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The impact of kangaroo care on exclusive breastfeeding in low birth weight newborns

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Abstract

Objective: To evaluate the impact of kangaroo care on exclusive breastfeeding in low birth weight newborns until 6 months of life.

Methods: Prospective study carried out with 43 newborns (23 allocated in the kangaroo group and 23 in a control group) weighing < 2,000 g and staying in the neonatal unit for at least 7 days. Exclusive breastfeeding rates between the groups were compared until the age of 6 months. The chi-square test for categorical variables was used and the statistical significance level was 0.05.

Results: Exclusive breastfeeding rates were higher in the kangaroo group at hospital discharge (82.6 vs. 0%; p = 0.00), at 40 weeks of gestational age (73.9 vs. 31.6%; p = 0.01), at 3 months (43.5 vs. 5.0%; p = 0.005), and at 6 months (22.7 vs. 5.9%; p = 0.20).

Conclusion: Kangaroo care showed to be a facilitator of exclusive breastfeeding for low birth weight newborns until 6 months of life.

J Pediatr (Rio J). 2010;86(3):250-253: Kangaroo care, exclusive breastfeeding, low birth weight.

Introduction

Low birth weight newborn infants often need special care during the neonatal period[1] in addition to being at a higher risk of mortality and morbidity in the first year of life.[2,3] However, despite the well-known benefits of breastfeeding,[4] its prevalence in this group is very low when compared with term infants with adequate birth weight.[5,6] This situation can be partly explained by the neonatal routines focused on technical care that discourage mothers from staying at the neonatal unit and make breastfeeding more difficult.

Kangaroo care (KC) has proved to be effective in increasing breastfeeding rates of low birth weight infants in different studies.[7-10] However, since there are few data on the maintenance of exclusive breastfeeding (EBF) after hospital discharge, the objective of the present study was to evaluate the impact of KC on the rates of EBF during the first 6 months of life in low birth weight infants.

Methods

This study was part of the project "Diagnosis of the evolution of low birth weight infants at Hospital do Campo Limpo before and after the implementation of Kangaroo Care," conducted by the Instituto de Saúde, Health Department of the State of São Paulo (SES/SP), Brazil, with financial support from the Japan International Cooperation Agency (JICA) in 2004/2005.

This is a before and after prospective observational study involving low birth weight newborns followed until they were 6 months old before and after the implementation

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of KC. The present study was conducted in a public city hospital in the South region of the municipality of São Paulo, State of São Paulo, Brazil, a center of excellence for high-risk pregnancies, with about 350 deliveries per month, of which 12% are deliveries of low birth weight newborns. Before the implementation of KC, the hospital already had a milk bank (MB) and promoted breastfeeding in order to be considered a Child-Friendly Hospital. KC was implemented according to the guidelines of the Ministry of Health.[11]

The inclusion criteria were: birth weight < 2,000 g (or weight < 2,000 g during stay at the neonatal unit), at least 7-day stay at the neonatal unit, and mothers' acceptance to participate in the study. Between January 1 and March 31, 2004, prior to the training of the team regarding the implementation of KC, 20 out of the 21 eligible infants (95.2%) were included in the control group (G1). After implantation, between August 1 and October 31, 23 out of the 39 eligible infants (59%) were allocated in the kangaroo group (G2). In G1, there was one loss because a mother refused to participate in the study. In G2, of the 39 eligible babies, 23 were included: two mothers refused to participate and 14 infants could not be included in the KC due to overcrowding of neonatal units.

Data collection on pregnancy history and the socioeconomic status of the family was performed using a semi-structured questionnaire administered to the mothers. The information about the infants' feeding and weight during hospital stay were collected from medical records, and data after discharge were collected during outpatient evaluations at 40 weeks of gestational age, 3 and 6 months of chronological age. During hospitalization and after discharge, all mothers received support from the MB team, a practice previously used at the hospital. Those infants who received only breast milk, as defined by the World Health Organization (WHO), were considered to be exclusively breastfed.[12] The definition of EBF at discharge took into consideration the diet for the immediately preceding period of 3 days.

We carried out a comparative analysis of the groups regarding the infants' maternal/family characteristics and type of feeding. Quantitative variables were analyzed using the *t* test of mean differences for independent samples, and the categorical variables were analyzed using the chi-square test. In both cases, the statistical significance level was set at 0.05. Data were entered using the computer program Epi Data and, after consistency analysis, data were analyzed using the Statistical Package for the Social Sciences (SPSS) 10.0.

The study was approved by the Ethics Research Committee of Hospital do Campo Limpo and SES/SP. Infants were included in the study after the mothers/guardians signed a written consent.

Results

Of the 43 infants who began the study, 36 were followed up until 6 months of life, 16 in G1 and 20 in G2. One infant of G1 died of pneumonia before the first follow-up outpatient visit, and the other losses were due to failure to attend the medical appointments. A comparative analysis of the groups was performed according to data shown in Table 1.

We found that most women had a stable romantic relationship, the mean family income was 2.5 minimum salaries per month, and 2/3 of them received guidance about breastfeeding during prenatal care in a similar manner in both groups. In terms of infants' birth conditions and breastfeeding beginning, there was no significant difference. However, in G2, there was a predominance of mothers with higher educational level, in their first pregnancy, and who were unemployed. The infants in the kangaroo group started breast sucking on average 3 days before the infants allocated in G1.

Figure 1 shows that, while in G1 no infant was discharged from hospital being exclusively breastfed, in G2, we found 82.6% of cases of exclusive breastfeeding. There was a higher prevalence of EBF in G2 at 40 weeks of gestational age, 3 months and 6 months, with statistically significant differences at hospital discharge, 40 weeks of gestational, and 3 months of life.

