Mother's perceptions and expectations regarding their newborn infants: the use of Broussard's neonatal perception inventory

Expectativas e percepções da mãe quanto ao seu recém-nascido: aplicação do inventário de percepção neonatal de Broussard

Expectativas y percepciones de la madre respecto a su recién-nacido: aplicación del inventario de percepción neonatal de broussard

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ABSTRACT

Objectives: To evaluate Broussard's Neonatal Perception Inventory (BPNI), an instrument to measure the mother's perception and expectations regarding her newborn infant at immediate postpartum and one month afterwards in primiparous and multiparous women.

Methods: Prospective cohort of 27 multiparous and 29 primiparous mothers of healthy newborn infants. In the second day postpartum, mothers were asked about the difficulties they thought that babies would offer regarding specific behaviors: crying, spitting, feeding, elimination, sleeping and predictability. Answers were rated in a 5-point scale. Next, mothers were questioned about their own babies regarding the same items. After 30 days, the mothers were questioned again about her perception of most babies and their own baby regarding the same items. The results were analyzed by repeated measures ANOVA considering the following main effects: time, group (primiparous and multiparous), and subjects (mother's baby and most babies).

Results: Following birth, mothers expected their babies to have fewer difficulties in the daily activities than the majority of the babies. These expectations were confirmed one month later for all items. There were no differences between primiparous and multiparous mothers.

Conclusions: The Broussard's Neonatal Perception Inventory was well understood and accepted by mothers and showed consistent results in this study. It can be used as a screening psychological tool to assess bonding between mothers and infants.

Key-words: newborn infant; mother-child relations; bonding.

RESUMO

Objetivos: Analisar o Inventário de Percepção Neonatal de Broussard, um instrumento que detecta as percepções e expectativas maternas com respeito aos filhos logo após o parto (Tempo 1) e com um mês de vida (Tempo 2), em puérperas multíparas e primíparas.

Métodos: Coorte prospectiva com 27 multíparas e 29 primíparas mães de neonatos a termo saudáveis. Inquiriu-se à mãe no segundo dia pós-parto quanta dificuldade ela esperava que a maioria dos bebês tivesse em relação a chorar, alimentar, regurgitar ou vomitar, evacuar, dormir e ter uma rotina. As respostas foram marcadas em uma escala de 5 pontos. A seguir, repetiam-se as perguntas em relação ao seu filho recém-nascido. Após 30 dias, perguntava-se à mãe quanta dificuldade ela achava que a maioria dos bebês e seu próprio filho apresentavam em relação aos mesmos quesitos.

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A análise estatística utilizou ANOVA para medidas repetidas, considerando os seguintes efeitos principais: tempo, grupo (primíparas e multíparas) e categoria (seu bebê e a maioria dos bebês).

Resultados: Logo após o parto, as mães esperavam que seus filhos tivessem menos dificuldade nas atividades avaliadas do que a maioria dos bebês. Essa expectativa se confirmou com 30 dias de vida para todos os comportamentos. Não houve diferenças entre primíparas e multíparas.

Conclusões: O Inventário de Percepção Neonatal de Broussard foi bem entendido e aceito pelas mães, mostrando resultados consistentes neste estudo. O instrumento pode ser útil para triar pares mãe-bebê com dificuldades no estabelecimento de vínculo.

Palavras-chave: recém-nascido; relações mãe-filho; vínculo.

RESUMEN

Objetivos: Analizar el Inventario de Percepción Neonatal de Broussard (BNPI - un instrumento que detecta las percepciones y expectativas maternas respecto a los hijos) enseguida al parto (T1) y con un mes de vida (T2), en puérperas multíparas y primíparas.

Métodos: Coorte prospectiva con 27 multíparas y 29 primíparas madres de neonatos a término sanos. Se preguntó a la madre en T1 la dificultad que ella esperaba que la mayoría de los bebés tuviera respecto a llorar, alimentarse, regurgitar o vomitar, evacuar, dormir y tener una rutina. Las respuestas fueron marcadas en una escala de 5 puntos. Enseguida, se repitieron las preguntas respecto a su hijo recién-nacido. En T2, se preguntaba a la madre la dificultad que ella creía que la mayoría de los bebés y su propio hijo presentaban respecto a los mismos requisitos. El análisis estadístico utilizó ANOVA para medidas repetidas, teniendo en cuenta los siguientes efectos principales: tiempo (T1 y T2), grupo (primíparas y multíparas) y categoría (su bebé y la mayoría de los bebés).

