RISK FACTOR FOR STUNTING IN TODDLERS AGED 24–59 MONTHS IN KERSANA PUBLIC HEALTH CENTER WORKING AREA

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ABSTRACT

According to the Indonesia Nutrition Status Survey 2022, Central Java highest stunting rate is in Brebes District. In Brebes Regency, the prevalence of stunting increased by 2.8% between 2021 and 2022. The goal of the study was to investigate the risk factors for stunting in toddlers in the Kersana Public Health Center area between the age of 24 and 59 months. This study employed a quantitative approach using a case-control design. Purposive sampling was used to create a sample set of 90. There are two variables in this study, namely the dependent variable (stunting) and the independent variables (family income, mother and father education, immunization, LBW, PBL, birth spacing, mother SEZ status during pregnancy, environmental sanitation, energy and protein intake, IMD, exclusive breastfeeding, complementary feeding, history of diarrhea and respiratory tract infections). The binary logistic regression test on multivariate analysis and the chi-square test were utilized in the bivariate analysis test. The study findings indicated that the following variables were linked to the incidence of stunting: immunization status (p-value=0.000), family income (p-value=0.000), environmental sanitation (p-value=0.000), history of diarrhea (p-value=0.030), early breastfeeding initiation history (p-value=0.006), history of exclusive breastfeeding (p-value=0.003), history of complementary feeding (p-value=0.000), energy intake (p-value=0.000), and protein intake (p-value= 0.001). According to the research, immunization status and energy intake are the two risk variables that have the most significant effects on stunting in children between the ages of 24 and 59 months.

Keywords: energy intake, environmental sanitation, immunization status, stunting

INTRODUCTION

In developing countries, stunting is one of the chronic nutritional issues that arise. WHO (World Health Organization) defines stunting as being of a low height compared to the age of the child. It is characterized by height for age z-score <-2SD, which is classified as stunted, and <-3SD, which is classified as severely stunted. Stunting arises from repeated infections and chronic starvation throughout the first 1000 days of life (Kementerian Desa Pembangunan Daerah Tertinggal dan Transmigrasi, 2017). The causes of stunting are related to poverty, poor maternal nutrition, frequent exposure to infectious diseases, and improper intake and care early in life.

Indonesia is the second country in the Southeast Asia region with the greatest incidence of stunting (United Nations Children's Fund (UNICEF), 2021). According to the Indonesian Nutrition Status Survey (SSGI) statistics from 2022, stunting was prevalent in 2021 (24.4%) decreased by 2.8% in 2022 (21.6%). RPJMN 2020-2024 states that stunting is a national priority issue, with a significant reduction target to 14% by 2024. Central Java has a stunting prevalence of 20.8% based on SSGI 2022. This figure does not indicate the achievement of the stunting prevalence target that has been set.

Brebes Regency in Central Java has the highest rate of stunting. The stunting prevalence in Brebes Regency in 2022 was 29.1%. Brebes Regency experienced an increase in the stunting prevalence rate of 2.8% from 2021 (26.3%) to 2022 (29.1%). Kersana sub-district is one of the sub-districts that is focused on reducing stunting rates in the Gotong Royong Prevent Stunting program in Brebes District in 2022. Kersana sub-district only has one public health center in its area. Based on the Kersana Public Health Center nutrition report, the villages with the highest

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stunting rates are Ciampel Village, with 33 stunting children (20.37%), and Sutamaja Village, with 39 stunting children (19.2%). The village with the lowest stunting rate is Kersana Village, which has 16 (6.17%).

Stunting that occurs in children has long-term effects that can interfere with children's growth and development. Increased risk of infection and non-communicable illnesses, poor cognitive development, elevated risk of overweight or obesity, increased morbidity and mortality, and decreased work ability and productivity are some of the possible effects (Soliman et al., 2021). Cognitive development in stunted children decreases by 7% compared to normal children (Ekholuenetale et al., 2020)

Many interrelated factors influence stunting that occurs in children. Factors causing stunting consist of parental education, birth length, birth weight, birth spacing, the past of complementary feeding, the past of exclusive breastfeeding, the past of early breastfeeding initiation, the past of infectious illnesses, immunization status, family income, maternal chronic energy deficiency status during pregnancy, environmental sanitation, energy intake, and protein intake (Ariati, 2019; Sari et al., 2020).

