Effectiveness of kangaroo method to weight infants with low birth weight at the perinatology room dr. achmad mochtar hospital bukittinggi

Nurhayati1, Yealni Lifrinur2, Niar Afrian Nuari3, Akbar Iskandar4, Ketut Sukiyono5, Dewiana Novitasari6, Hifdhotul Munawaro7, Taufiqurrahman7, Harapin Hafid8, Desi Ulpa Anggraini9, Veronika Nugraheni Sri Lestari10, Ria Marginingsih11, Herfa Maulina Dewi Soewardini12, Muhammad Alif13, Herlina Ahmad14, Ahmad Al Yakin14, Muthmainnah14, Eko Sumartono15, Nova Ch Mamuaya16, Rahmad Hidayat17, Rini Apriyani18

1Health Science Fort De Kock Collage
2Nursing Program Health Science Fort De Kock Collage
3STIKES Karya Husada Kediri
4STMIK AKBA Indonesia
5University of Bengkulu
6STIE Insan Pembangunan Tangerang
7University of Darussalam Gontor
8Universitas Halu Oleo Indonesia
9Sekolah Tinggi Ilmu Ekonomi Rahmaniyah
10Universitas Dr. Soetomo Indonesia
11Universitas Islam 45 Bekasi Indonesia
12Universitas Wijaya Kusuma Surabaya Indonesia
13Universitas Lambung mangkurat, Indonesia
14Universitas Al Asyariah Mandar
15Universitas Bengkulu Indonesia
16Universitas Negeri Manado
17STTM Bandung Indonesia
18Universitas Mulawarman, Indonesia

nurhayatifdk1@gmail.com

Abstract. Low birth weight of infants born weighing less than 1500 grams to 2500 grams. One way to improve the care of the baby weight in babies with low birth weight babies (LBW) and preterm is by kangaroo method. The data obtained from the Medical Record in the Perinatology room Hospital Dr. Achmad Mochtar for 3 months in 2015, found the number of babies with low birth weight by 47. The phenomenon that is found in this room that kangaroo care method is great for LBW infants, especially in helping to improve the baby's weight although it needs close monitoring, especially for infant nutrition. The objective of research to determine the effectiveness of Kangaroo method to the weight of newborns. The research design was Quasi-experimental approach to pre and post test only design. The population in this study is all the baby's birth weight 1500 - 2500 g in perinatology room Dr. Achmad Mochtar hospital Bukittinggi and sampling was done by purposive sampling as many as 10
people. Data was collected using observation sheets, then processed and analyzed by computerized. Results of univariate analysis discovered that the average weight of the baby to Kangaroo method is 1724 grams, and after was 1844.3 grams. The results of the bivariate analysis there are differences in the average weight of newborns (1500 - 2500 grams) before and after the implementation of kangaroo method with p value = 0.000. It was concluded that the kangaroo method effective to increase weight of baby with LBW. It is expected that healthcare workers in hospital more often socialize and train mothers with LBW about kangaroo care method. As well as optimize the mentoring and monitoring the implementation of the kangaroo method.

1. Introduction

Low birth weight infants are infants born weighing less than 1500 grams to 2500 grams. Low birth weight infants with birth weight less than 2,500 grams regardless of gestational age[1]. Low birth weight babies are neonates with a weight at birth of less than 2,500 grams (up to 2499 grams) regardless of gestational age [2]. LBW in each country varies, in developed countries like Europe in 2009, the figure reached 5-11%, in the United States in 2009 by 10.7% and in Australia in 2009 by 7%. In developing countries, the figure is still high. In India in 2009 by 34%, South Africa in 2009 by 15% and Malaysia in 2009 by 10%, whereas in Indonesia in 2009 the numbers of infants with low birth weight nationally in hospital was 27.9%[3].

