

## Maternal Concepts and Expectations regarding a Preterm Infant

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The objective of the present study was: (a) to identify the concerns, verbally expressed, of 50 mothers regarding their preterm infants (PT) and then compare their verbal expression with those of 25 mothers of full-term infants (FT); and (b) to correlate the mothers' verbal expressions with maternal and infant variables. The following instruments were used to compose and characterize the sample: Structure Clinical Interview for DSM III-R Non-Patient (SCID/NP), State-Trait Anxiety Inventory (STAI), Beck Depression Inventory (BDI), and medical charts. Results showed that there was no difference between groups in term of mothers' expectations and conceptualizations; both groups exhibited predominantly positive expectations and concepts. In comparison with FT mothers, PT mothers verbally expressed more feelings and reactions predominantly negative or conflicting in relation to infant birth. Higher levels of maternal anxiety and depression in the PT Group were correlated with more verbal expressions about negative or conflicting emotions. In addition, lower birth weight, higher neonatal risk and longer length of stay in intensive care nursery of the infants were related with more negative or conflicting concepts by the mothers.

*Keywords: maternal expectations, preterm infants*

El objetivo de este estudio era: (a) identificar las preocupaciones, expresadas verbalmente, de 50 madres con respecto a sus niños prematuros (PT) y después comparar su expresión verbal con la de 25 madres de niños nacidos a término (FT); y (b) correlacionar las expresiones verbales de las madres con variables maternas e infantiles. Se emplearon los siguientes instrumentos para componer y describir la muestra: Entrevista Clínica Estructurada para DSM-III-R No-Pacientes (Structure Clinical Interview for DSM III-R Non-Patient; SCID/NP), Inventario de Ansiedad Estado-Rasgo (State-Trait Anxiety Inventory; STAI), Inventario de Depresión de Beck (Beck Depression Inventory; BDI), y registros médicos. Los resultados mostraron que no había diferencias entre los grupos en términos de las expectativas y conceptualizaciones de las madres; ambos grupos exhibieron predominantemente expectativas y conceptos positivos. En comparación con las madres FT, las madres PT expresaron verbalmente más sentimientos y reacciones predominantemente negativos o conflictivos con respecto al nacimiento del niño. Los niveles más altos de ansiedad y depresión maternas en el grupo PT correlacionaban con más expresiones verbales de emociones negativas o conflictivas. Además, el peso más bajo al nacer, mayor riesgo neonatal y una estancia más larga en la unidad de cuidados intensivos neonatales de los niños se relacionaban con mayor número de conceptos negativos o conflictivos de las madres.

*Palabras clave: expectativas maternas, niños prematuros*

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According to developmental psychopathology, the notion of risk represents a statistical probability of occurrence of determined engagement in human development (Horowitz, 1992). The risk factors are adverse influences on development which may be of a biological, social or psychological nature, whether intrinsic to the individual, or present in the environment, or, even, in both, in a combined manner (Kopp & Kaller, 1989).

Among the possible risk factors for human development, premature birth with very low birth weight is highlighted as a biological risk factor, due to the fragility of the neonatal conditions (Linhares, 2003). However, distinct developmental patterns can be observed among children born with low birth weight, according to individual differences and in response to their environments, in relation to this adversity (Horowitz, 1992). An adequate family environment, with favorable conditions, such as parental responsibility, acceptance of the child's behavior, and availability of toys, may reduce or compensate for adverse prenatal risk factors (Kalmár & Boronkai, 1991).

This way, the adequate family environment may become a psycho-social protection mechanism for infants vulnerable due to adverse neonatal conditions, attenuating or neutralizing the negative effects of prematurity (Linhares, 2003). Nonetheless, prenatal risk may be intensified when the family situations are inadequate (Bradley, Whiteside, Mundfrom, Casey, Kelleher, & Pope, 1994).

Factors that characterize an adequate family environment include the mother's capacity to care for the infant, which may be influenced by her emotional stability (Gennaro, Booten, Roncoli & Kumar, 1993). Considering that the premature birth of a child with low birth weight is an unexpected and highly stressful situation for the family, and, especially for the mothers, a situation of risk for their mental health occurs, causing the mother to become more fragile in terms of dealing adequately with the situation and less adapted to take care of the child initially (Kennel & Klaus, 1993; Linhares, 2003).

The tension associated with premature birth may cause maladjusted responses in mothers (Sameroff, 1984), most notable among which are symptoms of anxiety (Doering, Moser, & Dracup, 2000; Zanardo & Freato, 2001) and depression (Davis, Edwards, Mohay, & Wollin, 2003; Doering et al., 2000; Drewett, Blair, Emmett, & Emond, 2004; Lambrenos, Weindling, Calm, & Cox, 1996; Mew, Holditch-Davis, Belyea, Miles, & Fishel, 2003; Younger, Kendell & Pickler, 1997) and elevated stress levels experienced by mothers in the post-partum period (Singer, Salvator, Guo, Collin, Lilien, & Baley, 1999; Younger et al., 1997). Otherwise, maternal symptoms of anxiety and depression have been shown to have a relationship to aspects of infant development (Drewett et al., 2004; Jonn-Seid & Weiss, 2002; Miceli, Goeke-Morey, Whitman, Kolberg, Miller-Loncar, & White, 2000; Ruttenberg, Finello, & Cordeiro, 1997; Wijnroks, 1999).

