

ORIGINAL ARTICLE

Family Assistance Significantly Increased the Growth of Infants With Low Birth Weight (LBW) in the Province of Nusa Tenggara Timur, Indonesia

Florentianus Tat¹, Yulianti Kristen Banhae¹, Norma Tiku Kambuno², Faridah Binti Mohd Said³, Bibi Florina Abdullah³, Hafizah Che Hassan³

¹ Poltekkes Kemenkes Kupang, Indonesia, Off Jalan Piet A Tallo, Liliba Kupang, East Nusa Tenggara Indonesia

² Department of Medical Laboratory Technology, Poltekkes Kemenkes Kupang, Jl. Piet A. Tallo, Liliba, Kec. Oebobo, Kota Kupang, Nusa Tenggara Tim., Indonesia

³ Lincoln University College, Wisma Lincoln, No, 12-18, Jalan SS 6/12, 47301 Petaling Jaya, Selangor, Malaysia

ABSTRACT

Introduction: Infant mortality is still a global problem, especially in the province of East Nusa Tenggara, Indonesia. Infant mortality every year continues to increase and is a problem that must be solved. LBW or low birth weight is a baby's weight at birth of less than 2500 grams, reportedly contributing to neonatal mortality. The purpose of the study was to examine the relationship of mentoring in families who have LBW babies with infant growth and development. **Methods:** The study population was families with low birth weight babies who were treated in the NICU room at SK Lerik Hospital in Kupang City by as many as 298 people. The research sample was 30 people. **Results:** For 30 respondents, namely mothers with LBW babies, they were given intervention through assistance for 3 full months, an increase in family knowledge in the good category (86.7%), an increase in family motivation in caring for LBW infants in the good category (100%), and an increase in care actions so that the baby's body temperature is within normal limits in the good category (86.6%). **Conclusion:** It is concluded that there is an influence family assistance to increase growth and development in LBW infants. Intensive assistance from health workers to families is very necessary. Support from families to mothers can increase knowledge and skills as well as motivation for caring for LBW babies so as to increase the babies' growth and development optimally.

Keywords: LBW babies, Family, Mentoring

Corresponding Author:

Florentianus Tat, PhD

Email: florentianustat@yahoo.co.id

Tel: +62 852-5337-4350

INTRODUCTION

According to WHO (2010), 60% to 80% of all neonatal deaths are due to low birth weight infants, who have 20 times the risk of death when compared to normal weight infants. LBW babies have a birth weight of less than 2,500 grams regardless of gestational age (1,2). The number of LBW in developing countries is 16.5%, while in developed countries it is 7%, meaning that LBW in developing countries are twice as more frequent than developed countries. In countries with the highest prevalence of LBW are South Africa (13.2%), India (27.6%) and Indonesia (11.1% or 390.720 babies), meaning that Indonesia ranks third in the ASEAN region with the second highest prevalence of LBW after the Philippines (21.2%) (3,4).

The causes of LBW babies are multifactorial, including maternal factors, including pregnancy complications such as preeclampsia, eclampsia, anemia, antepartum bleeding, age less than 20 years or more than 35 years, sexually transmitted diseases, HIV/AIDS, hypertension, TORCH, heart disease, birth spacing too close (5). Then fetal factors like multiple pregnancies, chromosomal abnormalities, fetal distress. Additionally, Placental factors like premature rupture of membranes, hydramnios, placenta previa. LBW babies born prematurely are included in the category of high-risk babies due to the condition during pregnancy, childbirth and adjustment to life outside the womb (6). Some conditions that can be found in infants with LBW are body temperature instability, digestive problems, respiratory problems, hyperbilirubinemia, immunologic disorders, and hypoglycaemia (7).

