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Prandi Perrone, Rosely Aparecida

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MATERNAL ANXIETY AND PRETERM BABIES' BEHAVIOR

Rosely Aparecida Prandi Perrone roseprandi@hotmail.com
Lisbon University, Portugal

Abstract: Mothers of preterm babies present clinical symptoms of anxiety, turning them more fragile and less adapted to initial care for the baby, with consequences upon the global development of the child along time. This study investigated the self-perception of anxiety of preterm babies' mothers at birth and six months later and also about correlations between maternal anxiety and babies' behaviors during the first year of life. Clinical and structured interview with 44 mothers twelve months after hospital discharge. Results reveal a higher level of maternal anxiety at delivery than six months later. It was observed a significant relationship between the feeling of maternal anxiety at delivery and babies' sleep disturbances during the first year of life. Maternal perception of anxiety at delivery was strongly associated with the intensity of fear displayed by the baby in the presence of strangers. Results suggest that maternal anxiety at delivery influences the beginning of the baby's play whose skill is inversely proportional to maternal anxiety. Maternal anxiety after delivery seems to influence mother-baby relationship and baby's behaviors that are indicators of development, inducing a level lower than expected.

Keywords: maternal anxiety, preterm, behavior, play, bond.

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INTRODUCTION

At some point in life, anxiety is experienced by all people. When it is excessive, it can disrupt the individual's adaptive capacities (Benute, Nomura, Pereira, Lucia, & Zugaib, 2009). Especially in the context of maternity, anxiety can occur in different periods and contexts (Mateos, Cabaco, Gil, Lancho, & Díez, 2014). In pregnancy, anxiety symptoms are very frequent, which may negatively influence the pregnancy process, leading to risky behaviors such as smoking, irregular pregnancy monitoring, inadequate feeding and excessive gestational weight gain, among others (Mateos et al., 2014).

Intense symptoms of gestational anxiety may predispose women to more severe obstetric complications, such as preeclampsia and the outcome of delivery, especially the occurrence of preterm birth (Camarneiro, & Justo, 2014; Meijssen, Wolf, Koldewijn, Van Baar, & Kok, 2011) and postpartum depression (Coelho, Murray, Royal-Lawson, & Cooper, 2011). In the postpartum period, anxiety symptoms may influence the mother-baby relationship, with repercussions on the child's development over time. After delivery, anxiety generates maternal difficulties in understanding the baby's needs, including decoding the baby's crying and maternal intuition about the baby's needs for breastfeeding and sleep (Beltrami, Flores, Souza, & Moraes, 2013). In this sense, clinical symptoms of maternal anxiety compromise the interaction

with the baby and can lead to an exaggerated control of the baby's behavior (Feldman et al., 2009).

Investigations about the effects of anxiety during pregnancy and the increased risk of preterm birth reveal significant associations indicating that pregnancy anxiety is associated with prematurity and low birth weight (Camarneiro, & Justo, 2014). The studies also indicate that, in particular, mothers of preterm newborns (PTNBs) present clinical symptoms of anxiety after childbirth, which make them more fragile and less adapted to the initial care for the baby (Dib, Padovani, & Perosa, 2019; Kynø et al., 2013; Medina et al., 2018; Zirpoli, Mendes, Barreiro, Reis, & Menezes 2019).

A psychological impact on preterm birth is observable. It is the beginning of a stressful period for parents generating a high level of maternal anxiety and affecting their perception about the baby (WHO, 2016).

Preterm birth is a remarkable maternal event that unables the mother of the possibility to hold the last weeks of gestation, as well as to prepare childbirth, inducing an early separation between mother and baby, triggering a process of familiar crisis (Ministério da Saúde [MSB], 2017).

