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Research Article

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Relationship Between Breastfeeding History and The Principle of Providing MP-ASI with the Nutritional Status of Under-Two Children in the Working Area of the Puskesmas Beringin Raya Bengkulu City

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ABSTRACT

Baduta are infants under two years of age, which is a critical period or golden period in growth. Factors that influence the development and growth of under-fives are the provision of breast milk and complementary foods. Inappropriate nutritional intake will cause children to experience malnutrition. This study aims to determine the relationship between breastfeeding history and complementary feeding principles with the nutritional status of under-five children in the Beringin Raya Health Center Working Area, Bengkulu City. This research is a quantitative study using a cross-sectional study approach, the total number of respondents was 60 infants with purposive sampling technique, the research instrument used a questionnaire, lengthboard and baby scale. The analysis showed that 18.3% of under-two children did not receive exclusive breastfeeding with poor nutritional status, and 18.3% of under-two children did not receive appropriate complementary feeding with poor nutritional status. There was a significant relationship between breastfeeding history and the nutritional status of under-two children with a p-value of 0.047. There was a significant association between the principle of complementary feeding and the nutritional status of the under-five children with a p-value of 0.030. There is an association between breastfeeding history and complementary feeding principles with the nutritional status of under-two children. It is hoped that this study can help parents pay more attention to breastfeeding and complementary feeding to improve the health and quality of life of under-two.

Keywords: Breastfeeding, MP-ASI, Nutritional Status, IMT

Introduction

Infants under two years of age (Baduta) is a critical period in growth or known as the golden period with an age of up to 24 months. The condition that affects the early growth and development of baduta is the intake of nutrients needed for the physical development of infants. Nutrient intake plays a major role in the development and growth of infants [1]. Factors that influence the development and growth of under-five children are exclusive breastfeeding and complementary foods (MP-ASI) [2].

Breast milk (ASI) is milk produced by the mother or biological fluid that contains all the nutrients needed by the baby for the baby's growth and development needs [3]. The only good first food for babies is exclusive breast milk, which is breast milk from mothers given to babies aged 0-6months without additional food and drink. Breast milk should be the main and important food during the first year [4].

Complementary foods to breast milk (MP-ASI) are given to meet the needs of infants in development and growth. Complementary feeding is food and drink that contains nutrients, which is given to infants aged 6 months. Late complementary feeding will cause the baby to be malnourished and feeding at an early age result in the baby's digestive ability not being ready to receive additional food [5].

Complementary feeding is the process of providing food and other liquids given to infants starting at the age of 6 months when breast milk alone is no longer sufficient to meet the nutritional needs of infants. The importance of complementary feeding >6 months is because the maturity of the baby's digestive tract occurs at the age of 6 months and above, at this age the digestive system is relatively perfect and ready to receive complementary foods [6].

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Malnutrition in under-two children will affect the quality of life in the future. These nutritional deficiencies will lead to growth failure, low birth weight (LBW), wasting, stunting. Inadequate nutrition intake will cause children to become malnourished. Malnutrition can increase the incidence of morbidity and mortality [7].

The nutritional status in Indonesia based on regional basic health research data in 2018, the prevalence of undernourished (undernourished and malnourished) infants was 15%, wasting (thin and very thin) was 11.7%, stunting (short and very short) was 29.9%, obese infants were 9% and overnourished infants were 2.7% [8].

Based on the results of data collection from the Bengkulu City Health Office in 2022, the incidence of wasting in Bengkulu City is 83 toddlers, stunting 66 toddlers, and underweight 81 toddlers. The health center with the highest incidence of wasting, stunting and underweight among the 20 health centers in Bengkulu City is Beringin Raya Health Center with a total incidence of wasting 15 toddlers, stunting 16toddlers and underweight 21 toddlers (Bengkulu City Health Office, 2022).

Based on a study conducted by (M. I. Sari, 2022) about the incidence of stunting conducted in Sampang Regency. The results obtained from this study were toddlers who were not exclusively breastfed with a short category of 23.3% and very short 10.0%. Toddlers with a history of giving MP-ASI were 23.3% in the short category and 10% in the very short category, which showed a relationship between the history of exclusive breastfeeding and MP-ASI with the incidence of stunting.

