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Original Research Article

Kangaroo mother care affect stability vital signs of low birth weight babies

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ABSTRACT

Background: The Kangaroo Mother Care (KMC) is defined as skin-to-skin contact between mother and her new-born. KMC is a simple way to increase the life expectancy of low birth weight and premature infants. The purpose of this study is to explore the stability of vital signs for Low Birth Weight (LBW) infants before and after using KMC.
Methods: the design was a quasi-experimental pre and posttest without a control group has been conducted in private hospital perinatal inward Tangerang with 30 LBW babies.
Results: The result shows that the stability of vital signs with t-test the baby's temperature that the resulting p=0.001; α=0:05, heart frequency p=0.004; α=0:05, breath frequency p=0.004; α=0:05 and oxygen saturation p=0.011; α=0:05. The stability of vital signs through KMC could be a complement and alternative to conventional nursing for LBW babies and length of stay in hospital could be minimized.
Conclusions: The stability of these vital signs through the KMC can be used as a complementary and alternative in the treatment of LBW, particularly those with low birth weight, which can decrease the duration of hospitalization and use of the incubator is an absolute equipment used.

Keywords: Kangaroo mother care, Low birth weight baby, Skin to skin contact and stability of vital signs

INTRODUCTION

The infant mortality rate low birth weight (LBW) in Southeast Asia was 39 per 1,000 live births (Health Technology Assessment Indonesia, MoH, 2008).[1] The infant mortality rate in developing countries is still high. Every day there were 8,000 babies born in the world who died. WHO 2012 statistics of infant mortality in developing countries 75% of infant deaths occur in the first weeks of life, while the (Infant Mortality Rate) IMR in Indonesia amounted to 34 per 1,000 live births (MoH, 2010).[2]

Neonatal deaths caused by infant Low Birth Weight (LBW) 27%, caused by sepsis 20%, congenital anomalies 19%, pneumonia 17%, Respiratory Distress Syndrome (RDS) 14%, prematurity 14%, Yellow 3%, Birth injury 3% neonatal tetanus 3%, 3% nutritional deficiencies, and Sudden Infant Death Syndrome (SIDS) by 3%. Infant mortality in developing countries is controlled in several ways such as, Ante Natal Care (ANC) routine when the baby is still in the womb, Early Breastfeeding Initiation and rooming after birth (rooming in) (MoH, 2011).[3]

Infant mortality and morbidity Low Birth Weight or premature can be reduced through Kangaroo Mother Care (KMC) Conde-Agudelo, and Díaz-Rossello.[3] Kangaroo Mother Care (KMC) is an old method that is efficient and effective that can be used as a substitute for the incubator. Kangaroo care method is a way of infant care by direct skin to skin contact (skin to skin contact). The warmth of the mother's body is a heat source that is effective for

term infants, low birth weight and premature (MoH, 2008).[1] Kangoroo Mother Care is a simple way to increase the life expectancy of low birth weight and premature infants. Kangaroo Mother Care has many benefits such as the effectiveness of thermoregulation, heart rate, frequency of breathing regularly include lowering apnoe, stabilizing oxygen saturation, accelerate weight gain, accelerate bonding of mother and baby, Increase of mother's confidence, Increase the production of breast milk and reduce cost of hospital treatments.

The mother's body is a natural heat source for infants born at term or low birth weight baby if the baby's skin direct contact with mother's skin or Kangaroo method. Kangaroo Mother Care was first introduced by Rey and Martinez from Bogota, Colombia South America in 1983. Kangaroo Mother Care is a simple way that is beneficial to improve infant survival, especially Low birth weight by weight 1200- 2000 grams (PERINASIA, 2014).[4]

Kangaroo Mother Care is a technique to promote mother and child bonding or bonding. There was a significant correlation between Kangaroo Mother Care with stable heart rate, oxygen saturation, temperature axila and arterial blood pressure in the low birth weight or premature (de Olivera).[5] Hunt in his research said Kangaroo Mother Care is a method of treatment of LBW infants that has benefit stability of heart rate, respiratory rate, thermoregulation and increase breastmilk production and the baby will suckle longer. Results of research Ali et al, says of respiratory rate, body temperature, oxygen saturation is more stable in infants who get KMC compared with infants who did not get the KMC.[6,7] Skin to skin contact will make a positive bond to premature and low birth weight who is sick because it affect growth and progress of baby and can increase mother's confidence to care her baby.

METHODS

This study uses a quasi-experimental quantitative methods, with the approach of pre and posttest without control design to the correspondents about the effects before and after treatment in the kangaroo care method of LBW infants. Variable data collected at the same time, the variable method of kangaroo's method and stability of vital signs. Differences in the measurement result is considered as the treatment effect. Bivariate analysis performed with different test T test to see the effects of KMC with stable body temperature, heart rate, breath frequency and oxygen saturation.

The purpose of this study was to identify the differences before and after used kangaroo care method in LBW conducted for 3 months (September-November, 2015) with total sampling 30 babies with LBW. The inclusion criteria are the babies have stable in vital signs and mothers ready to skin to skin contact and Babies have weight more than 2000 gram. The exclusion criteria are the babies not stable in vital sign and Babies have weight extremely less than 1900 gram and still need the ventilator or add the equipment to breath.

Data were collected through observation sheets made before and after used kangaroo care method with measure heart rate, body temperature and frequency of LBW babies breath.

