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THE EFFECT OF LOVING TOUCH STIMULATION THERAPY FOR INFANTS' WEIGHT GAIN

Fatatu Malikhah*, Melyana Nurul Widyawati, Sutarmi, Siti Kistimbar, Taryatmo Kusmini

Master of Applied Science in Midwifery, Poltekkes Kemenkes Semarang, Semarang, Indonesia

*Corresponding author's e-mail: fatatumulikhah45@gmail.com

ABSTRACT

Background: *Low Birth Weight (LBW) is one of the risk factors that have a high contribution to infant mortality. Increasing the baby's weight is used as an indicator to determine LBW growth. In LBW babies, touch therapy is a form of stimulation to increase endurance, digestive function activities, and vagus nerve activity.*

Objective: *This study aims to determine the effect of Loving Touch Therapy (LTT) as one of the effective non-medical methods to increase body weight in LBW that can be done by parents during home care.*

Method: *This study was a quantitative study using an experimental design and Randomized Controlled Trial (RCT) design. This research conducted in 15 respondents in the intervention group with four weeks' LTT and 15 respondents in the control group who were given Tactile Kinesthetic Stimulation (TKS). Data were obtained from measurements of body weight before and after the intervention then the data were analyzed using independent t-test with significance level p-value <0.05 and multivariate analysis using linear regression.*

Results: *19 respondents female (63.3%) and 11 respondents male (36.6%) was participated in this research by the frequency distribution of the gender. It was a significant increase in body weight in LBW with LTT carried out by his mother for 28 days compared with TKS stimulation. The differences in the average weight gain are 197 grams. The difference is statistically significant.*

Conclusions: *It can be concluded that LTT is more effective in increasing body weight in LBW post-hospital care because the technique is simple and sequential from the front to the back of the baby's body which makes it easier for parents to understand and physiologically doesn't lose much an energy.*

Keywords: *Low Birth Weight Baby, Loving Touch Stimulation Therapy, Male and Female Body*

INTRODUCTION

Low Birth Weight (LBW) is a baby born with a weight less than 2,500 grams, regardless of gestational period [1]. [1]. World Health Organization (WHO) and United Nations Children's Fund (UNICEF) (2013) stated that there was an increase in LBW incidence (2009-2013 period) from 15.5% to 16% and 95.6% of these are in developing countries [2]. [2]. Indonesia as a developing country ranks third as the country with the highest prevalence of low birth weight (11.1%) [3]. In the ASEAN allocation, Indonesia ranked second with the highest prevalence of LBW with a percentage of 11.1% [4]. The results of the 2013 Riskesdas show that the prevalence of LBW in Indonesia is 10.2%, this figure is lower than in 2010 of 11.1% [5]. However, this decrease in prevalence caused no significant changes in the incidence of LBW. Blora Regency is one of the Kabupaten in Central Java. In 2014, LBW cases reached 540 cases from 12,116 live births (4.45%). While in 2015 there was an increase of 630 cases from 12,013 live births

(5.24%). Furthermore, as of June 2016, LBW was the highest cause of infant mortality, 45 out of 95 infant mortality rates [6].

LBW has the highest contribution to morbidity and mortality in infants, especially in the perinatal period. LBW is a major factor in the disability of neonates, infants and children. It provides a long-term impact on their lives in the future [7]. [3]LBW mortality is also influenced by the readiness to care for LBW babies by the family when the baby has been treated at home [6]. Lack of family knowledge about the management of infants at home after treatment for LBW in hospitals is the trigger for the death of LBW infants[6] Based on the results of interviews with parents who possessed LBW post-NICU care and returned home, they stated that one of their babies had hypothermia because they took care of their babies just like normal babies, which began to be bathed and paid less attention to the baby's warmth[8]. One more baby is experiencing vomiting due to choking, another baby is losing weight while being treated at home, it happens because mother's milk does not come out so that formula milk was used instead. This causes the baby not like to drink Mother's Milk [8].[4].

Early stimulation with massage is one of the oldest touch therapies that already known by humans since the beginning of human creation and the most popular. While touching and massage the baby immediately after birth is a continuous body contact that the baby needs to maintain a sense of security [9],[10].. Research conducted by Karbasi states that touch therapy in infants can effectively be used as one way to increase infant weight. It is a safe non-medical procedure if done on LBW babies [11]. This result is in line with research by Field et al. which shows that the increase in body weight in the term infants group massaged for one month is 1130 grams, meaning that the increase in weight is approximately 37.67 grams per day [12]. The massage increase physical awareness and strength of the muscles and make joints more flexible. This is especially useful in premature babies and babies born with less weight. Touching babies indirectly can teach them to communicate and create non-verbal communication that is able to provide social skills [13]..