In Indonesia, the prevalence of infants with low birth weight (LBW) reduced from 11.1 percent in 2010 to 10.2 percent in 2013. The percentage of low birth weight in women (11.2%) was higher than for men (9.2% ), but the percentage of birth weight ≥4000 g in males (5.6%) higher than for women (3.9%)[4]. The number of LBW babies in West Sumatra in 2012 as many as 1,802 infants or 2.0% of 93,290 live births. And in the city of Bukittinggi, there are 18 cases of low birth weight, or 0.8% of 2,320 live births[5].

The problem is more common in low birth weight compared with term infants and babies of normal birth weight. LBW mainly because of premature birth, the function of body organs is still not perfect, so it needs special attention. Among others, have difficulty maintaining body temperature due to: an increase in heat loss, lack of subcutaneous fat, the ratio of skin surface area to body weight ratio that is large, and the heat production of brown fat is reduced due to inadequate and inability chills[6].

Babies with low birth weight experiencing hypothermia therefore very thin subcutaneous fat so easily influenced by the ambient temperature and in general, infants with low birth weight had to be treated in an incubator (Priya, 2004). LBW in hospital care with incubators other than a limited number, to incubator care requires a high cost. In addition, the incidences of nosocomial infection in LBW were hospitalized quite high. Therefore we need a practical method as an alternative to incubator is it economically efficient and effective. And the use of incubators impeded early mother-infant contact and breast-feeding[7].

LBW is good quality care, can reduce neonatal mortality, such as incubators and equipment to the Neonatal Intensive Care Unit. In developing countries, including Indonesia faced with the problem of shortage of skilled labor, equipment maintenance costs, as well as logistics. In addition, the use of incubators impeded early contact with the baby's mother and is less practical and less economical. So that experts in particular in the field of perinatology doing research and found the kangaroo care method or methods closely, which provide many benefits in dealing with LBW[8].

One way of treatment on the baby to gain weight in babies with low birth weight (LBW) and preterm by kangaroo method, this way the baby's heart rate is stable and breathing more regularly, so that the spread of oxygen throughout the body even better. Additionally, this method prevents the baby was cold. Baby calmer, cry less, and weight gain becomes faster [9].

In the method kangaroo baby's risk of getting an infection is smaller, because the mother's skin flora is certainly better than not using the kangaroo method. Further in newborns who are sick or small (birth weight <2,500 g), requiring the addition of body heat to maintain a normal temperature. Low
birth weight can quickly occur hypothermia and to warm the back takes a long time. The risk of complications and death increases significantly when the ambient temperature is not optimal[9].

According to the study Silvia[10] concluded that there are significant kangaroo care methods to weight change LBW infants. This baby’s weight gain will close relation to the increase in infant weight is influenced by several factors many factors, one of which is the ability to suck the baby in breast milk. In kangaroo care method the frequency of breastfeeding mothers in a more orderly and timely. Because babies are always in the mother’s arms and in conditions when the baby is thirsty and require breastfeeding the baby will find you in the mother's nipple kangaroo clothes, so it's also helping with the baby dam meets the needs for nutrition and fluids.

Survey on 24 November 2015 perinatology room Dr.Achmad Mochtar Hospital Bukittinggi known that the incidence of LBW is number 2 after asphyxia. The data obtained from the Medical Record in the room Perinatology in the last 2 years that the number of babies with low birth weight in 2014 as many as 188 cases (12.6%) out of 1,485 births, in 2015 the number of babies with low birth weight of 185 cases (12.8%) of 1,443 births. The phenomenon that is found in this room that kangaroo care method is great for LBW infants, especially in helping to improve the baby's weight although it needs close monitoring, especially for infant nutrition.

Based on the above background, researchers interested in conducting research on the effectiveness of Kangaroo Care to the weight of newborns is low (1500-2500 grams) at the Perinatology room Dr. Achmad Mochtar Hospital Bukittinggi in 2016.

