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Risk Factors for Stunting at Lurasik Health Center

Eleonora Edeltrudis Nopala [1)], Intje Picauly [2)], Anna H. Talahatu [3)]
[1,2,3)]Public Health Science Program, Public Health Faculty, Nusa Cendana University;
eleneleonora98@gmail.com intjepicauly@staf.undana.ac.id annatalahatu80@gmail.com

ABSTRACT

Stunting is a condition of failure to thrive in children under five years old (infants under five years old) due to chronic malnutrition so that the child is too short for his age. This study aims to determine the factors that influence the incidence of stunting in the Lurasik Health Center Work area, North Biboki District, North Central Timor Regency. This type of research is an analytic survey with a case-control study design. The sample of the study was 148 toddlers who were divided into 74 case samples and 74 control samples. The use of data analysis was univariate, bivariate, and multivariate analysis with statistical tests of simple logistic regression and multiple logistic regression. The results of this study indicate that the factor which influences stunting was a history of infectious disease (p= 0.008), energy adequacy level (p= 0.000), protein adequacy level (p = 0.000), history of exclusive breastfeeding (p= 0.000), level of parental income (p= 0.031), while the factor that did not affect the incidence of stunting was level of mother's work (p= 0.869). The dominant factor which most influence the stunting was the history of gave breastfeeding, the level of energy sufficiency and the level of protein adequacy. It is hoped that with the factors that influence the incidence of stunting in toddlers in the working area of the Lurasik Health Center, it can add information to the public so that stunting prevention is further improved.
***Keywords**: Stunting; Toddler.*

ABSTRAK

Stunting adalah kondisi gagal tumbuh pada anak balita (bayi di bawah lima tahun) akibat dari kekurangan gizi kronis sehingga anak terlalu pendek untuk usianya. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang mempengaruhi kejadian *stunting* di wilayah Kerja Puskesmas Lurasik, Kecamatan Biboki Utara, Kabupaten Timor Tengah Utara. Jenis penelitian ini adalah survey analitik dengan desain *case control study*. Sampel dalam penelitian ini sebanyak 148 balita yang dibagi menjadi sampel kasus sebanyak 74 dan sampel kontrol 74 balita. Analisis data yang digunakan adalah analisis univariat, bivariat dan multivariat dengan uji statistik regresi logistik sederhana dan regresi logistik berganda. Hasil penelitian ini menunjukkan bahwa faktor yang berpengaruh terhadap kejadian *stunting* adalah riwayat penyakit infeksi (*p*=0,008), tingkat kecukupan energi (*p*= 0,000), tingkat kecukupan protein (*p* = 0,000), riwayat pemberian ASI Eksklusif (*p*= 0,000), tingkat pendapatan orangtua (*p*= 0,031), sedangkan faktor yang tidak berpengaruh terhadap kejadian *stunting* adalah tingkat pekerjaan ibu (*p*= 0,869). Faktor dominan kejadian *stunting* yang paling berpengaruh adalah riwayat pemberian ASI Eksklusif, tingkat kecukupan energi dan tingkat kecukupan protein. Diharapkan dengan adanya faktor yang mempengaruhi kejadian stunting pada balita diwilayah kerja puskesmas Lurasik maka dapat menambah informasi kepada masyarakat agar pencegahan *stunting* lebih ditingkatkan lagi.
Kata Kunci: *Stunting;* Balita.

INTRODUCTION

The children nutritional conditional influenced by both of direct and indirect factors. Nutritional deficiencies and infectious illnesses are direct causes of malnutrition. The indirect are cause by the lack of food in the home, insufficient child care, quality of poor water or environmental cleanliness, and the lack of health-care use. The most come about of Essential Wellbeing Inquire about (Riskesdas 2018) is [(1)] appeared that the predominance of stunting in Indonesia is diminished from 37.2% to 30.8% from 2013 to 2018. It means that Indonesia is having problems with stunting which the prevelance number above 20% based on World Health Organization (WHO). East Nusa Tenggara (NTT) is city with the highest percentage of stunting in Indonesia. Although it decreased from 51.7 percent in 2013 to 42.6

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percent in 2018, NTT continues ranked terms of stunting prevalence above. North Central Timor Regency is one of 13 districts in NTT Province's 100 priority districts for management stunting, which are drawn from 21 districts [(2)].

