Factors Related to Mother’s Competency In Caring For Low Birth Weight Baby Based on Theory of Planned Behavior

Tiyas Kusumaningrum1*, Iqlima Dwi Kurnia1, Yohanes Pemandi Doka2,

1Faculty of Nursing, Universitas Airlangga, Jl. Mulyorejo (Kampus C) UNAIR, Indonesia
2Manggarai District Health Office, Jl. Ahmad Yani, Ngkaer, Satar Mese, Kabupaten Manggarai, Nusa Tenggara Timur, Indonesia

Corresponding author: tiyas-k@fkp.unair.ac.id

Abstract. Care giving competency for mother with low birth weight baby should be improved to avoid infant from disability and morbidity. This study was aimed to analyze factors related the mother’s competency in caring for low birth weight baby. This study used descriptive analysis with cross sectional approach. The population was mother with low birth weight baby in Manggarai NTT. Total sample was 57 respondents. The independent variables were knowledge, attitude, subjective norm, perceived behaviour control and intention. The dependent variable was mother’s competency in caring for low birth weight baby. Data was collected using modified questionnaire from Ajzen Theory and were analyzed using logistic regression test with significance level ≤ 0.05. Result showed that knowledge (p=0.02), attitude (p=0.033), subjective norm (p=0.016), and perceived behaviour control (p=0.012) have correlation with mother’s competency in caring for low birth weight baby. However, intention has no correlation with mother’s competency. It can be concluded that better knowledge, attitude, subjective norm, and perceived behaviour control lead to better competency. Mothers with low birth weight babies need to have health information seeking behavior to improve positive attitudes and perceptions that will improve competence in caring for babies.

1. Introduction
Mortality and morbidity of low birth weight babies are still a problem both globally and nationally. The majority of annual infant deaths are caused by complications that occur in infants with low birth weight[1]. Treatment of low birth weight babies needs to be done well so as to avoid disability and pain[2]. Low birth weight babies often experience disruption in body temperature regulation which results in hypothermia; swallowing reflex weakness resulting in an inability to suckle; and disruption of the body’s immune system which results in babies being susceptible to infection[3].

The incidence of low birth weight up to 2017 in Manggarai District experienced a double increase of the number in 2014 which only reached 114 events[4]–[6]. The incidence of low birth weight babies if not balanced with the mother's ability to care can cause more severe health problems. Premature babies and low birth weight infants have a higher tendency to re-hospitalized in the first year of life compared to term infants whose percentage of re-hospitalized is between eight and ten percent[7]. Several studies also showed similar result regarding the readmission of low birth weight babies in the first year of life. The causes of the readmission include: respiratory disease, jaundice, and sepsis[8]–[10].
Mothers have a very important role in caring for newborns. The ability to care determines the health status and illness of low birth weight babies. This also reflects the belief in carrying out parenting role as a mother[11]. Theory of Planned Behavior (TPB) is a behavioral prediction theory through a social psychology approach to understand several determinants of health behavior including maternal behavior in caring for low birth weight babies[12]. The behavior displayed by a person is influenced by their intention to behave, while intention is determined by three factors: attitude toward behavior, subjective norm, and perceived behavioral control. In addition, intention is also influenced by background factors which include personal, social and knowledge[13].

2. Research Method
This study used descriptive analytic design with cross sectional approach. The population in this study was all mothers who had low birth weight babies in Manggarai District, East Nusa Tenggara. A total of 57 participants were involved in the study, selected through purposive sampling based on criteria: mothers with infants aged ≤3 months and could read and write. Independent variables were based on TPB factors: knowledge, attitude toward behavior, subjective norms, perceived behavioral control, and intention[13]. The dependent variable was the ability of mothers to treat low birth weight babies. The research instrument used questionnaires that have been developed by researchers based on TPB. The data obtained was analyzed using logistic regression with a significance value of α≤0.05. The research instruments has been tested for validity and reliability with a value of r>r table>0.632 (based on r value for N=10).

