JURNAL ILMIAH ILMU KEPERAWATAN INDONESIA
Indonesian Nursing and Scientific Journal

Volume: 12
Issue: 04
Years: 2022

Research Article

Socio-Economic Relationship of Infection Diseases and History of Exclusive ASI with Stunting Incidents

Dayana Noprida[1], Nyimas Heny P[2], Anita Apriliawati[3]
Muhammadiyah Jakarta University, Master of Nursing study program, Faculty of Nursing, Indonesia
Email Correspondent: nopridaarifin@gmail.com

Editor: KS
Received: 15/11/2022
Accepted: 24/12/2022
Published: 30/12/2022
Available Article: 10.33221/jiiki.v12i04.2784

Conflict of interest statement: This research is free from any conflict of interest of both individuals and organizations.
Funding: The funding of this research is fully funded by the author.

Abstract

Background: Stunting is a condition where a person has a shorter height compared to the height of people of the same age in general.
Objectives: This study aims to determine the relationship between socio-economics, infectious diseases, and exclusive breastfeeding with the incidence of stunting in toddlers in the Pringsewu Region, Pringsewu Regency.
Methods: The design of this research is observational analytic with a cross-sectional approach. The population is mothers who have children aged 2-5 years in the Pringsewu Lampung Health Center Working Area.
Results: The results of the study showed that there was a socio-economic relationship (maternal employment and income), history of infection, and exclusive breastfeeding with the incidence of stunting (p-value <0, 05) after being controlled by the quality of food intake.
Conclusion: It is hoped that this research can become evidence-based practice and motivate health officers (nurses) to carry out independent nursing interventions by providing health education to mothers regarding stunting prevention behavior by utilizing posyandu held in the community.

Keywords: exclusive breastfeeding, toddlers, history of infection, socioeconomic, stunting.

Introduction

Growth and development in the first 1000 days of a child is called the golden age period. In this phase, children can experience growth disorders such as stunting.[1] Stunting, also often called shortness or stunting, is a condition where growth is inhibited which has an impact on development due to severe nutritional deficiencies, recurrent infections, and lack of stimulation that occurs from the first 1000 days of life.[2]

In 2018, Indonesia was in 6th position with a prevalence of 36%, while globally, Indonesia was in 34th place (36%) from the world average prevalence of 21.9%, in 2021, Indonesia's stunting prevalence, as a general rule, is in position 108 out of 132 countries.[3]

The risk of stunting in Indonesia is caused by community factors, household factors, and child factors. Community factors are caused by regional conditions and topography. Household factors are caused by parenting conditions (mother's and father's education, income, and mother's and father's age at birth), by home environmental conditions (more than three children under five in one house, water sources, sanitation, and wealth), and access. health (insufficient antenatal care, poor compliance with blood supplement tablets, premature children, LBW births, and a history of not exclusively breastfeeding).[4] According to research by Beal et al[5], stunting cases are caused by direct and indirect risks. Direct risk factors for stunting in Indonesia include maternal factors and family factors, inadequate complementary foods, not exclusive breastfeeding, and recurrent infections. Meanwhile, indirect causal factors include educational factors, sociocultural factors, access to health services, agriculture, and food as well as sanitation, water, and environmental factors.

Maternal factors are caused by lack of nutrition during pregnancy, stunting of the mother's physical condition, teenage pregnancy, premature pregnancy, and LBW. Family factors are caused by poor sanitation housing and water supply, food shortages, low family education, low income, short families, and large household sizes. Inadequate breast milk companion factors are due to low levels of food containing micronutrients, types of food that are not diverse, the amount of food is insufficient, it is rare and food is contaminated with bacteria. immunization.[5] Family socio-economic factors also have a significant influence on meeting all the needs of family members in the form of shelter, clothing, and food. Apart from that, low family income will affect the level of consumption of nutritious food.[6] Another factor that influences the occurrence of stunting in children is infectious diseases. Infectious diseases in children that continuously increase the risk of stunting in the past two months are ARI and diarrhea.[7]

Stunting cases in Lampung Province in 2020 were 7.8%.[8] Pringsewu Regency itself is ranked 14th among 15 regencies and cities in Lampung Province, namely 20.9%.[9] This study aims to determine the relationship between socio-economics, infectious diseases, and exclusive breastfeeding with the incidence of stunting in toddlers in the Pringsewu Community Health Center Working Area.