The results of a recapitulation of Nutrition Status Monitoring (PSG) trough e-PPGBM, prevalence of stunting in North Central Timor Regency was 51,26 percent (7154 toddlers) in August 2018, 42,58 percent (7466 toddlers) in 2019, and 28,9 percent in 2020 (5836 children under five). Even though it has decreased, there are still sub-districts in this district where the prevalence of stunting is quite high, namely North Biboki District in 2018 which has the prevalence of stunting out highest of 24 sub-districts in Northern Central Timor district, namely 68,89% (567 toddlers) and 41,33 % (353 children under five) in 2019 [(3)]. The northern Biboki sub-district best has one medical institution, referred to as Lurasik sanatorium where is the prevalence of stunting is quite excessive and spread in 10 villages with the wide variety of stunting instances in 2020 amounting to 23,8% (248 toddlers) out of 1038 toddlers [(4).] The cases have decreased but the percentage is still above the standard of WHO. The results of the evaluation in the field stated that the reduction in stunted prevalence was inseparablefrom the role of cross OPD (Regional Apparatus Organizations) related to the acceleration process of underwriting the stunting problem, in this case, the application of convergence to prevent and overcome stunting problems (Assisting acceleration convergence action) [(5)].

Infectious diseases affect nutritional status through decreased food intake, decreased intestinal absorption of food, increased catabolism, and the uptake of nutrients needed for tissue synthesis and growth. According to the data of Lurasik Health Center, ARI was the highest case of disease, with 452 cases, and diarrhea with 157 cases or 86.3% [(4)]**.** The Nutritional intake of toddlers is very important to supporting growth so that there is no growth faltering that can cause stunting [(1)]**.** Exclusive breastfeeding for babies can provide benefits for both mother and baby. Breast milk is the best food**,,** practical, affordable, and an ideal vitamin composition based on their needs and digestive abilities. Breast milk also help babies grow, it have calciums which more easily absorbed than formula milk calcium [(6)] stated that the socio-economic family, namely education, work, and family income can hazard variables for hindering in children.

Toddlers with low energy and protein intake are at risk of stunting compared to toddlers who have adequate levels of energy and protein intake. Researchers suspect that stunting occurs in the working area of the Lurasik Health Center because the food obtained is not used by the community for consumption but the community prefers to be sold because North Biboki District is one of the contributing sub-districts in North Central Timor Regency in the form of grains, corn, tubers, nuts and animals and the livelihoods of the most people are farmers who only plant once a year so that they can increase people's income. In addition, researchers also suspect that this is because children prefer to eat foods that have low nutritional value such as noodles and snacks so children lack energy and protein intake which affects the growth and development these children.

Breast milk is the best food, practical, economical, has an ideal composition of nutrients according to the needs and digestive abilities of babies and breast milk supports growth for babies, especially height because breast milk calcium is more easily absorbed than formula milk. Low exclusive breastfeeding in the working area of the Lurasik Health Center can cause stunting in toddlers. The socioeconomic level of the family, namely education, work, and family income are risk factors for stunting in children. Low economic status at the Lurasik Health Center such as family income and work can indirectly cause stunting in toddlers.

METHOD

The strategy is an explanatory study consisting of a case-control ponder plan. This studywas conducted at the Lurasik Health Center's working area in North Biboki District, North Central Timor Regency from February to March 2021 and used a case population and a control population. Thecase population includes those children under the age of five who are stunted in the Lurasik Health Center's working region, which are 228 toddlers. All children under the age of five in the Lurasik HealthCenter's working region were included in the control group, which included 810 toddlers. Little children matured 12-59 months who don't stunting as controls, whereas little children matured 12-59 months who are hindering categories as the case gather. Determination the size of the control sample and case sample using a proportion of 1:1 with a testing prodecure that is simple random sampling, sothat the number of respondents in the control sample are 74 children under five and respondents in the case sample are children under five. Data processing in the study was analyzed using a simple logistic regression test and multiple logistic regression with a 95 % confindence level with significance limit (a) = 0.05. The processed data is next interpreted before being displayed in the form of tables and narratives. The research ethics feasibility test was passed, and the number of ethical approval/study is 2020228-KEPK.