3. Result and Discussion

Table 1. Frequency and percentage distribution of respondent’s demographic.

| Demographic data                          | Category                        | f  | (%)  |
|-------------------------------------------|---------------------------------|----|------|
| Age                                       | < 20 y/o                        | 6  | 10.5 |
|                                            | 20-35 y/o                       | 39 | 68.4 |
|                                            | > 35 y/o                        | 12 | 21.1 |
| Level of Education                        | Not attending school            | 2  | 3.5  |
|                                            | Elementary school               | 33 | 57.9 |
|                                            | Junior high school              | 9  | 15.8 |
|                                            | Senior high school              | 7  | 12.3 |
|                                            | Undergraduate/diploma           | 6  | 10.5 |
| Complication during pregnancy and childbirth | Young mother< 20 y/o           | 2  | 3.5  |
|                                            | Chronic energy deficiency and prematurity | 3  | 5.2  |
|                                            | Mother’s age> 35 y/o            | 6  | 10.5 |
|                                            | Chronic energy deficiency       | 17 | 29.8 |
|                                            | Mother’s age> 35 y/o and prematurity | 2  | 3.5  |
|                                            | Anemia                          | 4  | 7.01 |
|                                            | Hypertension during pregnancy   | 3  | 5.2  |
|                                            | Twin pregnancy                  | 5  | 8.7  |
|                                            | Mother’s Height< 145 cm         | 1  | 1.7  |
|                                            | Twin pregnancy and age> 35 tahun| 2  | 3.5  |
|                                            | Prematurity                     | 2  | 3.5  |
|                                            | HIV                             | 1  | 1.7  |
|                                            | Mother’s age< 20 y/o and anemia | 1  | 1.7  |
|                                            | Chronic energy deficiency and Anemia | 1  | 1.7  |
|                                            | Asthma                          | 1  | 1.7  |
|                                            | Post term pregnancy             | 1  | 1.7  |
| Place of giving birth                     | Home                            | 1  | 1.8  |
|                                            | Health facilities               | 56 | 98.2 |
| Family income/month                       | <34 USD                         | 3  | 5.3  |
|                                            | 34 USD -68 USD                  | 30 | 52.6 |
|                                            | 68 USD-136 USD                  | 21 | 36.8 |
Table 1 presents the demographic characteristics of mothers who have infants aged 0-3 months with low birth weight. Data shows that most mothers are in the age range of 20-35 years old (68.4%), graduated from elementary school (57.9%), experiencing chronic energy deficiency during pregnancy (36.7%), have family income ranging from 34 USD to 136 USD per month (89.4%), and giving birth at health facilities (94.7%). Only 5.3% mothers giving birth to very low birth weight baby.

Table 2. The correlations of knowledge, attitude, subjective norms, perceived behavior control and intention with the mother’s competency in caring for low birth weight babies.

| No | Independent Variables | Mother’s competency | Sig(p) | Exp (B) |
|----|------------------------|---------------------|--------|--------|
|    |                        | Competent           | Incompetent |        |        |
|    |                        | f | (%) | f | (%) |        |        |
| 1. | Knowledge              | Low | 0 | 5 | 100 | 0.001 |        |
|    |                        | Fair | 9 | 32.1 | 19 | 67.9 | 0.999 | 0.000 |
|    |                        | Good | 21 | 87.5 | 3 | 12.5 | 0.000 | 0.068 |
|    |                        |        |        |        |        |        | 0.002 | 7.000 |
| 2. | Attitude Toward Behavior | Negative | 9 | 30 | 21 | 70 | 0.001 | 8.167 |
|    |                        | Positive | 21 | 77.8 | 6 | 22.2 |        |        |
|    |                        |        |        |        |        |        | 0.033 | 0.429 |
| 3. | Subjective norm        | Good | 17 | 77.3 | 5 | 22.7 | 0.005 | 0.174 |
|    |                        | Fair | 13 | 37.2 | 22 | 62.8 |        |        |
|    |                        |        |        |        |        |        | 0.016 | 3.400 |
| 4. | Perceived behavioral control | Negative | 7 | 25 | 21 | 75 | 0.000 | 11.500 |
|    |                        | Positive | 23 | 79.3 | 6 | 20.7 |        |        |
|    |                        |        |        |        |        |        | 0.012 | 0.333 |
| 5. | Intention              | Weak | 0 | 0 | 4 | 100 | 1.000 |        |
|    |                        | Fair | 0 | 0 | 5 | 100 | 0.999 | 0.000 |
|    |                        | Strong | 30 | 62.5 | 18 | 37.5 | 0.999 | 0.000 |
|    |                        |        |        |        |        |        | 0.87 | 1.667 |

a. Frequency  
b. Significance value  
c. Power of relation

Table 2 shows most mothers have fair knowledge regarding the care of babies with low birth weight and there are more than 40% of mothers have good level of knowledge. Most mothers with fair level of knowledge know how to maintain a baby's body temperature, the benefits of exclusive breastfeeding, and how to prevent infection. However, most mothers did not understand the meaning of low birth weight babies and their vulnerability to diseases.