2. Method
The research design is quasi-experimental design with pretest posttest only design, the research apparent absence of a control group was not done at random[11]. This study on the effectiveness of Kangaroo Care (PMK) to the weight of newborns is low (1500-2500 grams), because of the low birth weight. Research has been conducted on the Space Perinatology Hospital Dr. Achmad Mochtar Bukittinggi, on January 12 to February 29, 2016. The Quasi-experimental study design with pre-test approach to. The population in this study is all the baby's birth weight 1500 - 2500 g in space Perinatology Dr. Achmad Mochtar. Hospital Bukittinggi and sampling was done by purposive sampling as many as 10 people. Data was collected using observation sheets, then processed and analyzed by computerized.

3. Result And Discussion

3.1. Univariat analysis
This analysis was conducted to explain or describe the characteristics of the variables, which are presented in the form of descriptive statistics include the mean, minimum-maximum and standard deviation.

| Tabel 1. Average Weight Newborns Before the implementation of Kangaroo Care at the Perinatology Dr. Achmad Mochtar Hospital Bukittinggi 2016 |
|-------------------------------------------------|--------|---------------------|-------------------|-----------------------------|
| Pre-test n Mean Standar Deviasi Min-Max 95 % CI |
| Weight of baby pre test 10 1724 207.6 1500-2140 1575.5-1872.5 |
| Weight of baby post test 10 1844.3 212.7 1571.7-2221.7 1844.3-1692.2 |

According to the table obtained an average weight of the baby prior to Kangaroo Care is 1724 grams with a standard deviation of 207.59 grams. Lowest weight was 1500 g and the highest weight 2140. From the estimation results concluded that 95% believed the average weight of the baby before the treatment methods kangaroo is 1575.5 to 1872.5 grams. Based on Table Average gained weight after the baby do Kangaroo Care was 1844.3 grams with a standard deviation of 212.7 grams. Body weight was 1571.7 grams lowest and highest weight 2221.7. From the estimation results concluded that 95% believed the average baby weight after doing kangaroo care method is 1844.3 to 1692.2 grams.
3.2. Bivariate Analysis

The bivariate analysis was conducted to see the effectiveness of Kangaroo Care (PMK) to the weight newborns (1500-2500 grams). The results of the bivariate analysis in this study are:

**Table 2. Differences Mean Weight Newborns (1500 - 2500 Gram) Before and After Implementation of Kangaroo Care at the Perinatology Dr. Achmad Mochtar Hospital Bukittinggi 2016**

| Measurement | Weight of babys Mean | SD | SE | N | Mean Different | t | p value |
|-------------|----------------------|----|----|---|----------------|---|---------|
| Pre-test    | 1724,0               | 207,6 | 65,6 |   |                  |   |         |
|             | 1844,3               | 212,7 | 67,3 | 10| 120,3           | 10,86 | 0,000   |
| Post-test   |                      |      |     |   |                |   |         |

Based on Table that the average weight of the baby prior the implementation of kangaroo care method is 1724.0 grams with a standard deviation of 207.6. While the average weights after the baby kangaroo care method is 1844.3 grams with a standard deviation of 212.7. Visible differences in the average (mean different) body weight before and after the implementation of kangaroo care method is 120.3 with the value t = 10.86. It can be concluded that there are differences in the average weight of newborns (1500 - 2500 grams) before and after the implementation of Kangaroo Care (FMD) p value = 0.000 (p <0.05) at the Perinatology Dr. Achmad Mochtar Hospital Bukittinggi in 2016.

**Table 3. Increased Weight Newborns (1500 - 2500 Gram) after the implementation of Kangaroo Care in room Perinatology Hospital Dr. Achmad Mochtar Bukittinggi 2016.**

