

**Jurnal Info Kesehatan**

Vol. 19, No. 2. December 2021, pp. 97-109

P-ISSN 0216-504X, E-ISSN 2620-536X

DOI: [10.31965/infokes.Vol19Iss2.525](https://doi.org/10.31965/infokes.Vol19Iss2.525)

Journal homepage: <http://jurnal.poltekkeskupang.ac.id/index.php/infokes>



**RESEARCH**

**Open Access**

**The Effect of Health Education on Mother's Knowledge Attitudes and Behavior in Giving Care to Low Birth Weight Babies**

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Received: 14 May 2021

Revised: 4 June 2021

Accepted: 21 July 2021

**Abstract**

The number of low-birth-weight babies (LBW) who returned to the hospital after returning home had increased from 2015 to 2016. The results of the interview revealed that mothers who had LBW did not thoroughly understand providing care for LBW after returning from the hospital. This study aims to determine the effect of health education on a mother's knowledge, attitude and behaviour in providing care to LBW. This study is quasi-experimental with a pre-posttest approach non-equivalent to the control group, with 66 respondents fulfilling the inclusion criteria. The inclusion criteria in this study were post-partum mothers on the second day who had babies with a birth weight of 1500 grams-2499 grams and were willing to be respondents. The sampling technique was purposive sampling. The statistical test employed independent t-test, paired t-test, and chi-square. Knowledge scores before and after treatment were significantly different in the intervention group and control group, with a p-value in the intervention group 0.00, while the knowledge and attitude scores in the control group were 0.00 and the behavioural scores were 0.11. There was a significant difference in the increase in knowledge, attitudes and behaviour scores in both groups. The p-value of knowledge and attitudes is 0.00, and the p-value of behaviour is 0.01. Hence, there is an increase in mothers' knowledge, attitudes, and behaviour after being provided with health education using a booklet.

**Keywords:** Health Education, Knowledge, Attitudes, Behavior, Low Birth Weight.

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## 1. INTRODUCTION

The incidence of low birth weight babies (LBW) contributes 60% to 80% of neonatal deaths worldwide and is more at risk of dying within the first 28 days of life compared to the normal weight babies (WHO, 2017). In 2012, the World Health Assembly Resolution supported a comprehensive implementation plan for mothers, babies and nutrition for children. The policy was set as six global nutrition targets by 2025. One of the WHO global nutrition targets in 2025 is to reduce 30% of babies born with low birth weight (WHO, 2014). Schiffman, et al., (2010) explained that one of the efforts which can be performed to prevent neonatal mortality is by providing quality services to mothers and babies during the antenatal, perinatal and postnatal periods.

The global prevalence of LBW is 15.5% or around 20 million LBW are born every year and 96.5% of them are born in developing countries (Gundani & Mutowo, 2012). In Indonesia, the prevalence of LBW incidence in 2013 was 10.2%. Meanwhile, in Special Region of Yogyakarta in 2015, the prevalence of LBW was 5.32% (Dinas Kesehatan Kota Yogyakarta, 2016). In Bantul Regency, the highest cause of infant mortality after asphyxia and congenital abnormalities is due to low birth weight, which was 22 cases (Dinas Kesehatan Kabupaten Bantul, 2016).

The research of Tarigan et al., (2012) revealed that the involvement of mothers in providing care to LBW greatly impacts the quality of LBW life, and if a mother does not take proper care, it will have an impact on the incidence of infection, malnutrition and LBW mortality. Many mothers do not know how to care for their babies properly, hence, many LBW are not saved due to the lack of knowledge about LBW care. In Panembahan Senopati Hospital, the number of LBW who returned to the hospital after going home has increased from 2015 to 2016. In 2015, there were 4 babies returning to the hospital while there were 11 LBW in 2016. The reason the LBW returned to the hospital was because after being brought home, the baby's condition worsened, hence, he was referred back to the hospital. The results of interviews with mothers who have low birth weight in the Perinatal Ward Panembahan Senopati Hospital discovered that the mother did not understand completely about how to care for LBW. The health promotion team is not directly involved in promoting to patients. The health promotion team is only obliged to create the existing programs in the hospital. The officer responsible for providing health education is the midwife or nurse working in the ward.