Researches with PTNBs show that not only the conditions of biological vulnerability of the baby are a risky factor for their development, but, similarly, maternal anxiety symptoms can result in the baby's difficulty to establish a positive bond with his mother. Thus, it is necessary to evaluate the biological risks together with other factors related to the child's environmental situation (Dib et al., 2019; Zirpoli et al., 2019). In this context, the family environment, especially the maternal relationship, is conceptualized as a fundamental moderating agent for the development of the baby (Fleck, & Piccinini, 2013; Pennell, Whittinghamb, Boydb, Sanders, & Colditz 2012).

Barroso, Pontes and Rolim (2015) studied the consequences of prematurity in the establishment of the affective bond of adolescent mothers with their PTNB infants hospitalized in a Neonatal Intensive Care Unit (NICU). They observed that these mothers present different perceptions about the suffering of their babies and consider preterm birth as a serious problem that makes it difficult to establish an affective bond between them.

Considering that there is an early and prolonged influence, mainly of the tactile stimuli on the functioning and development of the preterm baby, the literature is conclusive on the importance of the maternal interaction that favors the understanding of the needs of affection, attention, skin-to-skin care and baby care (MSB, 2017).

According to Winnicott (1978, 1983, 1993), the process of human development results from the interaction of inherited factors and the environment, represented by the maternal function performed by the good enough mother who has the capacity to adapt to the child's initial needs, establishing a relationship with the ego of the baby and facilitating the introjection of their anxieties in a bearable way. By the time the

mother fails her task of being good enough, the baby may feel a great distress, with the perception of being in an unintegrated state, the feeling of not ceasing to fall and the loss of the feeling of reality. In this way, the environment can favor, hinder or even prevent its promotion. For Piaget (1973, 1978, 1979), since birth, the baby adapts to the world in an essentially activeway, organizing his or her life experiences. His studies on genetic epistemology show that playing is fundamental to the process of human development, and the interaction of the child with the environment is vital in this process. Therefore, the maternal relationship is essential for the physical and psychic organization of the baby and for its constitution as a subject. In the first months of life, the environment is practically summed up to the mother-baby relationship.

Håkstad, Obstfelder and Øberg (2017), in a study with preterm infants aged between three and fourteen months, used sensory-motor play in a therapeutic approach in twenty clinical observation sessions to investigate how preterm infants progress according to a playful point of view. They concluded that playing offers learning opportunities that support the development and understanding of the world by the babies and that sensory-motor play is at the heart of the child's development.

Considering that mother-baby relationship is fundamental for the development of the child, of his skills and behaviors and, due to the repercussions of maternal anxiety during pregnancy and after childbirth, this study started with the hypothesis that it is relevant to follow the emotional development of the mother of the preterm baby during the first six months after birth. Thus, the objective of this study was to investigate the perception of the anxiety of preterm mothers at delivery and six months later, in addition to correlations with the behavior of the babies in their first 180 days of life.

METHOD

Participants

The participants were 44 mothers of preterm babies that were born in a university hospital of high complexity in the metropolitan area of São Paulo, Brazil.

Material

Structured Clinical Interview. This is a structured guided interview, guiding a clinical investigation that provides data on preterm delivery, baby behavior in the first year of life, baby care, sleep, interest in objects, play, imitation, and emotional bond, besides two questions about maternal anxiety rated from 0 to 10, one on anxiety during childbirth and the other one on anxiety six months later. This instrument contains 21 items and was specially organized for this study.

Procedure

This study was carried out at the Neonatology Outpatient Clinic of the Mário Covas State Hospital, in the city of Santo André, São Paulo, Brazil. Mothers of preterm infants were informed about this research and gave verbal informed consent without exceptions. After that mothers were interviewed during 60-minutes, at which time they responded to the Structured Clinical Interview with the goal of providing data on childbirth, baby care, behavior of the baby during the first year of life and the perception of maternal anxiety at childbirth and six months later.

Treatment of data

Data were treated using non-parametric statistics aiming to observe correlations and associations: chi-square and non-parametric correlation.

RESULTS

Results analysis suggest that levels of maternal anxiety, both at delivery as well as six months later, do interfere with the baby's developmental process.