However, despite clinically applicability, indicators of anxiety and dysphoria or depression obtained using psychometric scales do not fully cover understanding of the kinds of maternal emotions. The use of other parameters related to maternal emotional correlates becomes necessary. As recommended by Aylward (2002), the mother's anecdotal report, obtained in an interview, may provide the mother the opportunity to spontaneously express her emotions, anxieties and difficulties related to the premature birth of a child.

There is, however, a notable scarcity of studies that focus on the experience of premature birth of a child via verbal report from the mother herself, whether in an interview (Monteiro, Silva, & Silva, 2002), or expressed during participation in psychological support groups for mothers (Correia, 2005; Linhares, Carvalho, Bordin, & Jorge, 1999; Linhares, Carvalho, Correia, Gaspardo, & Padovani, 2006). This vacuum requires the development of studies that focus on the concepts and expectations of the mothers of preterm infants, and that verify if there are differences between mothers of infants born preterm and mothers of infants born full-term in regard to these aspects.

The objective of the current study was: (a) to evaluate the verbal content regarding the baby, expressed by a group of mother of infants born preterm and with very low birth weight, and compare them to a group of mothers of infants born full-term; and (b) to correlate the maternal verbal content about the baby with maternal and infant variables.

## Method

### *Participants*

The sample for this study was composed of 75 mothers, divided into two groups. The PT Group included 50 mothers of infants born preterm and with very low birth weight, and the FT Group included 25 mothers of infants born full-term.

The PT Group included mothers of infants born with gestational age lower than 37 weeks and birth weight below 1,500 grams, admitted to the Neonatal Intensive Therapy Unit (NITU) and the Neonatal Intermediary Care Unit (NICU) of Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto (HCFMRP-USP), between April 2001 and May 2002. The criteria for exclusion were: prior maternal psychiatric care, illiteracy, HIV positive, post-partum clinical complications, congenital anomalies babies, and those that were stillborn. Ninety mothers that met the inclusion criteria for the PT Group were contacted, with the above exclusion criteria applied. Of the 90 mothers, 29 mothers (32%) were excluded due to: having a clinical psychiatric history ( $n = 6$ ), illiteracy ( $n = 4$ ), being HIV positive ( $n = 1$ ), postpartum clinical complications ( $n=1$ ), or stillbirth ( $n=17$ ). Of the remaining 61 mothers, 11 chose not to participate in the study. The final sample for the PT Group, however, was

constituted by a convenient sample of 50 mothers interviewed during hospitalization of the infant.

The FT Group included mothers of infants born with a gestational age between 38 and 42 weeks, with birth weight equal to or greater than 2,500 grams, and between 10 to 15 days of postnatal age. The same exclusion criteria explained above was applied. Of the 52 mothers contacted, whose babies were born at Maternidade do Complexo Aeroporto (Mater) in the period between April 2002 and October 2004, 2 (4%) were excluded due to psychiatric history, and 25 (48%) chose not to participate in the study, stating either that no have the time, or were not interested. The convenience sample for the FT Group was composed of 25 mothers.

### Instruments

1. Interview guide (Carvalho, 2005). The interview guide included two topics and related questions: (a) Maternal expectations about the baby ("What did you expect of your baby during pregnancy?"; "What do you expect of your baby in the future?"); and (b) Maternal conceptions about their baby ("How do you perceive your child at this moment?"). The *Expectations* refer to what the mother expected in relation to their baby, and may include positive, negative/conflicting or neutral connotations; questions focused on expectations remembered during gestation of the baby as much as on expectations regarding future development. The *Conceptions*, on the other hand, refers to the manner in which the mother perceived and understood the current condition of the infant, which may have a positive, negative/conflicting or neutral connotation. The guide also included questions regarding the mothers' socio-demographic data.
2. Non Patient Structured Clinical Interview by DSM III-R (SCID; Spitzer; Williams, Gibbon, & First, 1989; translated by Del Ben, Personal communication, December 10, 1995).
3. State-Trait Anxiety Inventory (STAI, Spielberger, Gorsuch, & Lushene, 1970; translated and adapted for Brazil by Biaggio & Natalício, 1979); this self-evaluation instrument is composed of two sub-scales, state-anxiety and trait-anxiety. According to the authors, the state of anxiety is a transitory or situational emotional state, and refers, thus, to a specific reaction to a specific time and situation. On the other hand, the trait of anxiety refers to relatively stable individual differences in the tendency to react to situations perceived as threatening with elevations of intensity in the state of anxiety.
4. Beck Depression Inventory (BDI, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; translated and adapted for Brazil by Cunha, 2001).
5. Medical records of the infants.