Health education on LBW care performed in the Perinatal Ward Panembahan Senopati Hospital, Bantul Regency, was limited to verbal and mostly about the recommendation to breastfeed babies and assist mothers to employ the Kangaroo Mother Care (KMC) method. This health education is frequently provided before the baby is allowed to go home. Hence, when the mother comes home, she is not yet fluent in caring for the baby or sometimes forgets how to care for the baby as taught at the hospital. On average, health education is performed twice, which are once with the counseling method together with other patients and the second time when the mother is going home. Health education which is not conducted individually also causes mothers to be embarrassed to ask about the health condition of their babies. Therefore, this study creates a health education package about LBW care for mothers when the baby comes home from the hospital.

## 2. RESEARCH METHOD

This research is a quasi-experimental study with a non-equivalent pre-posttest approach with a control group design. This research was conducted in the perinatology room of Panembahan Senopati Hospital, Bantul Regency. The calculation of the number of samples was the formula for different proportions with a significance level of

5% and 95% CI. The sampling technique employed purposive sampling and consisted of 2 groups (intervention group and control group) where each group consisted of 33 respondents. The intervention group was the provision of health education using booklet media provided with lectures and discussions, and the control group was the provision of health education at the hospital without any additional intervention from the researcher. The inclusion criteria in this study were 1) postpartum mothers on the second day with normal delivery, and 2) postpartum mothers who had babies with a birth weight of 1500 grams - 2499 grams. Exclusion criteria in this study were 1) mothers with complications (uterine rupture, puerperal infection) and *sectio caesarea* delivery, 2) babies with complications (neonatal asphyxia, congenital abnormalities, infections), and 3) babies who have passed away.

Intervention health education employed in this study was administered with booklet media. The booklet media in this study is entitled "LBW care after returning from the hospital". The author adjusted this booklet to the needs of the research site by asking for the considerations of several experts such as pediatricians and nurses in perinatal wards and academics. The material in the booklet was not only on LBW care after being discharged from the hospital, but also at the hospital. The author included material about LBW care in the hospital with the hope that the way of LBW treatment can be applied by respondents while in the hospital even though the baby is still being treated. Respondents who are accustomed to caring for low birth weight will not feel awkward anymore holding the baby. Hence, after returning from the hospital, it is hoped that the mother will be ready and independent to care for her baby.

The difference between the health education material in the booklet "care of low birth weight after returning from the hospital" and the one in the hospital is that the material booklet provided is more complete, accompanied by steps and pictures. The material is not only limited to care at the hospital but also LBW care after returning from the hospital, danger signs and referral flow if the baby is discharged from the hospital and the mother may carry out the booklet home so that the contents can be reviewed. Meanwhile, the health education provided in the hospital was completed verbally about the condition of the baby on how to provide exclusive breastfeeding and conduct KMC.

This health education was administered to 30 respondents in the control group and 30 respondents in the intervention group. This research was conducted at Panembahan Senopati Hospital, Bantul Regency and began with the control group first. The control group performed pre-test and post-test at the same time interval as the intervention group for 7 days. Health education in the control group is health education usually conducted in a hospital and is not added with any interventions for 7 days. In this study, health education with booklet media was still provided, which was 1 day before the respondent was discharged from the hospital. The distribution of media booklets at the end is to avoid bias between the intervention and the control group.

Health education in the intervention group employing booklet media was provided once on the second day after delivery. Health education was performed for 45 minutes. Health education was provided by health personnel (midwives and nurses) individually to each respondent by means of lectures and discussions. The pre-test was provided before the respondent received health education and the post-test was administered seven days after receiving health education using booklet media by conducting home visits. A time lag of 7 days is in accordance with the Guidelines for pre and post-testing which identifies that if the research instrument is in the form of multiple-choice, the recommended time interval is one week (I-TECH, 2010).

