Acta Scientiarum

http://www.uem.br/acta
ISSN printed: 1679-9291
ISSN on-line: 1807-8648
Doi: 10.4025/actascihealthsci.v35i2.11805

Prevalence of breastfeeding in premature infants with very low birth weight in the first six months of life

Anelize Helena Sassá[1*], Cauana Gonçalves Lopes[2], Talita Maria Bengozi[3], Edilaine Giovanini Rossetto[4], Sarah Nancy Deggau Hegeto de Souza[4] and José Carlos Dalmas[4]

*[1]Universidade Estadual de Maringá, Av. Colombo, 5790, 87020-900, Maringá, Paraná, Brazil. [2]Hospital do Coração de Londrina, Londrina, Paraná, Brazil. [3]Hospital Araucária de Londrina, Londrina, Paraná, Brazil. [4]Universidade Estadual de Londrina, Londrina, Paraná, Brazil. *Author for correspondence. E-mail: anelizehs@hotmail.com*

ABSTRACT. Few studies have investigated the duration of breastfeeding among premature infants born with very low birth weight. The prevalence of exclusive breastfeeding among very low birth weight premature infants at a university hospital in Londrina Paraná State, Brazil and the identification of factors related to breastfeeding practice were determined. Current quantitative and analytic retrospective study analyzed the medical records, attendance reports and interviews of 54 mother-infant binomials. Breastfeeding was prevalent in 90% of infants, of which 50% were exclusively breastfed, at hospital discharge. However, 51% were weaned before their sixth month. The statistical analysis showed a positive association between breastfeeding and do not working mothers outside the home, cesarean delivery, positive previous experience in breastfeeding and gestational age at birth over 33 weeks. MF prevalence in the specific population NBVLW infants reinforce the notion that breastfeeding preterm infants, albeit challenging, may be carried out with the appropriate support of the mother-child binomial.

Keywords: nursing, breastfeeding, premature infant, infant nutrition.

Prevalência do aleitamento materno em prematuros nascidos com muito baixo peso nos primeiros seis meses de vida

RESUMO. Poucos estudos verificaram a duração do aleitamento materno entre prematuros que nasceram com muito baixo peso. O objetivo deste foi determinar a prevalência de aleitamento materno entre crianças nascidas com muito baixo peso num Hospital Universitário em Londrina-PR e identificar fatores associados à prática do aleitamento materno. Estudo quantitativo analítico e retrospectivo com 54 binômios mãe/bebê pesquisados por intermédio de prontuários, fichas de atendimento e entrevistas. Na alta hospitalar, aproximadamente, 90% estavam em aleitamento materno, e, destes 50% em aleitamento materno exclusivo. Entretanto, 51% da amostra foram desmamados antes do sexto mês de vida. A análise estatística mostrou associação positiva entre aleitamento materno e mães que trabalham somente em casa, parto cesárea, experiência prévia positiva em aleitamento materno e idade gestacional ao nascer >33 semanas. As prevalências de AM encontradas para uma população tão específica como os RNMBP reforçam a ideia de que amamentar prematuros, embora desafiante, é factível desde que haja apoio e suporte apropriados ao binômio mãe-bebê.

Palavras-chave: enfermagem, aleitamento materno, prematuro, nutrição do lactente.

Introduction

Maternal breastfeeding (BF) is of paramount importance for the infant's health and survival. In fact, breastfeeding during the first months of life is the most adequate and natural way to provide the necessary nutrients for the growth and development of the newly born (NB) infant (NASCIMENTO; ISSLER, 2003).

BF in normal NB infants is associated with good neuronal development, low obesity rates and fewer diseases such as diarrhea, malnutrition, otitis, diabetes, allergies, atopic dermatitis and respiratory illnesses (COLAIZY; MORRIS, 2008; WHO, 2001; BAPTISTA et al., 2009). The advantages for Preterm Newly Born (PTNB) infants include the nutritional and immunological factors of human milk, its role in gastrointestinal maturation, the formation of mother-child affection, increase in neuropsychomotor development, anti-oxidant protection, less hospitalizations and re-hospitalizations, and lower rates in infection incidences (NASCIMENTO; ISSLER, 2003; SERRA; SCOCHI, 2004). Further, breastfed newly born infants with very low weight (NBVLW < 1,500 g) at birth have better weight gain, less risk in

developing enterocolitis and a better intelligence coefficient when compared to infants fed on nutrition formulas, proving that breastfeeding is the best option (NASCIMENTO; ISSLER, 2003; BOO; GOH, 1999). From the psycho-affective point of view, breastfeeding provides important physical and psychological interaction between the mother and the child and favors the infant's adaptation to the extra-uterine environment (NASCIMENTO; ISSLER, 2003).

