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THE EFFECT OF GIVING HINDMILK ON INCREASING THE WEIGHT OF LOW BIRTH WEIGHT BABIES

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Abstract

Introduction. Low birth weight (LBW) are babies who have a risk of malnutrition, namely wasting and stunting. Breastfeeding results in less than optimal weight gain due to high LBW energy requirements but the tolerance of volume is limited. Hindmilk is breastmilk that has high energy and fat content. **Objective.** The purpose of this study was to determine the effect of hindmilk on increasing the weight of LBW babies. **Method.** This research is a prospective study with observation case series design. This observation used secondary data conducted by the researcher while on duty in the Perinatal ward of Dr Sardjito Hospital in Yogyakarta Indonesia in April-November 2016 and also in November 2017. **Results.** The results of the observations were 12 LBW babies with a weight of 994-1660 grams and stated that the average weight gain was 33.98 grams/day. The increasing weight when the babies were given hindmilk was 10 grams/day at the minimum and 74 grams/day at the maximum. Meanwhile, the weight loss happened when they were given mixed breastmilk was around 10-72 grams/day with an average of 18.2 grams. The major substances of hindmilk that can increase the LBW's weight are very long chain fatty acids, arachinoid acid (ARA), docosahexanoic acid (DHA) (22:6n-3), derivatives of linoleic and linolenic acids. **Conclusion.** MCO exacerbates the food accessibility problem in food-insecure HD patients.

Keywords: Food insecurity; Covid-19 lockdown; food intakes; body weight; hemodialysis

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INTRODUCTION

According to WHO statistical data indicators, Low Birth Weight Babies (LBW) are babies with the birth weight which is less than 2500 grams g regardless of the maternal gestational age (1). Salawati (2012) stated that one of the best indicators to determine the state or nutritional status of an infant is to measure body weight. Low birth weight (LBW) are also babies who have a risk of malnutrition, namely wasting and stunting and then stated that the highest values of the prevalence of Low Birth Weight (LBW) babies in developing countries was India (27.6 %), on the second place was South Africa (13.2 %) and on the third place was Indonesia (11.1 %) in 2015 (2). In Indonesia, the main causes of neonatal deaths in 2015 were prematurity 35.5 percent, birth asphyxia and trauma 21.6 percent, and congenital anomalies 17.1 percent (3).

The morbidities causes of Low Birth Weight (LBW) Babies are extra urine growth restriction because failure and maturity of organ function, gastrointestinal physiology is immature, respiratory disorder such as Respiratory Disease Syndrome, Bronchopulmonary dysplasia, apnea and neurological and cardiovascular disorders such as sepsis, necrotizing enterocolitis (NEC), bronchopulmonary dysplasia (PDA), anemia, hyperbilirubinemia, hypo/hyperglycemia, congenital heart defects, metabolic disorders, eye disorders, intracranial hemorrhage, hypo/hyperthermia, and infections. The long-term impact on LBW will affect life in the future. LBW will occur if the baby's nutrition is not handled properly. Increased mortality, morbidity, and disability in neonates, infants, and children which is the impact of LBW whose nutrition is not handled properly (4). According to WHO data, neonatal mortality due to low birth weight is 60% to 80% and 20 times greater than infants with normal birth weight. The smaller the gestational age, the higher the mortality 60% of neonatal deaths occur in premature infants less than 34 weeks. Extremely premature infants have a mortality risk of 30% to 50% (5).

The problems that often occur in LBW are the lack of nutrition due to unstable physiological conditions of the infant, hyper-metabolism, respiratory arrest, insufficient nutritional reserves, low sucking and swallowing reflexes and comorbidities in infants. LBW requires special appropriate nutritional treatment so that it will help its growth and development

as well as improve the quality of life and will reduce the morbidity and the mortality. The World Health Organization (WHO) recommends that the best nutrition for LBW is breastfeeding. Breastfeeding results in less than optimal weight gain due to high LBW energy requirements but the tolerance of volume is limited. Hindmilk is breastmilk that has high energy and fat content. Exclusive breastfeeding is expected to overcome the problem of stunting nutrition in LBW babies (6). Based on these fact, I have mentioned previously it is clear to see the urgency of doing a research to identify the effect of giving hindmilk on increasing the weight of low birth weight babies. The purpose of this study was to determine the effect of hindmilk on increasing the weight of LBW babies.

MATERIAL AND METHODS

This research is a prospective study with observation case series design.

Material: Hindmilk and composite milk for low birth weight babies. We used weight scale babies with the accuracy 0.001 and the baby scale was always checked for its calibration.

Methods: Weighing the LBW babies was done every day, after the babies taking a bath in the morning. The researchers observed the baby's weight every day and the observations were monitored and recorded.

DESIGN AND SUBJECT

This research is a prospective study with observation case series design. The data collection was carried out every day since the baby was drinking full breast milk until the low baby weight babies was allowed go to home by the recommendation of the Specialist doctor of Neonatology.

Study design and participants

This observation used secondary data conducted by the researcher while she was on duty in the Perinatal ward of Dr Sardjito Hospital in Yogyakarta Indonesia in April-November 2016 and in November 2017. There were 12 LBW babies who were observed at Dr. Sardjito Hospital.