Resultados: Enseguida al parto, las madres esperaban que sus hijos tuvieran menos dificultad en las actividades evaluadas que la mayoría de los bebés. Esta expectativa se confirmó con 30 días de vida para todos los comportamientos. No hubo diferencias entre primíparas y multíparas.

Conclusiones: El BNPI fue bien atendido y aceptado por las madres, mostrando resultados consistentes en este estudio. El instrumento puede ser útil para seleccionar pares madre-bebé con dificultades en el establecimiento de vínculo.

Palabras clave: recién-nacido; relaciones madre-hijo; vínculo; psicología.

Introduction

Early intervention in mother-child relationship seems to be a relevant tool in the prevention of disorders related to problems in establishing maternal bond[1-3]. Since its beginning, psychoanalysis has described the importance of childhood for the development of human beings. And the research in this area has increasingly being focused on the early stages of development closer to the beginning of life[4]. Babies begin to build their mental world through the relationship with their mothers[1,3,4].

In this context and using the mother's concept about the average babies as a parameter in relation to her own baby's behavior, Broussard conceived the Neonatal Perception Inventory (BNPI)[5-8]. There are two different inventories, each one is administered at different times: the first inventory (Time 1) is administered during the immediate postpartum period while in hospital, and the second one (Time 2) is administered one month after delivery. At each time, two groups of questions are asked to the mother: the first group is related to the "average baby" and the second group is about her "own baby." Each form consists of a six-item scale of child behavior: crying, spitting, feeding, elimination, sleeping, and predictability. These items were selected based on the concerns expressed by mothers about their babies and reflect the functioning of the mother-infant dyad during the neonatal period[5-8]. The presence of a positive maternal perception during the first months of life is no guarantee that there will be no difficulty in the future development of the baby, but the absence of a positive maternal perception of the newborn may be associated with a high rate of problems in the child's emotional development[5-8].

Given the importance of the interaction and bonding between the mother and her newborn child[8-10] and based on the possibility of intervention[4,11] when there is a diagnosis that such interaction is not satisfactory, the objective of the present study was to evaluate the use of the BNPI with mother-newborn dyads in Brazil. Therefore, we intended to evaluate the understanding and consistency of the BNPI, which is aimed at identifying the mother's expectations and perceptions about their children soon after birth and around 30 days of life. The inventory is administered to multiparas or primiparas with uneventful pregnancies, who gave birth to healthy full-term infants.

Method

This is a prospective cohort study conducted from October 2003 to January 2004 at a Child-Friendly public hospital. The study project was approved by the Research Ethics Committee of the hospital and the *Universidade Federal de São Paulo*, since the principal investigator is a professor at this university.

All women who gave birth during this period were invited to participate in the study, provided that the mother-newborn dyad met the following inclusion criteria: the mother should be staying with her newborn child in the same room and should agree to answer the questions of the BNPI. The newborns participating in the present study should be healthy full-term infants. Their postnatal age ranged from 24 to 48 hours of life and their Apgar score was higher than seven in the fifth minute. The selected mothers were divided into two groups: primiparas and multiparas.

The study was carried out at two times: Time 1 (24 to 48 hours following birth). During this period all mothers should complete the questionnaire of general information, the socioeconomic questionnaire, and the BNPI - Time 1. In the mothers' interviews made by the researcher, the answers were recorded manually by the researcher. During this phase, we collected the medical data related to mothers and newborns from their medical records. Time 2 (approximately 30 days following birth). After a routine pediatric visit, the mothers completed the BNPI - Time 2.

