DOI: 10.1097/JPN.0000000000000434

J Perinat Neonat Nurs • Volume 34 Number 1, 80–87 • Copyright © 2019 Wolters Kluwer Health, Inc. All rights reserved.

Downloaded from https://journals.lww.com/jpnnjournal by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 02/03/2020

The Effect of Kangaroo Mother Care, Provided in the Early Postpartum Period, on the Breastfeeding Self-Efficacy Level of Mothers and the Perceived Insufficient Milk Supply

Fatma Yilmaz, PhD; Sibel Küçükoğlu, PhD; Aynur Aytekin Özdemir, PhD; Tanju Oğul, MSc; Nesrin Aşki, BSN

ABSTRACT

The aim of this study was to determine the effect of kangaroo mother care, provided in the early postpartum period, on the breastfeeding self-efficacy level and the perceived insufficient milk supply. This study was conducted as the quasi-experimental design. The population of the study consisted of the mothers and their infants, to whom they gave birth in a university hospitals located in either eastern or western Turkey, between December 2016 and June 2017. In this study, mothers and their infants were randomly assigned to the experimental group (kangaroo mother care, $n = 30$) and the control group ($n = 30$). This study included 2500 to 4000 g birth weight infants who had no serious health problems and no sucking problems. The Introductory Information Form, the Breastfeeding Self-Efficacy Scale, and the Perception of Insufficient Milk Questionnaire were used to collect the data. In this study, kangaroo mother care was provided as a nursing intervention for the mothers in the experimental group twice a day until they were discharged. Any other application was not performed in the control group's mothers apart from the routine application. Ethical principles were adhered in all stages of the study. The breastfeeding self-efficacy mean score (65.50 ± 3.95) of the mothers who performed kangaroo mother care was higher than the mean score of the mothers who did not perform kangaroo mother care (55.50 ± 7.00) ($P < .001$). In addition, mothers in the experimental group (46.60 ± 3.40) perceived their milk more sufficiently than mothers in the control group (30.17 ± 11.37) ($P < .001$). In the study, a statistically significant correlation was determined between breastfeeding self-efficacy levels of mothers in the experimental group and the perceived insufficient milk supply ($P < .05$). In the study, kangaroo mother care increased breastfeeding self-efficacy perception of the mothers and reduced the perceived insufficient milk supply. This shows that kangaroo mother care can potentially have an important effect on breastfeeding perceptions.

Key Words: breastfeeding, kangaroo mother care method, self-efficacy

Author Affiliations: Department of Children Health and Diseases Nursing, Faculty of Nursing, Çanakkale Onsekiz Mart University, Turkey (Dr Yilmaz and Mr Oğul); Department of Children Health and Diseases Nursing, Faculty of Nursing, Selcuk University, Konya, Turkey (Dr Küçükoglu); Department of Nursing, Faculty of Health Sciences, Istanbul Medeniyet University, Istanbul, Turkey (Dr Aytekin Ozdemir); and Çanakkale Obstetrics and Gynecology Clinic, Health Practice and Research Hospital, Turkey (Ms Aski).

Disclosure: The authors have disclosed that they have no significant relationships with, or financial interest in, any commercial companies pertaining to this article.

Each author has indicated that he or she has met the journal's requirements for Authorship.

Corresponding Author: Sibel Küçükoğlu, PhD, Department of Children Health and Diseases Nursing, Faculty of Nursing, Selçuk University, 299/1 Alaeddin Keykubat Campus, 42250 Konya, Turkey (s_nadaroglu@hotmail.com).

Submitted for publication: September 3, 2018; accepted for publication: July 20, 2019.

Breast milk is the only physiological infant food that includes the nutrients required for absorption by infants in the proper amount and quality. The fact that the mother starts to breastfeed her infant as early as possible and the infant is fed exclusively with breast milk in the first 6 months is quite important for maternal and infant health.[1] The American Academy

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

of Pediatrics and the World Health Organization recommend giving breast milk exclusively to infants in the first 6 months.[2,3] It is stated that breast milk protects the infant against diarrhea, respiratory tract infections, otitis media, necrotizing enterocolitis, and sudden infant death syndrome.[4] Despite these benefits of breast milk, it is estimated that only 37% of infants in the world are fed breast milk exclusively in the first 6 months.[4] In Turkey, the rates of giving breast milk exclusively to infants in the first 6 months are quite low. Ninety-six percent of infants are breastfed for a while, and 58% of infants are breastfed exclusively in the first 2 months of their lives; this value decreases to 10% in infants ranging from 4 to 5 months old.[5]