Depending on the infant's maturity and weight at birth coupled to factors during its intra-uterine life period, PTNB infants may have greater risks of inter-occurrences during the neonatal period which may frequently prolong hospitalization and cause sequelae that impair the infant's evolution, including success in breastfeeding (ALVES et al., 2007). NBVLW infants, specifically more liable to disease and death, have a higher risk in not being breastfed till their sixth month, recommended by WHO (2001). As a rule, breastfeeding is impaired since most infants are separated from their mothers to guarantee vital functions during the long hospitalization period. Breastfeeding comes to a minimum and becomes a complex process to be learned by mothers who experienced infant prematurity and hospitalization (ALVES et al., 2007; AZEVEDO; MENDES, 2008).

Very few studies have investigated the duration of Exclusive Breastfeeding (EBF) or not, among PTNB infants in the Brazilian and international literature on the theme and still fewer on NBVLW infants (HILL et al., 1997; SANTORO JÚNIOR; MARTINEZ, 2007; GOMES et al., 2009). A 2008 systematic review for indicators on BF among premature VLW infants during the last ten years found only six international and three Brazilian reports specifically on NB infants (GOMES et al., 2009). Further, the lack of a clear definition of BF in the studies made highly difficult a comparison among them (HILL et al, 1997; SANTORO JÚNIOR; MARTINEZ, 2007; GOMES et al., 2009).

Current investigation determines the prevalence of BF or not, at hospital discharge, during the third and sixth month among NBVLW infants in a university hospital and identifies the factors associated with BF practice with regard to mother, infant and birth conditions.

Material and methods

Current analytic, quantitative and retrospective study was carried out at the Regional University Hospital of the Northern Region of the state of Paraná (RUHNP) in Londrina, Paraná State, Brazil, a government public hospital and a reference in risk pregnancies, run by the State University of Londrina. The RUHNP has a maternity ward with 19 beds, a Neonatal ICU with seven beds and a Neonatal Intermediary Care Unit (NICU) with ten beds. Both units have a mean occupation above their capacity. Mean prematurity rate lies at 45%, of which 20% of infants weigh less than 1,500 g at birth. Ninety-seven infants weighing less than 1,500 g at birth were born in the hospital in 2006. This is approximately 10% of birth totals during the same period.

Since 2000 the hospital was denominated Children Friendly Hospital due to activities introduced to encourage, promote and protect BF. The hospital comprises a Human Milk Bank which supports a host of activities related to the breastfeeding of premature infants.

Coupled to the Internment Course in Neonatal Nursing based and centered on family care, a project was introduced in 2006 at the RUHNP to give support to, respect and include the family in the care and decisions on NB infants, enhancing its competence in the wake of infant prematurity conditions (BENGOZI et al., 2010). Activities are developed from the moment of birth, during the entire hospitalization period, and up to one year through follow-up nursing care to the premature infant carried out at the Outpatient Clinic of the Hospital of the State University of Londrina.

The mother, contacted during the first 24 hours after the infant's birth, is informed on the project's aims and is interviewed so that she would be included in the program. During their first visit to the newly born infant the parents are accompanied by an intern nurse who gives them the necessary support and informs them on the hospitalization of the infant and its clinical conditions.

Stimulation and preparation for breastfeeding occurs since the first encounters when the mother learns about the importance of breastfeeding the preterm infant and is oriented on manual early milking for the maintenance of breastfeeding and milk extraction for the infant. Close contact between the mother and infant is also immediately established and thus breastfeeding and lactation are enhanced.

The intern nurse responsible for family assistance makes weekly contacts with the parents to follow up the mother-child bond, their emotional state, family support and structure, care undertaken by the mother at the neonatal unit and breastfeeding conditions (milking standards, volume of milk extracted, infant's suction at the breast). The nurse always tries to clarify doubts, re-orient and offer

support when needed, especially listening to the mother's complaints. Nursing diagnosis is thus established to intervene with the family.

When hospital discharge is imminent, the permanence of the mother at the Neonatal ICU becomes more intense especially for the effective establishment of breastfeeding and for care practice with the infant. A pre-discharge home visit prepares the family for the infant's arrival and knowledge on the environment experienced within the home context is ensued. A second home visit occurs between the first and second week of hospital discharge where the adaptation of the infant to the family environment is discussed with all the family. A survey of difficulties is also undertaken. Follow-up continues during the infant's first year through attendance by the clinic nursing team and actions are decided upon according to the needs of the breastfed child and the family.