After the initial contact, the researcher administered the BNPI. The researcher would provide the mother with the following information: "You probably have some ideas about how most babies behave. Please choose the option that you think best describes the average baby." The questions were then specified for the following items: 1) Crying: "How much crying do you think the average baby does?" 2) Feeding: "How much trouble do you think the average baby has feeding?" 3) Spitting or vomiting: "How much spitting up or vomiting do you think the average baby does?" 4) Elimination: "How much difficulty do you think the average baby has in eliminating feces?" 5) Sleeping: "How much difficulty do you think the average baby has in sleeping?" 6) Predictability: "How much difficulty do you think the average baby has in establishing a feeding and sleeping routine?" The answers were scored based on the mother's choices: a great deal (5 points), a good bit (4 points), moderate amount (3 points), very little (2 points), or none (1 point). Next, the researcher asked the mother to answer the same questions regarding their expectation about their own babies' behavior.

After the routine visit to the pediatrician, 30 days after birth, the mothers were asked to complete the BNPI - Time 2 about the average baby and their own child. Similarly to what had been done before the first interview, the researcher told the mothers that they probably had some ideas about how the average babies behave. Next, the researcher asked the mothers to choose the option that best described most babies in relation to the behaviors described above, taking into account the period of 30 days of contact with the child. Then the researcher asked the mothers to answer the same questions about their own babies. Similarly to the first phase of the study, this was an oral interview and the mothers' answers were recorded by the researcher and scored using the same method as that of Time 1.

For categorical variables, the results were described in frequency of events, comparing the study groups by using the chi-square test or Fisher's exact test[12]. For numerical variables, we analyzed the mean, standard deviation, median and range, describing the results in accordance with the best statistical representation. The comparison between groups was performed using Student's t test.

To check whether there were differences in the BNPI between multiparas and primiparas (group), between the answers provided soon after birth and 30 days after delivery (time), and between the answers obtained for the average babies and the mothers' own children (category), the analysis of variance for repeated measures (ANOVA-RM) was used.

The power of the sample was calculated as the mean difference of 1.0 point between the mother's expectations with respect to her own baby and the average baby, considering a standard deviation of 1.0 point (obtained through a pilot study) and an α and β error of 5% in two-tailed tests. According to these calculations, 26 dyads of primiparas and 26 dyads of multiparas should be included in the present study. We used the SPSS® 8.0 for statistical analysis and rejected the null hypothesis when α error was lower than or equal to 5% ($p \leq 0.05$).

Results

Of the 66 women who participated in the first phase of the study, eight did not attend the routine visit of 30 days after birth for unknown reasons and two did not attend because their children were hospitalized. Thus, the total number of mothers analyzed in the present study was 56. According to the methodology described above, the respondents were divided into two subgroups according to their parity; therefore, 29 were primiparas and 27 were multiparas.

The demographic characteristics of the mothers according to parity are shown in Table 1. It is noteworthy that the group of primiparas was five years younger and a higher percentage of primiparas reported to be white. Furthermore, the educational level was higher among primiparas. There was no statistical difference between multiparas and primiparas in terms of presence of a steady partner, religion, socioeconomic data, and the fact of living close to other family members. In terms of pregnancy and delivery (Table 1), although only one third of the women reported that their pregnancy was desired, more than half of them reported having received family support during pregnancy. On average, prenatal care consisted of seven medical visits. About 40% of the participants reported pregnancy complications; however, these were mild complications because of the inclusion criterion of the study. As for problems during birth, only one pregnant woman had preterm labor, close to 37 weeks of gestational age. There was no difference between multiparas and primiparas for all variables related to pregnancy. Fifteen (52%) primiparas and 20 (74%) multiparas had vaginal delivery. This difference was not significant.

All the mothers interviewed had single pregnancies. Thus, the sample of babies included 56 newborns, 29 primiparas and 27 multiparas. Table 2 shows the characteristics of the newborns. The newborns had no clinical complications during their hospital stay. None of them required phototherapy and all newborns were exclusively breastfed while in hospital. Mean length of hospital stay was 2.2 days.

