

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

Erlina Suci Astuti¹, Nursalam Nursalam², Shrimarti Rukmini Devy¹, Risa Etika³

¹Doctoral Student, Faculty of Public Health, ²Professor, Faculty of Nursing, Universitas Airlangga;

³Department of Neonatology, Dr. Soetomo Hospital, Surabaya, Indonesia

ABSTRACT

Introduction: Mother, as the primary care provider for the baby, is expected to be able and independent in caring for the baby. Many factors can influence the independence of mothers in treating low birth weight babies. The purpose of this study was to develop a model of maternal independence in caring for low birth weight babies at home.

Method: This study used an explanation survey. The samples were 160 mothers who had low birth weight babies. The samples were obtained through purposive sampling. The data were collected through a questionnaire and analyzed using Partial Least Squares.

Result: The mother's independence model is formed from maternal and health worker factors. The biggest effect is on the factor of health officers, with a statistical value of $T = 3.061$

Conclusion: Factors of health workers in making visits after mothers and babies go home and the care needed to be considered in increasing the independence of mothers to care for low birth weight babies at home are discussed. Further research is needed in the model of visits of nurses by involving families to improve the ability of mothers to care for low birth weight babies.

Keywords: low birth weight, home care, independence of mother, model.

Introduction

Low birth weight babies are those born with a body weight of fewer than 2,500 grams; the number of low birth weight infants in Indonesia is still quite high. The figure accounts for more than 20 million babies worldwide or 15.5% of all births and 95.6% of them in developing countries. Low birth weight babies have a 20 times higher risk of being likely to die than a normal baby. In the long term, low birth weight babies have been associated with the probability of infection, malnutrition and higher disability conditions during childhood, mental deficiencies, and problems related to behavior and learning during childhood. The number

of low birth weight babies births in East Java is 11.2% while Indonesia's national figure is 10.2%^{1,2,3}

Low birth weight babies are very susceptible to illness and death, especially in the first month to the third month after birth. Emerging health problems include hypothermia, lack of ability to consume nutrients and infections such as febrile/infection, dehydration, shortness of breath, vomiting, and diarrhea⁴⁻⁷. The health condition of low birth weight babies after returning home must be maintained properly because health problems are still prone to occur. The survey results in hospitals in Malang, East Java, Indonesia, show, on average, re-hospitalization of low birth weight babies as much as 10% in the first month after leaving the hospital. The mother, as the primary care provider for low birth weight babies, must be have ability include knowledge, mental readiness, and skills in carrying out baby care. Research results in Indonesia show that mothers' knowledge of maintaining a baby's body temperature and warmth is 75.56% of mothers with insufficient knowledge⁸.

Corresponding Author:

Nursalam Nursalam

Faculty of Nursing, Universitas Airlangga,

Surabaya, 60115, Indonesia

Email: nursalam@fkip.unair.ac.id

Mothers who have low birth weight babies often experience obstacles in carrying out their roles both internal and external, including insufficient knowledge, stress, economic problems, and family and social support⁹⁻¹². Mothers need knowledge/information and care support from the environment from both health and family officers up to the first six months after birth¹³. Family support is very important to improve the ability and confidence of mothers in caring for babies, but family support in the care of low birth weight babies is sometimes less than optimal.

Method

Research Design: This study used explanatory survey design, which explains the factors that influence the independence of mothers in treating low birth weight babies after they are released from the hospital.

Respondents: This study was conducted on mothers who had low birth weight babies and had returned from treatment at a hospital or health center from September to December 2018 in Malang, East Java, Indonesia. This study involved 160 respondents obtained by purposive sampling. The inclusion criteria were mothers who gave birth to low birth weight babies (body weight less than 2,500 grams with a baby aged 0-2 months and infants who did not experience congenital defects).

Data Collection: Data were obtained by going to the home of mothers who had LBW based on the data obtained from the local health center. Data collection was done through questionnaires, interviews, and observations. Maternal factors included knowledge, stress, and family support. Mother’s knowledge about LBW care was measured using a modified questionnaire from LBW care consisting of 15 question item^{2,14}.