Methods

This research design is an observational analytical research design with a cross-sectional approach.[10] The target population in this study was 630 parents who have toddlers (2-5 years) in the Pringsewu Lampung Health Center Working Area. The total sample was 165 people. The sampling method for the case group used purposive sampling. The inclusion criteria in this study are: Respondents are mothers and toddlers aged 2-5 years, children are regularly taken to posyandu or health facilities, mothers can read and write, and mothers are willing to be respondents. The exclusion criteria in this study were: Toddlers with congenital diseases/congenital defects (congenital heart disease, neurological disorders, genetic problems such as Down syndrome) and toddlers with chronic diseases. This research was carried out in the month of May-June 2022 in the Pringsewu Community Health Center Working Area Lampung. The questionnaire used in this study contains demographic data of respondents including characteristics of toddlers (age, gender, BB, TB), characteristics of mothers (age, education of parents, occupation of parents, and income of parents), history of exclusive breastfeeding, and infectious diseases. suffered and the quality of food intake consists of four statements, namely carbohydrate intake, animal protein intake, vegetable protein intake, and vegetable intake. Data analysis used the chi-square test and multiple logistic regression.

Results

Table 1. Distribution of Average Characteristics of Respondents Based on Age, Weight, and Height of Children in the Pringsewu Community Health Center Working Area, May to June 2022 (n = 165)

Variable	Mean	Median	Elementary school	Min-Max	CI 95%
Child's Age (Months)	36.63	35.0	9.94	24-55	35.10-38.16
Child's Height (Cm)	92.52	93.5	8.36	71-110	91.23-93.80
Body Weight (Kg)	14.55	14.4	2.32	8.6-20.4	14.20-14.92

Based on the table above, the characteristics of children based on age, height, and weight are obtained. The average age of children is 36.63 months with a standard deviation of 9.94 months, the youngest age is 24 months and the oldest age is 55 months. The average child's height is 92.52 cm with a standard deviation of 8.36 cm, the minimum height is 71 cm and the maximum is 110 cm. The average weight of children is 14.55 kg with a standard deviation of 2.32 kg, the minimum body weight is 8.6 cm and the maximum is 20.4 cm.

Table 2. Frequency Distribution of Child Characteristics Based on Gender and Mother According to Age at Birth, Height, Occupation, Income, Education, Infectious Diseases, History of Exclusive Breastfeeding, Birth Weight, and Quality of Food Intake in the Pringsewu Health Center Working Area, May to June 2022 (n = 165)

Variable	Amount	Percentage
Child's Gender		
Woman	79	47.9
Man	86	52.1
Mother's Age		
No Risk	134	81.2
Risky	31	18.8
Mother's Height		
≥150 cm	145	87.9
<150 cm	20	12.1
BB Born		
Normal	120	72.7
LBW	45	27.3
Food Intake		
Four Stars	122	73.9
Not Four Stars	43	26.1
Socioeconomic		
Mother's Job		
Work	83	50.3
Doesn't Work	82	49.7
Mother's Education		
Tall	94	54.0
Low	71	43.0
Income		
> MSEs	132	80.0
< MSE	33	20.0
Infection		
No History	107	64.8
There's History	58	35.2

Exclusive Breastfeeding		
Exclusive Breastfeeding	111	67.3
Not Exclusive Breastfeeding	54	32.7
Stunting Events		
Normal	124	75.2
Stunting	41	24.8
Total	**165**	**100**

Based on the table above, it can be seen that the majority of children are male, 86 (52.1%), have a normal birth weight, 120 (72.7%), and receive a four-star food intake, 122 (73.9%), 107 people (64.8%) had no history of infectious disease, 111 children (67.3%) were exclusively breastfed and had normal height or were not stunted as many as 124 children (75.2%).

The table above also illustrates that the majority of mothers are not at risk, 134 people (81.2%), had TB >150 cm as many as 145 (87.9%),83 people (50.3%) worked, 94 people (54.0%) had higher education, 132 people (80.0%) had income > UMK

Table 3. Socioeconomic Relationship (Education, Employment, and Income), Infectious Diseases, History of Exclusive Breastfeeding, Birth Weight, and Food Intake With Stunting Incidents in Toddlers in the Pringsewu Community Health Center Working Area May to June 2022 (n = 165)

Variable Independent	Stunting Events						OR (95% CI)	P-Value
	Normal		Stunting		Total			
	n	%	n	%	n	%		
Socioeconomic								
Mother's Job								
Doesn't' Work	58	82.9	14	17.1	82	100	2,342 (1,122-4,889)	0.034
Work	56	67.5	27	32.5	83	100		
Mother's Education								
High	69	73.4	25	26.6	94	100	0.803 (0.391-1.651)	0.678
Low	55	77.5	16	22.5	71	100		
Income								
> Mses	109	82.6	23	17.4	132	100	5,687 (2,506-12,907)	0,000
< Mse	15	45.5	18	54.5	33	100		
Infection								
No History	93	86.9	14	13.1	107	100	5,786 (2,698 – 12,406)	0,000
There's History	31	53.4	27	46.6	58	100		
Exclusive Breastfeeding								
Exclusive	97	87.4	14	12.6	111	100	6,929 (3,196 – 15,019)	0,000
Not Exclusive	27	50.0	27	50.0	54	100		
Bb Born								
Normal	94	78.3	26	21.7	120	100	1.808 (0.848-3.855)	0.180
Lbw	30	66.7	15	33.3	45	100		
Food Intake								
Four Stars	111	91.0	11	9.0	122	100	23,287 (9,481 - 57,193)	0,000
No Four Star	13	30.2	30	69.8	43	100		
Total	**124**	**75.2**	**41**	**24.8**	**165**	**100**		