Based on the results of a study conducted by about the nutritional status of infants in North Aceh District [4]. The results showed that there was a relationship between exclusive breastfeeding and complementary feeding with the nutritional status of infants aged 6-12 months. This research also states that infants who are not given exclusive breastfeeding and inappropriate complementary feeding at the age of 6 months are at 3 times the risk of being malnourished.

Based on the description above, the researchers are interested in conducting research on the relationship between breastfeeding history and the principles of complementary feeding with the nutritional status of under-five children in the Beringin Raya Health Center Working Area, Bengkulu City,2024.

Methods

The research design used is quantitative research that uses analytical observational methods with a cross-sectional study approach, which is a study conducted in a moment or only one time at a time to determine the relationship between breastfeeding history, and the principles of complementary feeding with nutritional status in under-two children in the Beringin Raya Health Center working area of Bengkulu City.

The independent variables in this study were breastfeeding history and complementary feeding principles while the dependent variable was the nutritional status of under-five children. The study was conducted in April-May 2024.

The population in this study were all under-five children aged 06-24 months in the working area of the Beringin Raya Health Center, Bengkulu City, which was recorded during January 2024, totaling 125 people. The sample in this study was taken using purposive sampling technique. Samples will be taken from all representatives of the posyandu where the posyandu at the Beringin Raya Health Center is 7 Posyandu so each posyandu will be taken 8 or 9 baduta. The sample size of this study was 60 infants aged 06-24 months. The number of samples required was calculated using the Lameshow formula,namely:

$$n = \frac{(\ )}{(\ ) - (\ )}$$

Data collection was carried out using primary and secondary data. Primary data was obtained based on the results of filling out the Breastfeeding History questionnaire and the MPASI provision principal questionnaire consisting of 10 questions and the results of measuring the height and weight of respondents using a long board and baby scales. This questionnaire was created by considering the instrument in order to explore the age of respondents and toddlers, whether toddlers receive exclusive breastfeeding or not and whether toddlers receive MP-ASI in accordance with the principles of providing MP-ASI in the form of food variations, textures, frequency of giving, amount, schedule of giving, cleanliness of tools and food given, the initial age of being given MP-ASI, and the place of storing MP-ASI. This questionnaire has been tested for validity in each question and reliability test with a Cronbach's Alpha result of 0.890. While secondary data was obtained from the annual report of the Bengkulu City Health Office, the annual report book of the Beringin Raya Health Center regarding the number of toddlers in the working area of the related Health Center.

This research has received permission from the research ethics commission of the Bengkulu Ministry of Health Polytechnic with an ethics certificate No.KEPK.BKL/355/05/2024.

Result and Discussions

Overview of Breastfeeding History in Under-two Children in the Working Area of Beringin Raya Health Center, Bengkulu City

An overview of the breastfeeding history of under-five children in the working area of the Beringin Raya Community Health Center, Bengkulu City can be seen in Table 1.

Table 1: Overview of Breastfeeding History of Under-five Children in the Working Area of Beringin Raya Health Center, Bengkulu City

Riwayat pemberian ASI	N	Persentase
1. ASI Eksklusif	35	58,3 %
2. Tidak ASI Eksklusif	25	41,7 %
Total	60	100 %

Source: Primary Data

Table 1 shows that most of the infants in the Beringin Raya Health Center working area received exclusive breastfeeding from 0-6 months of age, namely 35 infants (58.3%) while almost half of the infants, namely 25 infants (41.7%) did not receive exclusive breastfeeding. Of the 25 infants who were not

exclusively breastfed, 13 were breastfed with additional formula milk, 2 were breastfed with water, 3 were breastfed with formula milk and water,7 was breastfed with formula milk only, and none were breastfed with honey and water. Mothers who did not provide exclusive breastfeeding to their children informed that the cause was insufficient or small amounts of breast milk. This indicates that most parents in the area have a good understanding of the importance of providing exclusive breastfeeding to their children.

Overview of the Principles of MP-ASI Feeding in Under-two Children in the Working Area of Beringin Raya Health Center, Bengkulu City

An overview of the principles of complementary feeding for under-five children in the working area of the Beringin Raya Community Health Center, Bengkulu City can be seen in Table 2.

