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Hemoglobin Levels of Breastfeeding Mothers and Nutritional Status of Infants Aged 0-6 Months

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ABSTRACT

Introduction: Breastfeeding mothers with poor nutrition will affect the adequacy of breast milk. Anemia in pregnant women is thought to affect breast milk production. The quality of breast milk affects the nutritional status of toddlers. **Objective**: This study aims to determine the relationship between hemoglobin levels of breastfeeding mothers and the nutritional status of infants aged 0-6 months. **Method**: This is cross sectional study and conducted in the Jogonalan 1 Klaten Health Center area which was implemented in January-July 2024. The population in this study were all breastfeeding mothers who had babies aged 0-6 months in May 2024 about 57 babies with purposive sampling. The types of data collected in this study include data on the results of hemoglobin examinations of breastfeeding mothers and the results of weighing babies aged 0-6 months. The bivariate analysis used by the researcher is Spearman Rank Correlation. **Result**: There is no relationship between the hemoglobin levels of breastfeeding mothers the nutritional status of infants aged 0-6 months. This result is Based on the results of the Spearman Rank test with p-value 0.143. **Conclusion**: There is no relationship between the hemoglobin levels of breastfeeding mothers and the nutritional status of infants aged 0-6 months. Implications for midwifery services are expected to continue to examine the nutritional status of infants to detect stunting and growth disorders. Recommendations for further research can be developed into research on other factors that influence the nutritional status of infants aged 0-6 months.

Keywords: breastfeeding mother, hemoglobin level, nutritional status of infants

Introduction

Stunting is a condition where a baby experiences chronic malnutrition which inhibits its growth and development. This occurs since the baby is in the womb until the age of 24 months. If the baby experiences stunting, then when they are adults they will be susceptible to obesity, non-communicable diseases, and poor cognitive abilities which will affect their life in adulthood (Haskas et al., 2020). Stunting occurs due to malnutrition in mothers and inadequate provision of complementary foods. Stunting causes impaired neurocognitive development. Later in life, children with stunting can experience non-communicable diseases and decreased productivity. The World Health Assembly (WHA) target is to achieve by 2025, a decrease in the number of toddlers experiencing stunting by 40% (WHO, 2014). According to data from the Indonesian Nutrition Status Survey (SSGI) at the BKKBN National Work Meeting, according to the Ministry of Health, the prevalence of stunting in 2022 is 21.6%. This figure has decreased from the previous year, which was 24.4% in 2021 (Kemenkes, 2023).

Several studies have been conducted to determine the causes of stunting in toddlers, especially toddlers aged 24-59 months. Some of these studies say that the incident Stunting in toddlers can be caused by exclusive breastfeeding received by toddlers. This research was conducted inside and outside Indonesia to find out the causes of stunting (Suciati & Wulandari, 2020). There is a possibility of a protective effect of exclusive breastfeeding on stunting in the group of maternal age during pregnancy > 30 years. The role of exclusive breastfeeding in preventing stunting is highly dependent on other supporting factors. In addition to increasing coverage, efforts are needed to improve the quality of exclusive breastfeeding to prevent stunting in the future (Hikmahrachim et al., 2020).

There are differences in nutritional status and incidence of infectious diseases between exclusively breastfed and non-exclusively breastfed children. Mothers who have babies must provide exclusive breastfeeding until the age of six months and provide appropriate complementary feeding starting from the age of six months, and are expected to always maintain hygiene and sanitation of the environment of the residence and themselves to prevent contamination with food consumed by the child (Novita Yustianingrum & Adriani, 2017). Duration of breastfeeding in mothers who exclusively breastfeed, most are included in the good category, while in mothers who do not exclusively breastfeed, most are included in the bad category (Aziezah Nur and Adriani Merryana, 2012). The proportion of stunting incidents is more occurring in girls compared to boys. Maternal anemia during pregnancy and history of Low Birth Weight will increase the risk of children becoming stunted. In this study, a history of Low Birth Weight had an 18.6 times greater risk of becoming stunted and a history of maternal anemia during pregnancy had a 17 times greater risk of becoming stunted (Meikawati et al., 2021). Breastfeeding mothers with poor nutrition will affect the adequacy of breast milk because the body needs sufficient nutrients to produce breast milk but the body cannot fulfill it so that the nutrients are taken from the mother's body so that over time the mother will experience increasingly poor nutrition. There is a relationship between the nutritional status of breastfeeding mothers and the adequacy of breast milk (Nurul Pujiastuti, 2010).