There may be a relationship between employment and the incidence of stunting in toddlers. From the results of the analysis, an OR of 2.342 was obtained, which means that working mothers have a 2.342 times chance of stunting compared to mothers who do not

work. There is no relationship between education and the incidence of stunting in toddlers. There is a relationship between income and the incidence of stunting in toddlers. In the table above, OR = 5.687 is also found, meaning that families with income < UMK have a 5.687 times chance of stunting compared to families with income > UMK. There is a relationship between a history of infection and the incidence of stunting in toddlers. Also obtained was OR=5.786, which means that toddlers with a history of infection have a chance of occurrence stunting amounted to 5,786 times compared to toddlers who had no history of infectious diseases. There is a relationship between a history of exclusive breastfeeding and the incidence of stunting in toddlers. An OR value of 6.929 was also obtained, meaning that toddlers who were not exclusively breastfed had a 6.929 times chance of stunting compared to toddlers who had a history of exclusive breastfeeding. There is no relationship between the history of birth weight and the incidence of stunting in toddlers. There is a relationship between the history of birth weight and the incidence of stunting in toddlers. The OR value = 23.287 was also obtained, meaning that toddlers with a food intake of not four stars have a 23.287 times chance of stunting compared to toddlers with a food intake of four stars.

Table 4. Final Model of the Relationship Between Socio-Economic, Infectious Diseases and History of Exclusive Breastfeeding With The Incidence of Stunting in Toddlers in the Pringsewu Community Health Center Working Area May to June 2022 (n = 165)

		Variables in the Equation						95% for EXP(B)	
		B	**S.E**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	Occupation_Mother	1,319	,620	4,531	1	.033	3,739	1,110	12,597
	Map	2,206	,654	11,368	1	,001	9,079	2,518	32,732
	Infection	1,751	,590	8,803	1	,003	5,759	1,812	18,308
	Exclusive Breastfeeding	2,337	,627	13,914	1	,000	10,355	3,032	35,361
	Food_Intake	3,386	,652	26,998	1	,000	29,542	8,237	85,950
	Constant	-16,660	2,914	32,678	1	,000	,000		

In the table above, the simplest modeling shows all variables, namely socio-economic variables (mother's job and income), history of infection, and exclusive breastfeeding which influence the incidence of stunting ($\rho<0.05$) after being controlled by the food intake variable. The exclusive breastfeeding variable is the most dominant factor.

Discussion

The Relationship Between Education and Events Stunning Toddlers

In this study, there was no relationship between education and the incidence of stunting in toddlers. Height is related to parental education. Socially and culturally disadvantaged children show lower self-esteem and perceive their fathers' social role as inferior.[11]

According to research by Putri et al[12], mothers with low education can influence the pattern of guiding and caring for children. This can influence the determination and method of serving food that will be consumed by the child. Providing the right food and menu for toddlers to improve their nutritional status can be fulfilled if the mother has good nutrition knowledge. Mothers with low education find it difficult to get nutrition so their children are at risk of stunting.

Mothers with higher education have good nutritional status for toddlers, namely 73.2 percent. Meanwhile, mothers with low education are 3 times more likely to have toddlers with poor nutritional status compared to mothers with higher education regarding the nutritional status of toddlers.[13]

In contrast to previous research, the higher a person's level of education, the easier

it is to understand information and the easier it is to implement that knowledge in behavior, especially in terms of health and nutrition. Thus, relatively low maternal education will also be related to the mother's attitudes and actions in dealing with the problem of malnutrition in her toddler children.[14]

on the incidence of stunting in the Pringsewu Community Health Center working area in 2022. Based on the results of statistical tests, the OR is 10,355, meaning that mothers who do not breastfeed their children exclusively have a chance of 10,355 times experience stunting compared to those who exclusively breastfeed.

According to researchers' assumptions, the insignificance of maternal education in the incidence of stunting can be caused because education is not a direct factor that can cause stunting in children.

Relationship Between Work And Events Stunning Toddlers

In this study, there was a relationship between employment and the incidence of stunting in toddlers. Working mothers have a 2,342 times chance of stunting compared to working mothers. Meanwhile, mothers who do not work experience stunting, which can be due to the mother's purchasing power and knowledge in providing the right food. Apart from that, other factors also play a role in the incidence of stunting.