Field and Schanberg's research shows that in infants who are massaged there will be an increase in vagus nerve tone (tenth brain nerve). Increased vagus nerve activity will cause an increase in the production of absorption enzymes such as gastrin and insulin so that the absorption of food is better [14].This is in line with the study of Diego et al. Stated that moderate infant touch therapy is able to increase vagus nerve activity and motility of gastric work both during massage and after a massage [15].This condition explains why the weight of babies given massage therapy increases more. Vickers et al. in his research explained that the baby who is massage will experience an increase in birth weight 5 grams per day. While the soft and constant touch gives a daily baby weight increase of 0.2 grams [16]. In Indonesia baby massage therapy has been carried out by traditional masseurs. Based on research that has been done at Adelia in Medan City states that baby massage has been carried out on healthy and sick babies with no differences in the techniques of movements and movements that are applied derived from hereditary knowledge [17].The application of baby massage for LBW babies has been carried out. Based on the research conducted by Dwi Octaviani Katili, it was stated that massage stimulation carried out for 14 days gave an average weight gain of 458 grams and infants who were not massaged had a weight gain of 404.3 grams, so that the difference in body weight in both the group was 53.7 grams after 14 days of study[18]. However, weight gain is still less than the standard increase that is said to be good, namely 15-20 g / kg / day, so the expected weight gain for 14 days is 470 grams [19].

Loving Touch Baby Massage is LBW therapy massage can be done when the baby is still being treated in the incubator then after the baby's condition is stable and after being allowed to go home or care at home using oil made from fruit and plants in accordance with international recommendations because it is biochemically in accordance with the baby's body condition to increase baby's weight [20].

Seeing the many benefits of touch therapy in low birth weight babies and the phenomena that occur in after-home care, which influence the high infant mortality rate , this is the basis of the authors to

examine "Effectiveness of Loving Touch Therapy on increasing weight babies of low birth weight (LBW)".

METHODS

Design in this research is *experimental study design* with quantitative approach and *randomized controlled trial (RCT)* design. *Two groups pre post test design* is comparing the effects or influence of the intervention of *Loving Touch Therapy (LTT)* in the intervention group and *Tactile Kinesthetic Stimulation (TKS)* on weight gain in Infants Low Birth Weight (LBW).

In this study, joint observations and initial measurements of body weight were carried out in low birth weight infants who had been given Loving Touch Therapy (LTT) in the intervention group and Tactile Kinesthetic Stimulation (TKS) in the control group, after which the difference in weight gain was seen. after 28 research days or 4th week in each group.

RESULTS

The general description of the research subject was presented in the form of frequency distribution seen from the gender, indicating that the female respondents were more than men, namely 19 respondents (63.3%) and 11 respondents (36.6%).

Table 1. Comparison of weight gain in LBW before and after action in the Intervention and Control group

Group	Increase in BB Babies Mean \pm SD	Δ Mean	95% CI	t-test	p-value
Intervention	2467 \pm 441,858	197	54,912 - 338,422	2,976	0.010
Control	2270 \pm 354,461				

Based on the results of analysis calculations using SPSS for Windows, using a 95% confidence level and $\alpha = 5\% : 2 = 2.5\%$ (2-sided test) with degrees of freedom (df) $n-1 = 15-1 = 14$. By testing two sides (significance = 0.025) results obtained for t_{table} of 2.145. Based on the table above, from the calculation results obtained by the value of t_{count} of 2.976. Because the value of t_{count} is greater than the value of t_{table} ($2,976 > 2,145$), it can be concluded that there is a significant difference in the increase in infant weight between the LTT method and the TKS method. LBW who were given LTT intervention by their mothers for 28 days experienced a difference in weight gain of 197 grams compared to TKS intervention. The difference is statistically significant, can be seen in the p value < 0.05 (< 0.010), 95% CI = 54,912 - 338,422.

Based on the results of the above test it can be concluded that the intervention of Loving Touch Therapy is more effective in increasing weight gain in low birth weight babies compared to Tactile and Kinesthetic Stimulation.

DISCUSSION

This study was conducted to determine the effect of touch therapy stimulation on weight gain in low birth weight infants, which consisted of the treatment group given LTT and the control group given TKS, which was given for 28 days. This study chose 28 days treatment as an effective time to see changes in LBW weight growth. As previous studies by Ferber et al. Showed that weight gain after massaging for 11 days was greater than 6 days. Furthermore, it was explained that baby massage carried out by the mother for 1-5 days, the average weight gain was 118.33 grams while the baby massage was

carried out on days 6-11 days, the average baby weight increase was 173 grams [21]. This is also supported by the results of research from Fallah that LBW infants who are under pressure pressurized with sunflower oil and compared to touch therapy without using oil show that the infants in the intervention group experienced greater weight gain in the 1st month compared to 2nd month with a P-value of 0.04 [22].