In many studies, several factors affecting breastfeeding have been reported. The breastfeeding process is a complex phenomenon and is affected by many demographic, social, psychological, and physical variables. The perceived self-efficacy of a mother related to breastfeeding is demonstrated as an important factor that affects it. In the study conducted by O'Campo et al,[6] the factors affecting breastfeeding were assessed and it was stated that the strongest affecting factor is the perceived self-efficacy of mothers. Another perception that affects breastfeeding is the perceived insufficient milk supply of mothers. It is estimated that 25% to 35% of mothers stop breastfeeding because they believe they can no longer secrete milk for their infants.[7] The World Health Organization has stated that the perceived insufficient milk supply is a public health concern.[8] Perception of the insufficient milk supply causes mothers to feel self-failure and enables them to stop breastfeeding earlier than they should. Huang et al,[9] in their study, stated the perceived insufficient milk supply of women is a common problem related to breastfeeding that has been determined in the stopping of breastfeeding early. The first 2 to 6 weeks after birth are described as a critical period for the interrupting or supporting of breastfeeding. The maternal perception of insufficient milk has been demonstrated as the most significant reason contributing to this situation.[7,10–12]

In previous studies, it was stated that the breastfeeding self-efficacy level of mothers was related to the perceived insufficient milk supply and that these 2 perceptions affect each other.[7,13] Otsuka et al[13] stated that there was an important correlation between breastfeeding self-efficacy perception and perceived insufficient milk supply. Also covered in the study conducted by Gökçeoğlu and Küçükoğlu[14] was the emphasis that these 2 perceptions were related to each other and that breastfeeding self-efficacy of mothers, who did not perceive their milk as sufficient, was low.

In previous studies, the "kangaroo mother care" (KMC) has been overemphasized in recent years as an important application for increasing the success of breastfeeding and continuing breastfeeding for a longer time. A mother and her infant touching each other immediately following the infant's birth is necessary for providing the physical and mental development of the infant. Kangaroo mother care, which is a natural approach and does not require any additional preparation or cost, is a method that can easily be utilized. Kangaroo mother care additionally contributes to stabilization of vital signs, development of the nervous system, nutrition in the early period, rapid weight gain and reaching the ideal birth weight in a short time, decrease in infant crying, fewer medical problems, being discharged early from the hospital, decrease in morbidity as a result of decreasing cross-infection, and a deeper and higher-quality sleep for infants.[15] It is known that KMC decreases both the morbidity and mortality rates of infants in the neonatal intensive care unit (NICU), enables the family to be involved in the infant's care from an early period, strengthens the relationship between the mother and her infant, and affects the breastfeeding process positively.[16] It has been emphasized in many studies that KMC increases the breastfeeding rate.[17,18] When studies were examined, it was observed that although there are many studies[18,19] emphasizing the positive effect of KMC on breastfeeding, the number of studies examining how KMC affects the perceptions of mothers concerning breastfeeding is quite limited.[20] In addition, no studies were found regarding whether or not KMC affects breastfeeding self-efficacy perception and the perceived insufficient milk supply. For this reason, this study was conducted to determine the effect of KMC, provided in the early postpartum period, on the breastfeeding self-efficacy level of the mothers and the perceived insufficient milk level.

KANGAROO POSITION

The guideline published by the World Health Organization in 2003 states the proper amount of time to provide KMC is 30 minutes.[21]

THE HYPOTHESES OF THE STUDY

H1: Kangaroo mother care, provided in the early postpartum period, increases the breastfeeding self-efficacy level of mothers.

H2: Kangaroo mother care, provided in the early postpartum period, reduces the perceived insufficient milk supply of mothers.

MATERIAL AND METHODS

Design

The study was conducted as the quasi-experimental design.

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

Setting

The study was conducted in both gynecology and obstetrics clinics of 2 university hospitals located in eastern and western Turkey between December 2016 and June 2017. The western clinic, where the study was conducted, contains 22 inpatient beds, 15 physicians, and 9 nurses. In addition, the hospital possesses a baby-friendly hospital designation. The eastern gynecology and obstetrics clinics contain 56 inpatient beds, 15 physicians, and 15 nurses. The hospital possesses a baby-friendly designation too. Kangaroo mother care is a routine practice in the western clinic. All mothers were able to perform KMC twice in the morning and evening, but KMC is not a routine practice in the eastern hospital.