RESULTS AND DISCUSSION

1. Univariate Analysis Results

In univariate, Table 1 shows many respondents who do not suffer from infectious diseases (66.2%) are high, the level of energy sufficiency (65.5%) is low and the level of protein sufficiency (58.1%) is sufficient. However, most of the respondents' children (60.8%) received exclusive breastfeeding but had a low-income level (58.8%) and more respondents did not work (53.4%).

Table 1. In the Lurasik Health Center Work Area, respondents were distributed based on independent variables studied

Independent Variable	Total (n=148)	Percentage (%)
History of Infectious Disease		
Ever Suffered	58	39.2
Never Suffered	90	60.8
Energy Adequacy Level		

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Less	97	65.5
Enough	51	34.5
Protein Adequacy Level		
Less	62	41.9
Enough	86	58.1
History of Exclusive Breastfeeding		
Not Exclusive	50	33.8
Exclusive	98	66.2
Parental Income Level		
Low	87	58.8
High	61	41.2
Mother's Occupation:		
Not Working	79	53.4
Working	69	46.6

2. Bivariate Analysis Results

Table 2 shows that bivariate history of infectious diseases, energy sufficiency level, protein adequacy, exclusive breastfeeding, and parental income influences stunting at Puskesmas Lurasik with a value of 0.05, whereas mothers who work have no effect with a value of p>0.05

Table 2. Effect of a history of infectious disease, energy adequacy level, protein adequacylevel, history of exclusive breastfeeding, parental income, mother's occupation on incidence Stunting in the Lurasik Health Center Work Area

Variable	Case		Control		Total		OR	p-value
	n	%	n	%	N	%		
Mother's work								
Not Working	40	50.6	39	49.4	79	100	1.056	0.869
Working	34	49.3	35	50.7	69	100		
Parents' Income Level								
Low	50	57.5	37	42.5	87	100	2,083	0.031
High	24	39.3	37	60.7	61	100		
Energy Adequacy Level								
Less Energy Consumption	66	68	31	32	97	100	11.444	0.000
Enough Energy Consumption	8	15.7	43	84.3	51	100		
Protein Adequacy Level								
Less Protein Consumption	43	69.4	19	30.6	62	100	4,015	0.000
Adequate Protein Consumption	31	36	55	64	86	100		
History of select breastfeeding								
No select breastfeeding	46	92	4	8	50	100	28,750	0.000
Select reastfeeding	28	28.6	70	71.4	98	100		
History Of infectious diseases								
Ever suffered	37	63.8	21	36.2	58	100	2,524	0.008
Not suffering	37	41.1	53	58.9	90	100		

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3. Multivariate Analysis Results

By comparing the OR values obtained, the order of importance of the determining factors was history of exclusive nursing (OR=34,823), energy adequacy level (18,819), the analysis, and protein adequacy level (3,290).

Table 3. The Final Results of Logistic Regression

Variable	B	Sig.	Exp (B)
The History of exclusive breastfeeding	3,550	0,000	34,823
Energy adequacy level	2,935	0,000	18,819
Protein adequacy level	1,191	0,014	3,290
Constant	-4,106	0,000	0,016

4. The History of infectious diseases

Diseases an affect nutritional status that decreased some of food intake, intestinal absorption of food, catabolism, and the uptake of nutrients needed for tissue synthesis and growth. Besides that, infectious diseases can lower the body's defenses and interfere with human immune function [(7)]. Based to the results of the analysis conducted that to assess the influence of a history of infectious disease on the incidence of stunting in Lurasik Health Center area, found that there were an influence between the history of infectious diseases and the incidence of stunting. This is also in line with the research conducted [(8)], demonstrating that there are substantial association betweeen the history of ARI, diarrhea and stunting based on the analysis of the data. Risk is 3.7 times higher in children who experience it frequently. This is also in line with the research conducted [(9)], showing the analysis of theresults that there is a significant relationship between a history of infectious diseases and the incidenceof stunting.

