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The Impact of Kangaroo-Mother Care on Postpartum Depression in Mothers of Premature Infants

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Abstract

Objectives: Postpartum depression is a serious problem with considerable effect on the mother and infant's health, being more common in mothers of preterm infants. Kangaroo mother care (KMC) method is a cheap and convenient way to take better care of premature neonates. This study aimed to evaluate the effect of KMC on the incidence of postpartum depression in mothers of preterm infants.

Materials and Methods: In this prospective cohort study, 60 mothers of premature infants who were hospitalized in neonatal intensive care unit (NICU) at Tabriz Al-Zahra hospital, were selected. All the mothers gave birth through caesarean section and carried out KMC. Mothers were divided in to 2 groups: mothers with 3 times or more/day KMC and those with less KMC. All mothers were required to complete the Edinburgh Postnatal Depression Scale (EPDS) on the 10th, 20th and 30th days after the delivery. The changes in mothers' depression scale were evaluated.

Results: There was no obvious difference between the 2 groups in terms of EPDS scores on the 10th day ($P=0.07$). However, there was significant difference on the 20th and 30th days ($P<0.001$).

Conclusion: Considering the results of this study, it can be concluded that depression in mothers with KMC decreased during follow-up time. In fact, KMC is associated with a predictive effect on postpartum depression.

Keywords: Kangaroo-mother care method, Postpartum depression, Premature Infant

Introduction

Postpartum depression is a serious problem with considerable effects on the mothers and more common in mothers of preterm infants. But it is commonly underestimated (1). Postpartum depression is defined with symptoms like feelings of sadness, anhedonia, irritability, anger, and low self-esteem. It is a problem which affects 10%-15% of women (2,3). Regarding a study In Iran, the prevalence of postnatal depression was 22% in Sari (4). Another study conducted in Kerman reported this rate 31.1% (5). Postpartum depression is high in mothers with sick and premature babies (6). Low birth weight neonates lead to severe stress and sense of inefficiency in the mother and decrease her self-esteem (7).

Depression is anticipated to be the second most common disease after cardiovascular diseases in 2020 and include 15% of all the patients (8). As an important issue, about two-thirds of depressed patients think of suicide and 10%-15% of them commit suicide (9). In addition to maternal health; neonate health is also at risk. So treatment is vital to the health of both (10). The risk of depression in mothers of preterm infants is higher than mothers with term infants. Therefore, this group needs more care. Premature neonates are mainly monitored in intensive care unit and it is accompanied with the separation anxiety both for newborn and mother. One of the interventional strategies in the care of the newborns is Kangaroo mother care (KMC), based on skin to skin contact between mother and newborn in order to improve confidence and self-esteem of the mother (11-13).

KMC method is a cheap and convenient way to take better care of premature neonates and has better effect on neonate's health (14). In addition, KMC facilitates the relationship between neonate and mother and makes the mother feel more comfortable (15). A few studies have also suggested that KMC can affect mothers' mental health, improve their self-esteem and reduce stress and postpartum depression (16,17). This kind of care provides skin to skin contact and breastfeeding, and reduces the side effects of separation (18). It makes both the mother and the baby ready to establish a pattern of mutual and coordinated interaction (19).

Applicability of it in the hospital and the possibility of continuing at home, and the possibility of early discharge in premature neonates, makes it an effective way to reduce stress in the busy neonatal wards (20). In addition, KMC is an easy, safe, inexpensive, and secure way for both newborn and mother; decreases the number of the neonatal hospitalization days and increases the ability of the mother in the care of newborns (21-25).

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Abbasianazar et al suggested that KMC could reduce postpartum blues score (26). In another study conducted in South Korea, mothers who performed KMC had less postpartum depression than control group (27).

Since the health of mothers and neonate is one of the national health priorities and affects the health of family and community health, this research project aimed to study the impact of KMC, a simple and inexpensive method, in preventing postpartum depression in mothers of preterm neonates.

Materials and Methods

The study was conducted as a prospective cohort.

Sampling

It was an available sampling. Sisty mothers of preterm neonates admitted to neonatal intensive care unit (NICU) of Al Zahra hospital during a 17-month interval from April 2014 to September 2015 were selected based on inclusion and exclusion criteria.

Inclusion criteria were: Consent to participate in the project, caesarean section, having the ability to do the KMC and having at least junior high school education. And exclusion criteria were: clear signs of depression at the baseline; psychotic symptoms; cognitive problems; history of drug abuse; serious health problems such as diabetes, kidney or liver failure; use of effective drugs for the nervous system such as anticonvulsants; unwillingness of the individual to do KMC or participate in the project; and neonates with congenital malformations

At the first stage, after describing the project, all mothers were requested to complete the questionnaire about general and demographic information such as age, education, birth time, and history of health problems on the first day after childbirth. They were also screened for history of depression during pregnancy and current situation through psychiatric structured interviews.