Ethical principles of the study

Prior to the study, both written and verbal permissions were obtained from the hospital where the study was conducted. The study was also submitted to the ethical committee of the university (no. 18920478-050.01.04/E.125067, date: November 2, 2016) and approval was granted. Before collecting any data, the mothers were clearly informed about the purpose and period of the study as well as the expectations within the scope of the study. Any questions were answered regarding the nature of the study, and written and verbal consent was obtained.

Participants

The population involved in the study consisted of the mothers who gave birth in one of the stated clinics, agreed to participate in the study, and met the inclusion criteria of the study.

Inclusion criteria of the study

For infants:

- Having a birth weight of 2500 to 4000 g;
- Having a 5-minute Apgar score of 7 or higher;
- Having no diagnosed health problem;
- Having no issue requiring suction;
- Being the only child at birth (not a twin); and
- Breastfeed exclusively.

For mothers:

- Giving birth by cesarean section;
- Being primiparous;
- Being aged between 18 and 35 years;
- Having no known breast or health problems; and
- Delivered in the 37th to 42nd weeks of gestation.

In the literature covering the experimental studies and parametric measurements, it has been reported that the sample size should be at least 30 each in the experimental and control groups.[22] In the study, the power analysis was carried out to determine the sample size. According to the power analysis, the power of the study was determined to be 99% with an effect size of 1.75 (large) at a confidence interval of 95% and significance level of .05 for the analysis of the t test ($n_1 = 30$, $n_2 = 30$, $\text{mean}_1 = 65.50$, $\text{SD}_1 = 3.95$, $\text{mean}_2 = 55.50$, $\text{SD}_2 = 7.00$). Thus, 60 participants in this study were acceptable for the sample size. Three infants and 3 mothers were added to each group by considering that there would be losses in the study ($n = 66$). However, as a result of the study, 2 mothers did not implement KMC regularly and 1 mother wanted to withdraw from the study in the experimental group; on the contrary, 2 mothers in the control group stated that they wanted to withdraw from the study. In addition, 1 mother was excluded from the study because of her hospitalization. The study was completed with 60 mothers and newborns (experimental group: $n = 30$ newborns and mothers; control group: $n = 30$ newborns and mothers).

DATA COLLECTION TOOLS

The Introductory Information Form, the Breastfeeding Self-Efficacy Scale, and the Perception of Insufficient Milk Questionnaire were used to collect the data.

Introductory Information Form

This form included the demographic questions for the newborn infant and the mother prepared by the researcher. Gender, gestational week, and birth weight among the data of infants, and age, educational status, working status, income status, and pregnancy planning method among the data of mothers were questioned.

Breastfeeding Self-Efficacy Scale

The scale was developed by Dennis and Faux[23] to assess breastfeeding self-efficacy levels of mothers, and its original form is composed of 33 items. Then, in 2003, a 14-item short form of the scale was developed.[24] Dennis[24] has recommended this short form for current use because it is easier to apply and accurately assesses self-efficacy. The Breastfeeding Self-Efficacy Scale–Short Form is a 5-point Likert-type scale (1 = "I'm not sure" and 5 = "I'm always sure"). While the minimum score of the scale is 14, the maximum score is 70. High scores signify high breastfeeding self-efficacy. The Turkish validity and reliability study of the scale was conducted by Tokat et al,[25] and its Cronbach α value was identified as 0.86. In this study, the Cronbach α value of the scale was identified as 0.90.

Perception of Insufficient Milk Questionnaire

This is a scale with 6 questions developed by McCarter-Spaulding and Kearney[26] in 2001 determines perception of the breast milk as insufficient. The first question

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

queries whether the mother perceives her milk as sufficient or not. Mothers answer this question with a "yes" or "no" response. The other questions of the scale are for measuring the perception of insufficient milk. Mothers are requested to score these questions between 0 and 10. While "0" indicates that the breast milk is perceived as completely insufficient, "10" indicates that the breast milk is perceived as completely sufficient. While the minimum score of the scale is 0, the maximum score is 50. Higher total score signifies that the perception of the sufficiency of milk increases. The Turkish validity and reliability study of the scale was conducted by Gökçeoğlu and Küçükoğlu,[14] and its Cronbach α value was identified as 0.86. In this study, the Cronbach α value of the Perception of Insufficient Milk Questionnaire was identified as 0.93.

DATA COLLECTION

During the data collection stage, the researcher first explained the aim of the study to the mothers and obtained written consent from them, indicating their agreement to participate in the study; this consent was obtained via the "informed consent form." The information in the Infant Introductory Information Form, which was one of the data collection tools, was obtained from the mothers in both the experimental and control groups using the face-to-face interview method on the day of birth, at a time when the mother was stable and willing to interview. In the study, the control group's data were collected first, followed by the experimental group's data collection to avoid either one affecting the other.