Data indicate that 52.3% of the mothers in this sample showed an evaluation of anxiety at the highest level (10) at delivery. The evaluation also indicates that 34.1% of the same sample maintained, from childbirth until six months later, maternal anxiety at level 10.

According to Table 1, data analysis reveals a significant association between maternal anxiety in childbirth and sleep disturbances of the baby in the first year of life ($p \# .05$, $df = 51$). In addition, maternal perception of anxiety at birth is strongly associated with the intensity of fear that the baby presented in the presence of strangers ($p \# .05$, $df = 8$).

Results show that clinical symptoms of childbirth anxiety influence the beginning of baby's play, whose ability is inversely proportional to maternal anxiety, that is, the baby's playful activity evolves more slowly when the level of maternal anxiety at childbirth is high, starting later, at around 9 months.

Principal components factor analysis shows, as an important factor in this study, the baby's ability to imitate and play, indicating that the baby's imitation capacity is higher when the mother presents a lower level of anxiety at childbirth. Also, the baby's ability to play was lower when maternal anxiety at delivery showed a higher level. This indicates that there is a direct relation between maternal anxiety at 180 days postpartum and the baby's ability to imitate, as well as an indirect relation between maternal anxiety at 180 days postpartum and the baby's ability to play, as it can be seen in Table 2.

Regarding the maternal assessment of the babies, the study shows that 41% of the mothers evaluate their babies as cheerful but, at the same time, agitated, suggesting the need to assess the preterm dyad bonding.

DISCUSSION/CONCLUSION

Results of this study indicate, according to the literature, that preterm delivery is a remarkable maternal event where the mother is confronted with an unpredictable situation that generates a high level of anxiety (Camarneiro, & Justo, 2014; Casanova, Valle, & Santos, 2009; Dib et al., 2019; Zirpoli et al., 2019).

Data on the clinical symptoms of anxiety maintained during the six months after childbirth are also compatible with the findings of other researches on the maternal emotional aspects of PTNBs, pointing out that these mothers often show difficulties while trying to adjust to motherhood (Camarneiro, & Justo, 2014; Peres, & Santos, 2018).

A study comparing anxiety symptoms in PTNBs' mothers, conducted in Denmark and Brazil, concluded that anxiety levels have the same intensity, showing that these levels are independent of the birth location of the baby and of the quality of available hospital resources (Valle, 2002). It seems that the suffering caused when these mothers are facing the abyss between idealized motherhood and preterm birth hampers maternal adaptation to the reality because, besides losing the fetus that is absent from the womb, the mother also loses the imaginary baby and stumbles upon the real baby, a small, fragile newborn (Iungano, 2009).

The analysis of the difference between the rate of mothers with the highest level of anxiety at childbirth (52.3%) and the rate of mothers who maintain that anxiety level at six months postpartum (34.1%) suggests that mothers progressively elaborate the process, reassigning this experience little by little and conquering their adaptation to reality (Perrone, & Oliveira, 2017).

Regarding the influence of maternal anxiety on the mother-baby relationship and on the developmental of the child over time, the data evaluated in this study point to a significant association between the presence of clinical symptoms of anxiety at childbirth and negative indicators that compromise maternal interaction (Casanova et al., 2009; Dib et al., 2019; Zirpoli et al., 2019). Among behaviors presented by preterm infants associated with maternal anxiety at childbirth, disturbances were observed in baby's sleep during the first 180 days of life and with fear in the presence of strangers, indicating that, since the first weeks of life, the family environment, especially the maternal relationship, can be viewed as a fundamental moderating agent for the development and behavior of the baby.

