

Prevalence of breastfeeding in infants with very low birth weight: alternative method versus traditional feeding

Prevalência do aleitamento materno em recém-nascidos de muito baixo peso: método alternativo versus tradicional na alimentação

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ABSTRACT

Introduction: the survival of preterm newborns (PTNBs) with very low birth weight (LBW) has been a concern for health care professionals. Frequent complications increase the length of hospitalization and lead to premature abandonment of breastfeeding. **Objective:** to verify the prevalence of breastfeeding in PTNBs with LBW in two maternity wards in the city of Belo Horizonte-MG comparing different ways to administer the oral diet: bottle or cup/spoon. **Method:** the studied population consisted of 84 PTNBs with birth weight less than 1,500 grams; 31 born in Hospital A and 53 in Hospital B, between March 1996 and June 1997. The monitoring was from the hospital period to the 40th week of corrected age (CA); mothers were contacted until the 6th month of CA to inform about breastfeeding. **Results:** the two hospitals started offering oral diet belatedly; however, Hospital A with the routine practice of alternative use of cup/spoon with the mother's participation seems to have allowed shorter hospital stay and less weight in PTNBs with LBW at discharge. The prevalence of breastfeeding in the two populations is statistically different at 40 weeks, and two and four months of CA, being greater in Hospital A. **Conclusions:** this study may contribute to the accumulation of data on prevalence of breastfeeding in PTNBs with LBW in Brazil, with the possibility to take part in new research with data only from our country.

Key words: Very Low Birth Weight, Prevalence, Breastfeeding, Feeding Methods.

RESUMO

Introdução: a sobrevivência de recém-nascidos pré-termo (RNPT) e de muito baixo peso (MBP) tem sido uma preocupação para os profissionais de saúde. As complicações frequentes aumentam o período de internação e levam ao abandono precoce do aleitamento materno. **Objetivo:** verificar a prevalência do aleitamento materno em RNPT de MBP em duas maternidades da cidade de Belo Horizonte-MG, comparando suas diferentes formas de administrar a dieta via oral: mamadeira ou copo/colher. **Método:** a população estudada constituiu-se de 84 RNPTs com peso ao nascimento inferior a 1.500 gramas, sendo 31 nascidos no Hospital A e 53 no Hospital B, no período de março de 1996 a junho de 1997. O acompanhamento iniciou-se no período hospitalar até a 40ª semana de idade corrigida (IC) e as mães foram contatadas até o 6º mês de IC para informar sobre o aleitamento materno. **Resultados:** os dois hospitais iniciam tardiamente a oferta da dieta via oral, no entanto, o Hospital A, cuja rotina é a prática alternativa do uso do copo/colher com a participação da mãe, parece ter permitido menor permanência hospitalar e também menos peso à alta dos RNPTs de MBP. A prevalência do aleitamento materno nas duas populações é estatisticamente diferente com 40 semanas, dois e quatro meses de IC, sendo maior

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no Hospital A. Conclusões: este estudo pode contribuir para o acúmulo de dados sobre a prevalência do aleitamento materno em RNPT de MBP no Brasil, com a possibilidade de fazer parte de novas pesquisas contando com dados apenas do nosso país.

Palavras-chave: Muito Baixo Peso; Prevalência; Aleitamento Materno; Métodos de Alimentação.

INTRODUCTION

Advances in neonatal intensive care has contributed to increased survival of preterm newborns (PN) and those with birth weight less than 1500 g called very low birth weight (VLBW), and weight less than 1000 g called extreme low birth weight (ELBW). The advent of new drug therapies for pregnant women and newborns, mechanical ventilation maneuvers, and strict control of infections during pre- and post-neonatal periods are some factors that can be highlighted.¹

Recent data warn to the risks of complications to which VLBW PNs are subjected. The relationship mother-newborn, family support, socioeconomic conditions, nutritional constraints during hospital stay and after discharge, chronic health conditions, and need of frequent hospitalizations in the first years of life are conditions that can interfere with growth and development in the early stage of life after birth of VLBW and ELBW PNs.^{2,3}

