

RELATIONSHIP BETWEEN EXCLUSIVE BREASTFEEDING, LOW BIRTH WEIGHT, AND FOOD INTAKE WITH STUNTING INCIDENCE IN CHILDREN AGED 24-59 MONTHS

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ABSTRAK

Jenis penelitian ini adalah kuantitatif analitik dengan pendekatan kasus-kontrol. Penelitian ini bertujuan untuk mengetahui hubungan antara ASI Eksklusif, Berat Badan Lahir Rendah dan Asupan Makanan dengan kejadian Stunting pada anak usia 24-59 bulan di Wilayah Kerja Puskesmas Perawatan Jambula. Penelitian ini dilakukan di Wilayah Kerja Puskesmas Perawatan Jambula dengan sampe 60 anak usia 24-59 bulan, terdiri dari 30 anak usia 24-59 bulan (kasus) dan 30 anak usia 24-59 bulan (kontrol). Variabel terikat penelitian ini adalah kejadian Stunting pada anak usia 24-59 bulan, sedangkan variabel bebas adalah pemberian ASI Eksklusif, Berat badan lahir rendah dan Asupan makanan. Hasil penelitian menunjukkan adanya hubungan yang bermakna antara pemberian ASI Eksklusif ($p=0.000$), Asupan Energi ($p=0.000$) dan Asupan Protein ($p=0.045$) dengan kejadian Stunting pada anak usia 24-59 bulan di Wilayah Kerja Puskesmas Perawatan Jambula, sedangkan Berat badan lahir rendah ($p=0.492$) tidak memiliki hubungan dengan kejadian Stunting pada anak usia 24-59 bulan di Wilayah Kerja Puskesmas Perawatan Jambula. Disarankan kepada ibu dan masyarakat untuk selalu memperhatikan asupan gizi yang dikonsumsi anak termasuk ASI Eksklusif dan berbagai makanan bergizi. Selain itu, peran aktif tenaga kesehatan di fasilitas pelayanan kesehatan perlu ditingkatkan untuk mencegah dan mengatasi masalah Stunting di daerah.

Kata Kunci: ASI Eksklusif, Berat Badan Lahir Rendah, Asupan Energi, Asupan Protein

ABSTRACT

This type of research is quantitative analytic with a case-control approach. This study aimed to determine the relationship between exclusive breastfeeding, low birth weight, and food intake with the incidence of stunting in children aged 24-59 months in the Jambula Care Health Centre Working Area. This research was conducted in the working area of Jambula Health Center with a sample of 60 children aged 24-59 months, consisting of 30 children aged 24 - 59 months (Case) and 30 children aged 24 - 59 months (Control). The study's dependent variable was the incidence of stunting in children aged 24-59 months. In contrast, the independent variables were the history of exclusive breastfeeding, the history of LBW, and food intake. The results showed a significant relationship between a history of exclusive breastfeeding ($p = 0.000$), energy intake ($p = 0.000$), and protein intake ($p = 0.045$) with the incidence of stunting in children aged 24-59 months in the Jambula Health Center Work Area, while the history of LBW ($p = 0.492$) does not have a relationship with the incidence of stunting in children aged 24-59 months in the Jambula Health Center Work Area. It is recommended to mothers and the community to always pay attention to the nutritional intake consumed by children, including exclusive breastfeeding and various nutritious foods. In addition, the active role of Health Workers in Health Service Facilities needs to be increased to prevent and overcome stunting problems in the regions.

Keywords: Exclusive Breastfeeding, Low Birth Weight, Energy Intake, Protein Intake

INTRODUCTION

The occurrence of nutritional problems in infants is caused, among other things, by the fact that breast milk is replaced by formula milk in amounts and ways that are not following the needs of infants.

According to the World Health Organisation (WHO), 1-1.5 million infants die yearly due to the lack of exclusive breastfeeding. The death of infants can be prevented by exclusively breastfeeding. Babies are exclusively breastfed. Six months can reduce the under-five mortality rate by 13% (Hanifah, Lilik, 2020).

