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Anxiety and Depression in Mothers of Preterm Infants and Psychological Intervention During Hospitalization in Neonatal ICU

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The objective of this study was to evaluate and compare symptoms of anxiety and depression before and after psychological intervention in mothers of babies born preterm with very low birth weight, hospitalized in the Neonatal Intensive Care Unit. Fifty nine mothers, without psychiatric antecedents, were distributed into two groups according to the type of psychological intervention received. Group G1 included 36 mothers who received routine psychological treatment associated with initial structured intake using support materials (video and guidance manual). Group G2 included 23 mothers who received routine psychological intervention without support material. The STAI and BDI, respectively, were used to evaluate maternal indicators of anxiety and depression. The results revealed that both groups showed a reduction in levels of state or trait anxiety and depression after psychological intervention and discharge of the baby from the hospital. In regard to the emotional symptoms at a clinical level, a statistically significant reduction in the level of state-anxiety was verified in G1. The findings confirmed the need for psychological support for mothers of preterm infants and the use of materials focusing on «prematurity» for reduction of the situational anxiety on a clinical level.
Keywords: preterm, anxiety, depression, psychological intervention, motherhood

El objetivo de este estudio era evaluar y comparar los síntomas de ansiedad y depresión antes y después de una intervención psicológica en madres de bebés prematuros con muy bajo peso, hospitalizados en la unidad neonatal de cuidados intensivos. 59 Madres primerizas, sin antecedentes psiquiáticos, se distribuyeron en dos grupos según el tipo de intervención psicológica recibida. El Grupo G1 incluía a las madres que recibieron tratamiento psicológico habaitual asociado a información estructurada y el emplo de material de apoyo. El Grupo G2 incluía a las madres que recibieron intervención psicológica sin material de apoyo. Se emplearon el STAI y el BDI, respectivamente, para evaluar los indicadores maternos de ansiedad y depresión. Los resultados revelaron que ambos grupos mostraron una reducción en los niveles de ansiedad estado o rasgo y depresión después de la intervención psicológica y de que su bebé fuese dado de alta. Con respecto a los síntomas emocionales al nivel clínico, se verificó una reducción estadísticamente significativa en el nivel de ansiedad-estado en el G1. Los resultados confirmaron la necesidad de apoyo psicológico para las madres de niños prematuros y el uso de material centrado en la «premadurez» para la reducción de la ansiedad situacional al nivel clínico.
Palabras clave: pretérmino, ansiedad, depresión, intervención psicológica, maternidad

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Prematurity and birth weight below 1,500 grams have been highlighted as biological risk factors for the development of the child (Levy-Shiff, Einat, Mogilner, Lerman & Krikler, 1994; Laucht, Esser & Schimt, 1997; Carvalho, Linhares & Martinez, 2001; Davis, Edwards, Mohay & Wollin, 2003; Linhares, Carvalho, Padovani, Bordin, Martins & Martinez, 2004). With scientific and technological advances in Medicine, there has been a progressive and significant increase in the survival rate of prematurely born infants (Holmgren & Högberg, 2001).

The birth of the preterm infant with very low birth weight (≤ 1,500g) provokes the necessity for prolonged hospitalization of the baby in the Neonatal Intensive Care Unit (NICU). In this context, the early separation of the mother and infant becomes necessary, damaging the attachment for the mother-child dyad (Thurman, 1989; Klaus & Kennell, 1993; Linhares et al., 2004). Hospitalization of the premature infant in the NICU is considered as a «psychological crisis» in the family, causing feelings of powerlessness and stress, especially for the mothers (Linhares, Carvalho, Bordin, Chimello, Martinez & Jorge, 2000; Davis et al., 2003). Consequently, feelings of anxiety and depression in mothers of preterm infants are studied, as they appear to be more intense during the hospitalization of the child in the NICU (Doering, Moser & Dracup 2000; Zanardo & Freato, 2001).

Mothers of preterm infants may exhibit symptoms of depression, especially during the acute phase of the infant's hospitalization in the NICU (Doering et al., 2000; Padovani, Linhares, Carvalho, Duarte & Martinez, 2005). The presence of symptoms of depression in the formation of the attachment between the mother and her preterm infant may interfere in the quality of care dispensed by the mother for the child, and, consequently, in the type of attachment presented by the child in the future (Poehlmann & Fiese, 2001; Pridham, Lin & Brown, 2001). Children born preterm, whose mothers had symptoms of depression, exhibit insecure attachment, demonstrating that the maternal characteristics and those of the child contribute to the quality of the relationship developed by the dyad (Pridham et al., 2001).

