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The Influence of Lactation Education toward Growth of Infants 0-6 Months in Kendari

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Abstract

Growth is the basis for assessing nutritional adequacy of baby. Appropriate intake of nutrition give an impact on the optimal growth. Growth of infants 0-6 months is a critical period in the first 1000 days of life and appropriate intake is exclusive breastfeeding. Breastfeeding lowers the risk of morbidity and mortality infants. This study aims to determine the effect of lactation education toward the growth of infants 0-6 months. This study design was Quasy Experiment, ie. pre-test and post-test with control group design. Samples were 28-30 weeks pregnant women, divided into three groups: 1) those who received education lactation and a modification module (n = 21), 2) a group that only received a modification module (n = 21) and 3) groups only get the MCH book (n = 20). Growth indicators were body weight and body length that measured at birth, months 1, 3 and 6. Statistical analysis using chi square, Wilcoxon test and Kruskal Wallis test. The results showed lactation education affected the baby's growth at 1, 3 and 6 months. Group 1 has an increase in length and weight of body higher than group 2 and 3. So it is very important to pregnant women and maternity lactation routinely receiveing education to improve breastfeeding practice for optimilizing infant growth.

Keywords: lactation education; infant growth.

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1. Introduction

The growth of children is determined by the conditions in the intrauterine and early first 2 years of life [1]. Growth of infants 0-6 months is a critical period in the first 1000 days of life. Growth is the basis for assessing the nutritional adequacy of baby. Growth faltering may be experienced by almost children from the age of 2-6 months for supplementary feeding patterns were too early. Consequently, it decrease the growth of children and susceptibility to infection.

Baby's growth is influenced by genetic factors, environmental and upbringing. Upbringing it self affect the continuity of the growth of the baby such as basic health care of children, immunization, exclusive breastfeeding, measurement of body weight regularly and current treatment of illness [2]. Proximal determinant in infant growth is a disease and baby food (cough, diarrhea, fever, feeding prelacteal, early initiation of breastfeeding, and the type of food provided) [3].

The decline in breast-feeding will lead to the emergence of nutritional problems in infants 0-6 months. So that, intervention is needed to increase rates of breastfeeding. The result of study in Japan showed that it is important to provide accurate prenatal education that focuses on methods and long-term benefits of breastfeeding to the mothers, families and health professionals. Prenatal education for mothers and fathers about breastfeeding should be improved [4].

Nowadays, in Maternal and Child Health (MCH), current information on breastfeeding is given in antenatal care session, midwife immediately give an explanation, especially in pregnant mothers at third trimester. In addition, information can be obtained by following the class of pregnant women in health centers. Pregnant class held at the health center, do 4-5 times sessions. Material on breastfeeding is given at the meeting to 2 and 4, which is about the early initiation of breastfeeding, breastfeeding position and attachment[5]. However, pregnant class has not been implemented as intended.

Based on this, a continuous intervention is needed, starting from pregnant until the mother gives birth to oversee the postnatal breastfeeding period. Because of failure to breastfeed, due to the emergence of problems in early breastfeeding and sometimes untouched by health personnels. This study will provide lactation education, in order to change behavior to breastfeeding mothers to infants 0-6 months. The results of this study will provide information on the importance of education lactation to increase exclusive breastfeeding coverage that directly affect baby’s growth. Lactation education given on prenatal and postnatal care, whereas breastfeeding practices determined by the intake of food from birth to babies aged 6 months. Growth of baby is determined based on measurements of weight and length of the baby.

2. Materials and methods

2.1. Material

The study design was Quasy Experiment, the pre-test and post-test with control group design. Sample of study were pregnant women with gestational age of ≥28-30 weeks located in Health Centres in Kendari. The samples

were divided into 3 groups: 1) those who received education lactation and module modification (n = 21), 2) a group that only received the module modification (n = 21) and 3) a group that only received the MCH book (n = 20). Lactation education interventions implemented 4 times, ie. 2 times prenatal and 2 times postnatal. Breastfeeding followed until the baby was 6 months old. Lactation education, using modification module, the material include: the importance of breastfeeding, exclusive breastfeeding, early initiation of breastfeeding, the advantages of breastfeeding, infant formula and prelacteal food hazards, myths about breastfeeding, breastfeeding: position and attachment, efforts to increase production of breast milk, breastfeeding; massage oxytocin, recognizing early changes in breast milk and mature milk, granting mothers to breastfeed at work: expressing the milk; resolving the problems of breastfeeding: mother and baby, determining the need of breast milk is fulfilled, nutritional needs of nursing mothers and supporting their husbands in breastfeeding. The presentation of the material used power point slide, props such as baby's phantom, models of breast and equipment for expressing milk (breast milk pump and milk bottles). Baby's growth is measured four times that at birth, 1 month, 3 months and 6 month. Growth indicator was the weight and length of the baby.