Stunting is a chronic nutritional problem facing Indonesia today. Data on the prevalence of stunted toddlers collected by the World Health Organization (WHO), Indonesia is the third country with the highest prevalence of stunting in the Southeast Asia/South-East Asia Regional (SEAR). The average prevalence of stunting in Indonesia from 2005-2007 was 36.4%. According to the 2018 Riskesdas data, 11.5% of children under five are very short, and 19.3% are short, which will impact the quality of Indonesia's human resources in the future (Supriyatni, 2021).

Globally, the prevalence of Stunting in Indonesian children reached 30.08% in 2018, decreasing to 27.67% in 2019. This figure will get 24.1% in 2020. According to the 2020 nutrition report of the North Maluku Provincial Health Office, the prevalence of Stunting in North Maluku Province reached 12.5%. Several factors cause stunting, namely unbalanced food intake (related to the content of nutrients in food, namely carbohydrates, protein, fat, minerals, vitamins, and water), a history of low birth weight (LBW), a history of the disease, exclusive breastfeeding, not receiving complementary foods. (UNICEF, 2013).

Inadequate breastfeeding in Indonesia causes infants to suffer from undernutrition and malnutrition. Malnutrition in infants will impact have an impact on psychomotor, cognitive, and social disorders as well as clinically impaired growth (Haryono et al., 2014).

Birth weight is an indicator of a child's growth and development into adulthood and describes the nutritional status of the fetus during the womb. In developing countries, low birth weight (LBW) is still one of the problems of nutritional deficiencies. Low Birth Weight is a baby weighing less than 2,500 grams, regardless of the gestation period (Kosim, 2012). Low Birth Weight is the most dominant factor at risk of Stunting in children; the high rate of Low Birth Weight is estimated to be the cause of the high incidence of stunting in Indonesia (Nadiyah, 2014; Nasution, 2014).

Many children are malnourished as a result of improper feeding. Growth faltering in Indonesian children starts at 4-6 months when infants are given supplementary food and continues to worsen until 18-24 months of age. Malnutrition contributes to two-thirds of under-five deaths. Two-thirds of these deaths are related to inappropriate feeding practices in infants and young children. (WHO/UNICEF, 2013). This study aimed to determine the relationship between exclusive breastfeeding, low birth weight, and food intake with the incidence of stunting in children aged 24-59 months in the Jambula Care Health Centre Working Area.

METHOD

This research is Quantitative Analytical with a Case-Control research design used to determine

the relationship between the independent and dependent variables. This type of research is Quantitative Analytical, meaning that collecting data starts with the effects or consequences. Then the effect is traced to the cause or variables that affect the impact (Notoatmodjo, 2005).

Data collection starts with the cohort data from the Jambula Health Centre in 2019. The total population of children aged 24-59 months in the Jambula Care Health Centre Working Area is 317 toddlers. With the number of stunting toddlers, as many as 30 toddlers. What needs to be known is that in 2021 there are additional stunting toddlers recorded in the Jambula Care Health Centre Working Area, as many as 10 toddlers aged 0-59 months.

The sample in this study was divided into 2 groups, namely, the case group and the control group. The case sample in this study was 30 toddlers aged 24-59 months stunted at the Jambula Care Health Centre in 2021. Meanwhile, the control sample in this study was 30 toddlers aged 24-59 months who were not stunted at the Jambula Care Health Centre in 2021. The total number of samples The number in this study was 60 samples. So it can be seen that the sample ratio is 1: 1.

The sampling technique in this study was carried out by Probability Sampling, a sampling method where all members of the population are sampled. The case sample in this study was obtained based on the list of records of the nutritional status of children aged 24-59 months conducted by the Jambula Care Health Centre in 2021 and was selected using a sampling table. Control samples in this study were taken by Simple Random Sampling, a simple random sampling method where control sampling is carried out in the local area of the case sample and based on age group.

The tools or instruments used in this study were the Lenght Board and Microtoise to measure the child's height with an accuracy of 0.1 cm, a questionnaire for exclusive breastfeeding, and low birth weight. This questionnaire refers to the previous researcher's questionnaire and is modified by the researcher and the Recall table to see the type and amount of food consumed.