The supply of nutritional needs through feeding aims at proper growth and is a complex bio-psychosocial process that includes alertness, cognition, motor development, neurological maturation, and mother and child interaction, settling the first relationships.⁴ According to the World Health Organization (WHO), breastfeeding is the most natural way of feeding a small child and can be exclusively offered until six months of age.^{5,6}

The human milk (LH) presents the best physiological adaptation to meet the nutritional needs and immune, endocrine, growth, and development modulation in these children, not only at the start of the post-natal life but throughout the first year of life. These HM qualities acquire more importance when it comes to PNs because they present more vulnerable initial conditions of life.^{6,7} In many maternity hospitals, the routine is feeding PNs as soon as possible, depending on their gestational age and weight, starting with parenteral diet, nasogastric tube (NGT), and bottle in parallel to breastfeeding initiation.

The decision to start breastfeeding is less frequently dependent on the ability of sucking/swallowing and the mother's performance. In this traditional dynamic, the mother's participation in the basic care of her child during the period of hospitalization is still small, especially in high and medium-risk units. Several studies have demonstrated the difficulty that mothers of preterm infants face to keep breastfeeding because most of them remain in the nursery for a long time.⁷⁻¹⁰

The conditions that facilitate the PN care are related to the type of attention received in the health service (methods used in the care of PNs), help from partners and other relatives and friends, and compensatory social measures such as financial aid obtained through social assistance for transportation. These factors appear as important determinants in the level of care participation of PN mothers with consequences for bonding, breastfeeding, and the child's health.^{9,10}

In addition, PNs often present intrauterine growth retardation, require mechanical ventilation, and longer hospitalization increasing the risk of alteration or delay in the onset of efficient sucking-swallowing patterns for feeding.^{11,12} The nurseries' routine is mostly from the diet via enteral feeding to the oral route when the PN achieves around 1500 g in weight and/or completes 34 weeks of gestational age (GA). The latter criterion is based on classic early 60's researches, such as from Gryboski,¹³ who states that PNs under 35 weeks show immaturity in the sucking-swallowing pattern, which is characterized by a 1.5 suction per minute and by the lack of synchronicity between sucking and swallowing. For the authors, the mature pattern of sucking-swallowing is common in PNs above 2100 g in weight and between 36th and 39th weeks of gestational age.

Health professionals, concerned with the means to offer a diet to these PNs, have evaluated and proposed alternative approaches to feeding them, with the objective of increasing the prevalence of breastfeeding. In the Neonatology clinical practice, the bottle feeding is common, however, two renowned groups of researchers associated the use of the bottle in the early periods of the PN's life with the early breastfeeding withdrawal.^{14,15} There is no consensus in systematic reviews, in the recently published literature, on the most suitable method for feeding these babies.¹⁶⁻¹⁸

The aim of this study was to verify the prevalence of breastfeeding in VLBW PNs in two maternity wards in the city of Belo Horizonte-MG comparing their

different ways to administer oral diet: bottle or cup/spoon feeding.

METHOD

This investigation was conducted in two maternity wards in Belo Horizonte, Minas Gerais: the General Hospital from the Federal University of Minas Gerais (Hospital A) and Odette Valadares Maternity Hospital from the Hospital Foundation of the State of Minas Gerais (Hospital B), which are similar with regard to the socioeconomic and cultural characteristics of the clientele serviced, service of medical residency, milk bank service, and nutritional assistance to PNs. Both are considered reference centers of excellence in obstetric and neonatal care. The project was approved by the Research Ethics Committee from the Federal University of Minas Gerais and the Center for Teaching and Research from the Hospital Foundation of the State of Minas Gerais (FHEMIG). Hospital A, for over three years, has administered diet using cup/spoons while Hospital B uses bottle feeding until the PN can suck at the breast. The routine using cups/spoons has triggered more participation of mothers because whenever she is present and after being trained, she feeds the child, while the use of bottles is exclusively performed by the nursery staff and not by the mothers.