Table 2 also showed that most mothers already have a positive attitude toward behavior related to the care of low birth weight babies (52.6%). Even so, there were still more than 40% of mothers having negative attitudes related to breastfeeding time, formula milk, and hand washing behavior. Most mothers who have a negative attitude also argued that the immunity of low birth weight babies is strong enough to survive infection.
The results on subjective norms showed that most respondents were at a fair level. This means that the mother's motivation in following advice from her husband, family, or health provider related to baby care is quite high, as well as the use of support provided by the party so far.

Regarding perceived behavioral control, the results showed that the number of mothers with positive perceptions was only slightly higher (50.9%) than those with negative perceptions (49.1%). From the answers in the questionnaire, most respondents said they agreed that some components of perceived behavioral control influenced the way they care for babies. Those components are healthcare counseling, husband's support; babies’ condition, home visits by health providers, economic level, mother's knowledge, and awareness of the health of the baby. The majority disagreement statement was given in a questionnaire which stated that past experience determines how mothers care for low birth weight babies.

Intention data showed that more than 80% of respondents have a strong intention to be able to provide care for low birth weight babies. From the questionnaire it was determined that almost every mother wants to keep their baby warm, provide breast milk, and prevent infection according to health education provided by health providers.

Research data showed that most mothers were competent in treating low birth weight babies (52.6%). However, this figure was not far from the number of mothers who are not yet competent. The type of care for low birth weight babies that was rarely or not done by incompetent mothers was the Kangaroo methods and prevention of infection.

Results of statistical analysis on the independent and dependent variables showed that the knowledge, attitude toward behavior, subjective norms, and perceived behavioral control related to the competence of mothers caring for low birth weight babies. However, the significance of the relationship was not followed by the results of the analysis on the variables of mother's intentions and competencies. Statistical analysis showed no relationship between intention and mother's competency in caring for low birth weight infants (p>0.05). Data in Table 2 show knowledge (B = 0.068), attitude toward positive behavior (B = 8.167), subjective norms (0.174), and perceived behavioral control (B = 11.50) can contribute to the competence of mothers caring for low birth weight babies.

In this study, knowledge has proven to be correlated with the competence of mothers caring for low birth weight babies. This result is in line with the findings of a study in Medan that the better the mother's knowledge, the more she is able to care for her baby at home. Mothers who have good knowledge will have greater confidence in their ability to care for newborns [14]. Research at a Singapore hospital also suggest that the provision of an educational program increases the knowledge and confidence of mothers to care for newborns [15]. Furthermore, a study of the history of maternal and child health care provides an illustration that since the mid-20th century the failure of mothers to obtain information and assistance can cause health problems for mothers and newborns [16].

Based on the results of statistical tests there was a correlation between attitude towards behavior and the ability of mothers to care for low birth weight babies. This possibility is strengthened with a value of B = 8.167. This means that someone who has a positive attitude has the ability to treat low birth weight babies, eight times better than mothers who have a negative attitude. The attitude a person has towards a behavior is based on the belief in the outcome that will be produced. It also means if someone believes that a behavior can produce a positive outcome then a positive attitude appears [13]. In this study, in addition to a positive attitude, some respondents still have a negative attitude. This also happened in Uganda where mothers argued that low birth weight babies were not as dangerous, which eventually made mothers not seek health care [17]. Maternal negative attitudes regarding the condition of low birth weight babies can cause delays in handling situations that should be prevented or overcome quickly. Delay in treatment of infants with low birth weight can lead to increased infant morbidity and mortality.

Statistical test results showed that there was a relationship between subjective norms and the ability of mothers to care for low birth weight babies with a significance value of p = 0.016. The results of the questionnaire showed that although they did not always do what was suggested by people in their
social environment, most mothers were willing to accept input from their husbands, families, and health care providers.