Studied population comprised hospitalized NBVLW infants interned at the RUHNP between January and December 2006 and their mothers. Sample selection was carried out by the same criterion used in newly born infants' participation given in the project called 'Support Network for the Family of Preterm Infants', or rather, those infants weighing less than 1,500 g at birth.

Infants who died prior to hospital discharge (n = 15), infants with incomplete charts and without any possibility of contacting the family (n = 4) and twins whose weight was over 1,500 g at birth (n = 6) were excluded from total participants (n = 79) in the 2006 project. Sample comprised 54 infants and their mothers. However, on the third and sixth month, respectively one and six breastfeeding mothers had to be excluded due to death or change of address which turned up to make follow-up impossible. During the third and sixth month, respectively 53 and 47 infants were on the list.

Data were collected between August and September 2007 and obtained from clinic charts, follow-up sheets of the 'Support Network for the Family of Preterm Infants' project, and telephone interviews with mothers to complete missing data.

Dependent variable was the type of breastfeeding at hospital discharge on the third and sixth month after birth. Two WHO-based breastfeeding categories (WHO, 2001) were taken into account: Exclusive Breastfeeding when the infant receives milk from the mother or received extracted milk, with the exclusion of drops, syrups, mineral supplements and other medicines; breastfeeding when the infant receives the mother's milk regardless of also receiving other types of milk or food. A third category was employed in current study, namely non-Milk-feeding when the infant was not breastfed by the mother and did not receive any type of human milk. Milk feeding at hospital discharge was that prescribed by the doctor on the discharge chart and that described in the follow-up clinical attendance chart of the preterm infant on the third and sixth month.

Independent variables studied were: mother's age; occupation (whether she works at home or is employed); schooling and conjugal status; pregnancy planning; prenatal exams and number of visits to the doctor during the follow-up stage (due to preterm conditions, at least three visits were taken into account); type of infant birth; previous experience in breastfeeding; gender, weight and pregnancy age at birth; duration of hospitalization.

Data were categorized and placed in a data bank by Microsoft Excel 2002, whereas simple frequency and proportions were employed for descriptive analysis. Hypothesis test, Fischer Exact and Chi-square Tests were used for statistical association, at $p < 0.05$ significance level and 95% confidence interval.

Research (Process 097/2007; Register Conep 268) was approved by the Ethics Committee in Research of the State University of Londrina, according to Resolution 196/1996. Only infants whose mothers signed the Free Consent Term on their insertion in the above-mentioned Project and authorized the use of information given for research were accepted.

Results

Sample comprised 54 mother-infant binomials. Most mothers were over 20 years old (68.5%), housewives (72.2%), lived with a partner (83.3%) and had had more than eight years schooling (68.5%). Moreover, 51.9% had not planned pregnancy and 92.6% undertook prenatal tests, with more than three visits by 80.8% of mothers. Caesarian section occurred in 70.4% of births. Profile of NBVLW infants revealed most were males (53.7%) with weight at birth between 1,000 and 1,499 g (61.1%), gestation age higher than or equal to 33 weeks (55.6%) and a hospitalization period higher than 30 days (94.4%). Table 1 describes Breastfeeding among NBVLW infants.

Table 1. Prevalence of milk-feeding in NBVLW infants, 2006/2007. Londrina, Paraná State, Brazil.

	EBF		MF		No MF		Total	
	%	n	%	n	%			
Hospital discharge	27	50.0	21	38.9	06	11.1	54	100.0
3rd month	18	34.0	16	30.2	19	35.8	53	100.0
6th month	16	34.0	07	15.0	24	51.0	47	100.0

EBF = Exclusive Breastfeeding; BF = milk-feeding; No BF = did not receive any human milk.

Tests applied for the analysis of statistical association revealed two independent variables

associated with MF at hospital discharge: the mother did not have an outside job and gestational age at birth was higher than or equal to 33 weeks (Table 2).

During the third month, independent variables associated with MF were caesarian section, gestational age at birth higher than or equal to 33 weeks (Table 3).

Besides the gestational age at birth, variable previous positive experience in MF had a positive association on the sixth month (Table 4).

Table 2. Frequency of milk-feeding at hospital discharge according to maternal, gestational and neonatal infant characteristics, 2006/2007. Londrina, Paraná State, Brazil.