Job factors influence knowledge, someone who works will have broader knowledge than someone who doesn't work because people who work have more information. Maternal characteristics also need to be considered because stunting is chronic, meaning it appears as a result of long-standing conditions such as poverty, inappropriate parenting patterns due to parents being very busy working, poor maternal knowledge about nutrition due to low maternal education, often suffer from recurring illnesses due to poor hygiene and sanitation.[15]

In line with research by Savita & Amelia[16], there is a relationship between maternal employment and the incidence of stunting (p = 0.000), where mothers who do not work have a 5 times tendency for their children to experience stunting compared to mothers who work (OR = 5.390). Supported by research that states there is a meaningful relationship between job mothers with the risk of stunting in toddlers.[17]

Researchers believe that mothers' profession is working outside the home to earn a living. both for himself and for his family, it is different. The mother's employment status greatly determines the mother's behavior in providing nutrition to toddlers. Mothers who work have an impact on the mother's lack of time with her child so that food intake is not well controlled and the mother's attention to her child's development is also reduced.

The Relationship Between Income and The Incidence of Stunting in Toddlers

In this study, it was found that toddlers with family income > MSE experienced stunting. The results of this research show a relationship between income and the incidence of stunting in toddlers with the risk of stunting occurring 5.687 times in families with income <UMK.

Income is the factor that most determines the quality and quantity of food. Income and nutrition are closely related to meeting the family's food needs. The higher the family's purchasing power, the more food consumed and the better the quality of the food consumed. Here it is clear that low income will hinder improved nutrition and lead to malnutrition.[18]

In research conducted by Apriluana & Fikawati[19] in Malaysia, the factor of low household income was identified as a significant predictor for stunting in toddlers at 2.1 times, while in Indonesia, toddlers with low family income had a risk of experiencing stunting of 2.30. time. compared to families with sufficient income. In low-income countries, the majority of food expenditure is used to purchase cereals, while in countries with high per capita income expenditure to purchase protein foods increases.

Based on the results of Amalia's research which states that economic status is proven

to have a relationship with stunting which has economic status.[20] This research shows that economic status will influence the choice of food consumed so that it usually becomes less varied and in small quantities, especially food ingredients that function for children's growth, such as sources of protein, vitamins, and minerals, thereby increasing the risk of malnutrition. This is one of the factors causing stunting.

In a study conducted by Apriluana and Fikawati in Malaysia, it was stated that low family income factors were at risk of increasing stunting in toddlers by 2.1 times.[19] In Indonesia, toddlers in families with low incomes are at risk of stunting 2.30 times compared to families with sufficient incomes. In low-income countries, the largest expenditure is on cereal needs, whereas in high-income countries the largest expenditure is on protein needs.

In line with research by Sari and Sulistianingsih, parents who earn less than the minimum wage will increase the incidence of stunting in toddlers by 6.5 times compared to parents who earn more than the minimum wage.[21] Family income is a factor that influences and determines the need for quality and quantity of food in adequate quantity and quality. Family income can be seen from the amount of income that influences the level of food consumption including nutrients.[6]

This is also supported by research in the Nganjuk Regency area, which states that family income has a significant relationship with the incidence of stunting in children under five (p= 0.048) and the odds ratio shows that a low family income has a 3.178 times greater risk of stunting. High family income can meet family needs, especially diverse food needs so that toddlers' food intake is adequate. Family Those who have sufficient economic access and fulfillment of their needs will influence increasing the quality of food consumption by family members, which is an illustration of good nutritional behavior.

In the Health Promotion Model concept, there is an indicator of Prior Related Behavior: Frequency of the same or similar behavior in the past. Direct and indirect effects on the likelihood of engaging in health-promoting behavior. Behaviors related to mothers using the stunting prevention model are behavior regarding access to health services, socio-economic factors, and maternal education which have an impact on health behavior.[22,23]

Based on the results of the analysis above, researchers assume that family income can influence people's purchasing power, including in the choice of food ingredients. Families with low incomes have limitations in purchasing food. Continuous and chronic malnutrition of food can affect children's growth, the most visible impact is stunting in children. Therefore, the researchers concluded that family income was significantly related to the incidence of stunting.

The Relationship Between Exclusive Breastfeeding and The Incidence of Stunting

In this study, there was a relationship between a history of exclusive breastfeeding and the incidence of stunting in toddlers. Toddlers who are not exclusively breastfed have a 6.929 times chance of stunting compared to toddlers who have a history of exclusive breastfeeding. Exclusive breastfeeding is protective against stunting, however, exclusive breastfeeding is not the only factor preventing stunting, pathogenic factors and a history of complementary breast milk food intake are factors that also play a role in stunting.

