vocalization.

2) *The infant inert-lively dimension (liveliness)* measured the infant's engagement with the environment, whether he/she was self-absorbed or not and whether or not he/she was lively or inert.

3) *The infant distress dimension (fretfulness)* was indicated by happy or distressed and fretful or non-fretful.

Dyadic behavior:

4) The mother-infant interaction dimension was assessed by smooth and easy or difficult, fun or serious, mutually satisfying or unsatisfying, involving much en-

gement or no engagement and excited engagement or quiet engagement [24].

Two of the authors (BH, ME) rated the videos. Forty-eight videos were rated by consensus and fifty-two individually. Of those individually rated, nine were coded for internal reliability, with 92 percent of the ratings being found to be in agreement.

## 2.5. Statistical Analyses

The statistical analyses were done using SPSS for Windows, version 18. Differences between the mothers with and without depressive symptoms, infant sex and the PBQ were calculated by two-way multivariate analysis of variance (MANOVA). The GRS (assessing mother and infant behavior) was similarly analyzed by two-way

MANOVAs, and dyadic behavior was analyzed with a two-way analysis of variance (ANOVA). Cases and controls were compared according to the background variables by independent *t*-test and chi-square.

## 3. RESULTS

### 3.1. Description of the Sample

As seen in **Table 1**, compared to mothers without, mothers with depressive symptoms were less educated and poorer in terms of land owned by the household and daily expenditure on food per household member. More mothers with depressive symptoms reported experiencing physical violence ever in life and during current pregnancy and had infants with low birth weight compared to mothers without depressive symptoms. Mothers

**Table 1.** Information on demographic, socio-economic, obstetric, child, family support and intimate partner violence of the sample (N = 100).

	Mothers with depressive symptoms N = 50	Mothers without depressive symptoms N = 50	p
Age (M ± SD)	26.6 (6.32)	25.6 (6.09)	0.432
Educational level			
Years of schooling (M ± SD)	1.86 (2.86)	3.22 (3.07)	<b>0.024</b>
Illiterate [N (%)]	38 (78)	10 (28)	<b>0.001</b>
Primary occupation [N (%)]			
Domestic work	45 (90)	49 (98)	0.092
Land owned by HH [N (%)]			
1 - 49 decimal	46 (92)	34 (68)	
≥50 decimal	4 (8)	16 (32)	<b>0.003</b>
Per daily household expenditure (in Taka* on food (M ± SD)	27.4 (11.1)	36.0 (17.3)	<b>0.004</b>
<b>Obstetric and infant data</b>			
First time mothers [N (%)]	6 (12)	7 (14)	0.766
Number of children (M ± SD)	3.0 (2.3)	2.4 (1.8)	0.130
More than 4 children [N (%)]	19 (38)	12 (24)	0.130
Low birth weight (<2.5 kg) [N (%)]	15 (30)	5 (10)	<b>0.012</b>
Preterm (<37 weeks) [N (%)]	8 (16)	8 (16)	1.000
Still breastfeeding exclusively [N (%)]	16 (32%)	25 (50%)	0.067
Difficult to care for the infant [N (%)]	34 (68%)	20 (40%)	<b>0.019</b>
<b>Family characteristic and support</b>			
Poor relationship—husband [N (%)]	7 (14)	0	<b>0.012</b>
Poor relationship—mother-in-law [N (%)]**	5 (12.5)	6 (14.3)	0.813
Did not have practical support [N (%)]	11 (22)	16 (32)	0.260
<b>Intimate partner violence</b>			
Forced sex [N (%)]	44 (88)	37 (74)	0.074
Physical violence ever [N (%)]	46 (92)	34 (68)	<b>0.003</b>
Physical violence during current pregnancy [N (%)]	18 (36)	7 (14)	<b>0.011</b>

\*1 US-dollar = approximately 71 Bangladeshi Taka (BDT); \*\*Calculation computed on 82 mothers-in-law.

with depressive symptoms reported their infants at 2 - 3 months as being significantly more difficult to care for compared to the mothers in the control group (**Table 1**). The mean EPDS at 2 - 3 months was 11.5 (SD 1.4) among the cases and 4.3 (SD 1.4) among the controls.

### 3.2. Maternal Perception of Bonding with Infants According to the PBQ

A two-way MANOVA showed a main effect of maternal depressive symptoms ( $F_{(3,94)} = 3.06$ ;  $p = 0.03$ ) but no effect of infant sex ( $F_{(3,94)} = 1.96$ ;  $p = 0.13$ ) on the PBQ, which measures mothers' perceptions of bonding with their infants. Follow-up ANOVAs indicated that mothers with depressive symptoms reported more *impaired bonding* and *anxiety about infant care* than mother's without depressive symptoms, but they did not show more *rejection and anger* towards the infant individually. Of those individually rated, nine were coded for internal reliability, with 92 percent of the ratings being found to be in agreement.