Variable	Hospital Discharge (n = 54)				
	MF		No MF		p
	n	%	n	%	Fischer
Age of Mother					
< 20 years	16	33.3	01	16.7	0.652
> or equal 20 years	32	66.7	05	83.3	
Works outside the home					
Yes	11	22.9	04	66.7	0.044
No	37	77.1	02	33.3	
Schooling of Mother					
< 8 years	15	31.3	02	33.3	1.000
> or equal 8 years	33	68.7	04	66.7	
Conjugal status					
With partner	41	85.4	04	66.7	0.259
Without partner	07	14.6	02	33.3	
Planned Pregnancy*					
Yes	22	47.8	03	50.0	1.000
No	24	52.2	03	50.0	
Prenatal Exam					
Yes	44	91.7	06	100.0	1.000
No	04	08.3	00	00.0	
Number of visits to doctor*					
0 – 3	10	21.3	00	00.0	0.569
> 3	37	78.7	05	100.0	
Type of Birth					
Caesarian section	36	75.0	02	33.3	0.056
Vaginal	12	25.0	04	66.7	
Experience in BF†					
Positive	24	72.7	01	33.3	0.216
Negative	09	27.3	02	66.7	
Gender of NB					
Male	24	50.0	05	83.3	0.200
Female	24	50.0	01	16.7	
Weight at Birth					
< 1,000 g	17	35.4	04	66.7	0.193
1,000 – 1,499 g	31	64.6	02	33.3	
Gestational age					
< 33 weeks	18	37.5	06	100.0	0.005
> or equal 33 weeks	30	62.5	00	00.0	
Hospitalization period					
Up to 30 days	03	06.2	00	00.0	1.000
More than 30 days	45	93.8	06	100.0	

*Variables analyzed with n = 52. †Variable analyzed with n = 36.

Table 3. Frequency of milk-feeding on the 3rd month according to maternal, gestational and neonatal characteristics. 2006/2007. Londrina, Paraná State, Brazil.

Variable	3rd Month (n = 53)				
	MF		No MF		p
	n	%	n	%	χ^2
Age of Mother					
< 20 years	10	29.4	07	36.8	0.760
> or equal 20 years	24	70.6	12	63.2	
Works outside the home					
Yes	10	29.4	05	26.3	1.000
No	24	70.6	14	73.7	
Schooling of Mother					
< 8 years	11	32.4	06	31.6	1.000
> or equal 8 years	23	67.6	13	68.4	
Conjugal Status					
With partner	30	88.2	14	73.7	0.255
Without partner	04	11.8	05	26.3	
Planned Pregnancy*					
Yes	16	50.0	09	47.4	1.000
No	16	50.0	10	52.6	

Continue…

…continuation

Variable	3rd Month (n = 53)				
	MF		No MF		p
	n	%	n	%	χ^2
Prenatal Exam					
Yes	30	88.2	19	100.0	0.284
No	04	11.8	00	00.0	
Number of visits to doctor*					
0 – 3	08	23.5	02	11.8	0.463
> 3	26	76.5	15	88.2	
Type of Birth					
Caesarian section	29	85.3	08	42.1	0.002
Vaginal	05	14.7	11	57.9	
Experience in MF†					
Positive	18	81.8	06	46.2	0.057
Negative	04	18.2	07	53.8	
Gender of NB					
Male	18	52.9	11	57.9	0.780
Female	16	47.1	08	42.1	
Weight at birth					
< 1,000 g	11	32.4	10	52.6	0.241
1,000 – 1,499 g	23	67.6	09	47.4	
Gestational age					
< 33 weeks	11	32.4	13	68.4	0.020
> or equal 33 weeks	23	67.6	06	31.6	
Hospitalization period					
Up to 30 days	03	08.8	00	00.0	0.545
More than 30 days	31	91.2	19	100.0	

*Variables analyzed with n = 51. †Variables analyzed with n = 35.

Table 4. Frequency of milk-feeding on the sixth month according to maternal, gestational and neonatal characteristics, 2006/2007. Londrina, Paraná State, Brazil.

Variable	6th Month (n = 47)				
	MF		No MF		p
	n	%	n	%	χ^2
Age of Mother					
< 20 years	07	30.4	08	33.3	1.000
> ore qual to 20 years	16	69.6	16	66.7	
Works outside the home					
Yes	07	30.4	06	25.0	0.752
No	16	69.6	18	75.0	
Schooling of Mother					
< 8 years	04	17.4	09	37.5	0.193
> or equal to 8 years	19	82.6	15	62.5	
Conjugal status					
With partner	20	87.0	20	83.3	1.000
Without partner	03	13.0	04	16.7	
Planned pregnancy*					
Yes	13	59.1	12	50.0	0.568
No	09	40.9	12	50.0	
Prenatal Exam					
Yes	22	95.7	23	95.8	1.000
No	01	04.3	01	04.2	
Number of visits to doctor†					
0 – 3	02	08.7	04	18.2	0.414
> 3	21	91.3	18	81.8	
Type of Birth					
Caesarian section	19	82.6	13	54.2	0.060
Vaginal	04	17.4	11	45.8	
Experience in MF‡					
Positive	13	92.9	10	55.6	0.044
Negative	01	07.1	08	44.4	
Gender of NB					
Male	11	47.8	14	58.3	0.564
Female	12	52.2	10	41.7	
Weight at Birth					
< 1,000 g	06	26.1	12	50.0	0.135
1,000 – 1,499 g	17	73.9	12	50.0	
Gestational age					
< 33 weeks	06	26.1	15	62.5	0.019
> or equal to 33 weeks	17	73.9	09	37.5	
Hospitalization period					
Up to 30 days	01	04.3	02	8.3	1.000
More than 30 days	22	95.7	22	91.7	