UNICEF and WHO recommend giving babies exclusive breast milk for the first 6 months and then continuing breastfeeding until they are 2 years old.[24] In line with WHO through the Indonesian Ministry of Health No. 450/MENKES/2004 and PP no. 33 of 2012. Regarding exclusive breastfeeding, it has stipulated that babies' rights be fulfilled to receive exclusive breastfeeding for 6 months. Then proceed with providing MPASI (complementary food for breast milk) to provide adequate nutrition for babies up to 2 years old by paying attention to their growth and development.

The research results of Krawczyk et al., show that there is a significant benefit in preventing rotavirus diarrhea among children who are given exclusive breast milk.[25] This research provides further reasons to promote exclusive breastfeeding among mothers.

Supported by research (Hashmi et al., 2016) breast milk is considered the gold standard for baby food. Exclusive breastfeeding plays an important role in neurological development, preventing infections, obesity, and allergies.

Toddlers who are exclusively breastfed reduce the risk of stunting by 0.108 times compared to toddlers who are not exclusively breastfed. Exclusive breastfeeding is protective against stunting. Exclusive breastfeeding is not only a protective factor that contributes to the incidence of stunting in children, but optimal complementary feeding must also be considered. Improving children's nutritional status from the preconception period and during pregnancy as well as economic status can also reduce the incidence of stunting in children. Poor to poor nutritional status of toddlers is an effect of cases of toddlers who do not receive exclusive breast milk.[26]

In the Health Promotion Model concept, there is an indicator of Perceived Barriers to Action: Perceived barriers in efforts to prevent stunting, namely a lack of knowledge will result in children not receiving Early Breastfeeding Initiation (IMD), not giving exclusive breast milk and inadequate complementary foods for breast milk. In addition to the indicator, Perceived Benefits of Action: the perceived benefits of action anticipated positive results that will result from health behavior. The perceived benefit in preventing stunting can be the application of breast milk Exclusively, mothers can get access to good health (Posyandu, posbindu, child monitoring, and home visits) and good knowledge from the information obtained from health workers

According to researchers' assumptions, exclusive breastfeeding is a direct factor that fulfills the nutritional needs of babies. In the short term, breast milk can provide protection that can prevent infection. The body will have good immunity and will not be easily attacked by disease. This will cause food absorption

Relationship Between History of Infection and Incidence of Stunting

The results of the analysis show that there is a relationship between a history of infection and the incidence of stunting in toddlers. It was also obtained that OR=5.786 means that toddlers with a history of infection have a 5.786 times chance of stunting compared to toddlers who do not have a history of infection. In this study, it was found that there were toddlers with no history of infection who experienced stunting. This could be due to other factors that cause stunting apart from infections in children.

There is a very close reciprocal relationship between the nutritional status of children and the incidence of infectious and non-infectious diseases. Investigations show that various types of diseases are very easily suffered by children who are not well nourished and the death rate due to these infectious diseases is very high in groups of children whose nutritional condition is poor. The condition of toddlers can cause malnutrition through various mechanisms. The acute condition of toddlers results in a lack of appetite and decreased tolerance for disease, making them susceptible to nutritional disorders.[2]

Exposure to infections such as enteric infections such as diarrhea, enteropathy, and worms, can also be caused by respiratory infections (ARI), malaria, and reduced appetite which is a result of infection. Inflammatory infections will result in nutritional problems. Clinical inflammation causes slow development and growth, On the other hand, children who have a history of infectious diseases have a probability of experiencing stunting.[27]

The results of this study are not in line with Sari & Sulistianingsih, who stated that there is no relationship between infection conditions and the nutritional status of toddlers in Pesawaran Regency.[21] It was found that a history of infection did not increase the incidence of stunting. This is due to the assessment of infections only in the last month, while stunting is caused by long-lasting chronic infections.

In the Health Promotion Model concept, there are indicators of Immediate Competing Demands and Preferences. A condition that requires the occurrence of a health problem. In modeling stunting, a condition that can directly cause cases of stunting

problems is immunity related to infection. Infections that are not prevented and treated will become chronic infections in toddlers. This can lead to a stunting problem.

According to researchers' assumptions, infectious factors are one of the causes of infection. Children who are infected generally show symptoms of lack of appetite. The condition of the body which is susceptible to attack by pathogens makes the body concentrate more on healing from the food intake it obtains. This causes insufficient nutrition for growth Which causes growth to become chronically stunted and has an impact on the incidence of stunting.