### Procedure

*Data collection.* After approval from the Research Ethics Committee at HCFMRP-USP and free and clear consent from the participants, the SCID/Non-Patient was applied in order to identify mothers with psychiatric history, who were excluded from this study. Then, the evaluation of emotional indicators for anxiety and depression was administered with psychometric scales (STAI and BDI), and the interviews were conducted with the mothers in both groups, individually. For the PT Group, the evaluation of indicators for anxiety and depression and the interview were conducted in two sessions, during the period of hospitalization of the infant in the NITU or NICU at HCFMRP-USP. For the FT Group, the evaluation of indicators for anxiety and depression and the interview were conducted in one session, between the 10<sup>th</sup> and 15<sup>th</sup> day of the infant's life. The interviews for both groups followed the interview script and were recorded in audio. Finally, specifically in the PT Group, a documental analysis of the infants' medical records was executed in order to collect information regarding the gender of the infant and the following neonatal conditions: weight at birth, gestational age, appropriateness for gestational age, interment time in the NITU, total hospitalization time, Apgar index at 5<sup>th</sup> minute and neonatal clinical risk index (Clinical Risk Index for Babies; Cockburn et al., 1993).

*Data analysis.* Comparison between the groups (PT vs. FT) was done using the Mann-Whitney test for independent samples, in reference to the variables: age, educational level, number of children, and occupational level. The percentage of first-time mothers, single mothers and mothers that perform some kind of paid work outside the home in the PT and FT Groups were compared using the Chi-square Test.

Then the PT and FT Groups were compared using the Chi-square test or the Fisher's exact test regarding incidence of mothers who had scores indicative of clinical symptoms of anxiety (STAI), and dysphoria or depression (BDI), respectively. For identification of scores indicative of symptoms at a clinical level, the criteria of 75<sup>th</sup> percentile or greater on the STAI was used. On the BDI, the criteria suggested by undiagnosed patients were used, being dysphoria above 15 and depression above 20 (Gorenstein & Andrade, 2000).

For analysis of the content of the interviews, a quantitative-interpretative system for data analysis, proposed by Biasoli-Alves (1998), was adopted. Initially, literal transcriptions of the verbal responses to the interview questions from each of the mothers in the PT Group and the FT Group were made. Then a system was developed for analysis of the maternal verbal content according to the following steps:

1. Definition of the analysis units, considering representative thematic segments in the maternal responses to the interview questions;
2. Identification of the contents of the verbal units, considering principal representative key-words in the express verbal content;

3. Grouping of key-words with contents in order to group into thematic categories that share equivalent content;
4. Revision of the groups made by two other researchers, both familiar with the maternal verbal content;
5. Definition by examples of thematic categories and subcategories

After development of the category system (Appendix), the reliability index was established, using the interview protocols from 20 mothers in the PT Group, which corresponds to 40% of the sample for this group. Each verbal unit was categorized by two independent evaluators, familiar with the categorization system, and, then, they were checked for agreement between the evaluators. The reliability index between evaluators was calculated using the following formula: agreement / agreement + disagreement X 100; the reliability index between the evaluators thus obtained being 91%.

Descriptive analysis of the data obtained was executed using the category system in terms of frequency and percentage of maternal verbal content. The frequency of each category or subcategory corresponded to the number of time that these were expressed by the mothers. The percentage for each category was calculated dividing the total frequency of the maternal verbalizations in the category by the total frequency of maternal verbalizations expressed during the interview, multiplied by 100. The percentage for each subcategory was calculated dividing the frequency of the verbalizations referring to a specific subcategory by the total frequency of maternal verbalizations of the corresponding category, multiplied by 100.

Finally, a Spearman correlation test was done for each group of participants for correlation between the categories

of verbal content expressed by the mothers and the following maternal variables: maternal STAI scores (sub-scales state-anxiety and trait-anxiety), maternal BDI score, age, years of education, number of children, conjugal situation, and presence of work outside the home. Specifically, in the PT Group, a Spearman test for correlation between the proportions of the categories of verbal content expressed by the mothers and the following neonatal variables for the infants was executed: gender, weight at birth, gestational age, appropriateness for gestational age, duration of hospitalization in the NITU, Apgar index at 5<sup>th</sup> minute and neonatal clinical risk index.

For statistical treatment of the data, the Statistical Package for Social Sciences (SPSS) version 12.0 was used. The level of significance adopted for this study was 5% ( $p \leq 0.05$ ).