Based on a preliminary study conducted on March 18, 2024 with 10 mothers who have babies aged 0-6 months at the Posyandu in Plawikan Village, Jogonalan 1 Health Center working area, it was found that 6 out of 10 mothers only gave breast milk. In the health center's nutritional report data as of March 7, 2024, on the nutritional status of babies aged 0-23 months based on BB/U, there were 11 babies with very low body weight and 50 babies with low body weight. Therefore, researchers are interested in conducting research on the

relationship between hemoglobin levels of breastfeeding mothers and the nutritional status of babies aged 0-6 months in the Jogonalan 1 Health Center area, Klaten.

Objective

This study aims to determine the relationship between hemoglobin levels of breastfeeding mothers and the nutritional status of infants aged 0-6 months.

Method

Design of this research is cross sectional study. The research was conducted in the Jogonalan 1 Klaten Health Center area which was implemented in January-July 2024. All breastfeeding mothers who had babies aged 0-6 months in May 2024 in the Jogonalan 1 Klaten Health Center working area totaling 132 become population of this study. Sample included 57 babies with purposive sampling.

The inclusion criteria for this study include breastfeeding mothers with babies aged 0-6 months and mothers who exclusively breastfeed their babies without any additional food or drink, breastfeeding mothers who live in the Jogonalan 1 Klaten Health Center area. The exclusion criteria for this study include mothers who have not breastfed their babies since birth, breastfeeding mothers who are in an unhealthy condition 2 weeks before or at the time of data collection, breastfeeding mothers who have a history of chronic illness and mothers who have babies aged 0-6 months who are in an unhealthy condition 2 weeks before or at the time of data collection or in special conditions that can affect anthropometric measurements and determination of the baby's nutritional status.

The types of data collected in this study include data on the results of hemoglobin examinations of breastfeeding mothers and the results of weighing babies aged 0-6 months. The bivariate analysis used by the researcher is Spearman Rank Correlation.

Result

Table 1 describes the characteristics of the respondents.

Table 1. Characteristics of Respondents

No	Characteristics	n	%
1	Age		
	<20	0	0
	20-35	46	80.7
	>35	11	19.3
2	Education		
	Basic	3	5.3
	Moderate	34	59.6
	High	20	35.1
3	Occupation		
	Work	6	10.5
	Not Working	51	89.5
	Total	57	100

Based on the characteristics of the study subjects, most respondents were aged 20-35 years, about 46 people (80.7%), the majority of mothers' education was secondary education, about 34 respondents (59.6%), and most mothers did not work, about 51 respondents (89.5%). Table 2 is the result of a study on the relationship between hemoglobin levels of breastfeeding mothers and the nutritional status of infants aged 0-6 months in the working area of Jogonalan 1 Klaten Health Center.

Table 2. Relationship of Hemoglobin Levels of Breastfeeding Mothers to the Nutritional Status of Infants Aged 0-6 Months

Mother's Haemoglobin	Nutritional Status of Babies Aged 0-6 Months								Total	*P Value*
	Very Underweight		Underweight		Normal		Overweight			
	n	%	n	%	n	%	n	%		
Anemic	0	0	2	3.5	32	56.1	1	1.8	35	0,143
Not Anemic	0	0	0	0	20	35.1	2	3.5	22	
Total	0		2		52		3		57	

Spearman Rank Test

Table 2 shows the cross-sectional distribution of hemoglobin levels of breastfeeding mothers and nutritional status of infants aged 0-6 months (cross-sectional). There are 3.5% (2 people) of anemic breastfeeding mothers who have poor nutritional status of infants, but on the other hand there are 56.1% (32 people) of anemic breastfeeding mothers with normal nutritional status of infants. The results of the Spearman Rank test obtained a p value of 0.143 which means there is no relationship between hemoglobin levels of breastfeeding mothers and nutritional status of infants.