Factors Most Related to The Incidence of Stunting Among Toddlers in Pringsewu Regency

In this study, socio-economic variables (mother's occupation and income), history of infection, and exclusive breastfeeding influenced the incidence of stunting (p-value <0.05) after being controlled by food intake variables. The exclusive breastfeeding variable is the most dominant factor in the incidence of stunting in the Pringsewu Community Health Center working area in 2022. Based on the results of statistical tests, the OR is 10,355, meaning that mothers who do not breastfeed their children exclusively have a 10,355 times chance of experiencing stunting compared to those who exclusively breastfeed.

In this study, food intake is a confounding variable that is included in the modeling and has an OR value of 29,542 highest i.e. Adequate food intake can have an impact on growth and development. Development is marked by maturity of nervous function, fine and gross motor skills, speaking according to age, independence, and how children build relationships with their social environment. Lack of nutritional intake during the toddler years can result in delayed child growth. Children who are malnourished tend to be inactive, weak, and lack response to their surroundings.[28]

The nutritional content of food can affect the immune system or immunity in toddlers. Immunity functions to defend the body from attacks such as viruses and bacteria. Nutritional components such as protein, minerals, and vitamins can help defend against infections, ward off free radicals, act as antioxidants, and act as antimicrobials in the body. Children with good nutritional status are less susceptible to illness than children who have poor nutritional status.[29]

Adequate nutrition for children can make children more active and healthier. Physical activity is body movement using muscles that require energy. Nutrients such as protein are substances the body needs to form tissue and muscle. Thus, children with good and adequate nutrition can be more active in their activities compared to children with poor or inadequate nutrition.[30] Nutrition has a role in the continuity of the growth and development process. By consuming food that is converted into energy, toddlers can fulfill their daily activity needs. Toddlers need healthy food or nutrition so that they can carry out activities optimally and be more active.[31]

Food intake is determined by the family's purchasing power based on their income. Income from work that is small will influence the choice of food consumed so that it generally becomes less varied and the amount is less, which plays a role in the development of toddlers, which consists of protein, nutrients, vitamins, and minerals, thereby increasing the risk of malnutrition.[32] Therefore, income plays an important role in determining the food intake given to toddlers. Food intake will affect the toddler's appetite and condition. A toddler who is suffering from an infection will focus his body on fighting pathogens. The incoming nutritional intake will be useful for the healing process. If this infection recurs and becomes chronic, the body does not have the opportunity to grow for a long time. This can also affect food absorption and reduce food intake when sick. Therefore, good immunity is needed to prevent infection. Immunity can be obtained from the immunity process and exclusive breastfeeding.

Breast milk is the only ideal and best food for babies to meet the physical and psychological needs of babies who are growing and developing. Babies who are given

breast milk grow better than babies who are given water or additional food before the age of 6 months. Breast milk does not burden the function of the digestive tract and kidneys and produces optimum physical growth. Breast milk contains lactose, the benefit of lactose is that it increases calcium absorption in the body so this substance helps calcium absorption during the baby's growth period.

Lactose in breast milk can increase passive calcium absorption by increasing calcium solubility in the ileum. In babies, lactose can increase the proportion of calcium absorption by 33%-48%. Calcium is an important mineral for humans, 99 percent of the calcium in the human body is found in the bones. And as many as 1 The percentage of calcium found in body fluids such as blood serum, body cells, in extracellular and intra-cellular fluids. The benefits of calcium are for the formation of bones and teeth. With good calcium intake, bones and teeth become strong and grow normally. Calcium deficiency can result in imperfect bone growth in children. Calcium deficiency during the growth period causes growth disorders and stunting can occur.

This research is closely related to the concept of the Health Promotion Model (HPM). HPM in the community, especially in nutritional problems, is a complex of care that is needed for successful management in preventing chronic nutritional problems. Toddlers with chronic nutritional problems are at risk of experiencing disruption in their life cycle, both long and short-term. The HPM theory is seen as an effort to promote health and prevent stunting so that stunting cases can be overcome optimally.

The application of the HPM theory by J Pender in stunting cases is formulated based on the HPM theoretical framework. This concept has eleven domains of care in making efforts to prevent and treat stunting in children. To complete the HPM model in stunting, HPM studies with stunting from previous research were also obtained.

HPM-based stunting prevention behavior affects increasing maternal behavior in preventing stunting. The increase in behavior of the intervention group (case) was higher than the case group. This proves that health promotion based on the health promotion model and social capital significantly increases stunting prevention behavior among mothers of toddlers in the district. It is recommended that with good maternal knowledge about stunting, mothers of toddlers will be more active in early detection and avoid family members who have children so that toddlers do not become stunted. The community can detect early prevention of stunting in toddlers and have a healthy lifestyle by using a health promotion model based on HPM to prevent stunting. The duties of health services for families and toddlers are to prevent stunting and increase knowledge as material or reference for subsequent research, especially health promotion.[23]

In this study, exclusive breastfeeding was the most influential factor. Breast milk is a nutritional intake that is by needs and will help children's growth and development. Babies who do not get enough breast milk have poor nutritional intake and can cause malnutrition, one of which can cause stunting. Exclusive breastfeeding supports the baby's growth, especially height because breast milk calcium is absorbed more efficiently than breast milk substitutes or formula milk. Babies who are given exclusive breast milk tend to be taller and fit the growth curve compared to babies who are given formula milk.