Leaving aside the mothers with exclusion criteria, 60 mothers were enrolled. Written consent was obtained from all patients after full description of the study and they were assured that the information would be confidential. It was also noted that their participation was completely optional and there was the possibility of exit at all stages of the study.

Since KMC has many advantages for the neonates, all preterm neonates' mothers at Tabriz Al Zahra hospital are advised to do KMC routinely. So it was not ethical to ignore KMC in some infants in the control group. Therefore, there was no official intervention and a prospective cohort study was carried.

Control group included mothers of premature neonates who had done KMC less than 3 times or less than 1 hour daily. The mothers who had done KMC at least 3 times for 1 hour a day, were considered as KMC group. The mothers were asked to complete the Edinburgh Postpartum Depression Scale (EPDS) on the 10th, 20th and the end of the first month. Finally, the status of depression between two groups was compared. The hours and frequency of KMC were recorded by a nurse of NICU ward.

Different studies have shown the effectiveness of 10-item EPDS to identify depressed women from not depressed ones. Cox and Holden (28) emphasized it on the mental aspects of depression, especially the inability to enjoy. The obtained scores ranged from zero to 30. The sensitivity and the specificity of this scale were reported 0.95 and 0.93, respectively in the Persian version (29). The cutoff point for existing depression in Persian version was considered 12.13.

SPSS 16 software, descriptive and analytic statistics tests like frequency, percentage, mean ± SD, independent *t* test, analysis of variance (ANOVA) test and some other correlational tests were used to analyze differences between 2 groups. $P<0.05$ was considered as significant.

Results

In this study, 60 mothers with premature infants were evaluated in 2 groups of KMC (more than 3 times a day, n = 30) and control (less than 3 times a day, n = 30).

Table 1 shows descriptive statistics of mean scores of EPDS on 10th, 20th and 30th days after birth.

Table 2 highlights analytic statistics of mean scores of EPDS on 10th, 20th and 30th days after birth.

Figure 1 shows the mean scores of EPDS in the first 10 days after delivery in the studied mothers.

The score of EPDS 10 days after delivery was 14.33 ± 4.53 with the average of 15. The lowest and highest scores were 2 and 25, respectively.

Figure 2 shows the mean scores of EPDS on the 20th day after delivery in the studied mothers. The score of EPDS on the 20th day after delivery was 12.86 ± 5.11 with the average of 12.50. The lowest and highest scores were 2 and 25, respectively.

Figure 3 shows the mean scores of EPDS on the 30th day after delivery in the studied mothers. The score of EPDS on the 30th day after delivery was 12.70 ± 5.93 with the average of 11. The lowest and highest scores were 0 and

Table 1. Descriptive Statistics of Mean Scores of EPDS in 10th, 20th and 30th Days After Birth

Group	Mean	Standard Deviation	Number
EPDS1			
KMC	13.30	4.38	30
Control	15.3667	4.51	30
Total	14.33	4.53	60
EPDS 2			
KMC	9.16	2.87	30
Control	16.56	4.06	30
Total	12.86	5.11	60
EPDS3			
KMC	8.10	2.72	30
Control	17.30	4.53	30
Total	12.70	5.93	60

Table 2. Analytic Statistics of Mean Scores of EPDS in 10th, 20th and 30th Days After Birth

		Equality of Means[a]		
		Sig (2-tailed)	Mean Difference	Standard Error Difference
EPDS1	Equal variances assumed	.07	-2.06	1.14
	Equal variances not assumed	.07	-2.06	1.49
EPDS2	Equal variances assumed	.00	-7.40	.90
	Equal variances not assumed	.00	-7.40	.90
EPDS3	Equal variances assumed	.00	-9.20	.96
	Equal variances not assumed	.00	-9.20	.96

[a] *t* test.

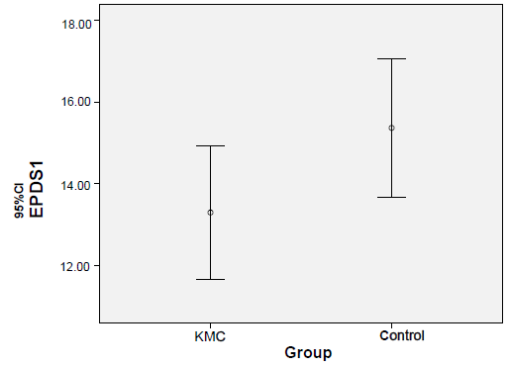

Figure 1. Mean Scores of Edinburgh Postnatal Depression in the First 10th Days After Delivery in the Studied Mothers.