Additionally, premature birth with very low birth weight is a condition perceived by the mothers as highly generative of anxiety (Zanardo & Freato, 2001; Grimstad, Schei & Backe, 1999). In the study from Pinelli (2000) high scores were found for state-anxiety in mothers of preterm infants, which caused difficulties in confronting the situation of the infant's prematurity. Scherman (2001) observed a high level of anxiety and insecurity in mothers of preterm infants, at the time of birth and during subsequent months, characterizing a traumatic and stressful situation for these mothers. The offer of appropriate support to the mothers, by the multidisciplinary team, in the sense of informing them of the conditions and abilities of the premature newborn, and also reflecting on the aspects related to the mothers' own feelings, may contribute to the diminution of anxiety and building of better confidence in the baby's care (Gasparetto, 1998).

Confronted with concerns over the care dispensed to premature infants and their families, and approach was systematized regarding *Individualized developmental and care, centered on the family of preterm babies with low birth weight in the Neonatal ICU* (Als, 1982). This approach in care aims to identify, from the individual functioning of the child and its family, the opportunities available for support for differentiation and modulation of stress on the baby in the NICU and to respect and support the family, considering them as an essential collaborator in neonatal care and promoter of child development.

For the purpose of minimizing the immediate unfavorable impact on the mother-child relationship, the need for services that provide psychological support to the mothers of preterm babies during hospitalization in the NICU is highlighted (Doering et al., 2000; Dobbins, Bohlig & Sutphen, 1994). Nonetheless, studies on clinical intervention with mothers of preterm neonates have not kept pace with technological advances, which have increased the survival rate for vulnerable infants (Melnyk, Alpert-Gills, Feinstein, Fairbanks, Schultz-Czarniak, Hust, et al., 2001). Intervention programs with mothers of preterm infants hospitalized in the NICU must be implements, as soon as possible, in order to promote concrete information regarding the NICU environment and the characteristics and behavior of preterm babies (Bruns, McCallun & Cohen-Addad, 1999).

The group activities may be a positive experience for these mothers, insofar as they allow an exchange of information (Bracht, Ardal, Bot & Cheng, 1998). Mothers of preterm infants may converse in the group about their concerns, share their experiences with other mothers who may be at different stages in relation to the development of their babies, and receive guidance that helps in satisfactorily facing this crisis period (Linhares et al., 2000). Thus, the goal is psychological re-balancing for these mothers.

Considering that frequently the task of caring for the premature infant is permeated with insecurities and overprotection on the part of the mothers, it becomes necessary to create a «psychological setting» in which the mothers may express themselves and reflect on their feelings regarding their premature child, and receive guidance. The purpose of the present study was: a) to evaluate and compare indicators for anxiety and depression in mothers of preterm infants with very low birth weight at two moments during hospitalization in the Neonatal Intensive Care Unit, and after psychological intervention, and upon the baby's discharge from the hospital; b) to compare two psychological intervention modalities for regulation of the mothers' emotional aspects, differentiated concerning the degree of structuring and systematization of activities, during the period of the babies' neonatal hospitalization.

Two hypotheses were employed as guidelines in the present study. The first hypothesis is that the psychological

intervention offered to the mothers in groups during the babies' hospitalization in the NICU would have a reducing effect on the levels of maternal anxiety and depression; the second hypothesis is that a systematized program of psychological intervention with audiovisual and printed material stimuli for support to be used in receiving the mothers in the group, dealing with specific subjects related to prematurity, an affective mother-child connection, and care of the baby, would be more effective in reducing clinical indicators of maternal anxiety and depression than a program without this type of support material.

Method

Participants

The sample was composed of 59 mothers of preterm newborns (< 37 weeks of gestational age - GA) and very low birth weight (≤ 1,500g), hospitalized in the Neonatal Intensive Care Unit (NICU) of the Hospital of Clinics at the School of Medicine of Ribeirão Preto, University of São Paulo (HCFMRP-USP), in the period between 2001 and 2003. The study was conducted in a university health care hospital, at a tertiary level by the Public Health System, which included psychological support for the mothers during the babies' hospitalization in the NICU.