In addition, data indicate that the high level of maternal anxiety at childbirth influences the beginning of babies' play. In this study, it is observed that the lower the level of anxiety of the mother in the childbirth, the sooner the baby begins to play, what occurs at around 7.5 months. Regularly, it is very difficult to determine the beginning of play or imitation in the baby, despite the immense behavioral repertoire of the first moments of life. However, for the preterm infant, the maternal relationship provides important interactive communication experiences while the sound of the mother's speech and touch are strong predictors of

babies' vocalizations and clues related to their play activity. These aspects support investigations that emphasize physical contact as an inducer of the baby's precocious neurobehavioral and psychomotor organization. Therefore, the preterm infant is a baby who needs, above all, a direct and positive relationship with his mother (MSB, 2017).

For Piaget (1973), all development depends on a progressive organization and, consequently, on equilibrations. The vital reality is constituted by continuous processes of self-regulation that simultaneously involve imbalances and a permanent dynamism of equilibration. In this sense, at all levels of development, there are interferences from exogenous factors, sources of imbalances, however generating responses. There exist also interferences of endogenous factors that, on their turn, are sources of those responses and equilibration agents. The central idea of this process is, precisely, of interaction and, especially, for the preterm baby, interaction with the mother.

Studies show that not only conditions of biological vulnerability of the preterm infant are risk factors for its development, but also that maternal anxiety symptoms can result in babies' difficulties to establish a positive bond with their mothers (Pontes & Cantillino, 2014). Thus, it is necessary to evaluate the biological risks together with other factors related to the child's environmental situation.

Each mother will react differently to her baby's characteristics and may become predominantly patient, affective, anxious, irritable or solicitous, this way affecting her baby's pattern of reactions. Thus, mother-baby relationship can be seen as a circular system in a constant dynamic flow, since messages originating from one of the two produce effects on the other (Maldonado, 1981). The safe and affective maternal relationship provides a significant evolution and balance of the preterm baby's psycho-functional aspects, mainly in relation to sleep/wakefulness, hunger/satiation, attention/habituation and rest/activity (Pinto, Vilanova, & Vieira, 1997).

Regarding maternal evaluation about the baby, the study shows that 41% of the mothers evaluate their babies as happy, but at the same time as agitated, suggesting the need to evaluate the preterm dyad bond. It is mainly through the mother-baby bond that the identification of the individual with the world begins, always by the relation of exchange, either of afflictions, fears or desires and expectations. When the mother does not frustrate the baby in excess neither deprives him of a minimum of frustration, she may be able to avoid environmental intrusions, characterizing herself as a good enough mother. When it does not occur, the baby is forced to undergo annihilating distress or to develop excessive and inadequate mental resources to compensate for environmental failure (Winnicott, 1978, 1983), which may justify dysfunctional behaviors.

Analysing the results of the sample of this study, it was concluded that the high level of maternal anxiety at the birth of preterm babies as well as during the next 180 days, interferes with the mother-baby relationship, with repercussions on the development process, skills and behaviors of the baby, leading to a lower level than expected.

The data obtained in this study, based on the relevance of the developmental evaluation and on the follow-up of the preterm baby, evidences the importance of other investigations on the subject.

Table 1.
Values of 2 associating maternal anxiety with babies' fear in the presence of strangers and with babies' sleep disturbances.

	χ^2	χ^2	df	ns(p)
Maternal anxiety in childbirth and baby's sleep disorder	99.30	67.51	51	< .05
Maternal anxiety in childbirth and baby's fear in the presence of strangers	17.84	15.51	8	< .05

Tabla 1

Values of 2 associating maternal anxiety with babies' fear in the presence of strangers and with babies' sleep disturbances.

Table 2.
Principal components analysis

Variable	Factor 1	Factor 2	Factor 3
Age	.709	-.664	.168
Corrected age	.607	-.745	.199
Play	.586	.378	-.517
Imitation	.616	.642	.245
Anxiety at childbirth	.725	-.213	-.124
Anxiety 6 months PP*	.501	.358	.118
Variance	3.1060	1.9284	1.0744
% Variance	.388	.241	.134

* PP – postpartum

Tabla 2

Principal components analysis

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