2.2. Statistic Analysis

Data analysis using SPSS (Statistical Package for Social Sciences). The homogeneity of the samples were analyzed using chi square, to see the effect of education on the growth of the baby using the Wilcoxon test and to see the difference in growth between groups used the Kruskal Wallis test. This study has received approval from the Ethics Commission on Health Research, Medical Faculty of Hasanuddin University, RSPTN UH, dr. Wahidin Sudirohusodo after discussion and assessment, with register number: 1659 / H4.8.4.5.31 / PP36-KOMETIK/ 2015.

3. Results

3.1. Characteristics of Respondents

Sample characteristics include gender, birth weight and length, and type of nutrition given by mother. Birth weight is considered normal if ≥2500 grams and length of birth is normal if ≥45 cm. Baby intake based on the type of drink given to babies, namely exclusive breastfeeding, partial breastfeeding (infants are breastfed and formula or food additives) and infant formula. Table 1 shows that generally, most of the gender of baby is men, ie. 52.4% in group 1, 57.1% in group 2, and 60% in group 3. Birth weight babies are generally normal. Groups that have low birth weight (LBW) are group 1 (9.5%) and group 2 (14.35%), and no LBW in group 3.

All babies have a normal body length. In month 1, all of babies in group 1 given breast milk, while some babies in group 2 and 3 added with formula. In month 3 and 6, amount of mothers who provide partial breastfeeding and formula feeding increase in group 2 and 3. The results of chi square test obtained p values >0.05 indicates the condition of baby's characteristics in all groups were homogeneous. While the intake of infants in each group from month 1 to month 6 was different ($p < 0.05$). This showed, feeding infants from 1 to 6 months was different in each group.

Table 1: Characteristics of Sample

Samples Characteristics	Groups						*P*
	1		2		3		
	n(21)	%	n(21)	%	n(20)	%	
Gender							
Female	10	47,6	9	42,9	8	40,0	
Male	11	52,4	12	57,1	12	60,0	0,883
Birth Weight							
Normal	19	90,5	18	85,7	20	100,0	0,233
LBW	2	9,5	3	14,3			
Body Length of Birth							
Normal	21	100,0	21	100,0	20	100,0	-
Infant Intakes							
1 month							
Exclusive Breastfeeding	21	100,0	19	90,5	14	70,0	
Partial breastfeeding	0	0,0	2	9,5	3	15,0	0,035
Formula	0	0,0	0	0,0	3	15,0	
3 Months							
Exclusive Breastfeeding	21	100,0	13	61,9	10	50,0	
Partial breastfeeding	0	0,0	5	23,8	3	15,0	0,002
Formula	0	0,0	3	14,3	7	35,0	
6 Months							
Exclusive Breastfeeding	20	95,2	6	28,6	10	50,0	
Partial breastfeeding	1	4,8	10	47,6	3	15,0	0,000
Formula	0	0,0	5	23,8	7	35,0	

3.2. The Effect of lactation education toward the growth of infants 0-6 months in Kendari

Growth is the increase in physical size and structure of the whole or part of the body. Table 2 shows that the weight and length of the baby's increased in all groups. The length and weight of baby were higher in group 1, then group 2, and the last was group 3.

Table 3 shows the Wilcoxon test results. There is an increasing of the length and weight of baby significantly in all groups from T0 to T3. While, based on the difference between the body length and weight were also significant. This mean, body length and weight were different in all groups. The length and weight were higher in group 1, then group 2 and group 3 is the lowest.

Table 2: Mean Changes in the Length and Weight of Baby

Size	Month			
	T0	T1	T2	T3
Body Length (cm)				
1	48,86±1,68	53,05±1,47	59,62±2,40	68,95±2,54
2	47,71±1,35	52,14±1,24	58,10±2,17	66,76±2,19
3	48,40±1,93	51,95±1,67	58,98±2,97	66,15±2,96
Body Weight (kg)				
1	3181,90±505,58	4264,76±691,21	5900,95±788,94	7729,05±723,89
2	2910,95±383,95	3891,90±451,40	5542,86±632,91	7020,00±612,50
3	2956,00±310,83	3912,50±506,18	5360,00±756,31	6920,00±673,25

Source: Primary Data

Table 3: Effect of Changes in the Length and Weight of Baby

Size	Measurement time				
				Difference	Effectiveness
	T0	T3	*p**	Δ3	*p***
Body Length (cm)					
Group 1	48,86±1,68	68,95±2,54	0,000	20,10	
Group 2	47,71±1,35	66,76±2,19	0,000	19,05	0.008
Group 3	48,40±1,93	66,15±2,96	0,000	17,75	
Body Weight (kg)					
Group 1	3181,90±505,58	7729,05±723,89	0,000	4547,14	
Group 2	2910,95±383,95	7020,00±612,50	0,000	4109,05	0.006
Group 3	2956,00±310,83	6920,00±673,25	0,000	3964,00	

Source: Primary Data

p *: Wilcoxon test

p **: Kruskal Wallis test

4. Discussions

Growth associated with major changes of number, size and function of the level of cells, organs and individuals as measured by the size of the weight, length, bone age and metabolic balance. Its speed is different in every stage of life because it is influenced by the complexity and size of organs and ratios muscle to body fat [6]. Growth is the basis for assessing the nutritional adequacy of baby. Body weight and body length are growth indicators that used widely. Mother has a major role in growth of infant in the future postnatal through the provision of breastmilk. Breastfeeding is the extragestational period with breasts as "external placenta", because breast replace the function of placenta not only in providing nutrients for the baby, but also very important in the

children's development. When mothers doing breastfeeding, occured reciprocal interaction between mothers and infants [2].

