ORIGINAL RESEARCH

RELATIONSHIP OF NUTRITIONAL INTAKE OF BREAST MILK AND HYPERBILIRUBIN IN PREMATURES

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ABSTRACT	Keywords
Almost all premature babies have hyperbilirubin due to immature body organs and liver function. Breast milk nutrition, which is often found, especially colostrum, can stimulate the baby's bowel movements to help the excretion process through the feces so that it will clear meconium faster, this will help remove bilirubin in the baby's body. The aim of this study was to analyze the relationship between breastfeeding nutrition and the incidence of hyperbilirubin in premature babies in the NICU room of the Wahidin Soedirohusada Regional Hospital, Mojokerto. This type of research is analytic with cross sectional approach. The population of all preterm infants treated in the NICU room of the Wahidin Soedirohusada Mojokerto Regional Hospital was 24 respondents with a total sample of 20 respondents with consecutive sampling. This research was started on March 10 - April 9 2019. Data collection was done by observing drinking intake and observing laboratory results, with 2 independent and dependent variables. Data analysis by editing, coding, scoring, tabulating, chi square test. Furthermore, statistically tested using the chi square test using the SPSS windows program with a significance limit ($\acute{\alpha} = 0.05$) H1 is accepted and H0 is rejected if $\rho < 0.05$. Based on the results of the research, some respondents, namely 11 respondents (55.0%) experienced good breastfeeding nutrition and there were no hyperbilirubin 12 respondents (60%) of 20 respondents who had good breastfeeding nutrition and did not occur hyperbilirubin as many as 10 respondents (50%) with chi square test, the value of ρ is 0.008, where $\rho = 0.008 < 0.05$, then H1 is accepted. There is a relationship between breastfeeding nutrition and the incidence of hyperbilirubin in premature babies in the NICU room of the Wahidin Soedirohusada Regional Umun Hospital, Mojokerto. The results of the study are expected for the hospital to increase education about the benefits of breastfeeding to prevent hyperbilirubin and to hold a breastfeeding corner.	*Breast Milk, Hyperbilirubin, Premature Babies*

INTRODUCTION

Preterm birth is one of the biggest contributors to neonatal mortality. Premature is a baby born with a gestation period of less than 37 weeks with a weight equal to or less than 2,500 (Black, 2012). The cause of premature infant death is due to meconium aspiration, hypoglycemia, hyaline membrane disease and hyperbilirubin. The cause of hyperbilirubin due to immature body organs and liver function to process erythrocytes (red blood cells). The effect of breastfeeding nutrition is often found, especially colostrum, which can stimulate the baby's bowel movements to help the excretion process through the feces so that it is cleared of meconium faster, this will help remove the bilirubin in the baby's body that causes jaundice and thereby reduce it (Nguyen et al., 2017) .

According to WHO every year around the world around 130 million births, one in 10 of these births are premature babies who tend to have problems, as a result of lack of gestation that causes immaturity in all organ systems. The number of preterm births in Indonesia is still high. The prevalence of premature babies in Indonesia is still relatively high, namely 7-14%, even in some districts it reaches 16%. This prevalence is greater than in developing countries, namely 5-9% and 12-13% in the USA. Currently in RSUD Dr. Soetomo Surabaya from year to year has not changed much, around 22% - 26.4%. The prevalence rate of infant jaundice in Indonesia is around 50% of term infants and in preterm infants more, namely 75%. There was also the incidence of neonatal jaundice in East Java Dr. Soetomo Surabaya at 13% -30% (Scrafford et al., 2013). Based on data on infant subjects treated in the NICU room of the Wahidin Soedirohusada Mojokerto Regional Hospital, from January to October 2014, as many as 111 babies (100%) were newborns. Nearly half (47.52%) or 48

premature babies. Based on the results of a preliminary study, 28 (58.33%) premature babies experienced hyperbilirubin (Nicu Patient Report Book, 2014). Based on Susenas (Walpole & Goodwin, 2000)2004-2008 the coverage of exclusive breastfeeding in Indonesia fluctuates and tends to decline. The coverage of breastfeeding for infants aged 0-6 months fell from 62.2% (2007) to 56.2%.