*Variable analyzed with n = 46. †Variable analyzed with n = 45.‡ Variable analyzed with n = 32.

It should be emphasized that the number in the variables Planned Pregnancy and Number of Visits to the doctor in Tables 2, 3 and 4 was lower due to the absence of data in two clinical charts. Contact with the mothers to complete data was not possible and analysis was conducted with the other valid data of these variables.

Discussion

EBF and MF prevalence in NBVLW infants at hospital discharge meant that approximately 90% of the infants were milk-fed. A study conducted at the same institution (RUHNP) in 2004 analyzed 278 preterm infants and revealed that 86 (31%) were exclusively breastfed during the hospitalization period and at discharge and 191 (69.0%) were milk-fed (OLIVEIRA et al., 2007). Prevalence difference may be due to several motives. The 2004 study analyzed all preterm infants, although only 16.9% were NBVLW infants since milk-feeding these infants was more difficult to be started and maintained due to natural immaturity and inability (OLIVEIRA et al., 2007; GOMES et al., 2009). Another aspect that should be taken into consideration is the difference in the methods employed so that EBF could be characterized. Whereas previous study researched registries on the type of milk given during the hospitalization period, current one concentrated on the medical prescription at hospital discharge. The latter criterion may have caused a decrease in MF prevalence found on the third week, probably due to the lack of consolidation in EBF practice during the pre-hospital discharge period. This fact may have been enhanced by the mother's insecurity for the maintenance of the practice at home. In fact, volume in milk production and the infant's suction competence were the main difficulties referred to by the mothers for the maintenance of EBF at home.

In the wake of these results, the establishment in 2006 of the project for the follow-up of preterm infants and a series of systemized activities of milk-feeding enhancement and protection should be emphasized. Another study, specifically on MF in NBVLW infants conducted at the University Hospital of Ribeirão Preto, São Paulo state, Brazil revealed differences in MF prevalence at hospital discharge, or rather, 38.9% in the control group and 80.5% in the group submitted to an intervention on MF incentives with support activities and counseling of mothers, very similar to the project described in current work (SANTORO JÚNIOR; MARTINEZ, 2007). The authors of the research concluded that simple supporting attitudes to the mothers during hospitalization had positive results in MF rates (SANTORO JÚNIOR; MARTINEZ, 2007).

Another factor that should be analyzed in current analysis is the different weaning rhythm found between exclusive breastfeeding mothers at discharge and those milk-feeding, which was equivalent to the prevalence of 34% for EBF on the sixth month and 15% for MF. This fact was very similar to other studies when, at discharge, EBF was shown to be a highly important factor so that MF would continue in preterm infants. Actually it enhanced the positive effects of support and orientation given to the mothers during hospitalization and during the period close to discharge (SANTORO JÚNIOR; MARTINEZ, 2007).

A study carried out between June and September 2003 to determine EBF and MF rates in infants born in a maternity hospital, which included all births in the maternity, showed that 98% of NB infants at hospital discharge were in EBF. However, on the sixth month only 5.3% continued this type of feeding (CHAVES et al., 2007). Besides the interference of other social and cultural factors such as the belief that maternal milk was weak or insufficient and the conflict some mothers felt between the desire and its lack to breastfeed (ISSLER et al., 2010), the level of EBF consolidation with regard to the infants at discharge was actually unknown. When compared with current results, this study evidenced satisfactory EBF rates in NBVLW infants and maintained most of the infants breastfed during the first three and six month of life.

In spite of the absolute agreement in the literature, some authors raised the possibility that the positive effect on preterm infants' milk-feeding was related to the fact that the infant had undergone long period of intensive care and that this condition had made possible the intensive support for MF aiming at the reestablishment of the health of infants who needed maternal milk (COLAIZY; MORRISS, 2008).

In a study undertaken in Malaysia which determined the MF percentage in NBVLW infants and identified prognostics associated to the practice, the MF group was characterized by NB fed daily on 80% or more of maternal milk, whereas the formula group consisted of NB infants fed daily on 20% or more of the formula. MF prevalence at hospital discharge reached 45.2% with a small difference in the rates presented in current study. In the above-mentioned study, weight at birth ($p = 0.02$) and a shorter hospitalization period for the MF group proved to be significant for MF (BOO; GOH, 1999).