The sample of 59 mothers was extracted from an initial sample of 126 mothers, which represents 75% of the annual births of premature babies in the HCFMRP in the period in which the study was conducted. The entire sample was subjected to the "*Programa de Apoio Psicológico às Mães de Bebês Prematuros"* (PAPPRE, Psychological Support Program for Mothers of Premature Babies), which consists in routine psychological intervention in the NICU offered throughout the baby's period of hospitalization. The participants were randomly distributed into two groups (G1 and G2), which were differentiated in terms of the structure and organization of the initial intake of the mothers in the PAPPRE, occurring in the first two sessions of the psychological intervention group.

In the composition of G1, 76 mothers were contracted during hospitalization of the premature babies in the NICU, of which 15 (20%) did not meet the stay with the study, and 25 (40%) were excluded based on the following criteria: psychiatric antecedents, identified by the Structured Clinical Interview for DSM-III-R (SCID-Non Patient) (n=11); illiteracy (n=3); hospitalization in the Intensive Care Unit (n=1); positive diagnosis for Acquired Immune Deficiency Syndrome (AIDS) (n=1), insofar as this constitutes an additional source of stress. The reasons for exclusion for the infant were: death of the child during hospitalization in the NICU (n=3); discharge during the process of data collection (n=6). The final G1 sample was composed of 36 mothers.

In the composition of G2, 50 mothers were contacted, of which 13 (26%) did not stay with the study, and 14 (38%) were excluded based on the following criteria: psychiatric antecedents identified by the SCID-NP (n=4); illiteracy (n=4); dropped out during the evaluation process (n=3). The reasons for exclusion for the infant were: death of the child during hospitalization in the NICU (n=1); dicharge during the process of data collection (n=2). The final G2 sample was composed of 23 mothers.

G1 included the mothers that received psychological intervention centered in the hospitalization provided by the psychologist and supported with audiovisual and print materials, offered in the first two care sessions intended for intake of the mothers (Experimental Group). G2 included mothers who received psychological intervention centered only in the hospitalization, provided by the psychologist, as routinely conducted until the time of this present study, without the use of audiovisual and printed support materials (Control Group).

Instruments and Materials

(a) *Clinical Interview Structured by DSM III-R - SCID/Nonpatient* (Del Ben, 1995); (b) *Inventário de Ansiedade Traço-Estado (STAI, State-Trait Anxiety Inventory)*, which is composed of two anxiety self-evaluation scales, being: Ansiedade-Estado e Ansiedade-traço (State-Anxiety and Trait-Anxiety, Spielberger, Goursuch and Lushene, 1979). In the State-Anxiety subscale, the mother was asked to focus on the current situation of the baby's hospitalization. The STAI was translated and adapted for Brazil and presents an index of reliability (test and retest) of 0.73 and 0.86 for the STAI-Trait and an internal consistency Cronbach Alpha index of 0.63 and 0.92 for the STAI-State. In the event that the individual is in a situation of psychological tension, the fidelity index is 0.92; (c) *Beck Depression Index- BDI* (Cunha, 2001), which evaluates symptoms of depression in clinical and nonclinical samples. The fidelity indexes are 0.86 for psychiatric samples and 0.81 for nonpsychiatric; (d) *Questionnaire for characterization of mothers*; (e) *Video of the Intervention Program for Mothers of Preterm Babies* (Gasparetto, 1998), support material for psychological intervention groups to support mothers of infants born preterm; (f) *Support book for psychological guidance for mothers of preterm newborns, Lembretes Preciosos para Mamãe* (Precious Memories for Mommy, Carvalho & Linhares, 2001). This manual deals with the following topics: The premature birth of a baby as a difficult event; Visiting time for the baby in the Neonatal Intensive Care Unit; How I may have contact with my baby; News about the baby; Breast feeding the baby; Time of discharge from the hospital; (g) *Clinical Risk Index for Babies* (Cockburn, Cooke, Gamsu, Greenough, Hopkins, Mcintosh et al., 1993) for identification of the baby's neonatal clinical risk; (h) *Medical chart of the infants.*

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Procedure

Data Collection

1st stage - Evaluation during hospitalization of the baby in the NICU

The study was approved by the Clinical Research Ethics Board of the Hospital of Clinics, School of Medicine, University of São Paulo at Ribeirão Preto, and informed consent was obtained from all mothers prior to participation. At first contact with the mothers, after the birth of the baby, the mothers are invited to participate in the study. Then, the SCID-NP was applied by the first author, who carried out the psychological intervention of the mothers of preterm infants admitted to the NICU, in order to determine the existence of psychiatric antecedents for the mothers.