Many factors influence the occurrence of hyperbilirubin in newborns, especially premature babies, including hemolysis such as blood incompatibility (Rh, ABO, G-6-PD deficiency), impaired uptake and hepatic conjugation due to liver immaturity, lack of substrates for conjugation (changing) bilirubin and Inadequate intake of breast milk due to reflex suction and swallowing as well as inadequate absorption. Hyperbilirubin can also be affected by excretion due to obstruction in the liver and also deficiency of albumin causing more free indirect bilirubin in the blood that is easily attached to the brain (kernicterus occurs) kernicterus is very easy to occur in babies who experience organ immaturity, asphyxia / hypoxia, premature (Deepthi, Singh, & Jeeva, 2019).

Efforts to prevent hyperbilirubin from occurring in premature babies so as not to endanger the baby, namely providing breast milk nutrition according to the baby's body needs, by motivating the baby's mother to always come to the hospital to give her breast milk either by direct breastfeeding or by giving her milk, stopping the drug which affects bilirubin metabolism (Nyangabyaki-Twesigye et al., 2020).

The purpose of this study was to analyze the relationship between breastfeeding nutrition and the incidence of hyperbilirubin in preterm infants.

METHOD

The research design used was analytic with the research design used was cross sectional. cross sectional, which is a type of research that emphasizes the time of measurement / observation of data on the independent and dependent variables assessed simultaneously at a time so there is no follow-up. In this study, two variables were combined, namely the independent variable (free) (breast milk nutrition) and the dependent variable (related) (the incidence of hyperbilirubin / jaundice in premature infants) at one time. The instrument in this study was data collection by using a drinking intake observation sheet for infants aged 0 months for 3 days and the incidence of hyperbilirubin by laboratory check on day 3. The population of all premature babies treated in the NICU room of Wahidin Soedirohusada Regional General Hospital Mojokerto was 24 respondents with a sample size of 20 respondents sampling consecutive sampling. The sample criteria in this study are: Inclusion criteria. According to Nursalam (2013), the inclusion criteria are the general characteristics of research subjects from an affordable target population that will be studied. The inclusion criteria in this study were: (Babies whose mothers are willing to be respondents, babies who drink breast milk with expressed breastmilk). The exclusion criterion was to remove subjects who met the inclusion criteria from the study for various reasons. The exclusion criteria in this study were: (Babies with ABO incapability, infants with sepsis and infants with G6PD deficiency). Measurement of nutritional intake of breast milk or diet can be done using a nominal scale. The nominal scale is a scale that provides a statement with answers in the form of numbers that have been provided, as follows: Provision of breast milk intake according to daily needs 10 -30 cc / kgBB / day in a good category, Giving breast milk intake less than the daily

requirement of 5 cc / kgBB / day in the less category. To analyze the occurrence of hyperbilirubin by means of blood tests, with laboratory tests, as follows: No Hyperbilirubin: total serum bilirubin level <5mg / dl, Hyperbilirubin: total serum bilirubin level> 5 mg / dl. This research was started on March 10 - April 9 2019. Collecting data by observing drinking intake and observing laboratory results. Data analysis by editing, coding, scoring, tabulating. Furthermore, statistically tested using the chi square test using the SPSS windows program with a significance limit ($\acute{\alpha} = 0.05$) H1 is accepted and H0 is rejected if ρ <0.05. This research has received research permit approval from Wahidin Soedirohusada Hospital Mojokerto with number: 445/54 / 429.070.50 / 2019.