The method of data collection in the study was divided into 2, namely, primary and secondary data. Primary data are the results of questionnaires and 2x24 hour recall tables conducted by researchers coupled with measurements of children's height and assisted by one of the Fikes students of Muhammadiyah University of North Maluku. While secondary data is data obtained from the Ternate City Health Office and the North Maluku Provincial Health Office and also obtained from the nutrition report of the Jambula Care Health Centre, Ternate City, in the form of records of toddlers aged 0-59 months and the number of prevalence rates of stunting toddlers.

Data processing obtained through interviews with respondents using a questionnaire was then processed using SPSS and the 2x24 hour Food Recall table, which was then processed using the Nutri Survey application to determine the amount of energy and protein consumed. And the presentation of data is presented in tabular form accompanied by interpretation. This data analysis was carried out to determine whether there was a relationship between the independent and the dependent variables using

the Chi-Square test.

RESULTS AND DISCUSSION

The univariate analysis in this study is in the form of a frequency distribution of gender, distribution of exclusive breastfeeding, and frequency distribution of protein intake.

Table 1. Characteristics of Toddlers (24-59 months) in the Jambula Care Health Centre Working Area in 2021

Characteristics	N	%
Gender		
Male	32	53,3
Female	28	46,7
Exclusive breastfeeding history		
Non-exclusive breastfeeding	20	33,3
Exclusive breastfeeding	40	66,7
Protein Intake		
Adequate	49	81,7
Deficit	11	18,3

Source: primary data, 2021

Table 1 shows the gender characteristics of male toddlers aged 24-59 months were 32 or 53.3%, and female toddlers aged 24-59 months were 28 or 46.7%. In the characteristics of exclusive breastfeeding history, it is known that toddlers aged 24-59 months who are non-exclusive breastfeeding or who do not get exclusive breastfeeding are 20 toddlers or 33.3%, while toddlers aged 24-59 months who get exclusive breastfeeding are 40 toddlers or 66.7%. And on the characteristics of protein intake of toddlers aged 24-59 months with adequate protein intake, as many as 49 toddlers or 81.7%, while toddlers aged 24-59 months with deficit protein intake are 11 toddlers or 18.3%.

Table 2. Characteristics of birth weight, height, and energy and protein intake of children under five years of age (24-59 months) in the Jambula Health Centre

Characteristics	n	mean	SE Mean	Min – maks	SD	95% CI
Low Birth Weight (g)	60	2985	44,202	2400 -4100	342,3	2896,55 – 3073,45
Height (cm)	60	88,98	763	72 – 101	5,9	87,46 – 90,51
Energy intake (kcal)	60	1310,75	79,91	228 – 3211	619,611	115,69 – 147,81
Protein intake (g)	60	48,33	2,557	23 -123	19,81	43,22 – 53,45

Source: primary data, 2021

Based on table 2 shows that the characteristics of birth weight with the number of respondents, namely 60 toddlers, have an average birth weight of 2985 grams with a standard deviation value of 342.3. In the characteristics of height with the number of respondents, 60 toddlers have an average height of 88.98 cm with a standard deviation value of 5.9. Regarding the characteristics of energy intake among respondents, 60 toddlers have an average energy consumption value of 1310.75 kcal with a standard deviation of 619.611. And on the characteristics of protein intake with the number of respondents, 60 toddlers have an average value of protein consumption of 48.33 g with a standard deviation value of 19.81.

2. Bivariate Analysis

This study used Bivariate Analysis, with the Independent Variables being Exclusive Breastfeeding, Low Birth Weight, and Food Intake, and the Dependent Variable being the Incidence of Stunting ($\alpha = 0.05$). The following table analysis is as follows.

Table 3. Analysis of the Relationship between Exclusive Breastfeeding, Low Birth Weight, and Food Intake with the Incidence of Stunting in Children 24-59 Months of Age in the Jambula Care Health Centre Working Area

Variable	Case		Control		p-value
	n	%	n	%	
Exclusive breastfeeding					
Non-exclusive breastfeeding	20	33,3	0	0	0.000
Exclusive breastfeeding	10	16,7	30	50	
Low birth weight					
Stunting	2	3,3	0	0	0.492
Normal	28	46,7	30	50	
Energy intake					
Deficit $\leq 80\%$ RDA	8	13,3	0	0	0.000
Adequate $\geq 80-120\%$ RDA	12	20	4	6,7	
More $\geq 120\%$ RDA	10	16,7	26	43,3	
Protein intake					
Adequate $\geq 80-120\%$ RDA	9	15	2	3,3	0.045
More $\geq 120\%$ RDA	21	35	28	46,7	