Based on health profile data from the NTT Health Office (2019), of 4,792 live births in 2019, infant mortality increased from 1,388 to 1,549 cases. According to

the NTT Provincial Health Office’s strategic plan for 2019, the number of infant mortalities reduced by 1,127 instances. This means that there was an extra of 442 cases. Thus, the reduction target was not achieved (8,9). Before the baby goes home, it is necessary to prepare the mother by providing assistance to the family in increasing knowledge and motivation for efforts to increase the growth and development of babies with low birth weight, such as prevention of hypothermia, prevention of infection, and proper breastfeeding. Handling babies with LBW requires good maternal knowledge and family motivation. Good knowledge will support the provision of quality and safe management of LBW babies. Caring for LBW babies by a mother includes maintaining the temperature to keep the baby warm, giving exclusive breastfeeding, and preventing infection in LBW.

The results of Setiawati et al’s research stated that LBW infants were very precise and easy to carry out with the kangaroo method to support the health and safety of LBW (10). Ambarwati’s et al., stated that lactation counseling has an effect on increasing knowledge about exclusive breastfeeding (11). Low birth weight babies are at high risk of adjusting to extrauterine life, therefore the role of parents in providing support and caring for children is very necessary.

Yuliani et al stated that the knowledge that a mother must have in LBW care includes efforts to maintain the baby’s body temperature, prevention of infection, and breastfeeding. This knowledge will lead to the mother’s knowledge about the importance of LBW care (12). The purpose of this study was to determine the effect of family assistance on increasing the growth and development of LBW infants. In addition, to identify mother’s knowledge, mother’s motivation, application of care in maintaining the body temperature of LBW babies are necessary assistance in caring for LBW babies.

MATERIALS AND METHODS

This type of research is pre-experimental research with a quantitative approach. The study population was families with low birth weight babies who were treated in the NICU room at SK Lerik Hospital in Kupang City by as many as 298 people. The research sample was 30 people. The sampling technique is accidental sampling, with the following steps: LBW families/babies that leave the NICU was given assistance in their homes. The assistance was carried out for 3 months, starting from September to November 2020. The technique and method of data collection used a questionnaire, which had previously been tested for validity and reliability. Data analysis was carried out univariate and bivariate, using the Wilcoxon ranks test to see if there was a significant relationship between the independent variable and the dependent variable. This study was approved by Health Research Ethics Committee of Poltekkes Kemenkes Kupang; Indonesia with license

number LB.02.03/1/0006/2021 dated April 30, 2020.

RESULTS

This research was conducted in Kupang on 30 families with low birth weight babies. The research variables are family assistance, growth and development of LBW babies, and mother’s knowledge, motivation, and family actions to maintain the body temperature of LBW babies.

Table I depicts the baby’s age, partly the size of the baby at the age of 4-6 months. As many as 23 people (76.7%) have knowledge of caring for LBW babies at home, as many as 26 (86.7%), mothers have motivation for caring for LBW babies. LBW baby weight increased by 1 kg as many as 22 people (73.3%). Most of the development of LBW infants according to age, as many as 25 people (83.3%).

Table I: Characteristics of respondents

No	Characteristics	amount	%
1	<i>*Baby Age</i>		
	13 months	7	23.3
	4 – 6 months	23	76.6
2	<i>*Family Knowledge</i>		
	Good	26	86.7
	Enough	4	13.3
3	<i>*Family Motivation</i>		
	Good	30	100
	Less	0	0
4	<i>*The mother’s actions maintain the baby’s body temperature</i>		
	With action	26	86.7
	No action	4	13.3
5	<i>*LBW baby weight after mentoring</i>		
	Weight gain < 1 kg	22	73.3
	Weight gain 1-3 kg	8	26.7
6	<i>*Development of LBW Babies after mentoring</i>		
	Proper	25	83.3
	Doubtful	5	16.7

Table II shows that the Asymp value. sign. (2-tiled) 0.05, namely: 0.000 where Ho is rejected and Ha is accepted, meaning that there is a difference in weight before and after assistance to families with LBW babies in Kupang.

Table III shows that the Asymp value. sign. (2-tiled) 0.05, namely: 0.000 where Ho is rejected and Ha is accepted, which means that there are differences in development before and after assistance to families with LBW babies. Thus, it can be concluded that there is an effect of family assistance on the increasing development of LBW infants in Kupang.