Acute Respiratory Tract Infections (ARI) with symptoms of cough, runny nose, fever, and diarrhea were determined to be the most common infectious diseases at the Lurasik Health Center's working area, according to the study's findings. There were 58 children under five who have histories of infectious diseases, 40 children under five experience ARI with symptoms of cough, runny nose, and fever and the rest have diarrhea. These affected by the moo level of select breastfeeding before thechild is 6 months old and the lack of attention about nutritional intake what children need. Children who do not receive exclusive breastfeeding and nutritional intake are more or less susceptible to infectious diseases. In addition to the low level of exclusive breastfeeding, this is due to a lack of attention to the nutritional intake needed by children.

The results of field interviews showed that in addition to the low level of exclusive breastfeeding, this was due to a lack of parental supervision. For example, in fruit seasons such as mango and sour season, children often consume them excessively and do not eat rice and vegetables and mothers often allow their children to consume raw water, thereby affecting the occurrence of diarrheal diseases. In

addition, during this pandemic, children who are sick are reluctant to be taken to health facilities by their parents, due to bad public perception about the coronavirus pandemic, so illness in children will continue and cause children to be malnourished.

5. Energy Adequacy Level Energy

Intake of food consumption can directly affect a person's dietary status or wholesome status. Energy is an important substance in preventing malnutrition[10]. It was found that there was an effect between the level of energy sufficiency and the incidence of stunting. The results of this study are in line with research conducted[11] which shows that there is a significant relationship between energy consumption and the incidence of stunting in children under five with a p-value of 0.036 <0.05 and an OR value of 3.109, meaning that the habit of consuming less energy has a 3.109 times risk of experiencing stunting.

The result of study by interviewing several mother that have children under the age of five in the Lurasik Health Center's working area did not receive varied food or only received one type of foodper day, and mothers tended to give food to their children regardless of nutritional content, quality, or diversity of food, affecting energy consumption in toddlers. Most of them only consume carbohydrate sources with available vegetables with the ratio of the number of carbohydrate sources far more than vegetables. Toddlers with low energy intake are at risk of stunting compared to toddlers who have sufficient energy intake levels, it caused by inadequate intake. The inversely proportional to the natural potential of the community to meet the energy needs of children under five, namely rice producers. There are also children under five with parents who work as farmers allowing for the availability of a variety of food for daily needs, but due to economic pressure, the harvests obtained must be sold for non-food purposes so that the availability of food in the family becomes less**.**

In addition, toddlers who barely eat rice a day only consume light snacks in the form of snacks and soft drinks or soft drinks, and during fruit seasons such as sour and mango seasons, toddlers forget to eat rice and vegetables. Most toddlers also consume more carbohydrate sources such as rice, porridge, noodles, corn, without adding animal side dishes. Some children only get empty porridge from morning to night without a mixture of other types of food such as vegetables so the nutritional intake obtained by children is not optimal because children only get carbohydrates from the porridge they eat without any additional micro-nutrients or other macro-nutrients. In addition, some mothers are tired of working or do not have vegetables at home, so children are only given instant noodles, instant noodles gave to children from an early age can cause disturbed digestion of children, risk disturbing children's organs that are not fully developed and contain MSG. Monosodium glutamate) which can cause brain damage in children. Varied types of food and sufficient nutritional value are very important for toddlers to avoid toddlers from malnutrition.

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6. Protein Adequacy Level

Protein is an important nutrient which most closely related to the processes of life. Protein is used in the body for the growth and cells' repair. Sufficient protein will be able to do its function for the growth process. The one of protein function as a source of energy also functions as a building block and regulator in the body. The main function of protein in the body, among others, are for the growth and maintenance of matrix tissue or the framework of bones and teeth, where calcium and phosphorus are stored to provide strength and tissue rigidity.

The results of the analysis conducted to assess the effect of protein adequacy level on the incidence of stunting in the working area of the Lurasik Health Center showed that there was an influence between the level of protein adequacy on the incidence of stunting. The results of this study are in line with research conducted [(12)] which states that statistically there is a relationship between protein adequacy levels and the incidence of stunting (p-value = 0.010 < 0.05). The results of research in the field indicate that toddlers consume less protein and consume more diversified foods and low consumption of animal protein sources. Children consume more vegetables and vegetable protein and consume less animal protein such as tofu and tempeh and the quantity of tofu and tempeh given is at most 2 pieces. In addition, some toddlers rarely consume seafood such as fish and meat, only consumed when there are events carried out by the family such as birthdays, traditional events, and weddings. Children also rarely consume milk because they are given more tea and drunk together with snacks such as biscuits, fried foods, crackers, and other snacks so that toddlers consume less protein which can cause stunted growth.