Source; primary data, 2021

Table 3 shows that in the exclusive breastfeeding variable, 20 or 33.3% were given exclusive breastfeeding, while 10 or 16.7% were given exclusive breastfeeding. In comparison, the control toddlers given exclusive breastfeeding were 30 or 50%, with a p-value of 0.000. Then the Low Birth Weight variable showed that stunted toddlers with Low Birth Weight ≥ 2500 gr were 2 toddlers (3.3%), while stunted toddlers with birth ≤ 2500 gr were 28 toddlers (46.7%). While normal toddlers with birth ≤ 2500 gr are 30 toddlers (50%) with a p-value = 0.492. Furthermore, the energy intake variable shows that toddlers with less energy intake are 8 or 13.3%, those with sufficient energy intake are 12 or 20%, and those with more energy intake are 10 toddlers (16.7%). While Normal toddlers with enough energy intake are 4 toddlers (6.7%), normal toddlers with more energy intake are 26 or 43.3%, with a p-value = 0.000. And the protein intake variable shows that the case toddlers who get enough protein intake are 9 toddlers (15%) and case toddlers who get more protein intake are 21 toddlers (35%). In comparison, normal toddlers who get enough protein intake are 2 toddlers (3.3%), and normal toddlers who get more protein intake are as many as 28 toddlers (46.7%) with a p-value = 0.045.

Analysis of exclusive breastfeeding variables was collected in a Quantitative Analytical way using a questionnaire as a research instrument, which was then analyzed using SPSS.

Based on the results of the Chi-Square statistical test analysis that has been carried out, the p-value = 0.000 was obtained. This shows that the p-value = 0.000 is smaller than the $\alpha = 0.05$ value, so H_a is accepted and H_0 is rejected, which means that the exclusive breastfeeding history variable has a relationship with the incidence of stunting in toddlers aged 24-59 months in the Jambula Care Health

Centre Working Area.

This study is in line with Erna Eka Wijayanti's (2019) research, showing that toddlers who do not get exclusive breastfeeding experience stunting, while toddlers who are given exclusive breastfeeding are almost entirely normal. Based on Chi-Square test results, the p -value = (0.000) is smaller than the α value (0.05), which means there is a relationship between exclusive breastfeeding and the incidence of stunting in toddlers aged 2-5 years in Jadi Village, Tuban District. Besides that Study in Sangkrah, Central Java, also showed that non-exclusive breastfeeding and stunting are significantly correlated (adjusted OR for exclusive breastfeeding 0.234; p -value =0.034). Regarding stunting in young children under five, breastfeeding may be a protective factor. The association between stunting and low birth weight in infants is also very strong, adjusted OR 10.510; p -value = 0,035. (Endang Dewi Lestari.,et.al, 2018)

Regarding dietary considerations, early breastfeeding initiation showed lower probabilities of stunting. This is in line with a previous study by Muldiasman et al. (2018), who found that starting breastfeeding young children lowers their risk of stunting. Early breastfeeding ensures the infant receives colostrum, which boosts the child's resistance to illness.

The analysis of the variable history of low birth weight (LBW) was collected in the same way as the analysis of the variable history of exclusive breastfeeding, which was collected in a Quantitative Analytical way using a questionnaire as a research instrument converted or analyzed using SPSS.

Based on the Chi-Square statistical test analysis that has been carried out, there is no relationship between a history of low birth weight and the incidence of stunting in children 24 – 59 months of age (p -value = 0.492 > 0.05). There is 3.3% low birth weight who stunting in the case group and 0% low birth weight in the control group.

Environmental and maternal factors include chronic undernutrition, numerous pregnancies, placental insufficiency, pregnancy problems (such as pre-eclampsia), infections, and other toxic exposures that contribute to intrauterine growth restriction, which is the main cause of low birth weight (at term) (Muchemi et al., 2015).

The result of this study is not in accordance with the research by Suriana et al. (2021), in which statistical tests that were carried out obtained a value of $p = 0.000$ ($\alpha < 0.05$). Thus it can be concluded that there is a significant relationship between birth weight and the incidence of stunting in toddlers in the working area of Mattombong Health Centre, Cappakala Village, Mattirosompe District, Pinrang Regency.