The analysis of the answers related to the BNPI revealed the following results for each item (Table 3): in general, shortly after the birth of a healthy newborn, the mothers have the expectation that their babies will have fewer difficulties than most babies in relation to daily activities. This expectation is confirmed after 30 days of interaction between mother and child, when the mothers' perception is that most children have less difficulties in relation to these behaviors than they thought they would have soon after birth and also that their own child, who is one month old now, has fewer "problems" regarding these behaviors compared to most babies this age. The characteristic of being primiparous or multiparous did not affect the results.

Table 1 - General characteristics of primiparas and multiparas

	Primiparas n = 29	Multiparas n = 27	*P*
Age (years)	22±6	27±5	0.001
White	21 (72%)	11 (41%)	0.017
Steady partner	25 (83%)	23 (85%)	NS
Religious	25 (86%)	24 (89%)	NS
Educational level (years)	10±2	8±3	0.005
House owner	18 (62%)	18 (67%)	NS
Family income (R$)	1049±551	857±701	NS
Social class D + E	10 (34%)	11 (41%)	NS
Living close to other family members	25 (86%)	20 (74%)	NS
Desired pregnancy	10 (34%)	9 (33%)	NS
Family support during pregnancy	21 (73%)	14 (52%)	NS
Prenatal visits (no.)	7±2	7±2	NS
Pregnancy complications	12 (41%)	10 (37%)	NS
Delivery complications	1 (3%)	Zero	NS
Vaginal delivery	15 (52%)	20 (74%)	NS

NS: non significant

Table 2 - General characteristics of newborns of primiparas and multiparas

	Primiparas n = 29	Multiparas n = 27	*P*
n (%) female	17 (59%)	13 (48%)	NS
Weight (grams)	3140±544	3390±473	NS
Gestational age (weeks)	39±1	40±1	NS
1-minute Apgar	8.4±0.7	8.7±0.9	NS
5-minute Apgar	9.6±0.6	9.7±0.5	NS

NS: non significant

Table 3 - Mean score attributed by primiparous and multiparous mothers to the Neonatal Perception Inventory Broussard at both times of the study

	Primiparas (n=29)				Multiparas (n=27)			
	Time 1		Time 2		Time 1		Time 2	
	Average babies	Own baby	Average babies	Own baby	Average babies	Own baby	Average babies	Own baby
Crying	3.6±0.8	3.0±0.9	3.4±0.6	2.7±0.9	3.3±0.7	3.1±1.1	3.3±0.7	2.6±0.9
Feeding	2.7±1.1	2.0±0.8	2.5±1.0	1.7±1.0	2.6±1.1	2.0±1.0	2.5±1.2	1.6±1.0
Spitting or vomiting	3.1±1.0	2.8±1.1	3.2±1.0	2.6±1.1	3.3±1.1	2.5±1.1	3.0±1.0	2.4±1.0
Sleeping	2.9±1.0	2.0±0.9	2.9±1.1	2.5±1.2	2.9±1.2	2.3±0.8	3.1±1.1	2.0±1.1
Eliminating	2.8±1.3	1.9±0.8	2.6±1.2	2.1±1.2	2.6±0.9	2.0±0.8	2.6±1.1	1.9±1.0
Predictability	3.3±1.3	2.3±0.8	2.9±1.1	2.5±1.1	3.6±1.1	2.3±1.0	2.7±1.2	2.2±1.1
Total	18.4±2.8	14.0±3.0	17.5±3.2	14.0±3.3	17.8±2.9	14.1±2.7	17.1±3.8	12.6±2.9

Discussion

Considering that there are few instruments assessing the interaction between mother and baby soon after birth[13], we administered the BNPI to a group of women who were receiving postnatal care at a reference maternity hospital. This evaluation is part of the search for instruments that may indicate the need for preventive work with mothers and newborns, since there are certain behavior patterns that are established very early and end up having significant influence on the child's life, with the possibility of determining early relationships and continuing for the whole life of the individual[1,3,9,14]. A person's plans, choices, and anxieties may be related to these early relationships. Detecting difficulties in the beginning gives the professional the opportunity to act at the moment when the picture starts to be drawn[1,4].