The process of becoming a mother is not easy. This change in role is a dynamic and broad process, sometimes even causing conflicts [18][19]. As a new mother, it certainly needs support of various parties, both from spouses, families, and especially midwives and nurses [18], [20], [21]. From the results of the study it can also be seen that the mother really appreciates every form of support provided. Support provided by husbands and families can be in the form of assistance or advice, while nurses and midwives need to focus on mentoring, counseling, and health education related to infant care and exclusive breastfeeding [21].

The results of the study showed that there was a correlation between perceived behavior control and the competency of mothers in caring for low birth weight babies with p = 0.012. The results of the study showed that there was a relationship between perceived behavior control and the ability of mothers to care for low birth weight babies with p = 0.012. All mothers believe that health education, emotional support, baby conditions, home visits by health care providers, economic factors, knowledge, and awareness of the health of babies are things that can encourage or inhibit the care of low birth weight babies. Almost all mothers disagree with the statement that past experience contributes to the care of low birth weight babies. This is somewhat different from the results of research on nurses about professional support for post partum patients. In the study, it was found that nurses who have experience giving birth and post partum performed good behavior and high intention in providing professional care for patients [12]. The value of B = 11.5 in the results of the regression test for perceived behavioral control variables showed that mothers with positive perceptions had the competence to care for babies with low birth weight 11.5 times better than those who had negative perceptions. This can happen because there is a tendency related to the health sector, mothers trust the health providers more than their personal experience. Trust in health providers makes mothers confident to treat low birth weight babies [22].

In this study, intention was not proven to contribute to maternal competence in caring for low birth weight infants. Tracking a link of intentions with demographic data showed an interesting phenomenon. The percentage of mothers with a strong intention was 84%, whereas the percentage of mothers with weak intentions was only 7%. This might caused by abnormal data distribution on the intention variable. From the cross tab data it was found that more than 30% of mothers, who have high intention, were not competent in caring for the baby. Respondents who have high intentions but were not competent to care for babies have characteristics such as: the level of knowledge is fair, has a negative attitude toward behavior, subjective norms at the fair level, and has a negative perception toward behavior.

The mother's ability to care for a baby will influences infant development, including elements of sensitivity and response [23]. Mothers and babies create dynamic and complex relationships, involving movement to new, unknown realities. Mother gets satisfaction in her role if she has confidence in her ability to care for the baby [24]. Caring for a baby is a natural thing for a mother. This is a psychosocial transition process that should start from pregnancy, and continue after the birth of the baby. Babies with special needs such as low birth weight babies certainly require more complex maternal competencies. Mothers need to get support from various parties in carrying out their roles, both in the form of material and non-material support.

4. Conclusion and Suggestion
Based on the discussion it can be concluded that the better the knowledge; the more positive attitude toward behavior; good subjective norms; and the positive perception of behavioral control, the more competent mothers are in caring for low birth weight babies at home. However, strong maternal intention does not guarantee that she will have ability to treat low birth weight babies at home.

Mothers need to prepare themselves in dealing with situations that are out of the ordinary related to pregnancy and childbirth. This can be done by increasing health information seeking behavior and attending health education provided by health providers. We need to provide information to partner
and other family members that all forms of opinion and advice from them about caring for babies with LBW will be highly considered by mothers. Given that mothers with low birth weight babies place high trust in health providers, they need to maintain information reliability, increase visits and involvement in the care of low birth weight babies at home to prevent morbidity and mortality.