NURSING INTERVENTION

Experimental group

In the study, KMC was provided by the mothers in the experimental group as the nursing intervention from the first day after giving birth. The information regarding the aim of the study and KMC was demonstrated to the mothers in the experimental group on a model with the face-to-face interview method before KMC was applied; it was ensured that the mothers applied KMC properly. As a clinical routine, the mothers are kept under observation at the clinic for 3 days following cesarean delivery. It was provided that the mothers provided KMC twice a day, once in the morning and once in the evening, for 30 minutes each time, for the first 3 days after birth. Training was provided to these mothers that involved keeping their bodies clean, avoiding pinning/wearing jewelry, refraining from smoking, and refraining from using perfume or deodorant. The mothers performed the first instance of KMC with the help of the researcher. The other KMC practices were performed under the supervision of the researcher but following the leadership of the mother. The room temperature was kept at 24°C to 26°C, and the mother's bed was set into the semi-fowler position where her back was supported by a pillow. After ensuring that the mother was situated comfortably in her bed, the naked infant was placed atop the naked breast of his or her mother in the prone and horizontal positions. The infant wore only his or her diaper and cap, a clean prewarmed cover, and a thin blanket provided by the mother beforehand. The mother was requested to hold her infant by supporting him or her from his or her back and butt. During KMC, attention was paid to ensure the infant did not apply pressure to the cesarean region of his or her mother. During KMC, any stimulus or visitor who would disturb or disrupt the mother and her infant was prevented. On the third day before the mother was discharged, the Breastfeeding Self-Efficacy Scale and the Perception of Insufficient Milk Questionnaire were administered to each mother following her completion of KMC; all mothers were requested to complete the questionnaires individually in order to prevent affecting or influencing one another's responses. Breast milk and breastfeeding education was provided by a lactation consultant, belonging to the baby-friendly hospital, for the mothers in the experimental group periodically for 3 days within the scope of the routine application.

Control group

After informing the mothers of the newborns included in the control group about the study, verbal and written consent of the mothers who agreed to participate in the study was retrieved, and the Introductory Information Form was completed through the face-to-face interview method on the first day following delivery at a time when the mother was stable. No intervention was performed for infants and mothers in the control group, and the regular protocols of the hospital were applied. On the third day, the Breastfeeding Self-Efficacy Scale and the Perception of Insufficient Milk Questionnaire were administered to the mothers prior to discharge, and they were asked to complete the questionnaires individually. Breast milk and breastfeeding education was provided by a lactation consultant, belonging to the baby-friendly hospital, for the mothers in the control group periodically for 3 days within the scope of the routine application. Although this clinic was baby-friendly, mothers living in the east tended to not usually practice KMC. The religious and cultural norms of mothers are thought to be effective in this situation, so a very small proportion of newborns who could benefit from KMC in this clinic. In the clinic, mothers were informed and supported about

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

participation in KMC by healthcare professionals. Mothers who want to perform KMC were not included in the study.

DATA ANALYSIS

The data obtained from this study were assessed in a computerized environment using the SPSS 18.0 (Statistical Package for Social Science) packaged software. Percentage distribution, χ^2 test, t test, Kruskal-Wallis test, and Cronbach α coefficient calculations were used to evaluate the data. The significance was accepted as $P < .05$ in this study.

RESULTS

In this study, mothers and their infants in the experimental and control groups were compared in terms of their descriptive characteristics, and it was observed that both groups were similar in terms of educational level, working status, income status, pregnancy planning method, and the first feeding time of the infant. In addition, when the experimental and control groups were compared in terms of each mother's age, each infant's week of gestation, and each infant's weight, there was no statistically significant difference between the groups (see Table 1).

At the end of the study, the breastfeeding self-efficacy mean score of mothers (65.50 ± 3.95) in the experimental group, who provided KMC, was found to be higher than the mean score of the mothers (55.50 ± 7.00) who did not provide KMC; the difference between the 2 groups was statistically significant ($P < .001$). Also, the perceived insufficient milk supply score (46.60 ± 3.40) of the mothers in the experimental group was higher than that of the mothers in the control group (30.17 ± 11.37). This indicated that the mothers in the experimental group perceived their milk as more sufficient than the mothers in the control group ($P < .001$; see Table 2).