Brazilian data on less than one-year-old children showed that in the Brazilian capital cities and in the

Federal District during 2008, mean EBF period was 54.1 days (BRASIL, 2009). When these data were compared to those of the infant population in general, progress in the maintenance of maternal milk feeding in preterm infants had been achieved, especially in NBVLW infants.

Predominant mothers' age in current study was higher than or equal to 20 years (68.5%), with 31.5% of mothers within the less than 19-year-old bracket. The latter is a very important fact since in a study with less than one-year-old children in several municipalities of the state of São Paulo, Brazil, showed that adolescent mothers and primiparas had 1.2 more chances to abandon EBF before the infant being four months old (VENÂNCIO et al., 2002).

On the other hand, the fact that the mother remained at home proved to be a MF protector since 77.1% of NB infants in MF at hospital discharge were the offspring of mothers who did not work outside the home ($p = 0.044$). A 2007 study, which evaluated MF practice in salaried females, concluded that 84.6% of mothers without jobs breastfed their infants up to the fourth month whilst 79.3% of mothers with jobs maintained MF (VIANNA et al., 2007). The above data corroborate results of a recent research, published in 2009, which showed that there was a greater risk of weaning in infants whose mothers had a job (BAPTISTA et al., 2009). However, this variable was not significant during the third and sixth month ($p = 1.00$ and $p = 0.752$, respectively).

The fact that most mothers had a partner, although with no significance for MF prevalence in current study, seemed to have a kind of influence on the milk-feeding of NBVLW infants. A 1990s study exclusively on NBVLW infants to verify the prevalence of MF among them and the correlation between milking and breastfeeding success showed that, encouraged by their husbands, mothers continued milk-feeding to maintain lactation during the hospitalization period of the infant in a neonatal unit (FURMANN et al., 1998). This fact might have provided a better perspective for the continuation of MF after discharge. When the support of the husband or relatives with the same motives was extant, the milk-feeding process, a rather complex factor for these mothers, became easier (ARRUDA; MARCON, 2007).

It should be emphasized that the father's indifference or unknown opinion on MF is a condition associated with early weaning. The preparation and conscience-raising of the family and of the partner on the maintenance of MF and its benefits are of paramount importance (ALVES et al., 2008).

All these social and cultural aspects justify the association between previous maternal experience in MF and a greater MF prevalence of preterm infants. Although only 36 mothers (69.4% of sample) replied affirmatively to previous MF experience, the mothers of 92.9 of newly born infants in MF on the sixth month had good breastfeeding experience. Mothers' positive experience was characterized by success in milk-feeding a previous offspring or they themselves had been successfully breastfed when young.

Only 48.1% of mothers stated they had wanted pregnancy. A planned pregnancy brings better benefits with regard to the mother-child bond. However, the bond is not an instinctive factor but a process that develops with time and several mechanisms are required for its survival. Although in some cases pregnancy had not been planned, the mother-child bond may develop during gestation (FERREIRA; VIEIRA, 2008).

Higher occurrence of MF in infants born by caesarian section with statistical association for the third month ($p = 0.002$) seems to favor the idea that caesarian section is a MF protecting factor in the case of NBVLW infants. Although requiring further analyses for its justification, the hypothesis that a mother submitted to caesarian section needed more hospitalization time than who underwent a vaginal birth might explain the above-mentioned fact. In this case, the hospitalization period became a protecting factor for MF orientation and incentive through the constant stimulation of early milking. In any case, it should be taken into account that it would be difficult for mothers to breastfeed their preterm infants immediately after birth. This is due to the infants' low gestational age and low weight, in contrast to studies undertaken with the entire population of any gestational age or weight.

The gestational age at birth is a highly significant variable for MF since infants with low gestational age are more sleepy, have slow and irregular suction, need longer periods in ventilatory assistance, hypoxia, thermal and physiological instability, that postpone the start of oral feeding and have difficulties in the maintenance of lactation (GAÍVA et al., 2000). Current study verified an expected association between gestational age and MF. MF percentage in the three instances under analysis was higher for NB with a gestational age at birth higher than or equal to 33 weeks. This statistical association was also shown in the already cited study in Itaúna Minas Gerais State, Brazil ($p = 0.039$), even though all newly born infants with less than 37 weeks were taken into account (CHAVES et al., 2007).