Implementation of lactation education using several methods such as lecture-discussions and demonstrations as well as video playback along with tools used are LCD, phantom baby and breast, stomach size models and devices to pump breast milk. In the pyramid of learning, the lecture method only provides retention of 5%, while the reading (10%), seeing and hearing (audio visual: 20%), demonstrations (30%), group discussions (50%), did significantly (75%) and teach each other (80%) [7]. Lactation education use several methods which is expected to increase retention of material obtained, while respondents follow lactation class. This is in line with the explanation, the knowledge is the result of the idea, and this occurred after people perform on sensing a particular object [8]. Change in behavior is a result of their learning process, ie. the process of attitude change that was not confident become more confident because knowledge or skills are growing. Changes in behavior occurs because of changes in knowledge or skills as well as a change in attitude is very clear [9].

The result of this study indicate that the number of mothers who exclusively breastfed at most is in the group 1. This result is consistent with research on prenatal breastfeeding education and breastfeeding outcomes. The result was mothers who taking prenatal classes significantly increased the duration of breastfeeding to 6 months, when compared with control group. But, there is no significant difference between the number of each class (group) [10]. The study about the effectiveness of prenatal education program with breastfeeding outcomes, showed the amount of mothers who gave exclusive breastfeeding were higher in the intervention group at 3 days postpartum and 1 month postpartum [11].

Another study supporting the results of this study is education about breastfeeding during antenatal and postnatal lactation support, both increase the rate of exclusive breastfeeding until 6 months postpartum [12]. Research on antenatal education and counseling is quite helpful in breastfeeding, 68% of mothers said, early breastfeeding problems are the main reason they stopped breastfeeding before 2 months postpartum [13]. Another barrier is lack of knowledge about breastfeeding and support from health professionals [14].

The results showed that an increase in body length and weight in the group receiving a education is higher compared with control. This is closely related to the material given during lactation education classes take place. Pregnant women who participated in lactation class given information about: the gold standard of infant feeding in 0-6 months is only breast milk, importance of breastfeeding, given training about right position and attachment of infant while breastfeeding and efforts to improve the milk production. Mothers taught feeding techniques so the baby can obtain hind milk that contain a lot of fat and gives a lot of energy for the growth of babies (increasing the weight and length of the baby).

The results are consistent with other studies that found the prevalence of exclusive breastfeeding in the first 6 months increased as a result of guidance and support to pregnant women, individuals and groups. Pregnant women were advocated and practiced techniques for adequate feeding, so the baby obtain hind milk which is rich in fat and energy for weight gain. The program aims to provide information on benefits of breastfeeding for mothers, children and families [15,16].

Infant growth is also influenced by many factors, such as genetic. If the genetic potential can interact in a good and optimal environment, it will produce optimal growth [12]. The body is made of cells and intercellular matrix that increase in size and number. Growth occurs when cells enter the cycle stages: stage S (S phase) which is characterized by changes in cellular content of inorganic, water absorption, and increased protein synthesis. If the mechanisms that regulate this trantition is not perfect, it is not able to meet the needs of wound healing or tissue replacement. During the S phase, the supply of suitable and sufficient raw material is essential, particularly amino acid that can be converted to protein or converted into important substances such as DNA (Deoxyribonucleic Acid). All growth receptors are a protein.

In group 1, almost all is exclusively breastfed infants, it indicates that the protein requirement for the growth of breastfed infants fulfilled. Privileged protein in breast milk can be seen from the ratio of whey proteins: casein (60:40), while in cow's milk (20:80) [17]. Numbers of protein in breastmilk are precise and easily digested. Alpha lactalbumin is 25-30% of the total milk protein which is the largest provider of amino acids to the growth of baby. Breast milk proteins associated with specific functions such as casein that forms miscelles with calcium and phosphate which are an important carrier for such minerals. Newborns (neonates) has not been able to manage large amounts of protein as found in many formulas. The combination of amino acids in breast milk is biochemically very suitable for infant growth period [18]. The results of other studies that support is occurrence adequate growth in infants who are exclusively breastfed, where an increase in weight two times before the age of 4 months. Although after four months, body weight and body length slows, but baby's weight at the age of 6 months is greater than the standard used. This confirms the benefits of breastfeeding, especially when mother gets proper guidance in breastfeeding technique [19].

5. Conclusion

The growth of infants (increasing of body weight and body length) in the group receiving lactation education is greater than other groups because this group has the highest percentage of infants who get exclusive breastfeeding.

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