A session was scheduled with the mothers who met the inclusion criteria for the study for psychological evaluation for symptoms of anxiety and depression. In order to neutralize interference from application of one test on the other (carry-over effect), a balance was done, altering the order of application of the STAI and BDI instruments. The principal investigator in the study was «blind» in relation to the results of the mothers' psychological assessments. The evaluations were conducted by two other collaborating researchers (B and C), psychologists specialized and trained in psychological evaluation. The mothers had the option of reading and filling the questionnaires alone, or could receive support from the B and C researchers that read the questionnaire for them. The mothers' questions were clarified on request for help from the psychologists that conducted the evaluation. After the evaluation, the mothers (G1 and G2) were separated into the groups for psychological intervention.

2nd stage - Psychological intervention

Upon conclusion of the first evaluation, the mothers participated in the psychological support groups, being the psychological intervention group centered on support from a psychologist and support materials (video and manual) (G1), and the routine psychological intervention groups centered only on support provided by a psychologist (G2). Both the mothers in G1 and G2 continued, after the two initial sessions, receiving psychological support up to the time of the infants' discharge from the hospital, according to the current guidelines in the Pediatric Psychological Service at the HCFMRP-USP.

3rd stage - Evaluation after psychological intervention and release of the baby from the hospital.

After the infants' discharge from the hospital, the mothers were reevaluated by the B and C researchers for emotional indicators of anxiety (STAI) and depression (BDI). The mothers' psychological reevaluation was conducted in the babies' first appointments in the *Longitudinal Follow-up Program for Preterm Babies with Very Low Birth Weight*.

Data analysis and Statistical treatment

The instruments were analyzed according to their respective norms. The measurement of anxiety was done based on Brazilian standardization. The statistical criteria of a score equal to or greater than 75th percentile was used for the STAI in identification of mothers with anxiety at clinical level. The criteria of scores greater than 20 was used in BDI for depression clinical symptoms, suggesting for patients no diagnosed (Gorestein & Andrade, 2000).

Primarily, the data were analyzed by the Kolmogorov-Smirnov test for normality to decide about statistical treatment adopted. For the maternal variables, the babies' variables, the maternal emotional indicators at a clinical level, the descriptive statistical treatment was used based on frequency, percentage, mean, or median, according to the nature of the data.

The inferential statistical treatment involved analysis of comparison between-groups and within-group. In the analysis of comparison between-groups, the continuous variables were analyzed by the t Student test or Mann-Whitney test, for independent samples, according to the normality of the distribution, and the categorical variables were analyzed by Chi-square Test.

In the analysis of the measurement of the level of state-anxiety, trait-anxiety and depression at the two moments, respectively, (during hospitalization in the NICU, and after the baby's release) the ANOVA 2 × 2 Test (Groups x Moments) was used. In the within group analysis, for indicators of maternal anxiety and depression at a clinical level in the two moments, the McNemar Test was used for matching samples. The data were processed using Statistical Package for Social Sciences (SPSS for Windows, version 12.0). A significance level of 5% was adopted for the study.

Results

The groups were similar in reference to the maternal variables of the type: age, academic level, civil status, occupation, number of births (first time mothers) and family income. The mothers in both groups were young adult, with an average age around 25 years, and academic level predominately at the elementary level (1st through 8th grade). The majority of the mothers stated being in a stable conjugal relationship, were homemakers, and without employ outside the home (Table 1).

As far as the babies' variables, the occurrence of significant differences was verified between the groups in reference to the variables: birth weight, neonatal clinical

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risk, duration of hospitalization in the NICU, and total duration of hospitalization. The babies in the G1 group had lower birth weight, more neonatal clinical risk, spent more time interned in the NICU, and, consequently, had longer total durations of hospitalization, when compared to the babies in the G2 group. As far as the other infant variables, gender, gestational age, 5th minute Apgar score, and appropriateness for gestational age, the groups did not show statistically significant differences (Table 1).

A statistically significant differences was found in the level of state-anxiety in groups G1 and G2 when the two moments were compared, prior to psychological intervention and after psychological intervention and release of the baby from the hospital. A reduction in the level of state type anxiety was recorded between the two momentss in both groups. No statistical difference was found between the groups in comparison of the moment and type of intervention (Tables 2 and 3).