| Code | Initials | Weight (Pre-test) | Increase weight of baby | Weight Post-test |
|------|----------|-------------------|-------------------------|-----------------|
| 1    | D        | 1800              | 40 | 120 | 20 | 10 | 10 | 100 | 2100 |
| 2    | G        | 1740              | 40 | 20 | 40 | 20 | 40 | 20 | 1920 |
| 3    | N        | 1500              | 30 | 10 | 40 | 20 | 40 | 30 | 1670 |
| 4    | Y        | 1500              | 10 | 20 | 30 | 20 | 20 | 50 | 1650 |
| 5    | Y        | 2140              | 20 | 20 | 10 | 10 | 80 | 40 | 2320 |
| 6    | M        | 1880              | 20 | 20 | 100 | 60 | 40 | 80 | 2200 |
| 7    | H        | 1560              | 40 | 20 | 20 | 40 | 40 | 80 | 1800 |
| 8    | R        | 1600              | 50 | 30 | 40 | 30 | 70 | 80 | 1900 |
| 9    | Y        | 1900              | 40 | 10 | 10 | 40 | 50 | 90 | 2140 |
| 10   | Y        | 1620              | 40 | 20 | 40 | 30 | 50 | 100 | 1900 |

Based on table above can be knows that every day all babies to gain weight, which is the lowest increase of 10 grams and 120 grams highest increase.

4. Conclusion

Based on the analysis and discussion it can be concluded as follows: The average weight of the baby prior to Kangaroo Care is 1724 grams. The average weight after the baby do Kangaroo Care is 1844.3 grams. There are differences in the average weight of newborns (1500-2500 grams) before and after the implementation of Kangaroo Care at the Perinatology Dr. Achmad Mochtar Hospital Bukittinggi in 2016, the p value = 0.000 (p <0.05).

References

[1] A. Proverawati and C. Ismawati, “BBLR (Berat Badan Lahir Rendah),” Yogjakarta Nuha Med., 2010.

[2] E. R. Ambarwati and Y. S. Risminarti, “Asuhan Kebidanan Komunitas,” Yogjakarta Nuha
[3] I. T. Simamora, “Karakteristik Ibu yang Melahirkan Bayi Prematur di Rumah Sakit Santa Elisabeth Medan Tahun 2004-2008,” *Karakteristik Ibu Yang Melahirkan Bayi Prematur Di Rumah Sakit St. Elisabeth Medan Tahun 2004-2008*, 2009.

[4] L. H. R. K. D. Tahun, “Badan Penelitian dan Pengembangan Kesehatan.” Jakarta, 2013.

[5] D. K. P. S. Barat, “Profil Kesehatan Provinsi Sumatera Barat Tahun 2012,” *Padang Dinas Kesehatan*, 2013.

[6] R. Suradi, “Pemberian Air Susu Ibu (ASI) Melihat situasi dan kondisi bayi,” Available from [http://www.IDAI.or.id](http://www.IDAI.or.id). Last Update, 2006.

[7] R. Suradi and P. B. Yanuarso, “Metode Kanguru sebagai pengganti inkubator untuk bayi berat lahir rendah,” *Sari Pediatr.*, vol. 2, no. 1, pp. 29–35, 2016.

[8] R. Setyowati, “Hubungan Pendidikan dan Pekerjaan dengan Pengetahuan Ibu tentang Perawatan Bayi Prematur di RSUD Cideres Kabupaten Majalengka Tahun 2014,” *J. Keperawatan dan Kesehat. AKPER YPIB Majalengka*. 2015, vol. 1, no. 3, p. 8, 2014.

[9] D. P. Astuti, S. Mutoharoh, and R. Priyanti, “Pengaruh Penerapan Metode Kanguru Dengan Peningkatan Berat Badan Bayi Baru Lahir Rendah (BBLR) Di Rumah Sakit PKU Muhammadiyah Gombong,” *INVOLUSI J. Ilmu Kebidanan (Journal Midwifery Sci.),* vol. 5, no. 9, 2015.

[10] Y. R. Putri and E. Gusnila, “Pengaruh Perawatan Metode Kanguru terhadap Perubahan Berat Badan Bayi Lahir Rendah,” *J. Ipteks Terap.*, vol. 9, no. 1, 2017.

[11] S. Notoatmodjo, “Metodologi penelitian kesehatan.” Jakarta: rineka cipta, 2010.