## Results

### *Characterization of the Sample*

In Table 1, the PT and FT Groups were checked for significant differences in regard to the mothers' socio-demographic characteristics, to determine if the groups were comparable between themselves. Both groups were composed of young mothers, with ages around 20 years, with median educational level of complete elementary school (from 1<sup>st</sup> to 8<sup>th</sup> grade), in the majority, and with a stable marriage or relationship. Most of the mothers stayed at home and did not work for a salary. The majority of those who did work outside the home performed manual labour. Most of the mothers in both groups were first time mothers, and, thus, the number of children was low.

Table 1

*Socio-demographic characteristics and clinical emotional symptoms of anxiety (State-Anxiety and Trait-Anxiety), dysphoria and depression in the PT Group and the FT Group*

	PT Group (n=50)	FT Group (n=25)	p -Value of
<b>Socio-demographic characteristics</b>			
Age (years) <sup>(1)</sup> - median (minimum value - maximum value)	23 (14 – 43)	21 (16 – 29)	0.26
Education (years) <sup>(1)</sup> - median (minimum value - maximum value)	8 (1 – 12)	9 (4 – 12)	0.28
Paid work outside the home <sup>(2)</sup> - frequency (percentage)	20 (40%)	9 (36%)	0.74
Occupational level <sup>(1) (4)</sup> - median (minimum value - maximum value)	1 (1 – 3)	2 (1 – 4)	0.28
Single mothers <sup>(2)</sup> - frequency (percentage)	13 (26%)	6 (24%)	0.85
First-time mothers <sup>(2)</sup> - frequency (percentage)	30 (60%)	17 (68%)	0.50
Number of children <sup>(1)</sup> - median (minimum value - maximum value)	1 (1 – 5)	1 (1 – 4)	0.56
<b>Emotional symptoms at clinical level</b>			
State-anxiety (STAI) <sup>(2)</sup> - frequency (prevalence)	16 (32%)	1 (4%)	0.006*
Trait-Anxiety (STAI) <sup>(2)</sup> - frequency (prevalence)	7 (14%)	4 (16%)	1.00
Dysphoria (BDI) <sup>(3)</sup> - frequency (prevalence)	5 (10%)	2 (8%)	1.00
Depression (BDI) <sup>(3)</sup> - frequency (prevalence)	7 (14%)	0 (0)	0.09

Note. <sup>(1)</sup> Mann-Whitney Test. <sup>(2)</sup> Chi- Square Test. <sup>(3)</sup> Fisher's Exact Test. <sup>(4)</sup> Classification according to Soares and Fernandes (1989): 1 = Nonqualified; 2 = Low Qualification; 3 = Average Qualification; 4 = Middle-Superior Qualification

\*  $p \leq 0.01$

In relation to the maternal emotional indicators, the incidence of mother in the PT Group that had scores indicative of clinical symptoms of state-anxiety was significantly greater than in the FT Group. A tendency was noted, as well, towards higher occurrence of scores indicative of clinical symptoms of depression in the PT Group compared to the FT Group. There was no significant difference between the two groups in relation to the occurrence of mothers with scored indicative of trait-anxiety or dysphoria at a clinical level.

Table 2 shows that the average gestational age of the infants in the PT Group was 31 weeks, with average birth weight of 1,114 grams, indicating that the majority of these

infants were small for The evaluation in the first hours of life showed that the median for Apgar scores at 5<sup>th</sup> minute was high (9 points), and the median score on the CRIB was low (2 points), indicating light clinical risk conditions for mortality and morbidity and a good prognosis in their clinical evolution. On the other hand, the median time of hospitalization in the NITU (13.5 days) and total time of hospitalization of the infant (53 days) were high, which indicates that their clinical development, after the first hours, required intensive care with procedures that ensured their survival. The evaluations of maternal indicators for anxiety, dysphoria and depression were conducted in the 3<sup>rd</sup> and 5<sup>th</sup> day of the infants' lives.

Table 2  
*Characteristics of preterm infants with very low birth weight (PT Group) (n=50)*

Neonatal characteristics of the very low birth weight infants	Values
Gestational age (weeks) - mean (standard deviation)	31 ( $\pm$ 2)
Weight at birth (grams) - mean (standard deviation)	1,114 ( $\pm$ 246)
Appropriateness for gestational age (SGA) - frequency (percentage)	39 (78%)
Apgar 5 <sup>th</sup> minute (score) – median (minimum value - maximum value)	9 (5 – 10)
Neonatal clinical risk index [CRIB] (score) – median (minimum value - maximum value)	2 (0 – 9)
Duration of interment at NITU (days) - median (minimum value - maximum value)	13.5 (0 – 92)
Duration of hospitalization (days) - median (minimum value - maximum value)	53 (20 – 146)
Chronological age of the infants at the time of assessment (days) - median (minimum value - maximum value)	24 (3 – 55)