Conclusion

Socioeconomic variables (mother's occupation and income), history of infection, and exclusive breastfeeding influence the incidence of stunting ($\rho<0.05$) after being controlled by food intake variables. The exclusive breastfeeding variable is the most dominant factor in the incidence of stunting in the Pringsewu Community Health Center working area in 2022. Based on the results of statistical tests, the OR is 10.355, meaning that mothers who do not breastfeed their children exclusively have a chance of 10,355 times experiencing stunting compared to those who exclusively breastfeed.

It is recommended to carry out health promotions to increase knowledge about

exclusive breastfeeding for mothers who have babies and mothers who are pregnant, so that they always give the best for their toddlers, especially in improving toddler nutrition to prevent stunting by paying attention to socio-economics, increasing exclusive breastfeeding and prevention. infectious disease.

Conflict of Interest Declaration

This research is free from any conflict of interest of both individuals and organizations.

Acknowledge

Thank you to all respondents who were involved in this research.

Funding

The funding of this research is fully funded by the author.

References

1. Himmawan LS. Faktor Yang Berhubungan Dengan Pengetahuan Kader Posyandu Tentang 1000 Hari Pertama Kehidupan (HPK). J Kesehat. 2020 Jun 24;11(1):23–30. https://doi.org/10.38165/jk.v11i1.194
2. Danaei G, Andrews KG, Sudfeld CR, Fink G, McCoy DC, Peet E, et al. Risk factors for childhood stunting in 137 developing countries: a comparative risk assessment analysis at global, regional, and country levels. PLoS Med. 2016;13(11):e1002164. https://doi.org/10.1371/journal.pmed.1002164
3. BKKBN. Indonesia Stunting Statistics. 2021;
4. Titaley CR, Ariawan I, Hapsari D, Muasyaroh A, Dibley MJ. Determinants of the stunting of children under two years old in Indonesia: A multilevel analysis of the 2013 Indonesia basic health survey. Nutrients. 2019;11(5):1106. https://doi.org/10.3390/nu11051106
5. Beal T, Tumilowicz A, Sutrisna A, Izwardy D, Neufeld LM. A review of child stunting determinants in Indonesia. Matern Child Nutr. 2018;14(4):e12617. https://doi.org/10.1111/mcn.12617
6. Nurmayasanti A, Mahmudiono T. Status sosial ekonomi dan keragaman pangan pada balita stunting dan non-stunting usia 24-59 bulan di Wilayah Kerja Puskesmas Wilangan Kabupaten Nganjuk. Amerta Nutr. 2019;3(2):114–21. Available from: http://repository.unair.ac.id/id/eprint/125266
7. Lestari W, Margawati A, Rahfiludin Z. Faktor risiko stunting pada anak umur 6-24 bulan di kecamatan Penanggalan kota Subulussalam provinsi Aceh. J Gizi Indones Indones J Nutr. 2014 Dec 1;3(1):37–45. https://doi.org/10.14710/jgi.3.1.126-134
8. Indonesian Ministry of Health. Indonesian Health Profile in 2020. 2021;
9. Lampung health department. Lampung Province Health Profile in 2019. 2020;
10. Dharma K. Nursing Research Methodology, Guidelines for Carrying Out and Applying Research Results. CV Trans Info Media.; 2013.
11. Scheffler C, Hermanussen M, Soegianto SDP, Homalessy AV, Touw SY, Angi SI, et al. Stunting as a synonym of social disadvantage and poor parental education. Int J Environ Res Public Health. 2021;18(3):1350. https://doi.org/10.3390/ijerph18031350
12. Putri RF, Sulastri D, Lestari Y. Faktor-faktor yang berhubungan dengan status gizi anak balita di wilayah kerja Puskesmas Nanggalo Padang. J Kesehat Andalas. 2015;4(1). https://doi.org/10.25077/jka.v4i1.231
13. Nurmaliza N, Herlina S. Hubungan pengetahuan dan pendidikan ibu terhadap status gizi balita. J Kesmas Asclepius. 2019;1(2):106–15. https://doi.org/10.31539/jka.v1i2.578
14. Putri R, Rahayu W, Maemunah N. The Relationship between Education, Parents' Work and the Nutritional Status of Pre-School Children. Care J Ilm Ilmu Kesehat. 2017;5(2):231–45.
15. Ngaisyah RD. Hubungan sosial ekonomi dengan kejadian stunting pada balita di Desa Kanigoro, Saptosari, Gunung Kidul. Med Respati J Ilm Kesehat. 2015;10(4). https://doi.org/10.35842/mr.v10i4.105
16. Savita R, Amelia F. Hubungan Pekerjaan Ibu, Jenis Kelamin, dan Pemberian Asi Eklusif Terhadap Kejadian Stunting Pada Balita 6-59 Bulan di Bangka Selatan The Relationship of