Table 1
Socio-demographic characteristics of the mothers, and neonatal characteristics of the infants

Variables	G1 (n=36)	G2 (n=23)	Value of p
Maternal			
Age (years) [1] Mean (DP)	24.56 (± 6.81)	23.48 (± 6.32)	NS
Educational level (years) [2] (%)			
8 years (elementary school)	72%	60%	NS
11 years (high school)	28%	40%	NS
Civil status (%) [2]			
Single	25%	26%	NS
Stable relationship/ Married	75%	74%	NS
Occupation (%) [2]			
Home maker	61%	61%	NS
Employed (outside of home)	38%	39%	NS
First time pregnancy [2] (%)	58%	74%	NS
P*er capita* income (Brazilian reais) [3] [4]			
Mean (min-max)	140.00 (7-1,133)	133.00 (42-766)	NS
Infant			
Gender [2] (%)			
Female	50%	70%	NS
Male	50%	30%	NS
Birth weight (grams) [1]			
Mean (DP)	1,058 (± 241.98)	1,201 (± 231.11)	0.03
Gestacional age (weeks) [1]			
Mean (DP)	30.44 (± 2.26)	29.22 (± 3.41)	NS
Apgar – 5th minute (score) [3]			
Mean (DP)	8.67 (± 1.31)	8.30 (± 2.10)	NS
Appropriateness for gestational age – Small for gestational age[2] (%)	72%	70%	NS
Neonatal clinical risk index - CRIB [3] (score) Mean (DP)	3.73 (± 3.34)	1.59 (± 1.99)	0.007
Neonatal period			
Duration of hospitalization in NICU [3] (days)			
Mean (DP)	31 (± 24.67)	18 (± 26.71)	0.004
Total duration of hospitalization [3] (days)			
Mean (DP)	72 (± 39.69)	58 (± 39.36)	0.04

[1] T test for independent samples; [2] Chi-squared test; [3] Mann-Whitney Test
[4] Minimum current salary R$180.00 in the period from 2000 to 2003; NS = non significant

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There was a statistically significant difference in the level of trait-anxiety between G1 and G2 when the moments before psychological intervention and after psychological intervention and release of the baby from the NICU were compared. A reduction in the levels of trait-anxiety was found in the second moment in relation to the first in both groups. No statistical difference was found between the groups when comparing the moment and type of intervention (Tables 4 and 5).

In relation to the levels of depression, a statistically significant difference was verified in both groups when comparing the moments before psychological intervention and after psychological intervention and release from the hospital. There was a significant reduction in the level of depression at the second moment in relation to the first in both, G1 and G2. No statistical difference was detected between the groups when comparing the moment and type of intervention (Tables 6 and 7).

Table 2
Indicator of maternal state-anxiety, measured by the STAI, prior to psychological intervention and after the infant's discharge (evaluation and reevaluation) in G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Moment (evaluation and reevaluation)							
STAI - State	1	1064.64	865.96	17.51	0.0001	0.24	0.98
Moment X Type of intervention (Group)							
STAI - State	1	40.57	40.57	0.67	0.42	0.01	0.13
Error	57	3465.63	60.80	—			

Table 3
Indicator of maternal state-anxiety, measured by the STAI, in groups G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Type of intervention (Group)							
STAI - State	1	128.33	128.33	0.40	0.53	0.007	0.10
Error	57	18346.92	321.88				

Table 4
Indicator of maternal trait-anxiety, measured by the STAI, prior to psychological intervention and infant's discharge (evaluation and reevaluation) in G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Moment (evaluation and reevaluation)							
STAI -Trait	1	306.46	306.46	11.18	0.001	0.16	0.91
Moment X Type of intervention (Group)							
STAI -Trait	1	2.60	2.60	0.09	0.76	0.002	0.06
Error	57	1561.74	27.40	—			

Table 5
Indicator of maternal trait-anxiety, measured by the STAI -Trait, in groups G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Type of intervention (Group)							
STAI - State	1	0.50	0.50	0.001	0.97	0.0001	0.05
Error	57	22843.32	400.76				

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Table 6
Indicator of maternal depression, measured by BDI, prior to psychological intervention and after infant's discharge (evaluation and reevaluation) in G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Moment (evaluation and reevaluation)							
BDI	1	104.35	104.35	4.54	0.04	0.07	0.55
Moment X Type of intervention (Group)							
BDI	1	2.35	2.35	0.10	0.75	0.002	0.06
Error	57	1310.11	22.98				