Measures


The measurement was done by the nurse. The researcher observed the status of the LBW babies' medical record and checked the whether the LWB babies consumed the hindmilk or not. The inclusion criteria for giving the hindmilk to the LBW babies were in the condition where the LBW babies were full feeding and the mother were ready to give the hindmilk.

Data Analysis

The data collection process was done by doing observation case series design. The data analysis used in this research was Ms Excel 2013. From the data collection, the researcher chose the cases of low birth weight babies who were given hindmilk continuously. There were 8 cases which had the improvement of the weight after they were given hindmilk continuously. They were the cases of baby no.3, baby no.6, baby no.7, baby no.8, baby no.9, baby no. 10, baby no. 11 and baby 12. The average score of the improvement in the LBW babies' weight after given hindmilk was 48.79 grams. Furthermore, for the other 4 cases, there was a decrease in the babies' weight when they were not given hindmilk. It happened to twin baby no. 1, twin baby no.2, baby no. 4 and baby no.5 because the mothers had difficulties in providing the hindmilk which was very limited. The weight of these babies were getting better again after they were given hindmilk. The data of the decreased weight of the LBW babies were presented on the yellow highlight on **Table 1**.

Table 1. The Monitoring Data of the Low Birth Weight Babies

Baby	Weight (grams)													
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
Twin 1	1856	1846	1835	1778	1838	1826	1786	1714	1788	1848	1816	1832	1848	1874
Twin 2	1430	1440	1450	1450	1485	1500	1540	1530	1550	1565	1590	1640	1650	1670
3	1420	1470	1500	1540										
4	1440	1430	1450	1460	1450	1470	1480							
5	1600	1618	1607	1634	1624	1614	1648	1632	1656	1666	1684			
6	1410	1490	1540	1600										
7	1420	1475	1488											
8	1250	1300	1355	1400										
9	1765	1800												
10	1726	1800												
11	1515	1558												
12	1452	1520												

 : one day before, the baby were not given the hindmilk

RESULTS

The results of the observations are 12 LBW babies with a weight of 994-1660 grams and stated that the average weight gain was 33.98 grams/day. The increasing weight when the babies were given hindmilk was 10 grams/day at the minimum and 74 grams/day at the maximum. Meanwhile, the weight loss happened when they were given mixed breastmilk was around 10-72 grams/day with an average of 18.2 grams. The major substances of hindmilk can increase the LBW's weight as much as is very long chain fatty acids, arachinoid acid(ARA), docosahexanoic acid (DHA) (22:6n-3), derivatives of linoleic and linolenic acids.

Researches on breastfeeding using hindmilk showed that there was an increasing weight of LBW babies after being given hindmilk because it has higher calorie and protein rather than

foremilk (7,8). Breastfeeding often results in suboptimal weight gain for smaller premature infants whose energy requirements are high but whose volume tolerance is limited. Fat is the main source of energy for newborns (9). Breast milk fat provides about 50% of the calories in breast milk. (10,11). Breast milk fat content increases during breastfeeding from foremilk to hindmilk (12). According to Innis (13) hindmilk breastfeeding focuses on very long chain fatty acids, arachinoid acid (ARA) and docosahexanoic acid (DHA) (22: 6n-3), linoleic and linolenic acid derivatives that can increase LBW weight. Breast milk is the perfect nutrition for the First 1000 Days of Life (FDL) with the hope of having the optimal growth (14).

DISCUSSION

In this study, the result was the increasing body weight in 12 infants who were given hindmilk. If LBW babies were not given hindmilk then they will lose their weight. Weight monitoring can determine the sum of bones, muscles, fat, body fluids, and others in the baby's body. The baby's survival, growth and development, and the mental development of the baby, the main factor for the baby's health in the future can be seen from the birth weight. The best indicator in knowing the nutritional and health status of infants is by performing anthropometry, namely monitoring their weight (1, 15).

Hindmilk ASI is expected to be a breast milk fortifier that will increase LBW weight. The fortifiers to add the calories into the breast milk are usually given additional HMF (Human Milk Fortifier). The price of HMF is quite expensive, which is IDR 17,000 – IDR 18,000 per pack and according to IDAI (6) it is 4-8 packs per day according to the availability of the HMF. Giving hindmilk breast milk is expected to be a natural and more economical alternative in increasing body weight and shortening the length of hospitalization for LBW. LBW neonates whose nutrition is not optimal will be treated longer in the Perinatal ward so that it will increase the cost of care. Giving hindmilk to LBW can increase LBW babies' weight optimally so that it saves the budget because the length of the hospitalization is expected to be shorter (16).

CONCLUSIONS AND SUGGESTION

Hindmilk can increase the weight of Low Birth Weight babies. The improvement of condition of Low Birth Weight babies happened when given the hindmilk was and it can shorten the length of the hospitalization. Further research is needed to determine the significant level of the effectiveness in giving hindmilk or the Low Birth Weight babies to increase the weight and to shorten the length of the hospitalization.

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CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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