In this study, the correlation between breastfeeding self-efficacy levels and the perceived insufficient milk

Table 1. **Comparison of experiment and control groups according to descriptive characteristics of babies and mothers**

Descriptive characteristics	Experiment groups, *n* (%)	Control group, *n* (%)	Test and *P*
Education status			
Primary education	12 (40.0)	6 (20.0)	$\chi^2 = 3.800$
High school	7 (23.3)	13 (43.3)	$P = .150$
University	11 (36.7)	11 (36.7)	
Working status			
Working	5 (16.7)	10 (33.3)	$\chi^2 = 2.222$
Housewife	25 (83.3)	20 (66.7)	$P = .116$
Income status			
More than income	2 (6.7)	4 (13.3)	
Equivalent to income	28 (93.3)	22 (73.3)	
Less than income	0 (0)	4 (13.3)	
Planning of pregnancy			
Planned	28 (93.3)	26 (86.7)	
Not planned	2 (6.7)	4 (13.3)	
Baby's gender			
Female	12 (40.0)	15 (50.0)	$\chi^2 = 0.606$
Male	18 (60.0)	15 (50.0)	$P = .302$
Baby's first feeding time			
Immediately after birth within 30 min	24 (80.0)	16 (53.3)	$\chi^2 = 4.873$
Within 30-60 min after delivery	4 (10.0)	8 (26.7)	$P = .087$
61 min after birth and over	4 (10.0)	6 (20.0)	
	Experiment group, $\bar{X} \pm$ SD	**Control group, $\bar{X} \pm$ SD**	
Mother's age	28.40 ± 5.91	26.77 ± 4.21	$t = 1.234$ $P = .222$
Baby's gestation week	38.77 ± 1.073	39.10 ± 0.995	$t = 1.248$ $P = .217$
Baby's birth weight	3194.00 ± 509.76	3386.27 ± 382.27	$t = 1.653$ $P = .104$

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

Table 2. **Comparison of breastfeeding self-efficacy and insufficient milk perception mean scores of the experimental and control groups' mothers**

Scales	Experiment group ($n = 30$)	Control group ($n = 30$)	Test and *P*
Breastfeeding Self-efficacy	65.50 ± 3.95	55.50 ± 7.00	$t = 6.815$ $P = .000$
Insufficient Milk Perception	46.60 ± 3.40	30.17 ± 11.37	$t = 7.584$ $P = .000$

supply of mothers was compared and a significant correlation was determined ($P < .05$; see Table 3).

DISCUSSION

This is the first known study examining the effect of KMC, provided during the early postpartum period, on both breastfeeding self-efficacy and perceived insufficient milk of mothers. The previous studies have revealed that KMC is effective in initiating and maintaining breastfeeding. In the study conducted by Ramanathan et al,[27] KMC was performed regularly for 6 weeks and breastfeeding rates were compared. It was determined that the infants, to whom KMC was provided, were breastfed more frequently than the infants lacking this care.[27] In the study conducted by Heidarzadeh et al,[28] KMC was taught to mothers with premature infants, to whom they provided KMC until these infants were discharged. The mothers who performed KMC exclusively breastfed their infants at a higher rate (62%).[28] Through many other studies, it has been determined that KMC increases breastfeeding rates.[29–31] A great majority of the studies have focused on the positive effect of KMC on initiating and maintaining breastfeeding, while the effect of KMC on the mothers' perceptions has not been adequately examined. The number of studies examining specifically the effect on perceptions such as breastfeeding self-efficacy levels and perceived insufficient milk supply remains quite limited.

Table 3. **Relationship between breastfeeding self-efficacy and insufficient milk perception**

		Insufficient Milk Perception Scale	
	Group	***r***	***P***
Breastfeeding Self-Efficacy Scale	Experiment	0.432	.017
	Control	0.243	0.196

The results of this study showed that mother-infant skin-to-skin contact led to higher breastfeeding self-efficacy in mothers (see Table 2). This result supports the hypothesis of the study: "Kangaroo mother care, provided in the early postpartum period, increases the breastfeeding sufficiency level of mothers." Aghdas et al,[32] in their randomized controlled trial, in which the primiparous mothers performed the postpartum KMC regularly, found that breastfeeding self-efficacy mean scores of these mothers were significantly higher than breastfeeding self-efficacy mean scores of mothers who did not perform KMC.[32] Also found through the study conducted by McQueen et al,[33] it was stated that KMC initiated in the early period increased breastfeeding self-efficacy scores of the mothers compared with those who did not perform KMC. In many other studies, it has been emphasized that KMC increases self-confidence of mothers in both feeding and caring of infants by increasing the mothers' satisfaction.[11,34,35] As the application of this care method in the Turkish society increases—hospitals here currently do not utilize KMC regularly—the self-confidence of mothers will continue to increase, which will provide a positive impact on breastfeeding rates and hopefully raise them to the desired level.