RESULTS

The characteristics of the respondents in this study is a baby who has a Weight infants less than 2500 grams.

Table 1: Distribution of respondents according to birth weight.

LBW group	Freq	%
1000 - <1500 g	2	6.66
1500 - <2000 g	12	40
2000 - <2,500 g	16	53.33

Table 1 shows that LBW infants who are still using the incubator in hospital with weight 1000-1500 gram amounted to 6.66% and infants with weight 2000-2499 gram amounted to 53.33%.

Table 2: Distribution average of body temperature in lbw infants before and after KMC.

Variable	mean	SD	Min-Max	p Value	95% CI
Babies temperature before KMC	36.3	0:11	36.0-37.0	0008	36.3-36.4
Babies temperature 15 minutes after KMC	36.8	0:07	37.0-37.1	0001	36.8-36.9
Baby's temperature 15 minutes in incubator	36.7	0:08	37.0-37.2	0001	36.7-36.8

There is a significant difference in body temperature on LBW infants before and after KMC. There is a temperature rise in LBW infants before the KMC with a temperature of 36.3ºC, after doing KMC 36.8ºC. There are significant differences changes in body temperature in LBW infants before and after KMC (p=0.001; α=0.05), believed by 95% if the measurement is made on the population, the difference in body temperature LBW infants before and after KMC between 36.0°C to 37.0°C (Table 2). Table 3 shows that there are significant differences in the frequency of LBW babies breath before and after the KMC, KMC can significantly stabilize the

respiratory rate of low birth weight infants (p=0.001; α=0.05). Trust by 95% if the measurement is made on the population of LBW infants in respiratory rate difference before and after KMC between 40 to 54 times per minute.

Table 3: Distribution of average - average frequency breath of LBW infants before and after KMC.

Frequency of Breath	Mean	SD	Min-Max	p value	95% CI
Before KMC	47.5	5.98	38-58	0094	45.2 -49.7
15 minutes after the KMC	43.9	3.91	40-54	0001	42.4 -45.3
15 minutes in incubator	45.5	5:30	40-56	0000	43.5 - 47.5

Table 4: Distribution average of frequency baby's heart before and after KMC.

Freq. Heart	Mean	SD	Min-Max	p value	95% CI
Before KMC	143	7:01	126-161	0340	141.0-146.2
15 minutes after the KMC	143.1	3:48	138-152	0004	141.8 - 144.4
15 minutes in incubator	143.4	4.65	138-158	0002	141.6 - 145.1

Table 5: Distribution average of oxygen saturation in infants LBW before and after PMK.

Oxygen saturation	Mean	SD	Min-Max	p value	95% CI
Baby before KMC	95.5	1:54	92-98	0049	94.9 - 96
15 minutes after the KMC	98.3	1:44	95-100	0011	97.7 - 98.8
15 minutes in incubator	97.3	1:47	95-100	0008	96.7 - 97.8

There are significant differences in the frequency of low birth weight baby's heartbeat before KMC -161 times per minute and after Kangaroo Care Method 138-152 times per minute (p=0.004; α=0,05). Significantly KMC stabilize the heart rate in LBW infants and trustworthy 95% if the measurement is made on the population difference LBW babies heart rate before and after KMC (Table 4).

Table 5 shows that there are significant differences in oxygen saturation LBW infants before KMC 95.5% and after KMC 98.3%, KMC significantly increase oxygen saturation LBW infants (p=0.011; α=0,05). Trust 95% if the measurement is made on the difference in oxygen saturation population LBW infants before and after KMC between 92% to 98%.

DISCUSSION

Research results show temperature stability, breathing, heart rate and oxygen saturation in infants after 15 minutes of KMC. Direct skin contact of mother and baby or skin-to-skin contact can help the stability of this vital sign according to research conducted by Bera et al.[8] Research results show for 3 days mother did KMC showed the baby all stable in temperatures no one broke into the hypothermia.

Babies have breathing regularly and no apnea or stopped breathing, heart rate experienced bradycardia of less than 100x / min only for 2 baby for one day, then all babies heart rate ranges from 100-170 x/ min. Their average increase of around 5% saturation for 3 days KMC in infants, of saturation falls below 90%.

Priya, also reported the results of studies that say the temperature measurement axila and average heart rate higher infant during ongoing KMC compared with routine care in hospitals using a radiant warmer or incubator.[9] Critical period of adaptation process of newborns especially those with low weight is the temperature, where the KMC baby's temperature can be maintained, using a simple and inexpensive (Singh, Yadav and Singh).[10] In this study, the temperature ranges from 36.8-36.9oC, after 15 minutes completed the KMC which lasted more than 1 hour for 3 times a day, it shows the KMC able to make the baby's temperature stable.

Ludington-Hoe research results show KMC can stabilize the physical function, with the average result of the baby's heartbeat is stable with mean 143.9 x / min and respiratory frequency range 20-72x / min with an average of 41.2x / min.[11]

CONCLUSION

The stability of these vital signs through the KMC can be used as a complementary and alternative in the treatment of LBW, particularly those with low birth weight, which can decrease the duration of hospitalization and use of the incubator is an absolute equipment used. This study has limitations of data collection using observation sheet only

for the measurement of vital signs before and after the KMC is completed. This researchers should also measurements of other physical growth as body length and head circumference. The ability of parents and health professionals were trained in methods of KMC correctly should also be considered in the care of the newborn, particularly who have low birth weight.

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