A tendency of interaction effect was observed between depressive symptoms and infant sex ( $F_{(3,94)} = 2.71$ ;  $p = 0.051$ ) indicating that mothers without depressive symptoms expressed more *rejection and anger* to their daughters than to their sons on the PBQ. However, mothers with depressive symptoms rated *rejection and anger* equally, regardless of sex of the infant (**Table 2**). 12% of the mother reported mild impaired bonding to their infants. Four mothers reported threatened rejection and one establish rejection *i.e.* more severe bonding disturbances. The last sentence has disappeared in the text. It is only a descriptive clarification of how many of the mothers who showed bonding disturbances. The whole sentence could be taken away if you want.

### 3.3. The Mother-Infant Interaction According to the GRS

A two-way MANOVA showed that neither maternal depressive symptoms ( $F_{(4,93)} = 0.74$ ;  $p = 0.57$ ) nor infant sex ( $F_{(4,93)} = 0.37$ ;  $p = 0.83$ ) had any significant main

effect on *maternal interacting behavior* on the GRS. On the other hand, on the GRS, maternal depressive symptoms ( $F_{(3,94)} = 3.52$ ;  $p = 0.02$ ) as well as infant sex ( $F_{(3,94)} = 3.91$ ;  $p = 0.01$ ) showed main effects on *infant interactive behavior*.

Follow-up ANOVAs indicated that infants, particularly boys of mothers with depressive symptoms, were more distressed and fretful, but not less engaged or lively, during the interaction than infants of mothers without depressive symptoms (**Table 3**).

No significant interaction between maternal depressive symptoms and infant sex was found ( $F_{(3,94)} = 0.69$ ;  $p = 0.56$ ). Finally, on the GRS, a two-way ANOVA showed no effects of maternal depressive symptoms ( $F_{(1,96)} = 0.45$ ;  $p = 0.51$ ) or infant sex ( $F_{(1,96)} = 0.88$ ;  $p = 0.35$ ) on *dyadic behavior*.

## 4. DISCUSSION

The main finding of this study is that mothers with depressive symptoms rated their bonding with their infants significantly lower on a self-reported scale than did mothers without depressive symptoms in rural Bangladesh. However, objective observation of mother-infant interaction did not indicate any significant differences in the interactive behavior of mothers with and without depressive symptoms. On the other hand, observation of infant behavior indicated that infants of mothers with depressive symptoms were more distressed and fretful during the interaction than infants of mothers without depressive symptoms. This behavior was more pronounced in boys than in girls.

The finding that mothers with depressive symptoms rated their bonding lower than mothers without depressive symptoms, while their observed interactive behavior did not indicate any difference, was consistent with research by Frankel and Harmon [29]. They also found that depressed women reported more negative evaluations of themselves as parents than did non-depressed women, even if no difference was found in observed maternal interactive behavior. Similarly, Hornstein *et al.* [30] found

**Table 2.** Comparisons between mothers with and without depressive symptoms and sex of infant according to parental bonding (N = 100) (Mean, SD).

	Mothers with depressive symptoms N = 50		Mothers without depressive symptoms N = 50		p-value	p-value	p-value
	Boys N = 27	Girls N = 23	Boys N = 28	Girls N = 22			
PBQ-subscale 1 Impaired bonding	8.2 (4.3)	8.5 (4.0)	5.6 (2.8)	6.8 (3.6)	<b>0.005</b>	0.301	0.594
PBQ-subscale 2 Rejection and anger	5.3 (3.1)	5.1 (3.4)	3.1 (2.4)	5.5 (4.1)	0.143	0.088	<b>0.051</b>
PBQ-subscale 3 Anxiety about care	3.9 (2.2)	3.9 (2.4)	3.0 (2.2)	2.8 (2.2)	<b>0.032</b>	0.823	0.719

**Table 3.** Comparisons between mothers with and without depressive symptoms and sex of the infant according to the dimensions of Global Ratings Scale (N = 100) (Mean, SD).

	Mothers with depressive symptoms (N = 50)		Mothers without depressive symptoms (N = 50)		p-value Difference depressive/non depr symptoms	p-value Difference infant's sex
	Boy (N = 27)	Girl (N = 23)	Boy (N = 28)	Girl (N = 22)		
<i>Mother's interactive behaviour</i>						
Mother's sensitivity	3.0 (0.8)	3.4 (0.9)	3.4 (0.9)	3.3 (0.9)	0.338	0.372
Maternal intrusiveness	3.4 (1.1)	3.6 (1.3)	3.2 (1.3)	3.6 (1.0)	0.815	0.224
Maternal remoteness	3.3 (1.0)	3.7 (1.0)	3.8 (1.0)	3.5 (1.3)	0.367	0.885
<i>Maternal affective behaviour</i> (depression)	3.0 (1.0)	3.3 (1.0)	3.6 (0.9)	3.3 (1.2)	0.145	0.778
<i>Infant's interactive behaviour</i>						
Infant engagement	2.9 (1.0)	3.0 (0.9)	2.9 (0.9)	3.1 (1.1)	0.818	0.355
Infant liveliness	3.0 (0.8)	3.3 (0.9)	3.2 (0.8)	3.4 (1.0)	0.371	0.182
Infant fretfulness	3.4 (0.8)	3.8 (0.8)	3.7 (0.8)	4.3 (0.6)	<b>0.009</b>	<b>0.002</b>
<i>Dyadic behaviour</i>						
Mother—infant interaction	3.0 (1.0)	3.3 (0.9)	3.3 (0.8)	3.3 (1.2)	0.505	0.350