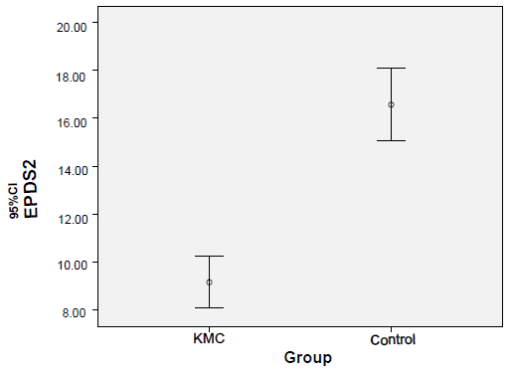

Figure 2. Mean Scores of Edinburgh Postnatal Depression in the First 20th Days After Delivery in the Studied Mothers.

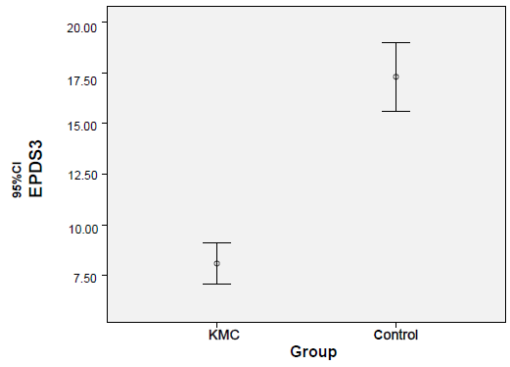

Figure 3. Mean Scores of Edinburgh Postnatal Depression in the First 30th Days After Delivery in the Studied Mothers.

26, respectively. As seen, EPDS score improves in mothers during KMC.

The EPDS scores in mothers with KMC less or more than 3 times a day was evaluated separately:

The EPDS scores in mothers with KMC of less than 3 times a day on the 10th, 20th and 30th days were 15.36 ± 4.51, 16.56 ± 4.06 and17.30 ± 4.53, respectively which increased over the time.

The EPDS score in mothers with KMC of more than 3 times a day on the 10th, 20th and 30th days were 13.30 ± 4.38, 9.16 ± 2.78 and 8.10 ± 2.72, respectively which decreased over the time. Indeed, it has been improved.

Comparing the difference between EPDS scores in both groups of mothers, no significant difference was observed on the 10th day ($P=0.07$). However, significant lower depression scores were observed in the mothers with the KMC of more than 3 times a day on the 20th $P<0.001$) and 30th ($P<0.001$) days.

Changes in EPDS trends were evaluated between the 2 groups in the studied intervals.

As seen in Figure 4, depression scores declined gradually in mothers with KMC, while an increase in depression scores were observed in the control group. Change in trend was significant in each group and between the 2 groups ($P<0.001$).

Maternal depression was examined in three intervals (Figure 5). As observed, the depression was significantly lower on the 20th and 30th days in the mothers with KMC compared to other group ($P<0.001$, in both cases).

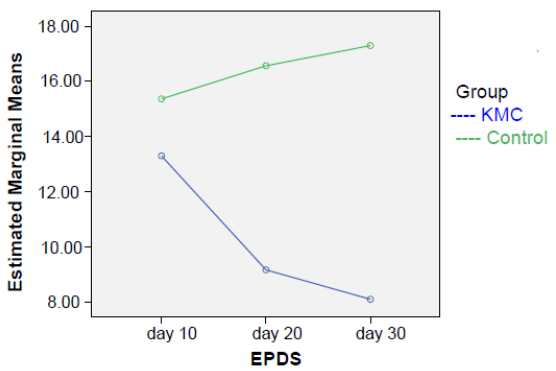

Figure 4. Change Trends Between the 2 Groups in the Studied Intervals.

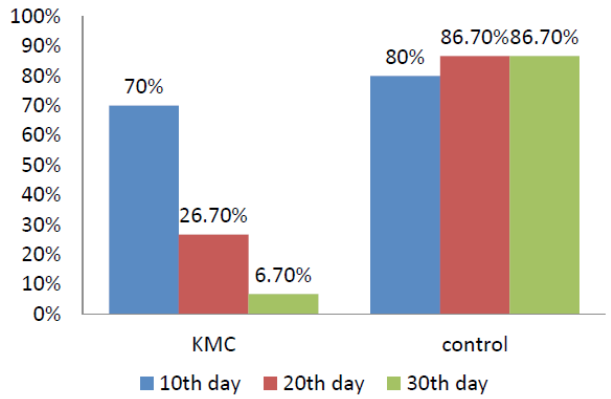

Figure 5. Depression Frequency in Mothers of 2 Groups in Different Intervals.