Table 3  
*Categories and subcategories of maternal verbal content in the PT and FT Groups - frequency (f) and percentage (%)*

Categories and subcategories of maternal verbal content	PT (n=50)		FT (n=25)	
	f	%	f	%
Expectations in regards to the pregnancy / birth / baby	230	54	68	57
Positive Expectation	167	73	35	52
Neutral Expectation	39	17	17	25
Negative Expectation	11	5	11	16
Conflicting Expectation	10	4	4	6
No expectations	3	1	1	1
Conceptions in regards to the pregnancy / birth / baby	95	23	39	33
Positive Conception	61	64	33	85
Negative Conception	23	24	1	2
Conflicting Conception	4	5	0	0
Neutral Conception	7	7	5	13
Reactions and/or emotions in regards to the pregnancy / birth / baby	53	12	1	1
Focused on the Positive Emotion	16	30	1	100
Focused on the Negative Emotion	32	60	0	0
Focused on the Conflicting Emotion	5	10	0	0
Descriptions of the pregnancy / birth / baby	16	4	4	3
Others	12	3	4	3
Remainder	16	4	4	3
TOTAL	422	100	120	100



Due to the ample variation in the number of days occurring between birth and the evaluation of the mothers' anxiety and depression levels in the PT Group, the Spearman test was executed for correlation between the infants' chronological ages and the date of evaluation of the mothers' score on the STAI and the BDI, respectively. It is important note, however that no statistically significant correlations were verified between these variables.

### *The Mothers' Verbal Expressions about the Baby*

Table 3 shows, in order of occurrence, the frequency, and percentage of the categories and subcategories of content of the maternal verbalizations regarding the infant in the PT and FT Groups. Additional data will be included in the comments about the data in the table, in terms of the proportion, presented in parenthesis, of the subcategories and respective examples of maternal verbalizations.

As expected, the mothers understood the questions and responded about the subjects approached in the interview. Table 3 shows that, in both groups, maternal expectations, as much as conceptions, were predominately positive. Comparing the descriptive data from the two groups, in the PT Group there were more currently conflicting or negative concepts about the baby than in the FT Group. Likewise, despite these more negative/conflicting conceptions, the PT Group also had more positive expectations in relation to the FT Group.

Additionally, mothers in the PT Group spoke about reactions and feelings at the time of the child's birth; 70% of their verbalizations focused on negative/conflicting emotions, such as: "*Once in a while, she [baby] really frightens me! I am still very afraid... You know, I started to dream two times that she had had the same problem as he did [twin brother who was stillborn]. From being so scared, I swear I'll never sleep again!*" (PT 8). Contrarily, in the FT Group, only one mother spoke of her reaction/emotions in relation to her baby, which were focused on positive emotion.

Next, additional data will be presented, regarding the subcategories related to the two respective most frequent categories, expectations and conceptions. In both groups, the positive expectations refer principally to those related to the future growth, development and health of the baby (PT Group = 18%; FT Group = 21%), as indicated in the following verbalizations: "*Ah, I hope she can develop, you know, like that, well... that nothing happens, like that, but in her future, you know?! She will be a perfect child, you know, thus, with good health...*" (PT 23). "*Ah, I hope, thus, that nothing happens, you know, that she grows up healthy (...)*" (FT 25).

Beyond this, in the PT Group, we observed expectations referring to the desire for the baby to be discharged from the hospital (11%) and the mother's role in the child's care after discharge (12%), in addition to the expectations for a healthy baby, at term, and pretty, during gestation (14%), while in the FT Group the verbalizations concentrated only on the matter of maternal care of the baby (12%).

In both groups, neutral expectations, without any positive or negative connotation, refer, in both groups, to expectations that the infant have certain physical characteristics and/or behaviors (PT Group = 9%; FT Group = 16%) or the mother's preference for the gender of the child (PT Group = 8%; FT Group = 9%), such as: "*Oh, I was hoping that she would have black hair...*" (PT 26); "*I wanted a boy, you know?! I was dreaming of a boy, in the beginning... Until four months...*" (FT 6).

In regards to maternal conceptions, in both groups positive conceptions predominated, related to the growth, development and health of the baby (PT Group = 37%; FT Group = 39%), as in the following verbalizations: "*She's well now! She's a little blessing! He's handsome! She's different...*" (PT 6); "*[See the daughter] Perfect and healthy!*" (FT 2). Still in both group, expressions of pride and love for the baby was observed (PT Group = 15%; FT Group = 18%), as seen in the following: "*I think that he [the baby] is the most special thing that has happened in my life*" (PT 9); "*Wow, [the baby] is the most important thing in my life!*" (FT 11).

Aside from these types of comments, the FT Group spoke frequently of satisfaction for the fact that the baby is like the mother had imagined during the pregnancy (26%), which did not occur as frequently in the PT Group (6%).