Instruments: The family support variable instrument was compiled based on a measurement questionnaire

by Mercer¹⁵ with modifications adjusted to families who had LBW¹⁶.

Mother’s perception used the Parental Perceptions Questionnaire by Pasquali and Araújo¹⁷, which was simplified into 15 items of questions for mothers. Each question item used the answer on a five-point scale. The instrument of the ability of mothers to carry out treatment based on LBW care books and health manuals used a 5-point scale^{4,16}.

All instruments were tested for validity and reliability in a pilot study consisting of 15 respondents. Each item in the statement reached validity ($r > 0.529$) and each questionnaire also achieved reliability (> 0.8). The development of the independence model of mothers caring for babies with low weight was carried out through focus group discussions with informants who played a role in establishing a model of maternal independence, namely mothers representing respondents, health workers, and holders of maternal and child health programs. After collecting data, we conducted a Focus Group Discussion with respondents and health workers.

Data Analysis: Data were collected and analyzed using Smart PLS.

Result

Table 1 shows that all indicators with the number 11 indicators are valid, with an outer loading value > 0.5 . Table 2 shows the results of the model reliability test. The reliability test results can be seen from Cronbach’s Alpha and the Composite Reliability value. Constructs or variables are said to be reliable when the value of the composite variable is > 0.7 and the value of Cronbach Alpha > 0.6 . All constructs in this study have Cronbach Alpha > 0.7 with the minimum composite value of 0.922.

Table 1: Results of validity test for the development of models for the independence of mothers caring for LBW babies at home

No.	Variable	Factor	Outer Loading
1.	Mother factor	X1.1 Knowledge	0.998
		X1.2 Stress	0.993
		X1.3 Family support	0.998
2.	Heath worker factor	X2.1 Number of visits	0.998
		X2.2 Maternal health check	0.998
3.	Interactions	X3.1 Selection	0.900
		X3.2 Interpretation	0.875
		X3.3 Reaction	0.902

Conted...

4.	Mother's independence	Y1.1 Hypothermia prevention	0.955
		Y1.2 Fulfillment of nutrition	0.952
		Y1.3 Prevention of infection	0.667

Table 2: The reliability test results for developing a model for the independence of mothers caring for LBW babies at home

No.	Variable	Cronbach Alpha	Composite Reliability
1.	Mother factor	0.975	0.984
2.	Health worker factor	0.996	0.998
3.	Interactions	0.886	0.994
4.	Mother's independence	0.898	0.922

Based on Table 3, it can be seen that there is significant influence between maternal factors (T=2.638), health worker factors (T=3.061), and interaction factors on maternal independence (T=2.222). Maternal factors that have a large influence are maternal knowledge and family support, while health worker factors are strongly influenced by the number of visits.

Table 3: The results of the hypothesis development test model for the independence of mothers caring for LBW babies at home

No.	Variable	Path Coefficient	Standard Deviation	T Statistic
1.	Mother factor -> Interaction	0.232	0.088	2.638
2.	Health worker factor -> Interaction	0.170	0.056	3.061
3.	Interactions -> Independence	0.166	0.075	2.226