The energy intake category is divided into 3 categories, namely deficit (<80% RDA), Adequate (≥ 80 -120% RDA), and More (≥ 120 % RDA). Consumption of nutritional energy substances was collected quantitatively using the 2 x 24-hour Food Recall method. Energy consumption data for 2 days was initially in the form of a list of food menus consumed and then converted using the Nutri Survey

application using the food ingredient composition list (DKBM) to obtain the level of energy adequacy of toddlers.

Based on the results of the Chi-Square statistical test analysis that there is a relationship between food intake (energy intake) with the incidence of stunting in children 24 -59 months of age in The Jambula Care Health center working area ($p= 0.000 < 0.05$)

Based on the research results from Aisyah and Yuniarto (2021), energy is one of the macronutrient indicators needed by toddlers. This study shows that energy intake is a factor associated with under-five stunting. Insufficient energy intake has a risk of 6.111 times the incidence of stunting in toddlers in Karanganyar village.

The results of research conducted by Jati and Nindya (2017) stated that most of the under-fives had inadequate energy intake and adequate protein intake, and 24.2 % were underweight. There was a relationship between energy intake ($p = 0.044$) and protein intake ($p = 0.038$) with BB/U nutritional status. Energy and protein contribute to the incidence of underweight in under-five children. Therefore, it is recommended to always increase food consumption by providing food intake that contains energy and protein for optimal growth. Inadequate energy intake is associated with the risk of stunting.

The protein intake category is divided into 3 categories again, namely the categories of deficit ($\leq 80\%$ RDA), adequate ($\geq 80-120\%$ RDA), and more ($\geq 120\%$ RDA).

To determine the protein adequacy level of toddlers, protein nutrient consumption was quantified using the 2 x 24-hour Food Recall method, as was done to collect energy adequacy data, among other things. This data was then converted using the Nutrisurvey application using the food ingredient composition list.

The number of toddlers aged 0-35 months who experienced a deficit or lack of protein intake ≤ 26 gr was 11 toddlers or 18.3% of the total 60 toddlers, while toddlers aged 36-59 months whose protein intake was adequate ≥ 35 gr was 49 toddlers or 81.7% of the total 60 toddlers. Based on the Chi-Square statistical test analysis that has been done, the p -value = 0.045 is obtained. This shows that the p -value = 0.045 is smaller than the $\alpha = 0.05$ value, so H_a is accepted and H_0 is rejected, which means that the protein intake variable has a significant relationship with the incidence of stunting in toddlers aged 24-59 months in the Jambula Care Health Centre Working Area.

In line with Isseu S and Yuniarto's (2021) research, protein has a major role in growth in children under five. Insufficient protein intake is associated with a risk of stunting 5.160 times compared to adequate protein intake in children under five. This follows research that states that stunted children have lower protein intake than normal children. Therefore, quality protein intake is needed to improve the linear growth of stunted toddlers.

A study in Bangladesh (Shafique S et al., 2016) showed that In Bangladesh's rural areas, daily home fortification of supplementary foods with an MNP containing 22 micronutrients decreased

stunting at 12 months in FT-LBW infants. The decreased stunting was probably caused by the better availability of critical nutrients for linear growth in the second half of infancy. There were no discovered safety issues with the new micronutrient composition. The price difference between the 22 and 15 micronutrient MNP formulations was marginal.

CONCLUSIONS AND SUGGESTIONS

There is a relationship between the exclusive breastfeeding history variable ($p=0.000$), energy food intake ($p=0.000$), protein food intake ($p=0.045$) with the incidence of stunting in toddlers aged 24-59 months in the Jambula Care Health Centre Work Area. And There is no relationship between the variable history of low birth weight (LBW) and the incidence of stunting in children aged 24-59 months in the Jambula Care Health Centre Work Area, with a p -value of 0.492.

It is recommended to mothers and the community to always pay attention to the nutritional intake consumed by children, including exclusive breastfeeding and various nutritious foods. In addition, the active role of Health Workers in Health Service Facilities needs to be increased to prevent and overcome stunting problems in the region.

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