The study population consisted of 84 PNs with birth weight < 1500 g, being 31 born in Hospital A and 53 in Hospital B, between March of 1996 and June of 1997. PNs who presented the following conditions were excluded from the study: uncontrolled infection, congenital infections, severe malformations, diseases whose evolution could interfere on the observation of sucking and swallowing, whose mother have declared no intentions to breastfeed, multiple birth, death of the mother or child during the study, and from mothers who reported intention to place their children for adoption.

The recruited PNs were selected after mothers signed a volunteer informed consent when an interview about social-economic characteristics of the family was performed (Table 1). Birth data were obtained from the delivery room records, using the model form from the Latin American Center of Perinatology (LACP) duly filled out by an authorized professional (doctor or nurse). Weight measures were taken in a pediatric electronic scale (Filizola

Baby) as suggested by Meier et al.¹⁹ The PN monitoring began when the child reached clinical stability, which occurred twice a week in order to observe how the PN was fed because there was no interference from researchers in the nurseries' routine. After hospital discharge, the PN was followed up weekly in the outpatient system until completing 40 weeks of corrected age (CA), calculated according to the criteria established by the Brazilian Society of Pediatrics. At two, four, and six months, the mothers were interviewed through letters, phone calls, or in person about the baby's feeding habits.

Gestational age was obtained in the two institutions preferably considering the maternal information about the date of last menstruation (DLM), whenever possible confirmed by ultrasound performed until 20th week of gestation; and if uncertainty still persisted, the PN clinical examination was performed using the Ballard method.²⁰

Storage and calculation of statistical data were made in the Epi Info 6 software using the Students t and X² tests. The threshold of statistical significance was established on the value of $p \leq 0.05$.

RESULTS

Table 1 shows that the basic characteristics of the population in the two hospitals (A and B) are statistically similar, which ensures the possibility for comparison.

Both hospitals belatedly start offering oral diet, however, Hospital A, whose routine is the practice of the alternative use of cup/spoon with the participation of the mother, seems to have allowed shorter hospital stays and lower weight at discharge of VLBW PNs (Table 2).

The prevalence of breastfeeding in the two populations is statistically different at 40 weeks and four months of CA; it is higher at Hospital A, which used the cup/spoon as a way of feeding, however, this difference was not observed at six months of CA.

It is important to note that changing the technique of administering diets did not modify the weight growth behavior of PNs with birth weight less than 1500 g (Figure 2). This data must be evidenced on the basis of the criticism made by the users of the cup/spoon modality who observed small volumes of milk spilled sideways in the PN's mouth at the time of feeding, therefore, it seems that these PNs received less milk than those bottle fed.

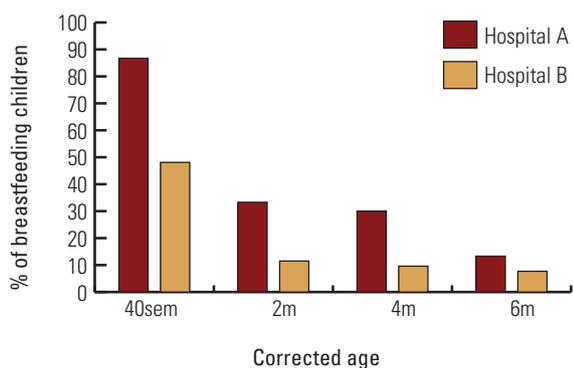
Table 1 - Characterization of Hospital A and Hospital B populations