Maternal Employment, Gender, and ASI Eklusif with Incident of Stunting in Toddler Aged 6-59 Months. J Kesehat Poltekkes Kemenkes Ri Pangkalpinang. 2020;8(1):6–13.
17. Illahi RK. Hubungan Pendapatan Keluarga, Berat Lahir, Dan Panjang Lahir Dengan Kejadian Stunting Balita 24-59 Bulan Di Bangkalan. J Manaj Kesehat Yayasan RSDr Soetomo. 2017 Apr 5;3(1):1–7. http://dx.doi.org/10.29241/jmk.v3i1.85
18. Ni'mah K, Nadhiroh SR. Faktor yang berhubungan dengan kejadian stunting pada balita. Media Gizi Indones. 2015;10(1):13–9. Available from: https://repository.unair.ac.id/125307/
19. Apriluana G, Fikawati S. Analisis faktor-faktor risiko terhadap kejadian stunting pada balita (0-59 bulan) di negara berkembang dan asia tenggara. Media Penelit Dan Pengemb Kesehat. 2018;28(4):247–56. https://doi.org/10.22435/mpk.v28i4.472
20. Rochmah AM, Fitriahadi E. Faktor-Faktor Yang Berhubungan Dengan Stunting Pada Balita Usia 24-59 Bulan Di Wilayah Kerja Puskesmas Wonosari I [Internet] [s1_sarjana]. universitas aisyiyah yogyakarta; 2017 [cited 2023 Sep 20]. Available from: http://digilib.unisayogya.ac.id/2535/
21. Sulistianingsih A, Sari R. ASI eksklusif dan berat lahir berpengaruh terhadap stunting pada balita 2-5 tahun di Kabupaten Pesawaran. J Gizi Klin Indones. 2018;15(2):45–51.
22. Alligood MR. Nursing theorists and their work-e-book. Elsevier Health Sciences; 2017.
23. Suharto A, Wildan M, Handayani TE. Development of stunting prevention behavior model based on health promotion model and social capital in the Magetan district. Health Notions. 2020;4(2):48–56. https://doi.org/10.33846/hn40204
24. World Health Organization. Guideline: protecting, promoting, and supporting breastfeeding in facilities providing maternity and newborn services. World Health Organization; 2017.
25. Krawczyk A, Lewis MG, Venkatesh BT, Nair SN. Effect of Exclusive Breastfeeding on Rotavirus Infection among Children. Indian J Pediatr. 2016 Mar 1;83(3):220–5.
26. Karthigesu K, Sandrasegarampillai B, Vasanthy Arasaratnam V. Breastfeeding practices and nutritional status of children aged one to five years in Jaffna District, Sri Lanka. Indian J Nutr Diet. 2017;54(2):172–84.
27. Setiawan E, Machmud R, Masrul M. Faktor-faktor yang berhubungan dengan kejadian stunting pada anak usia 24-59 bulan di Wilayah Kerja Puskesmas Andalas Kecamatan Padang Timur Kota padang Tahun 2018. J Kesehat Andalas. 2018;7(2):275–84. https://doi.org/10.25077/jka.v7i2.813
28. Humaira H, Jurnalis YD, Edison E. Hubungan Status Gizi dengan Perkembangan Psikomotorik Balita di Wilayah Kerja Puskesmas Lapai Padang Tahun 2014. J Kesehat Andalas. 2016;5(2). https://doi.org/10.25077/jka.v5i2.530
29. Siagian S. Immunity and infectious diseases. North Sulawesi: Department of Nutrition and Public Health; 2017.
30. Soraya D, Sukandar D, Sinaga T. The relationship between nutritional knowledge, nutritional adequacy level, and physical activity with nutritional status of junior high school teachers. J Gizi Indones Indones J Nutr. 2017;6(1):29–36.
31. Karim MA. Hubungan Asupan Makanan, Aktivitas Fisik Dengan Status Gizi Peserta Didik Kelas VII SMP Negeri 5 Sleman. Pendidik Jasm Kesehat Dan Rekreasi. 2017;6(12).
32. Picauly I, Toy SM. Analisis determinan dan pengaruh stunting terhadap prestasi belajar anak sekolah di Kupang dan Sumba Timur, NTT. J Gizi Dan Pangan. 2013;8(1):55–62. https://doi.org/10.25182/jgp.2013.8.1.55-62