Based on these problems, the researcher intends to research the causal risk factors of the incidence of stunting in three villages in the Kersana Public Health Center working area with the target of toddlers aged 24–59 months. This study aims to analyze correlation between each variable of the factors that cause stunting and the incidence of stunting in children under 24–59 months of age. This research needs to be done to add information and insight into the causes of stunting and the explanations obtained from respondents. Novelty related to child data that affects the indication of the main risk factors for stunting and the absence of research related to the risk of stunting in the area studied.

METHODS

A case-control design was employed in the analytical observational research type. The purpose of researchers using this research design is to study risk factors using a retrospective approach. Case samples were children aged 24–59 months with height/age ≤-2 SD, and control samples were children aged 24–59 months with height/age >-2 SD in three villages in the Kersana Public Health Center working area.

In this study, the dependent variable is stunted children aged 24–59 months. The independent variable consists of two categories, namely indirect factors and direct factors. Indirect factors of stunting include socioeconomic factors (family income, mother education, father education), access to health services (immunization status), maternal health (birth weight, birth length, birth spacing, maternal SEZ status during pregnancy), and environmental factors (environmental sanitation). Direct factors of stunting include inadequate nutritional intake (energy intake and protein intake), inappropriate feeding practices (early breastfeeding initiation, exclusive breastfeeding, complementary feeding), and history of infection (diarrhea and respiratory tract infection).

The minimum sample calculation uses a two-proportion sampling technique with the Lameshow formula (1990). The sampling technique with a 95% confidence degree (1.96) and 80% test strength (0.84) with OR = 6.96 (Alfian S. Abas et al., 2021) resulted in a sample of 41 children with an additional 10% to anticipate dropouts so that the minimum sample was 45 children. The ratio of the number of cases and controls is 1:1, so the total number is 90 respondents. Respondents must match the age of 24–59 months, be residents of a village in the working area of the Kersana Public Health Center, and must have a regular attendance list at the integrated service post (Posyandu).

The Chi-square test was used in a bivariate analysis to ascertain the extent of risk factors influencing the prevalence of stunting in relation to the Odds Ratio. Fisher exact test analysis was used if the chi-square test did not meet the requirements. To determine the causative factors that most affect the incidence of stunting in the three villages, multivariate analysis employing the logistic regression test is used. The likelihood of stunting in children is calculated using probability depending on the outcomes of multivariate analysis. This study was approved by ethical clearance number 446 from the health research ethics committee (KEPK) of Semarang State University.

Probability Calculation

$y = constant + a1x1 + a2x2$
$p = 1/(1+ \exp(-y))$

RESULTS AND DISCUSSIONS

Table 1. Univariate Analysis (Indirect Factors)

Variable	n	%
SOCIOECONOMIC FACTORS		
Family Income		
Low (≤ Rp 2.018.836)	50	55.6
Sufficient (> Rp 2.018.836)	40	44.4
Mother Education		
High (≥ High School Graduate)	28	31.1
Low (< High School)	62	68.9
Father Education		
High (≥ High School Graduate)	32	35.6
Low (< High School)	58	64.4
ACCESS TO HEALTH SERVICES		
Immunization Status		
Complete	51	56.7
Incomplete	39	43.3
MATERNAL HEALTH		
Birth Length		
Normal (≥ 48 cm)	75	83.3
Stunted (< 48 cm)	15	16.7
Birth Weight		
LBW (< 2500 gram)	4	4.4
Normal (≥ 2500 gram)	86	95.6
Birth Spacing		
< 3 years	6	6.7
≥ 3 years	84	93.3
Maternal SEZ status during pregnancy		
SEZ	6	6.7
Normal	84	93.3
ENVIRONMENTAL		
Environmental sanitation		
Healthy (≥ 1068)	33	36.7
Unhealthy (< 1068)	57	63.3

Table 2. Univariate Analysis (Direct Factors)

Variable	n	%
Inadequate nutritional intake		
Energy intake		
Sufficient (≥ 100% AKG)	55	61.1
Low (< 100% AKG)	35	38.9
Protein Intake		
Sufficient (≥ 100% AKG)	65	72.2
Low (< 100% AKG)	25	27.8
INAPPROPRIATE FEEDING PRACTICES		
Early Breastfeeding Initiation		
Yes	82	91.1
No	8	8.9
Exclusive breastfeeding		
≥ 6 months	53	58.9
< 6 months	37	41.1
Complementary Foods		
On Time (6 months)	49	54.4
less or more than 6 months	41	45.6
HISTORY OF INFECTION		
History of Diarrhea		
Yes	78	86.7
No	12	13.3
History of respiratory infection		
Yes	7	7.8
No	83	92.2

Description of Univariate Analysis

Table 1 shows the frequency distribution of each variable studied. Babies born with normal length were 83.3%, and babies born short were 16.7%. There were more normal-weight babies (95.6%) than low-birth-weight babies (4.4%). Higher education in parents is less than low education. Fathers do higher education than mothers. High-education mothers (31.1%) and fathers (35.6%), low-education mothers (68.9%) and fathers (64.4%).