The booklet in this study was modified from the book "Management of Low Birth Weight Babies for Village Midwives" published by the Directorate General of Nutrition and Maternal and Child Health (Kementerian Kesehatan Republik Indonesia, 2011) and research from Yani (2009) on the Effect of the "Rindu" Health Education Package on the Readiness of Mother Caring for Premature Babies after Returning from the Hospital in Kendari. Apart from the two sources of the book, booklet material was also added according to the needs and input from the hospital, especially associated with the cases which frequently cause LBW to return to the hospital. The measurement of knowledge employed a questionnaire by first performing the validity and reliability test. The questionnaire consisted of 15 items (definition of LBW, causes of LBW, prevention of infection, prevention of hypothermia, breastfeeding, KMC, bathing babies, planning to return home and problems often encountered by LBW). The validity score of the knowledge questionnaire with an *r* value was between 0.392-0.709 and a Cronbach's Alpha value was 0.705. This research has been approved by the research ethics committee of Universitas 'Aisyiyah Yogyakarta with number 01/KEP-UNISA/VIII/2017.

Data analysis employed independent t-test, paired t-test and chi-square test. Independent t-test and paired t-test were employed to identify the difference in the average knowledge and attitudes of mothers in the intervention group and the control group. The chi-square test was administered to determine the effect of health education on knowledge, attitudes and behavior of postpartum mothers with a categorical data scale. Linear regression test was employed to observe the effect of the independent variables, which were health education, external variables comprising of age, education, occupation and number of children on the variables, which were knowledge, attitudes and behaviors examined together. The calculation of the number of samples was the formula for different proportions with a significance level of 5% and 95% CI.

### 3. RESULTS AND DISCUSSION

**Table 1.** Frequency Distribution of Respondent Characteristics and Homogeneity.

Mother's Characteristics	Group				Total	P value
	Intervention		Control			
	N	%	N	%		
<b>Mother's age</b>						
< 20 years or> 35 years	11	52.4	10	47.6	21	0.500 <sup>a*</sup>
20-35 years	22	48.9	23	51.1	45	
<b>Mother's education</b>						
Low	11	57.9	8	42.1	19	0.294 <sup>a*</sup>
High	22	46.8	25	53.2	47	
<b>Mother's job</b>						
Housewife	15	45.5	18	54.5	33	0.311 <sup>a*</sup>
Working mother	18	54.5	15	45.5	33	
<b>Parity</b>						
Primipara	14	48.3	15	51.7	29	0.500 <sup>a*</sup>
Multipara	19	51.4	18	48.6	37	
Knowledge, average (min-max)	74.94 (60-93)		80.61 (60-93)			0.056 <sup>b*</sup>
Attitude, average (min-max)	72.67 (54-91)		74.64 (65-87)			0.075 <sup>b*</sup>
Behavior, average (min-max)	82.27 (55-100)		86.36 (60-100)			0.100 <sup>b*</sup>

<sup>a</sup>Pearson Chi-Square

<sup>b</sup>Levena's Test

\**p*-value >0.05

Table 1 depicts that the majority of respondents were aged 20-35 years (68.18%). The majority of respondents possessed higher education (71.21%). The respondent's employment status was between housewives and working. Most of the respondents were multipara (56.06%). Respondents' knowledge during the pre-test was higher in the group which was not provided with health education (80.61%) than in the group provided with health education (74.94%). The attitude of respondents during the pre-test was higher in the group that was not provided with health education (74.64%) than the group that was provided health education (72.67%). The behavior of respondents during the pre-test in the group provided with health education (86.36%) was higher than the group provided with health education (82.27%).

**Table 2.** Differences in average knowledge, attitude and behavior of mothers before and after being provided with health education with booklet media.