DISCUSSION

Mother’s knowledge after assistance in caring for LBW babies

Most mothers have not treated their LBW babies properly due to lack of knowledge of LBW care. This

Table II: The Effect of Mentoring on Increasing the Weight of LBW Babies in Kupang in 2020

		N	Mean Rank	Sum of Rank	Z	asympt. Sig. (2-tailed)
Baby's weight after mentoring	Negative Ranks	0 ^a	.00	.00		
Baby's weight before mentoring	Positive Ranks	30 ^b	15.50	465.0	-4.787 ^a	.000
	Ties	0 ^c				
	Total	30				

Information: significant $p < 0.05$ Asymp sig.(2-tailed): 0.000

Table III: The Effect of Mentoring on Improving the Development of LBW Babies in Kupang in 2020

		N	Mean Rank	Sum of Rank	Z	asympt. Sig. (2-tailed)
Baby's development after mentoring	Negative Ranks	0 ^a	.00	.00		
Baby's development before mentoring	Positive Ranks	30 ^b	15.50	465.00	-5.151 ^a	.000
	Ties	0 ^c				
	Total	30				

Information: significant $p < 0.05$ Asymp sig.(2-tailed): 0.000

is due to the lack of information about LBW care, such as maintaining body temperature, providing good nutrition, and breastfeeding. This is one of the factors that determines success in the growth and development of LBW babies. Mothers need help and information as well as support from all parties in providing good care for LBW babies after returning from the hospital. The results of our study show that there are still many mothers who do not know about LBW care after returning from the hospital. The results of previous studies show that after mentoring families with LBW babies showed that most of the family's knowledge of caring for LBW babies is in the good category with a percentage of 86.7% (13).

Several previous studies concluded that families who have babies with LBW need continuous assistance so that they have good enough knowledge to provide care and improve the growth and development of LBW babies. Families who have been accompanied by health workers will be more independent and confident in providing nursing care to LBW. It was found that there were differences in maternal independence between the groups of mothers who were given assistance and the kangaroo method of care module (11).

While mentoring, various activities that support health services can also be carried out, such as: health education, examinations, and demonstrations of care and evaluation of activities. The results of mentoring activities generally show an increase in participants' knowledge and self-efficacy in understanding the material, especially in nursing care for families. Family assistance increases medication adherence (2).

Assistance to the family has an impact on all family members, especially husbands and caregivers. Amininet al., showed differences in husbands' knowledge of pregnant women before and after being given the module with a p value of 0.000. Giving the module increases the knowledge of husbands of pregnant women about

preventing anemia, it is expected that health workers use modules on prevention of anemia (14).

Mother's motivation after assistance in caring for LBW babies

The assistant is basically a change facilitator in the mentoring process whose function is to heal, support, guide and improve family conditions. Assistance to families who have LBW babies is expected to show their role as educators, mentors, and also as motivators, so that families, especially mothers, can provide good care for LBW babies. The guiding function in the family is carried out at a time when people have to make the right decisions about providing care for their children. This assistance is also expected to empower and strengthen the role of the family. The mentoring function can help someone who is being assisted to become independent in helping himself when facing difficulties in the future, so it is hoped that the person being assisted does not always depend on the help of others.

The results showed that family motivation for caring for LBW infants was in the good category with a percentage of 100%. This is in line with Huda, M. C which study also showed that there is an influence between the mentoring of health cadres and mother's motivation (p-value 0.05) (15).

Family assistance will also increase the motivation of families and mothers to provide breast milk and nutrition to LBW babies. Mariani, et al., concluded that breastfeeding assistance and counseling has a major impact on the success of breastfeeding. Breastfeeding assistance and counseling is a recommendation for increasing the achievement of exclusive breastfeeding and is also used as a permanent program (16,5).