Table 2: Overview of the Principles of Providing MP-ASI to Under-five Children in the Working Area of Beringin Raya Health Center, Bengkulu City

Prinsip Pemberian MP-ASI	N	Persentase
1. Sesuai	36	60 %
2. Tidak Sesuai	25	40 %
Total	60	100 %

Source: Primary Data

Table 2 shows that most of the infants in the Beringin Raya Health Center working area were given complementary foods in accordance with the principles of complementary food provision, namely 36 infants (60%) while almost half of the infants, namely 24 infants (40%) did not get complementary foods in accordance with the principles of complementary food provision. Of the 24 infants who did not receive complementary food in accordance with the principles, many did not receive complementary food in accordance with the amount of complementary food and the frequency of eating. There were 4 baduta who received complementary food not on time, 2 baduta whose cleanliness of cutlery was not considered by the mother, 8 baduta whose meal time was not scheduled, 1 baduta was given food in a place that was not quiet, the mother did not see the surrounding environment when feeding the baduta, 2 baduta had not been taught by the mother to try to eat by themselves, 11 baduta did not get the appropriate amount of complementary food, 8 baduta did not get the appropriate frequency of eating, some mothers fed more often but in small amounts, 2 baduta got food with a texture that was not appropriate for their age, and there were 2 baduta whose food lacked variety. This indicates that most parents in the area have a good understanding and implementation of age-appropriate complementary feeding guidelines .

Overview of the Nutritional Status of Under-two Children in the Working Area of Beringin Raya Health Center,Bengkulu City

An overview of nuatritional status based on the IMT/U Index in under-five children in the working area of the Beringin Raya Community Health Center,Bengkulu City can be seen in Table 3.

Table 3: Nutritional Status of Under-five Children in te Working Area of Beringin Raya Health Center,Bengkulu City

Nutrition Status	N	Persentase
1. Good Nutrition	43	72 %
2. Poor Nutrition	17	28 %
Total	60	100 %

Source: Primary Data

Table 3 shows that out of a total of 60 children measured, 43 children or 72% were categorized as well-nourished, meaning that they had adequate and balanced nutritional intake according to the Body Mass Index by Age (BMI/U). However,there were still 17 children or 28% who were in the poor nutrition category consisting of 2malnourished children, 6 undernourished children, 7 at risk of overnutrition, and 2overweight children. This indicates that there are undernourished or overnourished infants who could affect their growth and development. This indicates the need for further efforts to improve the nutritional and health status of children in these vulnerable groups. Overall,although the majority of the Baduta in the region have good nutritional status, special attention still needs to be given to those who are malnourished to ensure improvements in their health and well-being.

Relationship between Breastfeeding History and Nutritional Status of Under-two Children in the Working Area of Beringin Raya Health Center, Bengkulu City

The relationship between breastfeeding history and nutritional status of under-two children in the working area of Beringin Raya Health Center, Bengkulu can be seen from table 4.

Table 4: Relationship between breastfeeding history and nutritional status of under-two children in the Beringin Raya Health Center Working Area

Breastfeeding History	Nutrition Status						p-Value	OR
	Good		Not Good		Total			
	N	%	N	%	N	%		
Exclusive breastfeeding	29	48,3	6	10	35	58,3	0,047	3,798
Not exclusively Breastfed	14	23,3	11	18,3	25	41,7		
Total	43	71.7	17	28,3	60	100		

Source: Primary Data, Continuity Correction Test

Table 4 shows that in the Breastfeeding History with Nutritional Status of infants, the p-value≤0.05 is 0.047, which means that there is an association between Breastfeeding History and Nutritional Status of infants in the Working Area of Beringin Raya Health Center, Bengkulu City in 2024. The results of the analysis also stated that infants who received exclusive breastfeeding were 3.798 times more likely to have a good nutritional status compared to children who did not receive exclusive breastfeeding.