Variable	<i>Pre test</i> Mean $\pm$ SD	<i>Post test</i> Mean $\pm$ (SD)	$\Delta$ mean 95% CI	t-test	P-value
<b>Knowledge</b>					
Intervention	74.94 $\pm$ 9.086	92.00 $\pm$ 7.259	17.061 (13.482 – 20.639)	9.710	0.000
Control	80.61 $\pm$ 7.471	85.33 $\pm$ 8.022	4.727 (2.012-7.443)	3.546	0.001
<b>Attitude</b>					
Intervention	72.67 $\pm$ 8.926	83.97 $\pm$ 7.573	11.303 (8.417-14.432)	7.691	0.000
Control	74.64 $\pm$ 6.494	76.55 $\pm$ 5.778	1.909 (0.986-2.832)	4.214	0.000
<b>Behavior</b>					
Intervention	82.27 $\pm$ 12.692	91.21 $\pm$ 9.273	8.939 (4.956-12.922)	4.572	0.000
Control	86.36 $\pm$ 10.700	88.94 $\pm$ 8.269	2.576 (-0.624 – 5.776)	1.640	0.111

Table 2 shows the difference in knowledge before and after being provided with health education in the group which was provided with education using booklet media of 17.061 and the group provided with health education from the hospital was 4.727. The attitude score after being provided with the intervention in the form of health education, the increase in the post-test score of the group provided with health education employing booklet media was higher (83.97) than the group provided with health education from the hospital (76.55). The difference in behavior before and after being provided with health education in the intervention group was 8.939 and the control group was 2.576.

**Table 3.** Differences in the average increase in knowledge, attitudes and behavior of mothers in the intervention group and the behavior control group.

Variable	Mean (SD)	CI 95%	$\Delta$ mean	t-test	P-value
<b>Knowledge</b>					
Intervention	17.06 (10.093)	7.927 – 16.739	12.333	5.592	0.000
Control	4.73 (7.658)	7.921 – 16.745			



<b>Attitude</b>					
Intervention	11.30 (8.559)	6.389 – 12.641	9.515	6.080	0.000
Control	1.90 (2.749)	6.349 – 12.682			
<b>Behavior</b>					
Intervention	8.94 (11.233)	1.353 – 11.375	6.364	2.537	0.014
Control	2.58 (9.024)	1.348 – 11.379			

Table 3 presents that statistically, the average score of increased knowledge, attitudes and behavior in the intervention group is higher than the control group. The statistical test reveals the variable knowledge, attitude and behavior p-value <0.05. Thus, it can be concluded that there are differences in knowledge, attitudes and behavior in the intervention group and the control group. The increase in the score for the behavior variable displayed that the average score increases in the group provided with health education was higher (8.94) than in the group which was not provided with health education (2.58).

**Table 4.** Linear regression analysis of the effect of health education and external variables on the increasing maternal attitudes in providing care for low birth weight.

Variable	Model 1	Model 2	Model 3
	Coefficient	Coefficient	Coefficient
	P-value (CI 95 %)	P-value (CI 95 %)	P-value (CI 95 %)
<b>Health education</b>	9.515	9.383	6.286
Intervention	0.000	0.000	0.000
Control	(6.389 – 12.641)	(6.425 - 12.341)	(2.909 – 9.667)
<b>Parity</b>		4.369	4.620
Primipara		0.005	0.002
Multipara		(1.389 – 7.350)	(1.830 – 7.409)
<b>Difference in knowledge</b>			0.250
			0.002
			(0.094 – 0.407)
<b>N</b>	66	66	66
<b>R<sup>2</sup></b>	0.366	0.442	0.521

From the results of the modeling analysis presented in table 4 and comparing the results of the analysis for each model, model 3 was selected which is good enough to be employed as a consideration in intervening. The selected model fulfills the parsimony and fit principle. Model 3 was selected due to the consideration of the R2 value, the coefficient and the confidence interval.

