Brief Report
Effect of Kangaroo Mother Care on Postpartum Depression

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Summary
Postpartum depression (PPD) is a serious public health issue. Kangaroo mother care (KMC) is widely considered to be the most feasible, readily available and preferred intervention for decreasing neonatal morbidity and mortality in developing countries. We conducted a prospective study to assess the effect of KMC on PPD. The study population included 177 low-income mothers with their preterm infants. We used the validated Portuguese version of the Postpartum Depression Screening Scale for the assessment of maternal depression. The mothers were evaluated twice, at Neonatal Intensive Care Unit admission and at KMC discharge. We found 66 mothers (37.3%) with depression and it decreased to 30 (16.9%) after KMC intervention; \( p < 0.0001 \). None developed PPD during the Kangaroo stay. We concluded that KMC may lessen maternal depression. Further studies, may be required to clarify these preliminary findings.

Key words: postpartum maternal depression, Kangaroo mother care, preterm.

Introduction
Postpartum depression (PPD) occurs following \( \sim 10\% \) of deliveries [1, 2]. Mothers of preterm infants experience more psychological distress than mothers of normal full-term infants in the postpartum period and poverty is associated with twice the rate of PPD [3–5]. PPD is associated with more severe depressive symptoms, social dysfunction and marital maladjustment than depression unrelated to the postpartum period [6]. Well-controlled research trials have revealed that PPD responds to treatment in the short term with treatment roughly doubling the spontaneous recovery rate [7].

The Kangaroo mother care (KMC) is based on skin-to-skin contact between the mother and her newborn baby, frequently a preterm or low birth weight infant and has been used more in developing countries [8–10]. KMC was initiated in Bogota [11] and Instituto Materno Infantil Prof. Fernando Figueira (IMIP) was the first hospital in Brazil to adopt KMC [12]. It is now widely considered to be the most feasible, readily available and preferred intervention for decreasing neonatal morbidity and mortality in developing countries [13]. The effects of KMC are commonly analyzed in aspects of the infant’s health, mother-to-infant bond and parent satisfaction [14–16] but not to prevent or to treat maternal PPD. We did not find studies that were concerned with this. In order to address these questions, we conducted a study to assess the effect of KMC intervention on PPD in low-income mothers of sick preterm births.

Methods
This prospective study was conducted in a teaching institution with a tertiary level neonatal intensive care unit (NICU) and a KMC in Northeast of Brazil over a 8 month period; from December 2006 to July 2007. The study population included 180 consecutive singleton intramural neonates with birth weight <2000 g. Illiterate mothers, previous history of depression and malformations of the infant were excluded.

KMC was initiated when the baby was discharged from the NICU and was stable. The mothers provided skin-to-skin contact using a specially tailored ‘Kangaroo bag’ made of soft flannel cloth. The mothers were encouraged to keep the baby in KMC as long as possible during the day and night with a minimum period of 1–2 h at a time. All babies were exclusively breastfed. Babies were monitored for hypothermia, hypoglycemia, apnea, sepsis, feeding problem and other morbidities. Babies who developed a life threatening event were considered as critically ill and were withdrawn from the study.
Babies were discharged when they showed a weight gain of 10–15 g kg$^{-1}$ day$^{-1}$ for three consecutive days, were feeding well, maintaining temperature without assistance and the mother was confident of caring for her baby.

We used the validated Portuguese version of the Postpartum Depression Screening Scale (PDSS) for the assessment of maternal depression with a cutoff score of 102, sensibility of 94%, a specificity of 95%, a positive predictive value of 75% and a negative predictive value of 99% [17]. The mothers were evaluated twice, at NICU admission and at KMC discharge.

Written informed consent was taken from the mothers enrolled into the study. The Ethical Review Committee of the IMIP granted ethical clearance for this project.

**Statistical Analysis**

The difference in the rate of PPD between NICU admission and KMC discharge was tested using the McNemar test; interpretation was done at 0.05 $\alpha$-level. Data analyses were performed using SPSS version 10.0 (SPSS Inc., Chicago, IL, USA).

**Results**

Three mothers were lost to follow-up. Baseline characteristics of the 177 mothers and newborns are shown in Table 1. We found 66 mothers (37.3%) with PPD at NICU admission within the first week of birth and it decreased to 30 (16.9%) at the KMC discharged (mean age of 49 days; range 20–64 days); $p < 0.001$. None developed PPD during KMC stay.

**Discussion**

In our sample, the prevalence of PPD at NICU admission was high (37.3%). Internationally, prevalence rates of PPD vary both within and across countries, ranging from as low as 4.4% to as high as 73.7%, with a rate of 13% found following a systematic review [18]. This is a wide variation in prevalence rates, indicating that there are inherent difficulties in estimating them. This substantial variation may be attributed to measurements used, sampling methodologies, socio-demographic variances, parity, timescale of the study and cultural diversity [19]. We studied low-income mothers during the period immediately after childbirth of preterm births with critical conditions needing NICU admission. All these variables could explain our PPD high prevalence.

Evidence-based PPD treatments include antidepressants, cognitive-behavioral counseling, cognitive-behavioral therapy, psychodynamic therapy and supportive counseling either in the home, as a member of a group or by telephone contact [19]. To our knowledge, this is the first study with KMC intervention to treat PPD with the exception of a case study [20]. After participating in a KMC session, the mothers reported improvement in feeling calmer, stronger, well-coordinated, energetic, contented, tranquil, quick-witted, relaxed, proficient, happy, friendly and clear-headed [21]. Such conditions are absent in the conventional care. These effects could minimize the risk for PPD. Another point is that early cessation of breastfeeding or not breastfeeding is associated with an increased risk of maternal PPD [22]. In our study, all mothers were exclusively breastfeeding.

However, our findings should be interpreted within the context of certain limitations of this study. First, our study was carried out only with low-income mothers with their sick preterm infants. Second, although the PDSS has been validated in Brazil, it does not give a definitive diagnosis of depression. Finally, our follow-up was short and we did not follow a control group.

In conclusion, KMC may lessen maternal depression. Further studies, may be required to clarify these preliminary findings.

**References**