Application of care in maintaining the body temperature of LBW babies after mentoring

LBW babies need special care because they have many

health problems throughout their body systems due to unstable body conditions (1). Newborn must be kept at an ambient temperature of 36°C-37°C, despite the fact that babies are usually exposed to a lower environmental temperature just after birth. Babies often lose body heat due to this temperature difference. The baby's low body temperature or hypothermia can occur due to the body's limited ability to maintain and produce body heat. The muscles of the babies are not strong enough because of the lack of subcutaneous fat, insufficient brown fat, and the nervous system that regulates body heat is not yet well developed. (17,18). Therefore, the family, especially the mother, has an important role in maintaining the body temperature of LBW babies in various ways. The Kangaroo Method is one of the most effective methods in maintaining the body temperature of LBW babies (2,10,19).

The results of the study indicate that after mentoring, mothers who do not take actions to maintain the body temperature of LBW babies were only 4 mothers with a percentage of 13.3%, while mothers who take actions to maintain the body temperature of LBW babies were as many as 26 mothers with a percentage of 86.7%. Most mothers have taken measures to maintain a stable LBW baby's body temperature. This is in accordance with research conducted by Hastuti et al., which found that there were differences in motivation between mothers who were given assistance with the Kangaroo Method of Care and those who were not provided with assistance (2).

Along with assistance, health education is also carried out for families so that they can improve the abilities and skills of families in an effort to maintain the body temperature of LBW babies. The assistance that has been carried out for LBW infants in Kupang is by providing health education and giving leaflets to mothers and families. The results of the mentoring can be seen that there is a change in the behavior of the mother in providing care for LBW babies. This is according to research by Hastuti, P. that health education is effective in improving kangaroo care practice (2).

Providing external warmth is the most crucial need for low birth weight babies after respiration is achieved. Efforts to prevent heat loss in a distressed baby's body are very important, because heat generation is a complex process involving the cardiovascular, neurological, and metabolic systems (19). Infants should be cared for in a temperature-appropriate environment where there is minimal oxygen consumption and caloric expenditure (20). Kangaroo Mother Care is a method for maintaining body temperature and warming the baby where there is continuous skin-to-skin contact between the baby and his mother for 24 hours (2,19). If the baby's mother can't do it or if the baby's mother is not available, then this method can be done by someone else as a substitute, for example, the husband or grandparents. Efforts to

maintain the baby's body temperature can also be done by using an incubator, heating transmitter, or a warm room (21).

The influence of mentoring on the growth and development of LBW babies

The purpose of mentoring is to help other people or accompany them, so that they can use existing resources to change, grow, and fully function physically, mentally, spiritually, and socially (23,24). The purpose of mentoring is basically a change towards growth, learning to express oneself fully and completely, practicing new, healthier behaviors, and eliminating dysfunctional symptoms. The process of mentoring others can serve as an act of healing, sustaining, guiding, repairing relationships, and also empowering/strengthening an individual (22,3).

The application of assistance to families who have LBW babies through home visits, leaflets, and communication by telephone has an impact on improving the health of LBW babies, especially weight gain, and the development. The results of the study showed that there was an influence of family assistance on increasing weight in LBW infants and there was an influence of family assistance on increasing the development of LBW infants. Several studies report significant improvements in the development and health of young children as a result of the home visit program (25,26,27).

Assistance to families who have LBW babies will increase the mother's confidence and independence in providing care so that it has an impact on increasing body weight (BB) and the development of LBW babies. Rahayu et al., concluded, that there is difference in maternal independence between the control group and the group of mothers who were given assistance (21). Research by Kurniawati, et al concluded that there is a significant correlation between infant birth weight, maternal confidence, and infant weight, as well as between comorbidities and infant weight gain (28).

CONCLUSION

It is concluded that there is an influence of family assistance on increasing growth and development in LBW infants. It is hoped that health workers would provide intensive assistance to families with LBW after leaving the hospital regarding treatment. Support from the family to the mother can increase knowledge and skills as well as motivation for caring for LBW babies so as to increase infant growth and development optimally. Further studies are needed to explore longer-term family adversity and the interrelationships of child and family outcomes along with follow-up of the by the health workers.