7. History of giving exclusive breastfeeding

Exclusive breastfeeding is a source of nutrien ts by not providing food or drink from birth to 6 months of age, it is highly recommended because breast milk is not contaminated and contains many of the nutrients that children need at that age [(13)]. It was found that there was an effect between exclusive breastfeeding on the incidence of stunting. The results of this study are in line with research from [(14)] that there is a significant influence between a history of exclusive breastfeeding and the incidence of stunting.

According to study's findings, it was found that infants who were exclusively breastfed were 60.8% and those who were not exclusively breastfed were 39.2%. Types of food and drink were given to infants before the age of 6 months is porridge, bananas, formula milk, water, and tea. Most of the 50 respondents gave formula milk to their children before the age of 6 months. Moms of little children who don't allow select breastfeeding to their children are caused by insufficient and insufficient breast milk and sore nipples when the child is born so that formula milk is given to babies as a substitute for exclusive breastfeeding. After the breast milk has been smooth, breast drain is given to the child by including equation drain. The first food that is good for babies is only exclusive breast milk (without

complementary feeding during the age of 0-6 months). Breast milk should be the main food during the baby's first year and food important during the second year[15].

8. The level of parental income.

One of the elements that influences nutritional status is income. The relationship between income and food consumption have two aspects, namely food expenditure and the type of food consumed. If the income of parents is low while the price of basic commodities is high, the parents will provide a menu of foods that are cheap foodstuffs with low nutritional content [16]. Stunting in children is linked to family socioeconomic characteristics such as education, work, and family income [17].

The findings of the investigation revealed that the degree of parental income had an affect on the rate of hindering at the Lurasik Wellbeing Center. This think about is in agreement with past inquire about [18] with the title Relationship of Family Income, Birth Weight, and Birth Length with the incidence of Stunting Toddlers 24-59 Months in Bangkalan that there is a significant effect between family income and incidence stuting with a p-value of 0.008. The results of respondents' interviews, the level of community income ranges from Rp. 500,000-Rp.750,000 so that the primary and secondary needs of children are not met properly. This is because the average community works as farmers, even though they are rich in food products, people prefer to sell their food products to increase income rather than be consumed so that people do not take advantage of the food they have. Family income earned is allocated for non-food expenditures compared to food expenditures such as cigarettes, toiletries, and education. Respondents usually only gave food to toddlers, such as rice or porridge with mustard greens,spinach, or kale. If they get more income, respondents will buy eggs, fish, chicken meat, or fruit for their toddlers.

9. Mother's level of work

Employment determines the quality and quantity of food with income. The results show that there is no effect of the mother's work variable on the incidence of stunting. The findings of this investigation are the same as those of previous studies [19] that the job of a mother has no effect on the frequency of stunting. This is also in line with research conducted [20] that there is no significant effect between a mother's work and the incidence of stunting. The children who are stunting can be found on mothers who do not work than a jobworkers mothers. Mothers who have work outside the home will have more money allocated for the needs of their children.

According to the findings of study conducted at the Lurasik Health Center, mothers who did not work had more time to care for their children so that their dietary needs were addressed adequately, and they took more time to take their children to the posyandu for health education than working mothers. However, if it is not accompanied by a stable economic situation to meet the needs of children under the age of five, it may have an impact on their nutritional health. Working women can enhance family income and support children's growth and development by meeting the family's nutritional needs. However, if it is not accompanied by a stable economic situation to meet the needs of children under

the age of five, it may have an impact on their nutritional health. Working ladies can upgrade family pay and bolster children's development and improvement by assembly the family's wholesome needs

CONCLUSION

It was concluded that those that had an impact on the rate of hindering within the working zone of the Lurasik Health Center, North Biboki District, North Central Timor Regency were the history of irresistible maladies, history of elite breastfeeding, parental income, energyadequacy level and protein adequacy level. Mother's occupation variable has no effect on the rate of hindering. The determinants of hinderiong are history of exclusive breastfeeding, protein adequacy level, protein adequacy level.

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