RESULT

Table: Cross-tabulation of the relationship between nutritional intake of breast milk and the incidence of hyperbilirubin in premature infants in the NICU Room of the Wahidin Soedirohusada Regional Hospital, Mojokerto 10 March - 9 April 2019

Nutritional intake of breast milk	Not hyperbilirubin		Hyperbilirubin		TOTAL	
	Σ	%	Σ	%	Σ	%
Well	10	50	1	5	11	55
low	2	10	7	35	9	45
Total	12	60	8	40	20	100

source: primary data, 2019

Based on the table results, it shows that of the 11 respondents (55%) whose breastfeeding nutrition is good, it turns out that 10 respondents (50%) do not have hyperbilirubin. Meanwhile, out of 9 respondents (45%) who had less nutritional intake, 7 respondents (35%) had hyperbilirubin.

Table: Chi square test results

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9,731[b]	1	,002		
Continuity Correction[a]	7,079	1	,008		
Likelihood Ratio	10,684	1	,001		
Fisher's Exact Test				,005	,003
Linear-by-Linear Association	9,244	1	,002		
N of Valid Cases	20				

a. Computed only for a 2x2 table

b. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 3,60.

The results of statistical analysis using the chi square test resulted in a value of p = 0.008. So it was found that p <0.05, which means H1 is accepted and H0 is rejected or there is a relationship between breastfeeding nutrition and the incidence of hyperbilirubin in premature babies in the NICU room of the Wahidin Soedirohusada Regional Hospital, Mojokerto.

DISCUSSION

Nutritional intake of breast milk

Based on the results of the study, 11 respondents (55.0%) had good breastfeeding nutrition. This is influenced by gestational age, namely 32-36 weeks as many as 9 respondents (45%), because at that gestational age the digestive organs begin to mature so that the baby's suction and swallowing reflex begin to be strong. Where in this study there was no effect on infant birth weight for breastfeeding nutrition, it was proven that babies with birth weight between 1551 - 2500 grams had good nutritional intake of breast milk as many as 10 respondents (50%). This study is in accordance with the theory presented by (Indrasanto, 2008), that the nutritional intake of breast milk is to provide adequate nutritional support for breastfeeding, especially for babies with problems. for premature babies is to provide adequate nutritional support for the breast milk needed to stimulate bowel movements. We know that premature babies are born with organ systems that are not functioning normally so that problems often arise, such as digestive system disorders, namely the

suction and swallowing reflexes are still weak (Ketty.W, 2014). Based on the theory and reality in this study that a good intake of breast milk nitrition is influenced by gestational age and not body weight, it is proven that some respondents weighing <2500 grams also have good nutritional intake of breast milk, both those who drink through OGT or drink perspeen. . In this study, it was also found that babies whose nutritional intake of breast milk were insufficient were mostly influenced by respiratory problems, digestive disorders with a large amount of gastric residue,> 25% of the previous intake and the occurrence of NEC (Necrotizing Enterocolitis). (Bravi et al., 2016) the factors that influence the nutritional intake of breast milk in premature babies are suction and swallowing reflexes, while the factors in the mother are feeling insufficient breastfeeding, not knowing the benefits of breastfeeding, breastfeeding is not a healthy choice and perceiving sucking something full of germs so that affects the lack of milk intake. In mothers who give birth to premature babies will produce low lactose milk, this is important for the baby's digestion and helps the excretion of both urine and feces.

Hyperbilirubin incidence

The results showed that most of the respondents did not have hyperbilirubin as many as 12 respondents (60.0%). 10 respondents (50.0%) influenced by good breastfeeding nutrition, because babies did not experience hunger, did not experience dehydration, and there was no barrier to bilirubin excretion. The incidence of hyperbilirubin can be influenced by gender, it can be seen that out of 8 respondents (40%) 6 respondents (30%) had hyperbilirubin and male sex was caused because male babies produced bilirubin faster than girls. , this is because baby boys have Y protein in the liver which plays a role in uptake of bilirubin to hepatic cells. This