However, the difference was not significant on the 10th day ($P = 0.55$).

Discussion

The neonates are usually separated from the mothers immediately and transferred to the NICU. Due to this separation both the newborns and their mothers experience stress. The risk of depression in mothers of preterm neonates is higher than mothers with term neonates. Maternal depression affects the care of child. Therefore, this group requires more care (7). Various methods have been proposed to reduce the stress and improve the health of premature newborn. One of the new interventional strategies in the care of the newborns is KMC (16,17).

With regard to the possible role of KMC, this study examined the impact of this method on postpartum depression in mothers of premature neonates and a reduction was observed in the depression score on the 20th and 30th days of postpartum in mothers with KMC during follow-up, in particular, in mothers with the KMC of more than 3 times a day. In fact, mothers with KMC of more than three times/day experienced significantly lower postpartum depression on the 20th and 30th days.

As mentioned earlier, the role of KMC in improving and preventing depression has also been examined by various researches. More studies have found results similar to the ones in our study that showed a significant reduction in depression in mothers receiving the KMC. Arzani et al study also indicated that KMC has a direct relationship with the mothers' self-esteem and leads to mothers comfort, competency and capability; but no significant difference was seen in terms of mother's self-esteem before and after the intervention (17).

Abbasianazar et al evaluated the impact of KMC on postpartum blues. The study suggests that KMC could reduce postpartum blues score (26). In the current study, postpartum blues were not specifically assessed. But the 10th scores could be equivalent to postpartum blues. Although the mothers who performed KMC had lower scores of depression, the results were not significant.

In one of the most recent studies, Faramarzi et al observed that the KMC for neonates with low birth weight was a safe method to improve maternal mental health. Therefore, it is recommended as an appropriate method to improve the mental health of mothers (25). The present study did not examine the general mental health. However, considering the fact that prevention of depression is directly associated with better mental health, our study is consistent with the above mentioned study.

In one of these studies, Ahn et al evaluated the effects of KMC on mental health status of mothers with premature infants. 25 mothers in kangaroo care group and 25 mothers in the control group were evaluated. They observed that the mothers in KMC group were also significantly more dependent and had less postpartum depression than mothers in control group (27). The results of research by de Alencar et al also indicated a reduction in postpartum depression following KMC. They carried out a prospective study to evaluate the effect of KMC on postpartum depression in 177 mothers with preterm neonates. A total of 66 mothers (37.3%) were depressed which reduced to 30 cases (16.9%) after KMC. No new case experienced postpartum depression during KMC (11). In the recent study all mothers were screened for depression in the beginning of study and the effect of KMC on the treatment of postpartum depression was not assessed.

Bad delivery conditions can lead to problems and psychological maladjustment, depression and anxiety in the mothers. Thus, KMC can break this vicious cycle and provide better condition and closer and more effective relationship for the mother and her baby. In fact, studies have shown that KMC method has positive effects on the mother's feeling toward her infant and the interaction between mother and neonate (25). Therefore, when postpartum blue peaks, skin to skin contact between mother and neonate prevents depression (30).

Skin to skin contact leads to a better understanding of the parents of neonatal care. Therefore, they meet the needs of neonates which are essential for improving the life quality and neonate communication with family (31).

The mothers feel improvement in sense of peace, being stronger, better compliance, energy increase, satisfaction, being relieved, relaxed, happy and having more relaxed mind (32). These effects can minimize the risk of postpartum depression. Considering the results of this study and the aforementioned information, it can be stated that KMC can considerably be effective in the prevention of postpartum depression.

Limitations

Al-Zahra hospital is a referral center in the north west of Iran. Therefore, many mothers and infants from different regions are referred. Nearly 20 mothers only filled the 10th day questionnaire, as they went back to their home towns.

With larger sample size results could be more accurate.

Conclusion

With regard to the results of this study, it can be highlighted that maternal depression happens less following the KMC. In fact, KMC is associated with a reduction in postpartum depression. The results indicated the efficiency of KMC in prevention of postpartum depression in mothers. Thus, this method is recommended especially in mothers of preterm neonates. Due to small sample size of this study, further studies with larger sample sizes can provide better and more accurate results in this regard.

Ethical Issues

This study was approved by the Ethical Committee of Tabriz University of Medical Sciences on July 27, 2015 (No. TBZMED.REC.1394.391).

Conflict of Interests

There is not any conflict of interest in this research.

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