Characteristics	Hospital A (n=31) (X±DP)	Hospital B (n=53) (X±DP)	value of p
Maternal age (years)	28,2±5,8	25,5±7,3	0,07
Maternal education (years)	6,9±3,1	6,7±3,1	0,76
Paternal age (years)	31,1±6,3	28,7±7,3	0,13
Paternal education(years)	7,0±3,6	6,7±2,9	0,75
Family income (R\$)	471,3±376,5	530,3±769,6	0,71
Prior breastfeeding experience	111,1±244,5	92,7±183,2	0,70
Weight at birth (g)	1195,9±202,2	1239,6±198,8	0,66
GA at birth (without)	31,5±2,4	30,5±2,2	0,07
Number of pregnancies	(n)	(n)	value of p
(up to 2)	17	32	0,71
(more than 2)	14	20	
Number of live children	(n)	(n)	value of p
(up to 2)	24	42	0,93
(more than 2)	7	10	
Type of delivery	(n)	(n)	value of p
(vaginal)	9	22	0,36
(cesarean)	22	31	
Sex	(n)	(n)	value of p
Male	14	28	0,65
Female	17	25	

Table 2 - Clinical characteristics of VLBW PNs from Hospital A and Hospital B

Characteristics	Hospital A (n=31)	Hospital B (n=53)	value of p
Beginning of oral feeding (CA)	34.9±1.8	34.7±1.8	0.63
Hospitalization (days)	43.3±13.2	50.9±17.8	0.03*
Average weight at discharge (g)	1947.7±142.9	2101.7±206.7	0.0007*

*Indicates definite difference.

**Figure 1** - Prevalence of breastfeeding in PNs birth weight less than 1500 g at Hospital A and Hospital B.

DISCUSSION

The results show that the prevalence of breastfeeding at the 4th month of CA in the population using the cup/spoon technique for the administration milk was significantly greater than that in the population using bottles. These findings corroborate those found by Collins et al. (2004) who studied the effects of using bottles, cups, and nozzles in the prevalence of breastfeeding at the time of hospital discharge, at three and six months. These authors report that the prevalence of breastfeeding at the time of discharge was statistically higher in the group fed with cups than in those bottle fed (319 PNs divided into stratified groups of GA < 28 weeks and 28 < GA < 34 weeks).¹⁶

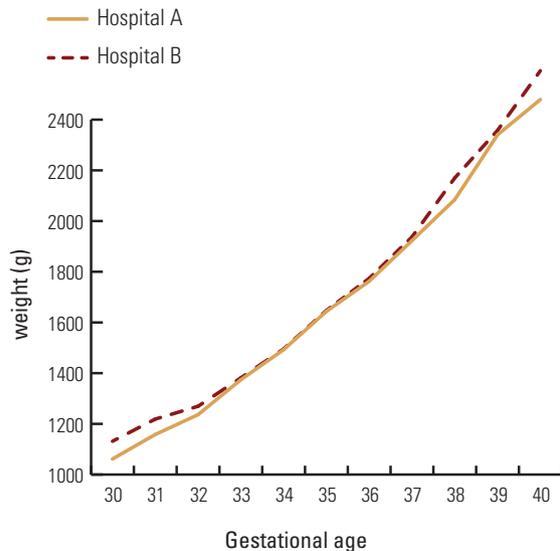


Figure 2 - Average weight per gestational age in PNs with birth weight less than 1500 g at Hospital A and Hospital B.

A mature sucking pattern in PNs is not necessary for cup feeding because the baby does not need to suck but just swallow and breathe. With the use of cups, the duly trained person administers the diet putting the milk in the child's mouth as the child swallows and breathes; unlike when using the bottle when the milk is continuously introduced through the force of gravity.²¹

The fact of the PN does not need to suck with the use of a cup somehow suggests that perhaps he could try oral diets early, favorably interfering in breastfeeding prevalences.^{21, 22} In this case, the pace of swallowing is controlled by the adult (parent or nurse), there is no need for optimal maturation of sucking patterns, and thus, the PN may experience oral diet before 34 weeks or 1500 g.⁷

However, some researchers claim that not all PNs are elected for the use of cups and suggest a performance assessment in the PN to ensure feeding success.^{7,23} Stimulation programs before the offering of oral diets seem to favor the PN's sucking performance.^{11,12}