A study conducted in Cuiabá, Mato Grosso State, Brazil, during six years, with 335 infants at the neonatal ICU found a prevalence of 82.3% of MF in NBVLW infants at hospital discharge (GAÍVA et al., 2000). Although in current study the variable weight at birth was not significant, most newly born infants who remained in MF at discharge had a weight ranging between 1,000 and 1,499 g in the third and sixth month, with a lesser MF incidence in preterm infants of extremely low weight (< 1,000 g). With regard to hospitalization period, current study showed that 95% of NBVLW infants remained hospitalized for more than 30 days. During their permanence in the hospital, PTNB infants were exposed to nosocomial infection risks due to their high immunological vulnerability. Further, there was also the danger of the infant being kept distant from the mother since hospital impairments existed against the permanence of the mother in neonatal sectors for high risk NB infants (NASCIMENTO; ISLLER, 2004). Thus, the maintenance of milk-feeding without the suction of the newly born infant for long periods made difficult the breastfeeding process. The existence of medical routine practices that made difficult the mother-child relationship might be collaborating for an early weaning of hospitalized children (GAÍVA et al., 2000). It is highly important to enhance that changes in hospital assistance are required to achieve progress in the feeding of PTNB infants. A committed multiprofessional team (nurses, doctors, speech-language pathologists etc) is required to make possible food transition by probe for oral food/mother's breast in an effective and secure way, taking into consideration a humanized attendance and providing individualized assistance with a better relationship between the infant and the parents. The preterm infants' parent should be seen as collaborators in the care of the child and as a beneficial presence for healthy psychomotor and bonding development. An appropriate follow-up of PTNB infants is also required after hospital discharge that would stimulate MF as one of its main aims.

Current analysis had its limitation due to the small number of samples which did not provide any statistical analysis and to the criteria used which could have been much better elaborated within MF practices. In spite of the fact that results provided high MF rates (90%) at hospital discharge, research indicated the need for further studies on new strategies that would consolidate EBF at discharge and increase MF duration, with complete success in the feeding process of preterm infants.

Conclusion

MF prevalence in the specific population NBVLW infants reinforce the notion that breastfeeding preterm infants, albeit challenging, may be carried out with the appropriate support of the mother-child binomial. High MF prevalence at hospital discharge suggests that the activities undertaken by the project 'Support Network for the Family of Preterm Infants' with one of its main aims being MF incentives, shows the success of this practice.

Although the female is the nucleus of the breastfeeding process, the family and its involvement are fundamental for the process. MF practices in NBVLW infants involve teamwork activities and follow-up by health professionals committed to their responsibilities for the promotion, support and viability of MF for preterm population. This requires support to the family, made fragile by prematurity, incentives for the maintenance of breastfeeding and early suction, and primary health attention which should begin during the prenatal period and continued after birth through activities in favor of milk-feeding.

References

ALVES, A. M. L.; SILVA, E. H. A. A.; OLIVEIRA, A. C. Early weaning in premature babies participants of the Kangaroo Mother Care. **Revista da Sociedade Brasileira de Fonoaudiologia**, v. 12, n. 1, p. 23-28, 2007.

ALVES, C. R. L.; GOULART, E. M. A.; COLOSIMO, E. A.; GOULART, L. M. H. F. Risk factors for weaning among users of a primary health care unit in Belo Horizonte, Minas Gerais State, Brazil, from 1980 to 2004. **Cadernos de Saúde Pública**, v. 24, n. 6, p. 1355-1367, 2008.

ARRUDA, D. C.; MARCON, S. S. The family in expansion: experiencing intercurrences during pregnancy and childbirth of a very low weight premature baby. **Texto e Contexto Enfermagem**, v. 16, n. 1, p. 120-128, 2007.

AZEVEDO, M.; MENDES, E. N. W. Maintenance of lactation: a challenge for hospitalized premature infant´s mothers. **Revista Gaúcha de Enfermagem**, v. 29, n. 1, p. 68-75, 2008.

BAPTISTA, G. H.; ANDRADE, H. H. K. G.; GIOLO, S. R. Factors associated with duration of breastfeeding for children of low-income families from southern Curitiba, Paraná State, Brazil. **Cadernos de Saúde Pública**, v. 25, n. 3, p. 596-604, 2009.

BENGOZI, T. M.; SOUZA, S. N. D. H.; ROSSETTO, E. G.; RADIGONDA, B.; HAYAKAWA, L. M.; RAMALHO, D. P. A network of support to the family of the premature baby. **Ciência, Cuidado e Saúde**, v. 9, n. 1, p. 155-160, 2010.

BOO, N. Y.; GOH, E. S. Predictors of breastfeeding in very low birth weight infants at the time of discharge from hospital. **Journal of Tropical Pediatrics**, v. 45, n. 4, p. 195-201, 1999.

BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Ações Progamáticas e Estratégicas. **II pesquisa de prevalência de aleitamento materno nas capitais brasileiras e Distrito Federal**. Brasília: Ministério da Saúde, 2009.

CHAVES, R. G.; LAMOUNIER, J. A.; CÉSAR, C. C. Factors associated with duration of breastfeeding. **Jornal de Pediatria**, v. 83, n. 3, p. 241-246, 2007.

COLAIZY, T. T.; MORRISS, F. H. Positive effect of NICU admission on breastfeeding of preterm US infants in 2000 to 2003. **Journal of Perinatology**, v. 28, n. 7, p. 505-510, 2008.

FERREIRA, L.; VIEIRA, C. S. A influência do método mãe-canguru na recuperação do recém-nascido em unidade de terapia intensiva neonatal: uma visão de literatura. **Acta Scientiarum. Health Sciences**, v. 25, n. 1, p. 41-50, 2008.

FURMANN, L.; MINICH, N. M.; HACK, M. Breastfeeding of very low birth weight infants. **Journal of Human Lactation**, v. 14, n. 1, p.29-34, 1998.

GAÍVA, M. A. M.; GOMES, M. M. F.; SCOCHI, C. G. S.; BARBEIRA, C. B. S. Breastfeeding in interned newborns in the neonatal intensive care unit University´s Hospital from Cuiabá-MT. **Pediatria Moderna**, v. 36, n. 3, p. 119-130, 2000.

GOMES, J.; ROSSETTO, E.; DE SOUZA, S.; SCOCHI, C. **The prevalence of breastfeeding in prematures with very low birth weight – a systematic review**. 2009. Available from: <http://www.objnursing.uff.br/index.php/nursing/article view/j.1676-4285.2009.2159/483 >. Access on: Mar. 21, 2009.

HILL, P. D.; LEDBETTER, R. J.; KAVANAUCH, K. L. Breastfeeding patterns of low-birth weight infants after hospital discharge. **Journal of Obstetric, Ginecologic and Neonatal Nursing**, v. 26, n. 2, p. 189-197, 1997.

ISSLER, H.; DOUEK, P. C.; ANDRÉ, L. M.; GOLDSTEIN, S. R.; ISSA, L. J.; FUJINAMI, P. I.; ZAIA, P. F. V.; HASHIMOTO S. Sociocultural factors in premature weaning: a qualitative study. **Pediatria**, v. 32, n. 2, p. 113-120, 2010.

NASCIMENTO, M. B. R.; ISSLER, H. Breastfeeding in premature infants: in-hospital clinical management. **Jornal de Pediatria**, v. 80, n. 5, p. 165-172, 2004.

NASCIMENTO, M. B. R.; ISSLER, H. Breastfeeding: making the difference in the development, health and nutrition of term and preterm newborns. **Revista do Hospital das Clínicas**, v. 58, n. 1, p.49-60, 2003.

OLIVEIRA, M. M. B.; THOMSON, Z.; VANNUCHI, M. T. O.; MATSUO, T. Feeding patterns of Brazilian preterm infants during the first 6 months of life, Londrina, Paraná, Brazil. **Journal of Human Lactation**, v. 23, n. 3. p. 269-274, 2007.

SANTORO JÚNIOR, W.; MARTINEZ, F. E. Effect of intervention on de rates of breastfeeding of very low birth weight newborns. **Jornal de Pediatria**, v. 83, n. 6, p. 541-546, 2007.

SERRA, S. O. A.; SCOCHI, C. G. S. Mother´s difficulties in breastfeeding premature babies in the neonatal ICU. **Revista Latino-Americana de Enfermagem**, v. 12, n. 4, p. 597-605, 2004.

VENÂNCIO, S. I.; ESCUDER, M. M. L.; KITOKO, P.; REA, M. F.; MONTEIRO, C. A. Frequency and determinants of breastfeeding in the State of São Paulo, Brazil. **Revista de Saúde Pública**, v. 36, n. 3, p. 313-318, 2002.

VIANNA, R. P. T.; REA, M. F.; VENÂNCIO, S. I.; ESCUDER, M. M. L. Breastfeeding practices among paid working mothers in Paraíba State, Brazil: a cross-sectional study. **Cadernos de Saúde Pública**, v. 23, n. 10, p. 2403-2409, 2007.

WHO-World Health Organization. **Global strategy for infant and young child feeding**. The optimal duration of exclusive breastfeeding. Expert consultation on the optimal duration of exclusive breastfeeding: conclusions and recommendations. Geneva: WHO, 2001.

Received on December 16, 2010.

Accepted on September 27, 2011.