study is also in accordance with his theory (Nyangabyaki-Twesigye et al., 2020) that the minor risk factors for hyperbilirubin can be influenced by male gender. And due to decreased liver function which can reduce the conjugation of bilirubin, due to less gestational age. Hyperbilirubin is an increase in serum bilirubin levels above normal, namely total serum bilirubin ≥ 5 mg / dl (Quinn, Largado, Power, & Kuzawa, 2012). The incidence of hyperbilirubin can also be influenced by gestational age. This hyperbilirubin event often occurs in newborns with the most common cases experienced by premature babies, where the premature baby has experienced organ immaturity. However, in this study the incidence of hyperbilirubin can be suppressed by providing good nutritional intake of breast milk, especially colustrum, which affects the maturity of the digestive organs so that it helps increase intestinal peristalsis where excretion occurs through feces (meconium) and kidneys (urine) so that bilirubin levels can be normal or down. Although in this study there was 1 respondent who had good breastfeeding nutrition, hyperbilirubin occurred because the respondent was with ABO blood type.

Relationship of nutritional intake of breast milk with the incidence of hyperbilirubin in premature infants
The results of cross tabulation showed that 10 respondents (50.0%) had good breastfeeding nutrition and no hyperbilirubin. The results of the analysis through the chi square test at SPSS resulted in a value of ρ of 0.008, where $\rho = 0.008 < 0.05$, then H1 was accepted. H0 was rejected, meaning that there was a relationship between breastfeeding nutrition and the incidence of hyperbilirubin in premature babies in the NICU room of the Wahidin Soedirohusada District Hospital, Mojokerto. In infants who do not occur

hyperbilirubin are babies with good breastfeeding nutrition, that is, these babies do not experience hunger, do not occur dehydration, there are no obstacles to bilirubin excretion, and no intestinal tract disorders. The results of this study are in line with the theory presented by Damanik.S, (2010), The effect of nutritional intake of breast milk is often found, especially in colustrum. In mothers who give birth to premature babies producing low-lactose milk, this is important for the baby's digestion, especially colostrum because it can help stimulate the baby's intestines so that they are cleared faster from meconium, this meconium will help eliminate bilirubin besides colostrum is also rich in antibodies and immunoglobulins (Indrasanto, 2008). Although breast milk is the best food for babies, sometimes the mother of the baby does not understand and understand the importance of breast milk, and thinks that the baby is full of germs, breastfeeding is not a good choice, according to (Pannaraj et al., 2017) .

This is in accordance with the research conducted by I Indanah et al in the 2019 University Research Colloquium Proceedings, namely that breastfeeding in infants is recommended 2-3 hours or 8-12 times a day. With more frequent breastfeeding prevents babies from experiencing dehydration and lack of calorie intake. The delay in getting the baby to get nutrition (ASI) results in direct bilirubin that has reached the intestine not bound by food and is not excreted through the anus with food. In the intestine, direct bilirubin is converted into indirect bilirubin which will be reabsorbed into the blood and this condition will lead to persistence of the hyperbilirubin condition. The results showed that the average reduction in bilirubin levels in infants who were given breast milk every 2 hours was 7.17 mg / dl.

In infants who were breastfed every 3 hours, the average reduction in the baby's bilirubin levels was 7.01 mg / dl, this shows that breastfeeding every 2 hours was effective in reducing the bilirubin levels of infants with hyperbilirubinemia with a p value of 0.000 (α: 0.05) .

CONCLUSION

The results of this study indicate that there is a relationship between the intake of breast milk nutrition and the incidence of hyperbilirubin in premature infants in the NICU room of the Wahidin Soedirohusada Regional Hospital, Mojokerto. In infants who do not have hyperbilirubin, in fact, they are babies with good breastfeeding nutrition, that is, these babies do not experience hunger, do not occur dehydration, there are no obstacles to bilirubin excretion, and no intestinal tract disorders.

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