that depressed mothers rated their emotional bonding lower than psychotic mothers did, but no differences were found in observed mother-infant interaction. This finding was explained by the fact that depressed mothers, contrary to psychotic mothers, may have negative thoughts and low self-esteem due to their depressive symptoms, which might negatively influence their ratings. It is known that depressed mothers appear to focus mostly on the negative aspects of their infants [31], which might influence the mothers' ratings of bonding. In our Bangladeshi sample, mothers with depressive symptoms were less educated and poorer than mothers without depressive symptoms, which might have contributed to low self-confidence in mothers with depressive symptoms and the ratings of the PBQ. Low self-esteem and feelings of worthlessness have been associated with both depression and limited literacy [32].

Mothers with depressive symptoms often know that they have not been available enough for their infants, and therefore could try hard to do everything right during the observations. Thus, it may be questioned if a short video-observation is a valid representation of mother-infant interaction. A Finnish study demonstrated that a video-recording of only 5 minutes provided similar information about mother-infant interaction observed, once a week, over a year in the families' homes during the infant's first year [33].

Even if a mother with depressive symptoms did everything right during the observation, she might not always have been sensitive to her infant's cues and as a result the infant might have accumulated negative affect and stress that was later demonstrated by the infant's distress and fretfulness during the mother-infant interaction observation. Another explanation to the distress and

fretfulness in the infants of mothers with depressive symptoms could be that the infants of these mothers have a more difficult temperament than infants of mothers without depressive symptoms as reported in several studies [14,34]. In this study, this is indicated by the fact that mothers with depressive symptoms rated their infants as more difficult to care for than the mothers in the control group. Although mothers with and without depressive symptoms in this sample were rated as equally sensitive, a temperamentally difficult and fussy infant may have been too challenging for the mothers with depressive symptoms in everyday life, particularly if the infant was a boy. In a study from Bangladesh, it was found that mothers with depressive symptoms who perceived their infants to be irritable were less sensitive and provided their infants a less stimulating environment at home than mothers without depressive symptoms who did not perceive their infants as irritable [14].

The finding of no observed difference in interactive behavior with their infants between mothers with and without depressive symptoms is inconsistent with a study by Cooper *et al.* [15] from a disadvantaged suburban area in South Africa. An explanation of the difference in findings may be that mothers in rural Bangladesh, unlike those in South Africa, had relatively stable situations in terms of their living arrangements in joint families and in a society with low migration. This indicates a social network that is relatively stable and safe for the infants, who can be looked after by relatives and neighbours. Another explanation might be that the depressive symptoms in this study were self-reported and the cutoff score (9/10) of EPDS rather low in contrast to the clinical diagnoses according to DSM-IV conducted by Cooper *et al.* [15], indicating that the Bangladeshi mothers may have

had fewer depressive symptoms than the South African mothers. Although the families in our sample live in poverty, the relatively stable situation in the family and the transient maternal depressive symptoms might explain the positive behaviour through the mother-infant interaction.

## 5. STRENGTHS AND LIMITATIONS

As this case-control study of mother-infant interaction was nested in a cohort, the risk of bias imposed by retrospective recall was reduced. The instrument, EPDS, used to assess depressive symptoms is validated in Bangladesh [22]. Another assessment instrument, PBQ, used in this study is validated in several countries including in Asia, e.g. in China [26] and has shown good ability to discriminate between good and poor bonding, even in Bangladesh [25]. The Global Rating Scale (GRS) was chosen as it was developed to assess differences in mother-infant interaction between groups of women with and without postnatal depressive symptoms and has been successfully used in cross-cultural settings [28]. The coders in the study did not know Bangla, which meant that verbal communications in the video recordings had to be translated from Bangla into English. This procedure could have led to misunderstandings and interpretation problems. However, all translations have been checked against the videos by two bilingual (Bangla and English speaking) researchers (HN and ZNK). Half of the videos were coded in consensus, and differences in the ratings were discussed in detail. Trained Bangladeshi interviewers collected the background data and two specially trained Bangladeshi social science researchers videotaped the mother-infant interactions.

## 6. CONCLUSION

Although the mothers with depressive symptoms were poorer, were less educated and rated the emotional bonding with their infants lower than mothers without depressive symptoms, they were not objectively rated as less sensitive and responsive towards their infants than the control group. However, it should be noted that infants in the case group, particularly boys, were more distressed and fretful in the observed interaction than infants in the control group. Mothers who were cases also rated themselves less confident as a mother compared to the mothers who were controls. Thus, the results indicate that it is important to identify mothers with depressive symptoms early postpartum and give them support and confirmation to increase their self-confidence as a mother, since depressive symptoms in mothers may have a negative effect on the affective states of their infants. Particularly boys seem to be less able to self-regulate their affective states during the early interactions.

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