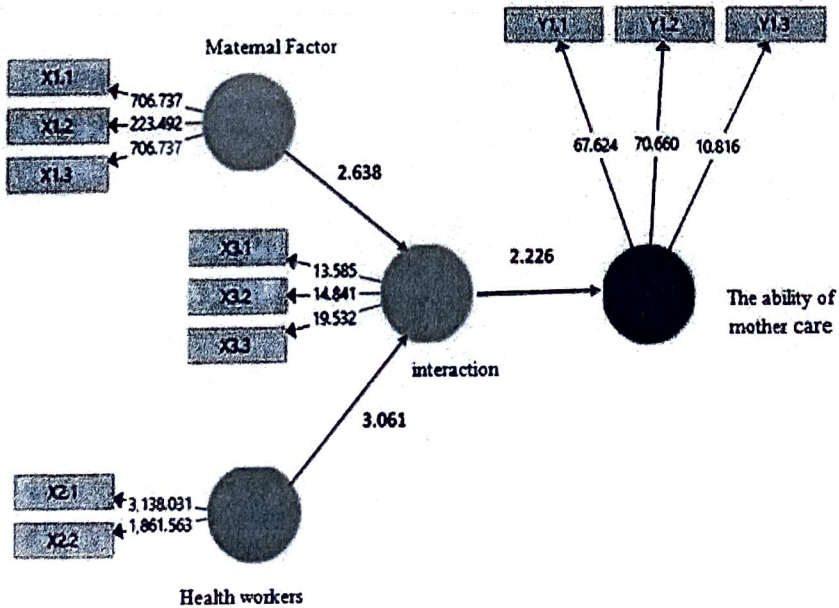


Figure 1: The results of the analysis on the development of a model for the independence of mothers caring for LBW babies at home

Discussion

Maternal factors in the application of independent care in treating LBW are shaped by indicators of knowledge, stress and family support felt by the mother in infant care. Knowledge is the result of knowing, and this happens after the person feels a certain object¹⁸. Knowledge can also be defined as facts or information that we consider to be correct based on thoughts that involve empirical testings or based on other thought processes such as providing logical reasons or solving problems¹⁹.

Almost all mothers had mobile communication media that could access the internet or asked neighbors who had given birth or from relatives. Mothers considered that information about baby care is the main requirement of postpartum mothers^{20,21}. There are four postpartum maternal needs, namely: information needs, psychological support needs, need to share experiences and need for practical and material support. Stressful condition of the mother will disrupt the daily activities of the mother, including the task of caring for the baby²². Confusion, maternal pressure, and anxiety are signs of prominent psychological disorders when discharged from the hospital^{23,24}. This psychological pressure will be weighted by family environment factors, such as low family income and a large number of family members that are dependent on living costs²⁵.

The results of the study show that prevention of infection in LBW has the smallest number in the ability of mothers to prevent infection in the care of their babies, so there should be active efforts by health workers, both in the perinatology treatment room setting and those responsible in the area/village midwives, to actively counsel and assist so that the baby does not have the potential for infection and illness. LBW babies will experience 30% pain after taking care at home⁶. The high birth rate of LBW and premature babies puts a burden on parents and a public health burden because of the impact of morbidity and mortality²².

Family support is given by providing maternal needs and trying to prevent the risk of postpartum psychological stress during the postpartum period^{26,27}. In carrying out the role of a mother, a harmonious relationship between husband and mother-baby and with other family members is the most important factor²⁸.

Family support increases people's confidence. Family is a power that is owned by the family to regulate

their values, communication patterns and the role of the family as a lifestyle so that families are able to carry out their functions well²⁹. Health worker has a higher influence than the maternal factor. The indicator of health workers in this study is the number of visits and healthcare provided.

The visit of community health workers is highly expected and the results are proven to increase the interaction and communication of mothers and health workers so that they are able to effectively solve health problems for babies and infants, especially from the first month to the sixth month³⁰. Babies with problems or high-risk babies are vulnerable groups who must get special care and assistance, receiving visits so that mothers are not too stressed and are able to independently care for their babies³¹ the depression rate among nursing home patients is three to four times higher than among community-dwelling older people, and a large overlap of anxiety is found. Therefore, identifying nursing strategies to prevent and decrease anxiety and depression is of great importance for nursing home patients' well-being. Nurse-patient interaction is described as a fundamental resource for meaning in life, dignity and thriving among nursing home patients.
DESIGN: The study employed a cross-sectional design. The data were collected in 2008 and 2009 in 44 different nursing homes from 250 nursing home patients who met the inclusion criteria.
METHODS: A sample of 202 cognitively intact nursing home patients responded to the Nurse-Patient Interaction Scale and the Hospital Anxiety and Depression Scale. A structural equation model of the hypothesised relationships was tested by means of Lisrel 8.8 (Scientific Software International Inc., Lincolnwood, IL, USA). The efforts of infant health services in Indonesia after the baby's birth, according to the government's program committee for the maintenance of the health of the first 1,000 days of life, comprised neonatal visits and postpartum maternal visits³².