In the PT Group, differently from the FT Group, the mothers also expressed negative concepts largely related to the fragility of the baby (22%), such as: "*Oh, I think she's so small...To play with her, you have to be very careful. That's what I think!*" (PT 23).

Table 4 present the correlation coefficients from the Spearman test which were statistically significant between the categories of verbal content and the maternal and neonatal variables of the infants in the PT Group.

For the maternal emotional variables from the PT Group, it was observed that, in relation to the maternal level of anxiety of the situational type, evaluated through the state-anxiety subscale on the STAI, there was a great proportion of positive maternal conceptions. Aside from this, the lower the levels of dysphoria or depression and dispositional type of anxiety, the greater the frequency of neutral maternal expectations. On the other hand, the greater the levels of anxiety, dispositional as much as situational, and depression in the mothers of the PT Group, the greater the proportion of verbalizations about reactions and feelings focused on negative and/or conflicting emotions.

In relation to the maternal socio-demographic variables from the PT Group, it was noted that the lower the number of children, the greater the occurrence of positive expectations, while, the greater the level of education in the mothers, the greater the occurrence of neutral expectations. It may be noted that the negative or conflicting maternal conceptions, for their part, were significantly associated to the fact of the mothers being at home and not earning a wage outside of the home.

Table 4

*Spearman post correlation coefficients (r), statistically significant, between the categories of verbal content and the maternal and neonatal variables in the PT Group, respectively*

Categories of verbal content	Maternal variables	r	p -Value
Neutral Expectation	Emotional Variables		
	STAI score (Trait-Anxiety)	-0.33	0.02
	BDI score	-0.48	0.01
Positive Conception	STAI score (State-Anxiety)	-0.34	0.02
Reactions and/or Emotions focused on the Negative or Conflicting emotion	STAI score (State-Anxiety)	0.49	0.01
	STAI score (Trait-Anxiety)	0.42	0.01
	BDI score	0.33	0.02
Positive Expectation	Socio-demographic Variables		
	Number of children	-0.35	0.01
Neutral Expectation	Years of education	0.30	0.03
Negative or Conflicting Conception	Work outside the home	-0.28	0.05
Categories of verbal content	Neonatal variables of the infants	r	p -Value
Positive Conception	Birthweight at birth	0.37	0.01
	Gestational age	0.29	0.04
	Duration of hospitalization at NITU	-0.30	0.03
	Neonatal Clinical Risk Index (CRIB)	-0.31	0.04
Negative or Conflicting Conception	Weight at birth	-0.49	0.01
	Duration of hospitalization at NITU	0.31	0.03
	Neonatal Clinical Risk Index (CRIB)	0.50	0.01

Regarding the associations between maternal verbalizations and the infants' neonatal variables, the greater the weight at birth and the gestational age of the infant, and the lower the index of neonatal clinical risk and time interned in the NITU, the greater the proportion of positive maternal conceptions. On the other hand, the lower the infant's birth weight, the greater the index of neonatal clinical risk and the greater time of hospitalization in the NITU, the greater incidence of negative or conflicting maternal conceptions.

In addition to Table 4, regarding the FT Group, only a positive statistically significant correlation was verified between the proportion of neutral maternal expectations and the score on the trait-anxiety subscale; the greater the level of trait-type anxiety, the more neutral maternal expectations in relation to the infant.

## Discussion

The groups studied were comparable between themselves in relation to the socio-demographic variables, however, they difference in regard to maternal anxiety symptoms. In this study, it was found that the mothers of infants born

prematurely and with very low birth weight had significantly greater state-anxiety when compared to mothers of infants born full-term; the anxiety symptoms were at a clinical level. The state of anxiety, evaluated by the state-anxiety subscale, corresponds to a transitory emotional state, in reaction to a specific situation and time (Biaggio & Natalicio, 1979). This finding confirms the previous study by Singer et al. (1999), in which the mothers of preterm infants showed symptoms of anxiety, evaluated with the Brief Symptom Inventory.

Therefore, premature birth with very low birth weight and consequent hospitalization of the infant is an adverse situations and may have an impact on the mother's mental health, as previously demonstrated in the studies from Davis et al. (2003), Doering et al. (2000), Drewett et al. (2004), Lambrenos et al. (1996), Mew et al. (2003), Younger et al. (1997), and Zanardo and Freato (2001).

In response to the main objective of this study, the results demonstrated that, both mothers of preterm infants, as well as mothers of infants born full-term, showed positive conceptions and expectations in relation to their baby. However, it was also verified that, different from the mothers of full-term infants, mothers of infants born prematurely

expressed their sentiments and reaction, with connotations predominately focused on negative emotions. These results are similar to those found in the study by Linhares et al. (1999), in which the mothers of preterm infants related experiencing feelings of guilt, anxiety, and fear, at the same time in which they showed feelings of hope and optimism.