In addition, the mothers who performed KMC in this study perceived their milk as more sufficient. This result confirms the hypothesis of the study: "Kangaroo mother care, provided in the early postpartum period, reduces the perceived insufficient milk supply of mothers" (see Table 2). In a literature review conducted in China, the perceived insufficient milk and breast problems have been stated as the most important reasons for the interruption of breastfeeding.[36] The perceived insufficient milk is a major problem continuing throughout the entire lactation period, for all women, which risks their stopping the breastfeeding too early in the early postpartum period.[7] Chan et al[37] reported that 77% of the mothers, whose infants were hospitalized in the NICU, fed their infants with supplementary foods due to their perceived insufficient milk supply during their hospital stay. Also, in the study conducted by Binns and

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

Scott,[38] it was stated that 16.7% of the women stopped breastfeeding early due to the perceived insufficient milk supply before being discharged from the hospital and 23% of the women experienced anxiety related to their perceived insufficient milk during discharge. The studies have shown that the perceived insufficient milk perception is an important factor in maintaining breastfeeding; however, the number of studies examining that this perception should be developed—and through employment of which interventions—is quite limited. In only one study, it was determined that the mothers who were supported by healthcare professionals during the postnatal period perceived their milk as more sufficient than the mothers in the control group.[39] In this study, the mothers who provided KMC perceived their milk as more sufficient than the mothers in the control group. This result was a striking finding as it revealed the effect of noninvasive interventions, such as providing KMC, in improving the perception of insufficient milk.

Another prominent result gathered by the study was that there was a significant correlation between breastfeeding self-efficacy perceptions and the perceived insufficient milk supply of the mothers who performed KMC (see Table 3). In the literature, it has been determined that the breastfeeding self-efficacy level of mothers is related to the perceived insufficient milk supply and that these 2 perceptions affect each other.[7,13] In several studies, it has also been stated that the most important factor affecting the perceived insufficient milk is the maternal perception of breastfeeding self-efficacy.[7,40,41] In the study conducted by Gökçeoğlu and Küçükoğlu[14] with 200 mothers that examined the correlation between breastfeeding self-efficacy levels and the perceived insufficient milk supply of mothers who had infants hospitalized in the neonatal clinic, it was determined that as breastfeeding self-efficacy levels of mothers increased, the perception of milk sufficiency supply also increased. Otsuka et al[13] stated that there was an important correlation between breastfeeding self-efficacy perception and the perceived insufficient milk supply. In the study conducted by Dennis,[42] it was determined that there was a correlation between breastfeeding self-efficacy perception and the perceived insufficient milk supply of mothers, and this caused the mothers to initiate the provision of supplementary food early on, which therefore reduced the breastfeeding frequency rate. While similar to the result of this study, the other studies have shown that KMC is effective for breastfeeding self-efficacy perception and the perceived insufficient milk supply. It was revealed specifically in this study that KMC, which is an interventional application, was effective in improving these 2 perceptions. For this reason, it is believed that these study results are quite valuable.

CONCLUSION

This study has shown that KMC is an easy-to-apply, cost-free, and noninvasive method that increases maternal breastfeeding self-efficacy and confidence. This shows that KMC can have an important effect on breastfeeding self-efficacy and the perceived insufficient milk supply. For this reason, to improve breastfeeding perception of mothers in a positive way, all new mothers should be encouraged by healthcare professionals to provide KMC; in addition, the appropriate environments should be established to encourage and enable this practice both in the NICU and in the obstetric clinics during the postpartum period until the time of discharge.

CLINICAL IMPLICATIONS

Interventions that will improve breastfeeding self-efficacy with the perinatal and postnatal interventions as well as reduce insufficient milk perception should be recommended to mothers who prefer breastfeeding. Practices such as KMC that positively affect results related to mothers, infants, and breastfeeding should be implemented as routine practices within clinics. Mothers who have high-level perceptions of effective breastfeeding would be successful during the breastfeeding process. Understanding the effect of KMC on mothers' perceptions in regard to breastfeeding will guide healthcare professionals through their practices and education.