The results of a study on the relationship between breastfeeding history and nutritional status of under-fives in the working

area of Beringin Raya Health Center, Bengkulu City, showed a significant relationship between breastfeeding and the nutritional status of children under two years of age. This study revealed that exclusive breastfeeding positively affects the nutritional status of children. Of the 60 children studied, 35received exclusive breastfeeding, of which 29 children (48.3%) had good nutritional status and only 6 children (10%) had poor nutritional status. In contrast, of the 25children who were not exclusively breastfed, only 14 children (23.3%) had good nutritional status, while 11 children (18.3%) showed poor nutritional status. The p-value of 0.047, which is smaller than 0.05, indicates that the association between breastfeeding and nutritional status is highly significant. In addition, the Odds Ratio (OR) value of 3.798 indicates that infants who received exclusive breastfeeding were 3.798 times more likely to have a good nutritional status compared to infants who did not receive exclusive breastfeeding.

This study confirms the importance of exclusive breastfeeding as a major factor in ensuring good nutritional status in children. Therefore, promotion and support for exclusive breastfeeding should continue to be enhanced as part of efforts to improve the nutritional status and health of children in the working area of Beringin Raya Community Health Center, Bengkulu City. It was found that 25% of under-five infants in the Beringin Raya puskesmas working area, which is actually unfortunate, considering that breast milk is a natural baby food that has the best balance of nutrients that are not found in other baby foods. Babies who are given colostrum will naturally get Ig A (immune substance) which is not found in cow's milk. The average macronutrient composition of mature breast milk is estimated to be about 0.9-1.2g/dL for protein, 3.2-3.6 g/dL for fat, and 6.7-7.8 g/dL for lactose. Energy estimates range from 65-70 kcal/dL. Many micronutrients vary in breast milk depending on the mother's diet and body stores including vitamins A, B1, B2, B6, B12, D, and iodine and other bioactive factors. The benefits of breastfeeding for infants are as a good nutrient, protective substance, psychological effects in the form of a sense of security and confidence, and reducing the incidence of dental caries and malocclusion [9].

These results are in line with the findings of a study that analyzed 68 studies covering more than 75,000 children in different countries. The results show that exclusive breastfeeding for the first six months of life is associated with better nutritional status, with a 54% lower risk of malnutrition in exclusively breastfed infants compared to those who were not exclusively breastfed. Exclusively breastfed infants had a significant improvement in nutritional status, with an average 30% reduction in the incidence of malnutrition compared to non-breastfed infants. This study also showed that breastmilk contributes to improved growth and development of infants up to two years of age, in line with the findings at the Beringin Raya Health Center which found that 48.3% of exclusively breastfed children had good nutritional status [10]. Another study also found that exclusively breastfed children had a higher average body mass index (BMI) by 1.5 points compared to children who were not exclusively breastfed, as wel1 as a 20% improvement in nutritional status. In addition, children who were exclusively breastfed for at least six months had a 40%lower risk of becoming malnourished [11].

The results contrast with the findings of a study that found that although exclusive breastfeeding reduced the prevalence of diarrhea by 25%, no significant association was found between exclusive breastfeeding and improved nutritional status. Data showed that 45% of exclusively breastfed children continued to show signs of malnutrition, with only 40% of them achieving good nutritional status. Factors such as maternal diet, environment, and sanitary conditions were also mentioned as contributing factors to malnutrition (Abdulahi et al., 2021). This finding is not in line with the results of a study at the Beringin Raya Health Center, which found that 48.3%of children who received exclusive breastfeeding had good nutritional status,compared to only 23.3% of those who did not receive exclusive breastfeeding.

Relationship between complementary feeding principles and nutritional status of under-two children in the working area of Beringin Raya Health Center, Bengkulu City.

The relationship between the principles of complementary feeding with nutritional status of under-two children in the working area of Beringin Raya Health Center,Bengkulu City can be seen in Table 5.

Table 5: Relationship between complementary feeding principles and nutritional status of under-two children in Beringin Raya Health Center Working Area

Principles of complementary feeding	Nutrition Status						p-Value	OR
	Good		Not Good		Total			
	N	%	N	%	N	%		
As per	30	50	6	10	36	60	0,030	4,231
Not suitable	13	21,7	11	18,3	24	40		
Total	43	71.7	17	28,3	60	100		

Source: Primary Data, continuity correction test

Table 5 shows that the principle of complementary feeding with the nutritional status of infants obtained p-value≤0.05, namely 0.030, which means that there is a relationship between the suitability of the principles of complementary feeding and the nutritional status of infants in the Beringin Raya Health Center Working Area, Bengkulu City in 2024. The results of the analysis also stated that infants who were given complementary food in accordance with the recommended principles had a 4.231 times greater chance of having a good nutritional status compared to infants who were given complementary food that was not in accordance with the principles of complementary food provision.