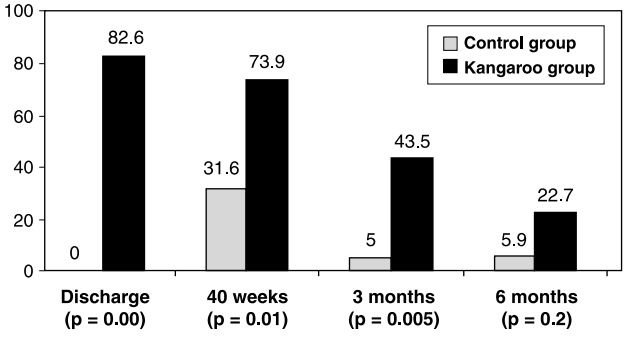

Figure 1 - Prevalence (%) of exclusive breastfeeding in the control and kangaroo groups up to the sixth month of life (Hospital do Campo Limpo, São Paulo, Brazil, 2004)

Discussion

In the present study, we found higher frequency of EBF in infants whose mothers participated in the KC when compared to those who received conventional neonatal care.

However, we should consider some limitations. The first limitation is related to the non-randomization of the infants due to the choice of evaluating the subjects before and after the implementation of KC to avoid ethical problems (providing different care to a portion of the population at the same health care facility) and operational problems (difficulties

related to the professional team and mothers regarding the delivery of two different types of care simultaneously). The other limitation is related to the sample size, restricted to the period established by the managers to carry out the project. Although no significant differences were detected between the groups, the data showed a tendency for mothers of G2 to have higher educational levels, being unemployed, being in their first pregnancy and for the infants to have started breast sucking before those in G1, which could have an influence on the best rates of EBF.[12] In addition, there were the follow-up losses (16%).

The data on EBF at hospital discharge corroborate the results of Lamy et al.[13] in a prospective multicenter study involving 985 infants with birth weight between 500 and 1,749 g involving eight centers of excellence for KC and eight hospitals offering excellence conventional care. The

Table 1 - Comparative analysis of the control group and the kangaroo group according to socioeconomic, maternal, gestational, and delivery characteristics, and the infants' perinatal conditions (Hospital do Campo Limpo, São Paulo, Brazil, 2004)

Characteristics	Control group		Kangaroo group		p*
	%	Mean ± SD	%	Mean ± SD	
Socioeconomic and maternal					
Age (years)		26.0±7.2		23.8±7.0	0.3
Mother's educational level (years)					
1-4	42.1		26.1		0.1
5-8	42.1		30.4		
9-11	15.8		43.5		
Monthly family income (minimum salaries)		2.3±1.1		2.5±1.1	0.5
Employed mothers					
Yes	30.0		13.0		0.2
No	70.0		87.0		
Marital status					
Single	20.0		26.1		0.3
Married	20.0		4.3		
Living with a partner	60.0		65.2		
Widow	–		4.3		
Father living with the infant					
Yes	75.0		73.9		0.9
No	25.0		26.1		
Gestational and delivery					
Previous pregnancies					
Yes	80.0		52.2		0.06
No	20.0		47.8		
Prenatal care					
Yes	90.0		100		0.1
No	10.0		–		
Guidance about breastfeeding during prenatal period					
Yes	27.8		30.4		0.8
No	72.2		69.6		
Type of delivery					
Vaginal	45.0		56.5		0.4
Cesarean section	55.5		43.5		
Infants					
Sex					
Male	40.0		43.5		0.8
Female	60.0		56.5		
Birth weight (g)		1,609±353.1		1,678±264,9	0.3
Apgar					
1 minute		6.3±2.7		7.2±1.5	0.2
5 minutes		8.3±1.3		8.5±0.9	0.6
Gestational age		33.2±2.1		34.1±2.3	0.2
Age at breastfeeding beginning (days)		16.9±11.5		13.7±13.9	0.80

SD = standard deviation.
* Chi-square.

infants who participated in the present study had a 2.34 times greater chance of being exclusively breastfed at discharge from hospital. In a comparative study, Brito[14] also found that at hospital discharge, the babies who underwent the procedure had a 37-time greater chance of being exclusively breastfed. After 2 months, the chance was 15 times higher, and at 3 months, it was 4 times higher.

At 40 weeks of gestational age, 70% of the infants in G2 were being exclusively breastfed. At 3 months, the results showed that, while EBF in the infants of G1 had decreased dramatically, reaching 5%, in infants of G2, it remained above 40%. Lee et al.[10] and Penalva & Schwartzman[9] showed a prevalence of approximately 60% of EBF at 3 months of age in infants subjected to the method.

At 6 months of life, although no statistically significant difference was found between the groups, there was a consistent tendency to a higher prevalence of EBF in the kangaroo group.

The best rates of breastfeeding found in the present study and in other studies on KC[8] could be due to the stimulation of breastfeeding, one of the pillars of the method. The effect of this type of humanized care, which promotes the presence of the mother with the infant, valuation of maternal care, and skin contact, was fundamental for this outcome.[7] At neonatal units offering conventional care, attempts to encourage breastfeeding were not effective to increase the prevalence of long-term breastfeeding.[15] Also, the family effort alone improved breastfeeding rates,[16] but KC was more effective to increase the prevalence of exclusive breastfeeding in the short and medium terms.[8,17]

Despite the limitations of the present study, we concluded that KC was a facilitating factor of EBF for low birth weight infants both at the hospital and during the first 6 months of life. Considering the potential impact of EBF on morbidity and mortality in this population group, we expect that these results encourage other researchers to conduct studies with larger samples and managers and health professionals to implement KC in Brazilian hospitals.

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