References
[1] World Health Organization, *WHO | Global Nutrition Targets 2025: Low birth weight policy brief*. World Health Organization, 2014.
[2] N. K. Yeaney, E. M. Murdoch, and C. C. Lees, “The extremely premature neonate: anticipating and managing care,” *BMJ*, vol. 338, p. b2325, Jun. 2009.
[3] A. Proverawati and C. Ismawati, *Berat Badan Lahir Rendah (BBLR)*. Yogyakarta: Nuha Medika, 2010.
[4] Dinkes Provinsi NTT, “PROFIL KESEHATAN TAHUN 2015 DINAS KESEHATAN PROVINSI NUSA TENGGARA TIMUR,” Kupang, 2016.
[5] Dinkes Kabupaten Manggarai, “Laporan Tahunan Dinas Kesehatan Kabupaten Manggarai-NTT 2016,” Manggarai, 2016.
[6] Dinkes Kabupaten Manggarai, *Laporan Bulanan Dinas Kesehatan Kabupaten Manggarai-NTT 2017*. Manggarai, 2017.
[7] Y. Rustina, *Bayi prematur: perspektif keperawatan*. CV. Sagung Seto.
[8] A. Armanian, M. Mohammadizadeh, and R. Soleimani, “The rehospitalization rates of low-birth-weight infants in Isfahan Shahid Beheshti Hospital, Iran,” *J. Isfahan Med. Sch.*, vol. 33, no. 351, 2015.
[9] N. Ambalavanan, W. A. Carlo, S. A. McDonald, Q. Yao, A. Das, and R. D. Higgins, “Identification of extremely premature infants at high risk of rehospitalization,” *Pediatrics*, vol. 128, no. 5, 2011.
[10] E. K. Aydiner, I. Ö. Akman, S. Kalaça, T. Ünver, H. Bilgen, and E. Özek, “Rehospitalization rates of infants of less than 32 weeks gestation in the first year of life,” *Marmara Med. J.*, vol. 18, no. 2, pp. 71–75, 2005.
[11] M. Keren, R. Feldman, A. I. Eidelman, L. Sirota, and B. Lester, “Clinical interview for high-risk parents of premature infants (CLIP) as a predictor of early disruptions in the mother-infant relationship at the nursery,” *Infant Ment. Health J.*, vol. 24, no. 2, pp. 93–110, 2003.
[12] A. P. Aschenbrenner, L. Hanson, T. S. Johnson, and S. T. Kelber, “Nurses’ Own Birth Experiences Influence Labor Support Attitudes and Behaviors,” *JOGNN - J. Obstet. Gynecol. Neonatal Nurs.*, vol. 45, no. 4, pp. 491–501, 2016.
[13] I. Ajzen, “The theory of planned behavior,” in *Handbook of Theories of Social Psychology: Volume 1*, 2012, pp. 438–459.
[14] A. R. Silaban, “Hubungan Tingkat Pengetahuan Dengan Kemampuan Ibu Merawat Bayi Baru Lahir Selama Postpartum Dini Di Klinik Bersalin Mariani Medan,” Universitas Sumatera Utara, 2011.
[15] S. Shorey, S. W. C. Chan, Y. S. Chong, and H.-G. He, “Perceptions of primiparas on a postnatal psychoeducation programme: The process evaluation,” *Midwifery*, vol. 31, no. 1, pp. 155–163, 2015.
[16] H. K. Hallgrimsdottir and B. E. Benner, “‘Knowledge is power’: Risk and the moral responsibilities of the expectant mother at the turn of the twentieth century,” *Heal. Risk Soc.*, vol. 16, no. 1, pp. 7–21, 2014.
[17] E. L. Nabiwemba, L. Atuyambe, B. Criel, P. Kolsteren, and C. G. Orach, “Recognition and home care of low birth weight neonates: a qualitative study of knowledge, beliefs and practices of mothers in Iganga-Mayuge Health and Demographic Surveillance Site, Uganda,” *BMC Public Health*, vol. 14, no. 1, p. 546, Dec. 2014.
[18] E. Hjälmhult and K. Lomborg, “Managing the first period at home with a newborn: A grounded theory study of mothers’ experiences,” *Scand. J. Caring Sci.*, vol. 26, no. 4, pp. 654–
662, 2012.

[19] D. C. Bell and A. J. Richard, “Caregiving: The forgotten element in attachment,” Psychol. Inq., vol. 11, no. 2, pp. 69–83, 2000.

[20] H. Kronborg, I. Harder, and E. O. C. Hall, “First time mothers’ experiences of breastfeeding their newborn,” Sex. Reprod. Healthc., vol. 6, no. 2, pp. 82–87, 2015.

[21] C. A. Corbett and L. C. Callister, “Giving birth: The voices of women in Tamil Nadu, India,” MCN Am. J. Matern. Nurs., vol. 37, no. 5, pp. 298–305, 2012.

[22] Deswita, “Pengalaman Ibu dalam Merawat Bayi dengan Prematur dan Berat Badan Lahir Rendah,” NERS J. Keperawatan, vol. 9, no. 1, p. 25, May 2016.

[23] B. Rossman, M. M. Greene, and P. P. M. Correspondence, “The Role of Peer Support in the Development of Maternal Identity for &quot;NICU Moms&quot;,” JOGNN, vol. 44, pp. 3–16, 2015.

[24] M. R. Alligood and A. M. Tomey, Nursing Theories and Their Work, 6th ed. St. Louis Missouri: Mosby, 2006.