Table 7
Indicator of maternal depression, measured by BDI, in groups G1 and G2 – ANOVA

Variables	sd	Sum of squares	Mean square	F	p	η^2	Power
Type of intervention (Group)							
BDI	1	71.17	71.17	0.54	0.47	0.009	0.11
Error	57	7556.201	132.56				

Table 8
Indicators of anxiety (state and trait) and depression, at a clinical level, evaluated prior to psychological intervention (evaluation) and after psychological intervention and infant's discharge (reevaluation), in G1 and G2 - frequency (f), proportion (p), and incidence (i)

Emotional indicators at a clinical level	G1				G2			
	Evaluation		Reevaluation		Evaluation		Reevaluation	
Emotional indicators taken together f (p)	14	(0.39)	8*	(0.22)	7	(0.30)	2	(0.09)
Specific indicators f (i)								
Anxiety - State	12	(0.86)	4**	(0.50)	5	(0.71)	2	(1.00)
Anxiety - Trait	8	(0.57)	7	(0.88)	2	(0.29)	2	(1.00)
Depression	8	(0.57)	4	(0.50)	2	(0.29)	2	(1.00)

* $p \leq 0.03$; ** $p \leq 0.008$
(McNemar Test)

Considering the maternal emotional indicators focusing on a clinical level, primarily it could be verified that both groups, at the time of the evaluation, presented similar proportions of emotional indicators at a clinical level, at the time of evaluation, they presented similar proportions of emotional indicators at a clinical level, without a significant difference between-groups (p=0.18). A statistically significant differences was recorded in G1 between the moments of evaluation and reevaluation, in the group of maternal clinical emotional indicators and, specifically, state anxiety; There was a reduction in the number of mothers in G1 that presented clinical emotional indicators after psychological intervention and release of the baby in comparison to the moment after the infant's birth. On the other hand, with G2, there was no statistically significant difference between the moments of evaluation and reevaluation in terms of the presence of emotional indicators at a clinical level, all together, not specifically by the type of symptom (Table 8).

Discussion

The study in question evaluated the indicators for anxiety and depression in mothers of infants born preterm with very low birth weight (≤ 1,500 grams) during hospitalization of

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the baby in the Neonatal Intensive Care Unit, and after psychological intervention and release of the baby from the hospital. Two groups of mothers with preterm infants were compared. The intervention in G1 was mediated by the psychologist and had audiovisual and printed support materials about prematurity, and the intervention in G2 provided by the psychologist was supported only by the mothers' talk.

It was verified that the groups were comparable between each other in reference to maternal variables. The mothers in both groups were predominantly young, with an age around 25 years, and education at the elementary level. About 72% (G1) and 60% (G2) of the mothers did not work outside the home, and most were first time mothers. Regarding the neonatal characteristics, it was noted that the infants in the G1 had lower birth weight and higher neonatal clinical risk, spent more time in the NICU (about 30 days), and remained in the hospital for a longer duration until clinical discharge (around 72 days), when compared to the infants in G2. These findings show that the infants in G1 presented more severe neonatal health status than the infants in G2, despite the fact that both groups required intensive care in the NICU. This data may suggest that the mothers in G1 were more exposed to a stressful situation, considering the level of maternal stress may increase or decrease according to the baby's clinical condition. Melnyk et al. (2001) highlighted the relevance of considering the intensity of the severity of the neonatal health status of the preterm infant, in addition to the relationship between birth weight and gestational age. In this context, a mother of a preterm neonate confronts the task of adaptation permeated with uncertainty regarding the surveillance and quality of development of the child.

Concerning the emotional indicators for anxiety, evaluated by the STAI, and depression, evaluated by the BDI, it was verified that both groups of mothers presented similar levels of emotional indicators (G1=39% and G2=30%) during hospitalization of the baby in the NICU and prior to beginning psychological intervention. This finding was corroborated by the study from Padovani et al. (2005) and de Bracht et al. (1998) which indicated that the impact of the premature birth may be traumatic for the mothers, and that, in general, they are not prepared to confront the premature birth of the infant.