Lang et al.²⁴ describe two sucking patterns used by PNs; the first is sucking the breast when the baby widely opens his mouth to accommodate it to the breast and casts his tongue over his bottom lip, which is housed below the areola; the second is used with the bottle, when the PN sucks the nozzle with a partially closed mouth and the tongue has little participation.²⁴ For these authors, the prevalence of the use of the second pattern when the PN is breastfed can lead to nipple ulceration, declining milk supply, and breastfeeding suspension.²⁴

The cup is an alternate method which, after being suspended, produces good occlusion of the mouth and swallowing patterns, if handled properly, which could contribute to breastfeeding.^{21, 22} Neifert et al.¹⁵ suggest alternative ways to feed PNs, such as the use of cup/spoon until suction evolves in the sucking-swallowing process and the PN is capable of sucking a mother's breast.¹⁵ Musoke²⁵ also believes that the experience with the nozzle in the administration of diet at an early stage of development of sucking patterns can predispose mother and child to the risk of confusion between nozzle and nipple, which is the difference between sucking patterns used in the breast and bottle, and can lead the PN to abandon breastfeeding.²⁵

The cup is an alternate method through which the child can apply his own pace because the cup is held allowing the milk to just touch the child's lips and is not introduced continuously into the mouth. Thus, the size of the sips only depends on the child, breathing is easier to be controlled, and the act of swallowing occurs when the PN is ready. In addition, the method allows contact between the lingual lipases and milk, which facilitates initial digestion and promotes maturation of satiety signals reducing vomiting and regurgitations.²⁴

The use of cup/spoon, besides being a non-invasive, simple, practical, and effective method, it delivers more physiological mother-child contact during feeding and the mother's conscious attention, a fact that is not always observed during bottle feeding.²⁴ In the dynamics of bottle feeding, Hospital B does not allow mothers to feed their children during the period of hospitalization because it can stimulate the use of this strategy after discharge. The offering of bottle-feeding does not require permanent visual contact, while when using a cup it is essential because it is impossible to administer the diet without observing the pace of the child in swallowing and breathing.

Another positive aspect of the cup/spoon method is that, in the light of greater participation and consequent autonomy of mothers in caring for their children, and the upward growth curve observed (Figure 2), PNs can go home with lower weight, statistically smaller than those who have been bottle-fed (Table 2).

The use of the cup/spoon technique in the administration of milk to VLBW PNs favored the prevalence of breastfeeding up to 4 months of CA; however, the difference was not statistically significant at six months, which may have resulted from the interference of cultural and socioeconomic factors.

The study also demonstrated a decrease in the length of stay of PNs fed with cups. However, Collins et al.²¹ observed that the length of hospital stay in PNs fed with cups was longer despite that the difference between the groups was not statistically significant.²¹ Despite this contradiction, the study by Collins et al.²¹ provides enough evidence to not recommend the use of bottle feeding in the transition from a via enteric diet to oral diet in PNs.²¹

The present study suggests that the use of cup/spoon feeding in maternity wards in Brazil could contribute to increased prevalence of breastfeeding. Currently, it is known that other programs such as the Kangaroo Mother Care and those stimulating sucking may also contribute to increased prevalence of breastfeeding.^{9,10,11,12}

LIMITATIONS AND FINAL CONSIDERATIONS

It is known that there are currently other studies with larger samples such as that developed by Collins et al.²¹ and Rocha et al.²² suggesting more robust evidences about the type of method to feed PNs, especially those of VLBW and ELBW.^{21, 22} Despite the small sampling size, this study may contribute to the accumulation of data on the prevalence of breastfeeding in VLBW PNs in Brazil, with the possibility to take part in the future in new literature reviews about Brazilian data. Furthermore, the strength of the findings' association is not calculated in almost all studies already published, including this one.

It is hoped that this study has contributions that exceed the scope of the research, reaching the practice of many professionals who seek ways to improve the quality of care in maternal and child health.

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