Baby condition monitoring and maternal assistance are also very important to maintain a conducive situation for the care of LBW babies^{33,34}. Good care will minimize the occurrence of LBW health problems, such as the risk of infection, poor nutritional intake and hypothermia problems. Independence in preventing hypothermia and fulfillment of infant nutrition is much better because the direct effects of this behavior can appear as a cold baby and weight loss, while infection prevention behaviors have a lag time for a decrease in endurance, infection, and illness³⁵.

Conclusion

The ability of mothers to care for LBW babies independently is very important to prevent babies from getting sick and dying. The most influential factor for the independence of mothers in the first two weeks is health workers. Mothers need guidance on knowledge, motivation and mentoring by health workers to be able to properly care for their LBW babies. This guidance is carried out by visiting the house at certain time intervals. The factor of family support is also important to help mothers carry out their roles and duties.

Ethical Clearance: Ethical clearance was conducted by the Faculty of Public Health ethics team, number 504-KEPK dated September 3, 2018.

Source of Funding: Self-funding

Conflict of Interest: None.

REFERENCES

1. Yadav DK, Chaudhary U, Shrestha N. Risk factors associated with low birth weight. *J Nepal Health Res Counc.* 2011;9(2):159–64.
2. Kementerian Kesehatan RI. Infodatin (Pusat Data dan Informasi Kementerian Kesehatan RI). Jakarta: Kementerian Kesehatan Republik Indones. 2014;
3. Targets WHOWHAGN. 2025: Low birth weight policy brief. Geneva WHO. 2014;
4. Kementerian Kesehatan RI. Buku Saku Pelayanan Kesehatan Neonatal Esensial. Jakarta: Direktorat Bina Kesehatan Anak Kemkes RI. 2010;
5. Organization WH. Guidelines on optimal feeding of low birth-weight infants in low-and middle-income countries. World Health Organization; 2011.
6. Boykova M, Kenner C. Transition From Hospital to Home for Parents of Preterm Infants. *J Perinat Neonatal Nurs.* 2012;26(1):81–7.
7. Akter T, Dawson A, Sibbritt D. The determinants of essential newborn care for home births in Bangladesh. *Public Health.* 2016;141:7–16.
8. Tarigan RM. Pengetahuan Ibu Tentang Penatalaksanaan Perawatan Bayi BBLR di Rumah di RSKIA Kota Bandung. *Students e-Journal.* 2012;1(1):30.
9. Zeitlin J, Comber E, Levallant M, Lasbeur L, Pilkington H, Charreire H, et al. Neighbourhood socio-economic characteristics and the risk of preterm birth for migrant and non-migrant women: a study in a French district. *Paediatr Perinat Epidemiol.* 2011;25(4):347–56.
10. Mehler K, Mainusch A, Hucklenbruch-Rother E, Hahn M, Hünseler C, Kribs A. Increased rate of parental postpartum depression and traumatization in moderate and late preterm infants is independent of the infant's motor repertoire. *Early Hum Dev.* 2014;90(12):797–801.
11. Ireland J, Khashu M, Cescutti-Butler L, Van Teijlingen E, Hewitt-Taylor J. Experiences of fathers with babies admitted to neonatal care units: a review of the literature. *J Neonatal Nurs.* 2016;22(4):171–6.
12. Moon H, Rote S, Beatty JA. Caregiving setting and Baby Boomer caregiver stress processes: Findings from the National Study of Caregiving (NSOC). *Geriatr Nurs (Minneapolis).* 2017;38(1):57–62.
13. Leahy Warren P. First-time mothers: social support and confidence in infant care. *J Adv Nurs.* 2005;50(5):479–88.
14. Loyd BH, Abidin RR. Revision of the Parenting Stress Index. *J Pediatric Psychol.* 1985;10(2):169–77.
15. Mercer GD. Do fathers care? Measuring mothers' and fathers' perceptions of fathers' involvement in caring for young children in South Africa. University of British Columbia; 2015.
16. Kementerian Kesehatan RI. Buku Kesehatan Ibu dan Anak. Jakarta: Kementerian Kesehatan Republik Indones. 2016;
17. Pasquali L, Gouveia VV, dos Santos WS, da Fonsêca PN, de Andrade JM, de Lima TJS. Questionário de Percepção dos Pais: evidências de uma medida de estilos parentais. *Paid (Ribeirão Preto).* 2012;22(52):155–64.
18. Notoadmodjo S. Prinsip-prinsip dasar ilmu kesehatan masyarakat. Jakarta: Rineka Cipta. 2003;
19. Hidayat AA. Metode penelitian kebidanan dan teknik analisis data. Jakarta: salemba Med. 2007;43–4.