Discussion

Based on the characteristics of the study subjects, most respondents were aged 20-35 years, the majority of mothers' education was secondary education and most mothers did not work. According to the study Anggraeni et al., (2023), it was found that breastfeeding mothers who had hemoglobin levels in the anemia category were 19.0%. There is no relevance between the variables of maternal education level, age, upper arm circumference, family income level, vitamin C adequacy, exposure to cigarette smoke and pesticides, exposure to cigarettes, and iron intake with maternal hemoglobin levels.

Based on the results of our study, there is no relationship between the hemoglobin levels of breastfeeding mothers and the nutritional status of infants. According to Fiandany Erynda et al., (2019) showing that there is no relationship between the incidence of anemia in breastfeeding mothers and the nutritional status of infants aged 1-2 months in Lengkong, Mumbulsari Health Center Working Area. The duration of breastfeeding and the frequency of breastfeeding can affect the nutritional status of the baby. If both of these things are not met, the baby is susceptible to malnutrition. Anemia in pregnant women does not necessarily cause the baby's nutritional status to be poor. Meanwhile, another study of (Setiyaningsih et al., 2024) about the hemoglobin levels of pregnant women with the incidence of stunting In toddlers, it was found that the risk of stunting was 8 times greater in mothers who had a history of anemia during pregnancy compared to mothers who were not anemic with an Odds Ratio value of 8.337.

According to research Zulmi et al., (2019), exclusive breastfeeding is correlated with the nutritional status of toddlers. Toddlers who are not given exclusive breastfeeding are at 8 times greater risk of experiencing poor nutritional status compared to those who are given breastfeeding. Afriyani et al., (2018) explains that the mother's age factor in the 20-30 year group has a tendency to provide exclusive breastfeeding with an OR value of 2.967 compared to the age groups below and above it.

Based on study of Lindawati et al., (2019), education, knowledge, and family support are significantly related to exclusive breastfeeding. Meanwhile study of (Assriyah et al., 2020), found that there is no relationship between maternal attitudes, age, and education with exclusive breastfeeding, while there is a relationship between maternal knowledge, maternal employment, maternal psychology and early breastfeeding initiation (IMD) with exclusive breastfeeding. It can be seen that several internal and external factors can influence exclusive breastfeeding.

In the study (Arisa Putri Lubis et al., 2022), there were mothers who were anemic but had babies with normal nutritional status. Babies who are breastfed more often will get very good nutrition, so that the baby's stomach is not empty and continues to digest food. Anemia factors in breastfeeding mothers do not determine the nutritional status of babies.

Based on research,there is no relationship between the incidence of anemia in breastfeeding mothers and the quality of breast milk protein. Breastfeeding mothers with sufficient food portions, especially foods containing protein sources, can affect the composition of the breast milk they produce. Although breastfeeding mothers have poor nutritional status, based on studies, the quality of breast milk protein is in good condition. This makes breast milk a complete food for babies. The mother's food intake will adjust to the baby's needs (Abdul Syukur, dkk 2018). To determine the level of Fe in breast milk, it can be done by laboratory examination using the Atomic Abortion Spectroscopy (AAS) method. Based on the results of the study, Fe levels in breast milk of mothers with normal Hb did not differ from those of mothers with non-normal Hb (Ernawati et al., 2019).

The strenght of this study are using real-time observation examinations that do not rely on memory, so that the results of the study are expected to be accurate, but our study has limitations including examination of hemoglobin levels using portable digital GCHB where the tool is not as accurate as using cyanmethemoglobin, the number of samples is limited and does not represent the population in each village where the study was conducted. Researchers are aware of the limitations of not examining other factors that can affect the research variables. This study is also limited to a cross-sectional research design, where data collection on both variables is only once at one time.

Conclusion

There is no relationship between the hemoglobin levels of breastfeeding mothers and the nutritional status of infants aged 0-6 months. There are many factors that influence the status of infants, including exclusive breastfeeding, the environment, and family parenting patterns. Implications for midwifery services are expected to continue to examine the nutritional status of infants to detect stunting and growth disorders. Recommendations for further research can be developed into research on other factors that influence the nutritional status of infants.

Ethical Consideration

This research has been declared ethically acceptable by the ethics committee of Dr Moewardi Hospital with number 1212/V/HREC/2024.

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