**Table 5.** Linear regression analysis of health education and external variables effect on increasing maternal behavior in providing care for low birth weight.

Variable	Model 1	Model 2	Model 3
	Coefficient	Coefficient	Coefficient
	P-value (CI 95 %)	P-value (CI 95 %)	P-value (CI 95 %)
<b>Health education</b>	6.364	6.170	4.373
Intervention	0.014	0.013	0.140
Control	(1.353 – 11.375)	(1.374 – 10.966)	(-1.480 – 10.226)
<b>Parity</b>		6.390	6.535

Primipara	0.010	0.009
Multipara	(1.559 – 11.221)	(1.700 – 11.370)
<b>Difference in knowledge</b>		0.145
		0.289
		(-0.127 – 0.417)
<b>N</b>	66	66
<b>R<sup>2</sup></b>	0.091	0.182
		0.197

From the results of the modeling analysis presented in table 5 and comparing the results of the analysis for each model, Model 3 was selected which is good enough to be utilized as a consideration in conducting intervention. The selected model fulfills the parsimony and fits principle. Model 3 was selected due to the consideration of the R2 value, the coefficient and the confidence interval.

Health education in this study was administered once, which was a day after the baby was born with a pre-test administered to the respondent first. Health education was provided as early as possible, that was after the mother gave birth because the respondent's attitude has not been formed. Niven, (2012), explained that it is easier to influence a person's attitude when forming an attitude than when an attitude is already formed. It is in accordance with the opinion of Grimes (2013) that health education performed earlier tends to increase attitudes and behavior in providing care to LBW and reduces negative behavior of mothers to their babies. This research is the first research at this hospital employing booklets to provide health education to postpartum mothers in providing care to LBW.

The evaluation was conducted 7 days after being provided health education. The concept of a 7-day time lag is in accordance with the pre and post testing guidelines explaining the pre-test and post-test measurement time. If the research instrument is in the form of multiple choice, the recommended time interval is 1 week. Meanwhile, if the evaluation employed is in the form of an essay, the research instrument should be in the form of multiple choices that the interval is 2 weeks (I-TECH, 2010). The time lag in evaluation is the same as the research conducted by Rahmayanti, (2010), that is the time interval between the pretest and posttest is one week.

Measurement of the increased knowledge within one week after health education was conducted with the objective of observing the retention of knowledge after health education was provided. However, this study did not further investigate knowledge retention over a longer period of time. During the period of one week between the pre-test and post-test, no other interventions were received by respondents but the interventions which had been planned.

Health education on care for LBW included a series of teaching and support programs which focus on skills, feelings and duties as parents. The objective of health education is to increase parents' role and health education focusing on knowledge about child development and care (Bornstein, et al., 2010). It is expected that after being provided health education, it may change the behavior and awareness of respondents to care for LBW and consequently improves the quality of life of LBW.

The health promotion media employed recently are various, such as using the Short Message Service (SMS), WhatsApp (WA) and the e-book model. However, in this study, researchers continued to utilize booklets as a medium for health promotion. The process of health education using booklet media is considered effective in increasing knowledge, because booklets contain more information which can be stored and read repeatedly anytime and anywhere (Notoatmodjo, 2010). Booklet is also equipped with attractive pictures,

making it easier for mothers to capture the message in question, remind it and practice it in everyday life. People remember 10% of what they read, 20% of what they heard, 30% of what they saw, 50% of what they saw and heard, 80% of what they heard they saw and were told (Ode, 2014). Research conducted by Peate, et al., (2012), reveal that booklets are effective learning media. As evidenced by 91% of respondents who were satisfied with the information because they were able to understand the material presented and 95% of respondents recommended booklets to others as a learning tool.

This study shows that the majority of post-partum mothers in this study have cellphones. A total of 66 mothers are post-partum, 40 mothers have smartphones, 18 mothers have cellphones and 8 mothers have cellphones shared with their husbands. The results of the interview present that of the 40 mothers using smartphones, only 3 mothers actively use smartphones to search for information on the internet, while others use them for calls, chatting, and social media. Furthermore, mothers who have their cellphones do not use them to seek for information, for instance to ask questions with health workers. Respondents stated it was more comfortable to read with a booklet than from a cellphone or smart phone screen.