After psychological intervention and discharge of the baby from the hospital, it was verified that levels of anxiety and depression observed in G1 and G2 during hospitalization of the infant decreased. Both groups experienced psychological support to face the situation of the premature birth and hospitalization in the NICU. Additionally, the practice of neonatal care in the context in which the present study was conducted promotes the stimulation and encouragement of physical contact between the mother and the premature baby, promoting the mothers to actively participate in the babies' care. Dobbins et al. (1994) and Als (1982) indicate that intervention models centered in the family of the preterm baby have been efficient as measures to alleviate the stress and help them to face the stressful situation.

Specifically in G1, a statistically significant reduction was recorded in the clinical level of state anxiety (from 86% to 50%) from the phase in which the baby was hospitalized in comparison with the time after psychological intervention and the infant's discharge from the hospital. On the other hand, no significant reduction was found in G2 in the clinical indicators for state-anxiety comparing the moments of evaluation and reevaluation. These findings suggest that a psychological intervention program systematized for maternal emotional regulation with video support materials and a guidance manual may have had a positive effect in facing the situation of maternal stress, helping the mothers to succeed in emotionally adapting to the baby's premature birth. Psychological support groups appear to benefit the mothers of preterm infants, insofar as they give them emotional «tools» to face the situation, promoting emotional support and information to the family, as mentioned in studies from Linhares et al (2004), Zanardo & Freato (2001), Doering et al. (2000) and Pinelli (2000).

Responding to the study's first hypothesis, that psychological intervention offered early in the beginning to mothers of preterm infants would reduce levels of anxiety and depression, it was verified that the levels of anxiety (both, state and trait) and depression, observed in G1 and in G2, during hospitalization of the baby, would decrease after psychological intervention of release of the infant from the hospital. This finding suggests that changes occurring in the practices of neonatal care have promoted stimulation and encouragement of physical contact between the mother and the premature newborn. Corroborating with the study of Dobbins et al. (1994), which indicated that intervention models centered on the family of the preterm infant have been proposed as measures to alleviate the stress.

It was verified that, despite a reduction in these emotional indicator for anxiety and depression at a clinical level in both groups, the reduction in clinical levels was significantly greater in G1 than in G2 and for the state anxiety.

Specifically in G1, a significant reduction was recorded in the clinical level of state anxiety (from 86% to 50%). In reference to G2, no significant reduction was found in the indicators for state anxiety at a clinical level. These findings respond to the second hypothesis of the present study, that a psychological intervention program intended for maternal emotional regulation with video support materials and a printed manual at the initial intake in group activities may have produced a positive effect in facing the situation of maternal stress related to the birth of a premature baby. The effect of this psychological intervention model may be related to the structuring and systematization of activities conducted in support program. The use of concrete materials, focusing on prematurity, appears to have functioned as a facilitator for reflection on feelings, translating maternal doubts and concerns related to the premature birth of their

child by involving operative activities that require the use of cognitive processes that may contribute to comprehension and regulation of feelings, corroborating the findings from Melnyk et al. (2001) and Gasparetto (1998).

Some final considerations must be made in relation to the present study. As this was conducted in a health care context, some variables were adjusted according to care routines. For example, scheduling of sessions for data collection was conducted according to the appearance of the mothers in the hospital for the baby's visits, since that majority of the mothers lived outside of the city of Riberão Preto and depended on public transportation from their respective cities, and according to the NICU's own routines. The fact that the study was conducted *on locus*, exactly in the context of the hospitalization of the baby, and not in a laboratory environment, was a relevant aspect of the study, since it favors the ecological validity of the results.

Some limitation of the study must be considered in the appreciation of the results. The psychological intervention groups brought few participants together, and the sample study was a convenience sample. Nonetheless, this is a condition frequently found in studies of this nature.

Additionally, there was no control group without psychological intervention, in order to verify the effect, only, of the passage of time. This could not be done for ethical reasons; mothers of preterm infants in the hospital in which the study was conducted receive routine psychological support during the time in which the baby stays in the NICU.

One may consider that the instruments used for psychological evaluation allow reaching the proposed objective, since both the BDI and the STAI were translated and adapted for Brazil. The STAI has Brazilian standardization and standard scores for high school. These instruments have been shown to be sensitive to affective changes occurring between hospital hospitalization of the baby when the mother experiences intense feelings of guilt, weakness, and anxiety, and after psychological intervention and the baby's discharge.

Considering the findings of this study, the implementation of psychological intervention programs, is recommended for the purpose of promoting meeting between mothers, in a protected setting, so that they feel free to express their feelings. Implementation of multi-professional services in Neonatal Units is also recommended to meet the needs of these patients and their families.

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