The positive maternal expectations, in both groups, refer largely to the growth, development, and health of the infant in the future. However, in the process of the situation experienced by the mothers of infants born prematurely and with very low birth weight, they also indicated the desire for discharge from the hospital and expectations related to their maternal role in the care of the infant after discharge. As far as remembered expectations, at the time of the baby's birth, the mothers of preterm infants hope for a healthy baby, full term, and pretty, similar to the standard pattern of found for maternal expectations about the «imaginary baby».

Yet, it was also observed that the mothers of preterm infants with a lower number of children, especially first time mothers, seem to have positive enough expectations for their babies, perhaps distant from the reality they are experiencing at the moment. It is presumed that the preterm infant, small and fragile, that requires special care, is far from the ideal that they dreamed during pregnancy. According to Kennell and Klaus (1993), this situation may generate intense feelings of guilt, anxiety, and weakness in the mothers. However, it becomes necessary for the mothers to adapt the idealized image of their baby to the "real infant" they actually have.

The positive maternal conceptions about the infant in both groups also refer to the growth, development, and health of the baby, as well as expressions of pride and love for the baby. In the case of mothers of preterm infants, these positive conceptions were associated with more favorable neonatal conditions for the baby and by lower scores for maternal anxiety. Therefore, the fact that the preterm infants are healthier and the mothers less anxious leads to positive maternal conceptions; the greater birth weight and gestational age of the baby, and lower neonatal clinical risk index, the time of hospitalization in the NITU and the level of maternal state-type anxiety, the more positive conceptions about the baby were reported by the mothers.

Together, the positive expectations and conceptions presented by the mothers of preterm infants may act as a protection mechanism for the development of the baby, which is in an adverse biological situation. The protection mechanisms are the environmental conditions and resources of the individuals capable of attenuating and neutralizing the negative effects of the risks present in the developmental pathway (Mastern & Gewirtz, 2006; Silva, 2003).

The mothers of preterm infants in this study, who showed positive conceptions and expectations for their babies, probably feel more optimistic and hopeful in relation to the infant development, which may have a positive impact on appropriate maternal care. At the same time, it was verified that these mothers had a realistic perception of the

seriousness of their babies' health conditions, in so far as they correctly perceived the fragility of their babies' health. This is a positive aspect for appropriately confronting the problem and caring for the infants, without creating deformed conceptions and expectations about the potential for development.

It is worth highlighting that, although not approached in the interview script, the mothers of preterm infants, feeling accepted during the interview situation, enjoyed the opportunity to express their reactions and feelings about the experience of having a premature baby and the consequent hospitalization. The mothers of preterm infants with very low birth weight expressed feelings and their reactions with a connotation predominately focused on negative or conflicting emotions, which did not occur with the mothers of infants born full-term. According that emphasized by Sobotková, Dittrichová and Mandys (1996), the results of comparison between the perceptions of the mothers of preterm infants and mothers of full-term infants show that having a premature baby is an emotionally stressful situation for most mothers, even when the baby is not severe ill.

These results found about the mothers' reactions and feelings are similar to those obtained in other studies that focused on mothers' verbal reports, obtained in interviews (Monteiro et al., 2002) or expressed by the mothers during participation in psychological support groups (Correia, 2005; Linhares et al., 1999; Linhares, Carvalho, Correia, Gasparido, & Padovani, 2006). In these findings the maternal preoccupations arising from the babies' premature births and consequent hospitalization in the NITU, as well as feelings of powerlessness, guilt, sadness, frustration, and anxiety, were observed.

In this study, the verbalizations of mothers of preterm infants about their feelings and their reactions, focused on negative/conflicting emotions, appear to be influenced by their levels of anxiety, as much situational and dispositional, and depression. These results appear similar to those found by Correia (2005) in a study of comparison between groups of mothers with preterm infants and without clinical emotional indicators in a psychological intervention context. The mothers with greater levels of anxiety and depression appear to be susceptible to reactions and feelings focused in negative/conflicting emotions, thus, comprising a situation of multiple risk which requires psychological support and care to neutralize the adverse effects for the mother, herself, and for the baby.

The mother whose capacity for appropriately confronting and adapting to the situation of a premature birth is weakened may have difficulties in establishing an appropriate connection to the baby and assuming appropriate maternal care (Gennaro et al., 1993; Sobotková et al., 1996). The damage to the quality of the care given the child may have negative consequences in the development of the prematurely born child (Bradley et al., 1994).



The findings of this present study suggest, therefore, the necessity for special attention to the identification of maternal thoughts and feelings, which permeate the care provided to the children by the mothers, as well as their performance in their maternal role. According to that emphasized by Buarque, Lima, Scott, and Vasconcelos (2006), the emotional stress of the neonatal experience and the perception that the parents have of an at-risk infant, as different from a healthy baby, and, often, as a «special» and «vulnerable» baby, may influence the parents' attitude about their child. Thus, according to the authors, the parents would have a compensatory attitude, of overprotection, in relation to this child. The influence of the parents' perceptions and ideas about the prematurely born child appear to last throughout the child's development (Tideman, Nilsson, Smtih, & Stjernqvist, 2002).