ACKNOWLEDGEMENT

The authors are grateful to the management committee

of SK Lerik Hospital in Kupang City for giving approval for this research and also thankful to Lincoln University College for academic support.

REFERENCES

- Fitri AM. Analisis faktor-faktor yang berhubungan dengan kejadian stres kerja pada karyawan Bank (studi pada karyawan Bank BMT). *Jurnal Kesehatan Masyarakat Universitas Diponegoro*. 2013;2(1):187-6.
- Hastuti P. Pendidikan Kesehatan Meningkatkan Praktik Perawatan Metode Kanguru (Pmk) Pada Ibu Nifas Dengan Bayi Berat Lahir Rendah. *Jurnal riset kesehatan*. 2018 May 31;7(1):32-6.
- Mariani M, Sunanto S, Wahyusari S. Pendampingan dan Konseling ASI Berpengaruh terhadap Pengetahuan, Motivasi dan Perilaku Ibu dalam Menyusui. *Jl-KES (Jurnal Ilmu Kesehatan)*. 2019 Aug 31;3(1):34-9.
- Juwita R. Hubungan konseling dan dukungan keluarga terhadap kepatuhan ibu hamil mengkonsumsi tablet Fe. *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan*. 2018 Mar 19;3(1):112-20.
- Simbolon D, Rahmadi A, Jumiyati J. Pengaruh Pendampingan Gizi terhadap Perubahan Perilaku Pemenuhan Gizi Ibu Hamil Kurang Energi Kronik (KEK). *Jurnal Kesehatan*. 2019 Sep 13;10(2):269-75.
- Astuti ES, Nursalam N, Devy SR, Etika R. Knowledge, Family Support and Self-Reliance Capital when Caring for Low Birth Weight Babies. *Jurnal Ners*. 2019 Apr 1;14(1):10-5.
- Simbolon D, Rahmadi A, Jumiyati J. Pengaruh Pendampingan Gizi terhadap Perubahan Perilaku Pemenuhan Gizi Ibu Hamil Kurang Energi Kronik (KEK). *Jurnal Kesehatan*. 2019 Sep 13;10(2):269-75.
- Profil Kesehatan Tahun 2018 Dinas Kesehatan Provinsi Nusa Tenggara Timur. Available at file:///C:/Users/sasa/Downloads/PROFIL%20KES%20NTT%20TAHUN%202018.pdf
- Profil Kesehatan Indonesia Tahun 2016. Kementerian Kesehatan Republik Indonesia 2017. Available at <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-Indonesia-2016.pdf>
- Kusnasetia S, Rini R. Pengaruh Konseling Terhadap Motivasi Ibu Melakukan Perawatan Metode Kanguru Pada Bayi Berat Badan Lahir Rendah. *KEMAS: Jurnal Kesehatan Masyarakat*. 2016 Jan 24;11(2):270-5.
- Ambarwati R, Muis SF, Susanti P. Pengaruh konseling laktasi intensif terhadap pemberian air susu ibu (ASI) eksklusif sampai 3 bulan. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*. 2013;2(1).
- Fatimah S, Yuliani NT. HUBUNGAN KURANG ENERGI KRONIS (KEK) PADA IBU HAMIL DENGAN KEJADIAN BERAT BAYI LAHIR RENDAH (BBLR) DI WILAYAH KERJA PUSKESMAS RAJADESA TAHUN 2019. *Journal of Midwifery and Public Health*. 2019 Dec 6;1(2).
- Astuti ES, Nursalam N, Devy SR, Etika R. Mother's Independence Model within Caring for Low Birth Weight Babies at Home after Hospital Care Based on Mother Factors, Family Support, and Social Support. *Indian Journal of Public Health Research & Development*. 2019 Oct 1;10(10).
- Aminin FA, Dewi U, Nurniati TR, Jayanti V. Modul Pendampingan Ibu Hamil sebagai Inovasi Peningkatan Pengetahuan Pencegahan Anemia. *JURNAL KEBIDANAN*. 2019 Apr 30;9(1):51-5.