The results revealed that the health education provided to mothers could increase their knowledge of LBW care. Table 3 displays that statistically, there is a difference in the increase in knowledge in the group provided with health education compared to the group that did not receive health education ( $p < 0.05$ ). The difference in the increase in knowledge of the group provided with health education was 12,333 higher than the group which was not.

The results of this study are supported by previous research which states that health education possesses effect on knowledge. Research by Hanafi, et al., (2014) on 360 pregnant women in Saudi Arabia presented that the intervention group provided individual health education owned a higher level of knowledge about breastfeeding practices than the control group provided with regular antenatal care. Research by Alkon, et al., (2014), and Yousafzai, et al., (2015), revealed that the provision of health education interventions provides an essential role in increasing knowledge about development and practices in caring and feeding of early childhood. The group provided with health education also experienced an increase in the score of knowledge about LBW care, but the increase was not as high as the group provided with health education. The increase in this score is influenced by age, education and parity.

The majority of mothers in the group provided with health education according to those in the hospital ranged from 20-35 years and were in the productive age group. At the reproductive age, post-partum mothers were mature in both rational and motoric terms. At a young age, mothers possess a stronger memory to discover something unidentified compared to older people (Notoatmodjo, 2014).

The majority of maternal education in the group provided with health education according to those in the hospital was in the higher education group. Notoatmodjo (2014) asserted that education uphold mothers to have a wider education and easier to comprehend the provided information. Respondents who possess higher education are willing to learn on how to care for their babies to be healthier.

More than 50% of the respondents in the group provided with health education according to those in the hospital were multiparous, thus, they probably already experienced in providing care to their children. Research by Rustikayanti, (2011), explained that mothers experienced caring for babies have better knowledge than mothers never experienced caring for babies. The majority of mothers who already have children possess knowledge and experience in parenting compared to those who do not have children.



The use of booklets as a medium in this study is because people prefer to read with books than from cellphone. Research by Kretzschmar, et al., (2013) compared reading efforts from three different media, which were books, e-books and tablets. The result revealed that all participants preferred reading books. It was due to their skepticism towards digital reading media (Myrberg, & Wiberg., 2015). The obstacle in employing e-books is the inconvenience in reading through screen. Thus, reading using e-books was less desirable. Hence, respondents tended to read short sections of books online and also preferred to print the entire book to read (Folb, et al., 2011; Shelburne, 2009).

A study conducted in Norway involved one group who read in the printed media, while another group read the same text in PDF form on a computer. The evaluation results revealed that reading in the printed book was significantly better than reading the digital text. Book media is better because they make students easier to remember what they have read (Mangen, et al., 2013). Hence, the materials of health education which are still in form of e-book should be printed in the form of book. People were arguing on why they had to read the digital version if they experienced more comfortable reading the printed version (Myrberg & Wiberg, 2015). This study is in accordance with Bernaix, et al., (2010), who explained that health education programs should be cost effective, able to recognize the learning styles of each respondent, and should contain strategies for changing positive behavior.

Myrberg, and Wiberg (2015), argued that in order to employ new types of media, initially, it is necessary to familiarize oneself with the media in order to utilize them optimally and comfortably. Myrberg, and Wiberg (2015), stated that in Sweden, 57% of children aged two years employed the internet, especially tablets. They were accustomed to use technology. However, it is not sufficient to become accustomed to reading on digital media. In the current study, respondents explained that the majority owned a smartphone but they did not utilize it to search for health information.

Green explained that the behavior change process is divided into three factors. Predisposing factors are motivating behavior. Mother's behavior in providing care to LBW might be influenced mother's knowledge and attitudes. The provided health education increases maternal knowledge (Bornstein, et al., 2010). Extensive knowledge of LBW care shapes behavior in accordance with the attitudes they possess (Notoatmodjo, 2014).