The contribution of this study consist in the characterization of the thoughts and feelings of the mothers, which may be expressed in the process of a guided interview, qualifying the maternal emotional universe and associating it to the levels of anxiety and depression. The identification of these thoughts and feelings allows for appropriate planning and provision of appropriate preventive psychological support with the intent of providing a protection mechanism for the mental health of the mothers and developmental care of the preterm infant (Buarque et al., 2006; Carvalho, 2005; Preyde & Ardal, 2003; Younger et al., 1997).

The findings from this study, above all, must be considered in light of the methodological limitations of a transversal, descriptive, and correlational study. Additionally, further investigation of relevant questions should be attempted, such as investigations of the possible differences in maternal verbalizations about the baby between the period of hospitalization and after discharge of the baby, or investigation of the relationship between maternal expectations and conceptions and the later development of the preterm infant.

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## APPENDIX

### SUBCATEGORY AND CATEGORY SYSTEM FOR MATERNAL VERBAL CONTENT

#### I - EXPECTATIONS FOR THE PREGNANCY / BIRTH / BABY

**1.1- Positive Maternal Expectation:** refers to maternal expectations, attributing a positive value, in a specific form related to the baby, healthy pregnancy, and birth, to religious faith or in generic form.

1.1.1- Specific

1.1.1.1- Related to the baby

- Healthy/full term/pretty newborn
- Desire for discharge from the hospital
- future growth/development/health of the baby

1.1.1.2- Related to healthy pregnancy

1.1.1.3- Related to arrival of the birth

1.1.1.4- Related to religious faith

1.1.2- Generic

**1.2- Negative Maternal Expectation:** refers to maternal expectations, attributing a negative value in specific form, related to the baby's problem, relation to nonacceptance and/or denial of the baby or in generic form.

1.2.1- Specific

1.2.1.1- Related to the baby's problem

1.2.1.2- Related to nonacceptance/denial of the baby

1.2.2- Generic

**1.3- Conflicting Maternal Expectation:** refers to expectations, attributing an ambivalent value to questions related to the baby.

**1.4- Neutral Maternal Expectation:** refers to expectations about the baby without attributing any value.

1.4.1- Preference for gender

1.4.2- Attribution of physical and behavioral characteristics

**1.5- Absence of expectations:** refers to the complete lack of expectations regarding the interview matter.

#### II - CONCEPTIONS REGARDING THE PREGNANCY / BIRTH / BABY

**2.1- Positive Maternal Conception:** refers to the manner in which the mother perceives and understands, attributing a positive value to the baby and to religious faith.

2.1.1- Related to the baby

- Related to the growth/development/health of the baby
- Related to the expression of pride/love for the baby
- Related to the real baby x imaginary baby

2.1.2- Related to religious faith

**2.2- Negative Maternal Conception:** refers to the manner in which the mother perceives and understands, attributing a negative value to the fragility of the prematurely born baby and the discrepancy between the real baby and the baby she imagined.

2.2.1- Related to the fragility of the baby

2.2.2- Related to the real baby x imaginary baby

**2.3- Conflicting Maternal Conception:** refers to the manner in which the mother perceives and understands, attributing ambivalent values to the baby.

- 2.4- Neutral Maternal Concept:** refers to the manner in which the mother perceives and understands the physical and behavioral characteristics of the baby, in regard to the physical and behavioral characteristics, without attributing any value.

### III - REACTION AND / OR FEELING REGARDING THE PREGNANCY / BIRTH / BABY / HOSPITALIZATION

- 3.1- Reaction and/or feeling focused on the *positive emotion*:** refers to the expressions of descriptions of reactions and/or maternal feelings focused on positive emotions, such as happiness, joy, euphoria, hope, confidence, security, adaptability, acceptance.
- 3.2- Reaction and/or feeling focused on the *negative emotion*:** refers to expressions of the description of maternal reactions and/or feelings focused on the negative emotion, such as crying, sadness, anger, discomfort, fear, anguish, insecurity, fright, surprise, apprehension, rejection, revolt.
- 3.3- Reaction and/or feeling focused on *conflicting emotion*:** refers to expressions of descriptions of maternal reactions and/or feelings focused on conflicting emotion, showing an oscillation or ambivalence of emotions or feelings.

### IV - DESCRIPTIONS OF THE PREGNANCY / BIRTH / BABY

- 4.1- Description of the baby's behavioral pattern:** refers to the narratives regarding the baby's behavioral pattern.
- 4.2- Description of the pregnancy:** refers to narratives of discover of the pregnancy and situations occurring during the gestational period.

### V - OTHERS