References

1. Yenal K, Tokat Aluş M, Ozan Durgun Y, Çeçe Ö, Abalın Bakılan F. The relation between breastfeeding self-efficacy and breastfeeding successes of mothers. *HEAD*. 2013;10(2):14–19.
2. American Academy of Pediatrics. Breastfeeding and the use of human milk. *Pediatrics*. 2005;115(2):496–506.
3. American Academy of Pediatrics. Breastfeeding and the use of human milk. *Pediatrics*. 2012;129(3):e827–e841.
4. Victora CG, Bahl R, Barros AJD, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*. 2016;387(10017):475–490.
5. Hacettepe University Institute of Population Studies. *Population and Health Survey to Turkey (TNSA-2013)*. Ankara, Turkey: Hacettepe University Institute of Population Studies; 2013 http://www.hips.hacettepe.edu.tr/tnsa2013/rapor/TNSA_2013_ana_rapor.pdf. Accessed May 31, 2016.
6. O'Campo P, Faden R, Gielen A, Wang M. Prenatal factors associated with breastfeeding duration: recommendations for prenatal interventions. *Birth*. 1992;19:195–201.
7. Gatti L. Maternal perceptions of insufficient milk supply in breastfeeding. *J Nurs Sch*. 2008;40(4):355–363.
8. World Health Organization. *Essential Nutrition Actions: Improving Maternal, Newborn, Infant and Young Child Health and Nutrition*. Geneva, Switzerland: World Health Organization; 2013.

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.