On the results of bivariate analysis the effect of Loving Touch Therapy (LTT) on weight gain in low birth weight infants was found to be statistically correlated. The average increase in body weight done by baby massage is 757 grams and Tactile Kinesthetic Stimulus (TKS) babies gain weight by 533 grams, so the difference in body weight in both groups is 197 grams with p value <0.05 (<0.010) after 28 days of research. The results of this study are similar to the results of a study conducted by Karbasi et al. (2012), there was a difference in weight gain between low birth weight babies who were given a massage and no massage for 14 days (mean \pm SD: 3250 \pm 305, 2948 \pm 121 grams, p value <0.05).

Touch therapy is one alternative that is the most effective and widely used therapy, because it has several advantages, namely noninvasive, inexpensive and safe. This is very suitable for the needs and conditions of LBW babies who need additional stimulation to increase growth and development especially in increasing body weight [23]

In his explanation, Field et al. added that baby massage can be done for 15 minutes 2 times every day and can be done 1 hour after the baby drinks or the baby is in standby [24]. According to Vickers et al say baby massage in low birth weight babies should be slow and gentle, but not too smooth. The order of infant massage in low birth weight babies consists of: tactile stimuli, kinesthetic stimuli, tactile stimuli, each performed for 15 minutes [16].

One of the basic mechanisms of baby massage is the release of beta endorphin which can affect the growth mechanism, reduction of tactile sensation will increase a *neurochemical beta-endorphine*, which will reduce the activity of *ornithine decarboxylase (ODC)* so that it can increase growth hormone. Research conducted by Field comparing moderate pressure massage and light pressure massage. It shows that light pressure massage can significantly reduce stress behavior and fussy babies and improve sleep quality in babies while moderate pressure massage can only increase baby weight gain [24]

A similar study conducted by Bing Ho by using the *Test of Infant Motor Performance (TIMP)* and assessment of infant body weight found that there was a significant difference between groups of very low birth weight babies who performed massage compared to those who did not do massage (*p-value* 0.044), so it can be concluded that massage therapy is one of the actions that can be done to gain weight in very low birth weight babies [14].

Other factors that can affect weight gain in low birth weight babies are family factors, parents play a role in fulfilling children's basic needs. Some of the factors associated with child development include: parent education, socio-economic, psychology.

In this study 76.7% of mothers had high education, parents who had good education would find it easier to receive education about how to care for low birth weight babies so that knowledge would increase. Whereas in the employment status, the majority of mothers (66.7%) status did not work at the time of the study, thus allowing mothers to carry out infant massage interventions according to the specified schedule.

Loving Touch Therapy (LTT) massage is more effective in increasing LBW weight that has been treated at home due to massage movements not only using Tactile Kinesthetic Stimulation (TKS). Because almost all studies with effective TKS increase LBW body weight but only the average research is done when the baby is still in the blood pressure in the hospital [25]. While this research was carried out when the baby had been treated at home, in line with the Field that TKS will be more effective to increase the weight of LBW when added with movements with gentle and moderate pressure in addition to the movement of TKS with moderate pressure can be done on LBW who have stable conditions and can be

done by parents [14]. This is in accordance with this study that LTT massage is carried out by parents who have been trained because biochemically and physiologically the touch can improve the loving relationship or bonding between the baby and the mother so that it increases warmth and increases hormone - the hormone oxytocin which can reduce feelings of anxiety and depression [14], [21], [26].

Besides applying TKS in this study, it combines with the Loving Touch Baby Massage technique, where this massage is according to the founder of IAIM, *LoVing Touch Baby Massage* developed by IHCA (2014) is very effective to be used for healthy babies to be healthier namely stimulation massage can be used at the time and every time that can be done by parents themselves [9]. Furthermore the movements and techniques are also soft and moderate and are safe, effective and easy to do [23].

The movement and sequence of implementation of *Loving Touch Therapy* effectively increases body weight in LBW, because the implementation of TKS according to research Dr. Tiffani Field is 5 minutes in a prone position for tactile stimulation then kinesthtis stimulation with the supine position then back again in a prone position to tactile stimulation again [27]. According to Diego, the implementation of the TKS from the Field shows that there is a lot of energy spent turning back, even though it can improve vagal activity. While LTT is done sequentially and effectively starting from the back with a movement starting from the foot until the new face and head behind the back area so that it doesn't waste much energy [28], [14]. Livingston added that Loving Touch Baby Massage if performed on infants who are not yet stable or still in the incubator will cause thrilling, tongue stiffness, tremor, drowsiness and choking.

Besides that with LTT touch therapy can stimulate the release of endorphine hormones and the hormone oxytocin which is a happiness hormone that has an impact on improving the function of closeness or bonding between mother and baby, as a form of channeling love through touch [21],[14]. [13], [10]

CONCLUSION

The increase in body weight in low birth weight infants carried out by 28 days of Loving Touch Therapy (LTT) Stimulation was greater than that of Tactile Kinesthetic Stimulation (TKS) with differences in the average weight gain of 197 grams. The difference is statistically significant, can be seen in the p value <0.05 (<0.010), 95% CI = 54,912 - 338,422.

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