20. Arzani A, Valizadeh L, Zamanzadeh V, Mohammadi E. Mothers' strategies in handling the prematurely born infant: a qualitative study. *J caring Sci.* 2015;4(1):13–24.
21. Slomian J, Emonts P, Vigneron L, Acconcia A, Glowacz F, Reginster JY, et al. Identifying maternal needs following childbirth : A qualitative study among mothers, fathers and professionals. 2017;1–13.
22. Offiah I, O'Donoghue K, Kenny L. Clinical risk factors for preterm birth. In: *Preterm Birth-Mother and Child.* IntechOpen; 2012.
23. Lakshmanan A, Agni M, Lieu T, Fleeegler E, Kipke M, Friedlich PS. The impact of preterm birth < 37 weeks on parents and families : a cross-sectional study in the 2 years after discharge from the neonatal intensive care unit. 2017;1–13.
24. Gray PH, Edwards DM, O'Callaghan MJ, Cuskelly M, Gibbons K. Parenting stress in mothers of very preterm infants - Influence of development, temperament and maternal depression. *Early Hum Dev.* 2013;89(9):625–9.
25. Suplee PD, Gardner MR, Borucki LC. Low-Income, Urban Minority Women's Perceptions of Self- and Infant Care during the Postpartum Period. *J Obstet Gynecol Neonatal Nurs.* 2014;43(6):803–12.
26. Hookway L, Everson B. First family-centred care coordinators appointed to support families through the difficult and stressful time of having a baby in neonatal care. *J Neonatal Nurs.* 2011;17(6):216–8.
27. Ingram JC, Powell JE, Blair PS, Pontin D, Redshaw M, Manns S, et al. Does family-centred neonatal discharge planning reduce healthcare usage ? A before and after study in South West England. 2016;1–10.
28. Alligood MR. *Nursing theorists and their work.* Elsevier Health Sciences; 2017.
29. De Chesnay M, Anderson BA. *Caring for the vulnerable: Perspectives in nursing theory, practice, and research.* Jones & Bartlett Publishers; 2019.
30. Horowitz JA, Murphy CA, Gregory K, Wojcik J, Pulcini J, Solon L. Nurse home visits improve maternal/infant interaction and decrease severity of postpartum depression. *JOGNN - J Obstet Gynecol Neonatal Nurs.* 2013;42(3):287–300.
31. Haugan G, Innstrand ST, Moksnes UK. The effect of nurse-patient interaction on anxiety and depression in cognitively intact nursing home patients. *J Clin Nurs.* 2013;22(15–16):2192–205.
32. RI KKBKR. *Kerangka Kebijakan Gerakan Nasional Percepatan Perbaikan Gizi Dalam Rangka Seribu Hari Pertama Kehidupan (Gerakan 1000 HPK).* Jakarta Kementerian Koord Bid Kesejaht Rakyat. 2013;
33. Šchönbauerová A, Boledovičová M. The role of paediatric nurse in home visiting of newborns and infants in the past - Literary survey. *Kontakt.* 2015;17(4):e211–8.
34. Mahanta TG, Islam S, Sudke AK, Kumari V, Gogoi P, Rane T, et al. Effectiveness of introducing home-based newborn care (HBNC) voucher system in Golaghat District of Assam. *Clin Epidemiol Glob Heal.* 2016;4(2):69–75.
35. Anderson V, Northam E, Wrennall J, Aaen GS, Holshouser BA, Sheridan C, et al. Quality of life of formerly preterm and very low birthweight infants from preschool to adulthood: A systematic review. In: *Developmental Neuropsychology: A Clinical Approach.* Butterworth-Heinemann Burlington, VT; 2019. p. 1–98.