9. Huang YY, Lee JT, Huang CM, Gau ML. Factors related to maternal perception of milk supply while in the hospital. *J Nurs Res*. 2009;17(3):179–188.
10. Balogun OO, Dagvadorj A, Anigo MK, Ota E, Sasaki S. Factors influencing breastfeeding exclusivity during the first 6 months of life in developing countries: a quantitative and qualitative systematic review. *Matern Child Nutr*. 2015;11:433–451.
11. Blyth R, Creedy DK, Dennis CL, Moyle W, Pratt J, De Vries SM. Effect of maternal confidence on breastfeeding duration: an application of breastfeeding self-efficacy theory. *Birth*. 2002;29(4):278–284.
12. Hauck YL, Fenwick J, Dhaliwal SS, Butt J. A Western Australian survey of breastfeeding initiation, prevalence and early cessation patterns. *Matern Child Health J*. 2011;15(2):260–268.
13. Otsuka K, Dennis CL, Tatsuoka H, Jimba M. The relationship between breastfeeding self-efficacy and perceived insufficient milk among Japanese mothers. *J Obstet Gynecol Neonatal Nurs*. 2008;37(5):546–555.
14. Gökçeoğlu E, Küçükoğlu S. The relationship between insufficient milk perception and breastfeeding self-efficacy among Turkish mothers. *Glob Health Promot*. 2017;24(4):53–61.
15. Walters MW, Boggs KM, Ludington-Hoe S, Price KM, Morrison B. Kangaroo care at birth for full-term infants: a pilot study. *MCN Am J Matern Child Nurs*. 2007;32(6):375–381.
16. Eras Z, Atay G, Şakrucu ED, Bingöler EB, Dilmen U. Developmental care in neonatal intensive care unit. *Med Bull Şişli Etfal Hosp*. 2013;47(3):97–103.
17. Ghavane S, Murki S, Subramanian S, Gaddam P, Kandraju H, Thumalla S. Kangaroo mother care in Kangaroo ward for improving the growth and breastfeeding outcomes when reaching term gestational age in very low-birth-weight infants. *Acta Paediatr*. 2012;101(12):e545–e549.
18. Hake-Brooks S, Anderson G. Kangaroo care and breastfeeding of mother-preterm infant dyads 0-18 months: a randomized, controlled trial. *Neonatal Netw*. 2008;3(27):151–159.
19. Flacking R, Ewald U, Wallin L. Positive effect of kangaroo mother care on long-term breastfeeding in very preterm infants. *J Obstet Gynecol Neonatal Nurs*. 2011;40(2):190–197.
20. Groleau D, Cabral IE. Reconfiguring insufficient breast milk as a sociosomatic problem: mothers of premature babies using the kangaroo method in Brazil. *Matern Child Nutr*. 2009;5(1):10–24.
21. World Health Organization. *Kangaroo Mother Care: A Practical Guide*. Geneva, Switzerland: Department of Reproductive Health and Research, World Health Organization; 2003. https://apps.who.int/iris/bitstream/handle/10665/42587/9241590351.pdf;jsessionid=217CD5B37BC4C13312DFFBDB5A98D26C?sequence=1. Accessed May 9, 2019
22. Sümbüloğlu K, Sümbüloğlu V. *Biyoistatistik*. 9th ed. Ankara, Turkey: Hatipoğlu Basım ve Yayın San, Tic, Ltd Şti; 2000.
23. Dennis C-L, Faux S. Development and psychometric testing of the Breastfeeding Self-Efficacy Scale. *Res Nurs Health*. 1999;22:399–409.
24. Dennis C. The Breastfeeding Self-Efficacy Scale: psychometric assessment of the short form. *J Obstet Gynecol Neonatal Nurs*. 2003;32(6):734–744.
25. Aluş Tokat M, Okumuş H, Dennis CL. Translation and psychometric assessment of the Breastfeeding Self-Efficacy Scale-Short Form among pregnant and postnatal women in Turkey. *Midwifery*. 2010;26(1):101–108.
26. McCarter-Spaulding DE, Kearney MH. Parenting self-efficacy and perception of insufficient breast milk. *J Obstet Gynecol Neonatal Nurs*. 2001;30(5):515–522.
27. Ramanathan K, Paul VK, Deorari AK, Taneja U, George G. Kangaroo mother care in very low-birth-weight infants. *Indian J Pediatr*. 2001;68(11):1019–1023.
28. Heidarzadeh M, Hosseini MB, Ershadmanesh M, Gholamitabar Tabari M, Khazaee S. The effect of kangaroo mother care (KMC) on breastfeeding at the time of NICU discharge. *Iran Red Crescent Med J*. 2013;15(4):302–306.
29. Almeida Hd, Venancio SI, Sanches MT, Onuki D. The impact of kangaroo care on exclusive breastfeeding in low-birth-weight newborns. *J Pediatr (Rio J)*. 2010;86(3):250–253.
30. Jayaraman D, Mukhopadhyay K, Bhalla AK, Dhaliwal LK. Randomized controlled trial on effect of intermittent early versus late kangaroo mother care on human milk feeding in low-birth-weight neonates. *J Hum Lact*. 2017;33(3):533–539.
31. Nagai S, Yonemoto N, Rabesandratana N, Andrianarimanana D, Nakayama T, Mori R. Long-term effects of earlier initiated continuous kangaroo mother care (KMC) for low-birth-weight (LBW) infants in Madagascar. *Acta Paediatr*. 2011;100(12):e241–e247.
32. Aghdas K, Talat K, Sepideh B. Effect of immediate and continuous mother-infant skin-to-skin contact on breastfeeding self-efficacy of primiparous women: a randomised controlled trial. *Women Birth*. 2014;27:37–40.
33. Mcqueen KA, Dennis CL, Stremler R, Norman CD. A pilot randomized controlled trial of a breastfeeding self-efficacy intervention with primiparous mothers. *J Obstet Gynecol Neonatal Nurs*. 2011;40(1):35–46.
34. Mahmood I, Jamal M, Khan N. Effect of mother-infant early skin-to-skin contact on breastfeeding status: a randomized controlled trial. *J Coll Physicians Surg Pak*. 2011;21(10):601–605.
35. Velandia M, Matthisen AS, Uvnäs-Moberg K, Nissen E. Onset of vocal interaction between parents and newborns in skin-to-skin contact immediately after elective cesarean section. *Birth*. 2010;37(3):192–201.
36. Xu F, Qiu L, Binns CW, Liu X. Breastfeeding in China: a review. *Int Breastfeed J*. 2009;4(6):1–15.
37. Chan S, Nelson E, Leung S, Li C. Breastfeeding failure in a longitudinal post-partum maternal nutrition study in Hong Kong. *J Paediatr Child Heal*. 2000;36(5):466–471.
38. Binns C, Scott JA. Breastfeeding: reasons for starting, reasons for stopping and problems along the way. *Breastfeed Rev*. 2002;10(2):13–19.
39. Kronborg H, Væth M, Olsen J, Iversen L, Harder I. Effect of early postnatal breastfeeding support: a cluster-randomized community based trial. *Acta Paediatr*. 2007;96(7):1064–1070.
40. Rollins NC, Bhandari N, Hajeebhoy N, et al. Why invest, and what it will take to improve breastfeeding practices? *Lancet*. 2016;387(10017):491–504.
41. Roseline G, Louise D, Mario L. Perception of not having enough milk and actual milk production of first-time breastfeeding mothers: is there a difference? *Breastfeed Med*. 2017;12(4):210–217.
42. Dennis C-L. Breastfeeding initiation and duration: a 1990-2000 literature review. *J Obstet Gynecol Neonatal Nurs*. 2002;31(1):12–32.

Copyright © 2019 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.