In this context, we intended to find out if the mothers, regardless of age, educational and socioeconomic level, understood what the instrument was asking and if the answers were consistent, showing that mothers who had just given birth had different expectations and perceptions regarding the behavior of their own child and the behavior of most children. A month later, these perceptions were also assessed with respect to their own children and the average babies considering the period of interaction between mother and child. In addition, in order to identify possible peculiarities of the BNPI, we were interested in investigating if there were differences between the answers provided by primiparas and multiparas.

We found that most mothers, regardless of being primiparous or multiparous, showed hope that their babies would have less difficulty than most babies in relation to daily activities (crying, feeding, spitting or vomiting, sleeping, eliminating, and establishing routines) shortly after birth. One month later, these mothers realized that their babies were behaving "better" or had "fewer difficulties" than they thought most babies usually have. In the present study, the fact that the mothers were primiparous or multiparous women did not lead to statistically significant differences regarding expectations for their own children and the average babies soon after birth, as well as the their perceptions in relation to their own children and most babies one month later for all behaviors measured.

Mothers are able to develop attachment regarding their children if they consider them important and valued[15-17]. The necessary initial symbiosis with the baby requires a libidinal investment in their child. Such symbiosis is only achieved if the child is seen as a depositary of the ideal image that the mother has of a child[15], either if this is the first child or the second child, and so on. At the same time that it facilitates the establishment of attachment, this investment protects the child because it provides the child with the feeling of being recognized and valued, giving him/her a "narcissistic envelope"[15]. *"The narcissistic envelope corresponds to the ideal image that the mother consciously created for her child... It is a heroic image and there is a shadow that whispers: 'nothing will happen to you', 'you will be the strongest of all'... Evoking the narcissistic envelope echoes of the invulnerability of mythological heroes, their limits and strengths."* The absence of what Stern[17] calls positive distortions (attribution of positive qualities to the newborn) is a serious prognostic sign for new parents, *"because they are part of what constitutes 'maternal love' or, according to Winnicott, the 'primary maternal preoccupation'"*[18].

Thus, the results of this study are in agreement with the results of Broussard[5] for primiparas: the positive perception that the mother has about her newborn child is one of the grounds on which to found a good mother/baby relationship. These findings can be extended also to multiparas, since those mothers without a positive perception of their child will have difficulties to meet their needs, whether primiparas or multiparas. Mothers who cannot see their child as being better than most babies would

have a negative image of themselves determined by different contexts of life, which they could be projecting on their child and, at the same, they could be having a hard time to believe that they created something valuable when they gave birth.

Based on the present study, we can make some critical comments about the inventory used in this study. These are important issues that should be taken into consideration in future studies. Therefore, an extremely positive assessment of the baby would not necessarily have a positive meaning. Instead, it could suggest that the mother does not see her child in a realistic manner, being unable to establish contact with the baby's behaviors that she dislikes. Such a perception could demonstrate difficulties in establishing contact with the real child and cause consequences as adverse as a negative evaluation to the baby. On the other hand, when the mother's perception of her baby is considered negative, it can suggest that she is being realistic, that is, the mother may have an exact perception that her child is not doing well and has practical difficulties that should be investigated. If these difficulties are overlooked, there may be damage to the dyad and especially to the baby.

The results of the administration of the inventory should be considered the first step in a process of emotional assessment of the mother-child dyad and, therefore, a warning sign so that the mother-baby dyad receives greater attention. The multiple variables surrounding this interaction should be taken into consideration, such as the baby and the mother's ability to overcome adversity, despite disastrous early experiences (resilience)[16]. At the same time, a positive maternal perception also does not guarantee that everything will run smoothly throughout the complex development of the child[4], since the interaction between mother and baby continues to develop beyond this initial phase with the members of the dyad changing each other's behavior[17].

We conclude, therefore, that the BNPI has shown potential to be used in other studies and in clinical practice because it was understandable and showed consistent results in all items when administered to Brazilian mothers of healthy full-term newborns, who had pregnancies with no complications. Our results were similar to those found for other populations from the USA[19-21], Sweden[22,23], and Australia[24,25]. Based on these findings, it might be interesting to expand the use of this inventory and administer it to Brazilian mother-infant dyads at risk of having problems to establish a bond, such as teenage mothers, mothers of premature infants, assisted reproduction mothers, and mothers of twins.

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