The results of a study on the relationship between the principles of complementary feeding and the nutritional status of under-five children in the working area of Beringin Raya Health Center,

Bengkulu City, showed a significant relationship between the suitability of the principles of complementary feeding and the nutritional status of children under two years of age. Based on data analysis of the 60 children studied, 36 children (60%) were given complementary foods in accordance with the recommended principles. Of this group,30 children (50%) had good nutritional status, while 6 children (10%) showed poor nutritional status. In contrast, of the 24 children who were not given complementary

foods according to the recommended principles, only 13 children (21.7%) had good nutritional status,while 11 children (18.3%) had poor nutritional status.

The p-value of 0.030, which is less than 0.05, indicates that the relationship between the suitability of complementary feeding principles and nutritional status is highly significant. This means that feeding complementary foods in accordance with the recommended principles significantly increases the likelihood of children having good nutritional status.In addition, with an Odds Ratio (OR) value of 4.231, children who are given complementary foods in accordance with the recommended principles are 4.231 times more likely to have good nutritional status compared to children who are given complementary foods that are not in accordance with the principles.

From the results of the study, it was found that 40% of under-five children did not get complementary food in accordance with the principles of complementary feeding, which is unfortunate because under-five children need food or drinks that contain nutrients to meet nutritional needs other than breast milk. This is because breast milk can only fulfill two-thirds of the baby's needs at the age of 6-9 months, and at the age of 9-12 months it fulfills half of the baby's needs [12]. Things that need to be considered in providing complementary food are the age of giving complementary food, the type of complementary food, the frequency of giving complementary food, the portion of giving complementary food, and how to give complementary food in the early stages.

These results are in line with research that emphasizes the importance of introducing complementary foods gradually and in a timely manner in accordance with child development to support optimal growth and development. Children who received complementary foods with the right principles had significant improvements in nutrient intake and physical development, reflecting the results of a study at Beringin Raya Health Center that showed a significant association between the appropriateness of complementary feeding principles and good nutritional status [13].

Other studies have also found that appropriate complementary feeding principles can substantially reduce children's risk of stunting, malnutrition, and other nutrition-related diseases. Providing complementary foods in accordance with recommendations can provide additional protection against nutritional problems during the child's growth period,in line with the findings at the Beringin Raya Health Center which showed an increased odds ratio (OR) of 4.231 for good nutritional status in children who received complementary foods in accordance with recommendations [14].

This result is also in line with previous research that emphasizes the importance of introducing complementary foods gradually and in a timely manner in accordance with child development to support optimal growth and development [15]. Children who received complementary feeding with the right principles had significant improvements in nutrient intake and physical development, reflecting the results of the study at Puskesmas Beringin Raya which showed a significant association between the appropriateness of complementary feeding principles and good nutritional status. In contrast, the results highlighted that while appropriate complementary feeding principles are important for child health and development, factors such as accessibility, parental understanding of nutrition, and availability of resources also have a major influence on successful implementation. The results show that in some contexts, even when the principles of complementary feeding are well followed, there are still challenges in achieving significant improvements in children's nutritional status [16]. This result is in contrast to the findings at Beringin Raya Health Center, which showed a significant association between the suitability of complementary feeding principles and good nutritional status.

Conclusion

Based on the results of research and discussion regarding the relationship between breastfeeding history and the principles of complementary feeding with nutritional status in under-two children in the working area of Beringin Raya Health Center, Bengkulu City in 2024. There is a relationship between breastfeeding history and nutritional status of under-five children in the working area of Beringin Raya Health Center,Bengkulu City, 2024. There is a relationship between the principles of complementary feeding and nutritional status in under-five children in the working area of Beringin Raya Community Health Center, Bengkulu City, 2024.

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