Mother's behavior based on knowledge of LBW care is more lasting than those not based on knowledge. Parents possessing negative attitudes may encounter difficulties in implementing knowledge about childcare (Saleh, et al., 2014). This statement is corroborated by the WHO and Mannava, et al., (2015), asserted that negative attitudes and behaviors damage the quality of care and the effectiveness of promoting maternal and infant health. The results of the research by Vijayalakshmi, et al.,(2015), revealed that mothers' positive attitudes towards breastfeeding were associated with longer breastfeeding duration and a greater opportunity of success. However, women's negative attitudes towards breastfeeding were considered as the prior obstacle to starting and continuing breastfeeding.

Enabling factors are a continuation of predisposing factors in which motivation for changes in maternal behavior is realized. Enabling factors in this research are health information and media information. At Panembahan Senopati Hospital, health education has already been implemented but it was not performed initially or at the beginning of the baby's entry, on average health education, it was conducted when the baby was approved to KMC and when the mother returned home.

Some of the post-partum mothers in this study who were not provided with health education presented inappropriate behavior in caring for low birth weight such as breastfeeding,

prevention of infection, prevention of hypothermia and treatment of the kangaroo method. The majority of post-partum mothers in this study have already understood about the prevention of infection, one of which was by washing their hands before and after carrying the baby. However, the implementation of washing hands for most mothers was merely washing hands as usual without following the steps provided in the hospital or in the booklet. The respondent's reason was even though these steps have already been presented in the hospital, most of the nurses and midwives had not explained and recommended washing their hands according to these steps.

The material in this study was a material which should have been implemented by mothers in one week such as breastfeeding, proper breastfeeding, bathing babies, KMC and infection prevention. However, in this study, there were several skills which mothers were not able to perform during the study, such as bathing babies and KMC. At the Panembahan Senopati Hospital, bathing the babies was performed by health personnel. Hence, in this study, the mother merely answered through a questionnaire. Furthermore, there were some respondents did not perform KMC on their babies due to the baby's weight constraints and the baby's unstable condition.

The reinforcing factor is the factor obtained from the closest person. In this study, the health worker is able to strengthen the mother in providing care to LBW. Health education in this study was provided by midwives who frequently provide counseling to patients. Hence, they are more expert and trusted.

Knowledge, attitudes and behavior of mothers in providing care to LBW are influenced by several variables. The results of the external variable analysis discovered that parity affected the score for mothers' attitude and behavior. The parity variable possesses a positive relationship with mothers' attitudes and behavior in providing care to LBW. The results revealed that mothers possessing parity of more than one (multiparous) owned higher knowledge scores than primiparous mothers. Multiparous mothers possessed positive attitudes 4,658 times higher than primiparous mothers. Meanwhile, multiparous mothers owned good behavior 6,580 times higher to provide care to LBW.

The results of these studies are consistent with research by Salonen, et al., (2009), which explain that the number of children are associated with childcare because with the increase in the number of children, the mother possesses more experience in parenting. The results of this study are also corroborated by Rustikayanti, (2011) who revealed that the number of children the mother has provide the mother's experience in parenting. Mothers who have ever raised children own better knowledge than mothers who have never raised children. This study shows that parity is a confounding variable towards the increasing maternal attitudes and behavior in providing care to LBW.

#### **4. CONCLUSION**

There is an increase in knowledge, attitudes and behavior of mothers after being provided with health education using booklets. The provision of health education employing booklets is tailored to the necessity of patients who are more comfortable reading with booklets than from cell phone or smart phone. It is able to change the behavior and awareness of respondents to care for LBW and consequently improves the quality of life of LBW. It is recommended that the hospitals are able to provide health education with booklets more consistently according to the patients' needs, and further research is required replicating the effects of health education using booklets for LBW outside the institution.

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