- Shawe J, Ceulemans D, Akhter Z, Neff K, Hart K, Heslehurst N, totl I, Agrawal S, Steegers Theunissen R, Taheri S, Greenslade B. Pregnancy after bariatric surgery: Consensus recommendations for preconception, antenatal and postnatal care. *Obesity Reviews*. 2019 Nov;20(11):1507-22.
- Widaryanti R. Pendampingan Ibu Menyusui Pada Masa Pandemi COVID-19 Guna Menjaga Ketahanan Keluarga. *PANCANAKA Jurnal Kependudukan, Keluarga, dan Sumber Daya Manusia*. 2021 Feb 7;2(1):1-8.
- Vickers A, Ohlsson A, Lacy J, Horsley A. Massage for promoting growth and development of preterm and/or low birth-weight infants. *Cochrane Database of Systematic Reviews*. 2004(2).
- Novianti S, Aisyah IS. Hubungan Anemia Pada Ibu Hamil dan BBLR. *Jurnal Siliwangi Seri Sains dan Teknologi*. 2018 May 31;4(1).
- Tarigan RM. Pengetahuan ibu tentang penatalaksanaan perawatan bayi bblr di rumah di rskia kota bandung. *Students e-Journal*. 2012;1(1):30.
- Hughes MM, Black RE, Katz J. 2500-g low birth weight cutoff: history and implications for future research and policy. *Maternal and child health journal*. 2017 Feb 1;21(2):283-9.
- Haryanti SY, Pangestuti DR, Kartini A. Anemia Dan Kek Pada Ibu Hamil Sebagai Faktor Risiko Kejadian Bayi Berat Lahir Rendah (Bblr)(Studi Di Wilayah Kerja Puskesmas Juwana Kabupaten Pati). *Jurnal Kesehatan Masyarakat (Undip)*. 2019 Jan 2;7(1):322-9.
- Tauriana S, Haryanto J, Pradanie R. Kangaroo Mother Care and Swaddling Methods In Low Born Weight Babies In Community Settings: A Systematic Review. *STRADA Jurnal Ilmiah Kesehatan*. 2020 Nov 1;9(2):1186-95.
- Yongky Y, Hardinsyah H, Gulardi G, Marhamah M. Status gizi awal kehamilan dan penambahan berat badan ibu hamil kaitannya dengan BBLR. *Jurnal Gizi dan Pangan*. 2009 Mar 10;4(1):8-12.
- Kusparlina EP. Hubungan antara umur dan status gizi ibu berdasarkan ukuran lingkaran lengan atas dengan jenis BBLR. *Jurnal Penelitian Kesehatan*

- SUARA FORIKES (Journal of Health Research Forikes Voice). 2016 Jan 31;7(1).
25. Amaliah N, Rizkianti A. The Role of Assistance Toward Pregnant Women Against Low Birth Weight. In 2nd Bakti Tunas Husada-Health Science International Conference (BTH-HSIC 2019) 2020 Jun 8 (pp. 192-196). Atlantis Press.
 26. Kusuma H, Widyaningsih S, Hastuti YD, Ropyanto CB, Sujianto U. PENGARUH PROGRAM PEMBERDAYAAN PENDERITA KUSTA BERBASIS SUPPORT GROUP DENGAN PENDAMPINGAN KELUARGA TERHADAP PENINGKATAN KEMAMPUAN PERAWATAN MANDIRI. Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal. 2019 Oct 30;9(4):387-94.
 27. Sukirno RS. Kesabaran Ibu Merawat Bayi Berat Lahir Rendah (BBLR). Journal of Psychological Perspective. 2019 Dec 10;1(2):1-4.
 28. Kurniawati, Rustina Y, Budiati T. Peer Support Increases Maternal Confidence, Kangaroo Mother Care Implementation and Weight Gain in LBW Infants. Comprehensive child and adolescent nursing. 2019 Mar 29;42(sup1):252-60.