More mothers under five years old gave birth to children ≥ 3 years apart (93.3%) than mothers who gave birth to children < 3 years apart (6.7%). More children received early breastfeeding initiation (91.1%) than those who did not. Children who were exclusively breastfed were more likely (58.9%) than children who were not exclusively breastfed (41.1%). More children were given complementary foods on time (60%) than children who were not given complementary foods on time (40%).

There were more children with a history of diarrhea (86.7%) than children without a history of diarrhea (13.3%). Children with a history of respiratory infections were 7.8%, and children without a history of respiratory infections were 92.2%. Immunization status was declared incomplete if the toddler did not have consecutive immunizations until the age of 18 months, according to those in the mother and

child health book. Children who received complete immunization were 56.7%, and children who did not receive complete immunization were 43.3%. Mothers experienced chronic energy deficiency (CED) if the upper arm circumference (MUAC) was < 23.5 cm and standard if the MUAC was ≥ 23.5 cm. Mothers of toddlers showed the occurrence of SEZ by 6.7% and normal nutritional status by 93.3%.

The study of family income in the respondents showed that family income tended to be low, with a percentage of 55.6% and sufficient family income of 44.4%. Respondents who had a living environment with environmental sanitation were classified as healthy at 36.7%, and those classified as unhealthy were classified at 63.3%. Nutritional adequacy in toddlers is divided by age, namely age 1-3 years and age 4-6 years. Energy intake in the group of children aged 1-3 years was 1350 kcal, and in the group of toddlers aged 4-6 years was 1400 kcal. The energy intake of toddlers categorized as sufficient tends to be more (61.1%) compared to the energy intake of toddlers categorized as less (38.9%). The nutritional adequacy rate in toddlers is divided by age, namely age 1-3 years and age 4-6 years. Protein intake in the group of children aged 1-3 years was 20 grams, and in the group of children aged 4-6 years was 25 grams. Protein intake of toddlers categorized as sufficient tends to be more (72.2%) compared to energy intake of toddlers categorized as less (27.8%).

The Relationship Between Indirect Risk Factors and Stunting

Socioeconomic Factors

Mother education (p-value = 0.255) and father education (p-value = 1.000), indicating that there is no discernible link between the prevalence of stunting and the educational attainment of the mother and father. These results are similar to research conducted by Mustajab & Romdiyah (2023), It demonstrated that the frequency of stunting and mother education did not correlate (p=0.749). The study findings are consistent with studies conducted in three villages within the Sumberbaru Jember Public Health Center operational region, which found a p-value of 0.128 for the father education variable, which means that the father education does not have a meaningful correlation with the incidence of stunting (Rufaida et al., 2020).

The prevalence of stunting is correlated with family income (p-value = 0.000; OR 7.000; 95% CI = 2.742 - 17.867), indicating that toddlers from low-income homes are seven times more likely to be stunted than toddlers from high-income families. These findings concur with the study carried out by Akbar & Ramli (2022), It indicates that children are 2.6 times more likely to be stunted in families with low incomes. Aida (2019) suggests that the incidence of stunting decreases with increasing household income. This can occur because low family income makes it difficult to provide food that meets the nutritional needs of toddlers (R. M. Sari et al., 2020). A healthy income allows for the provision of delicious, high-quality food for every member of the family. The opposite can happen if sufficient income is not matched with sufficient nutritional knowledge. Families who do not consider adequate nutritional needs only choose food ingredients based on taste rather than nutritional aspects, even though the family income is sufficient.

Access to Health Service

Immunization status is associated with stunting (p-value = 0.000; OR = 35.875; 95% CI = 10.338-124.488), meaning that children who do not get complete immunization are 35.875 times at risk of stunting. This research was also carried out by Darmawan et al. (2022), who states that incomplete immunization has a 4.3 times risk of stunting. Immunization is given to increase immune system. In follow-up interviews conducted, there were several reasons why toddlers did not get complete immunizations. These reasons include children side effects, such as fever and the COVID-19 pandemic, as well as family influence. Toddlers who do not get complete immunizations tend to be easily infected with diseases, which results in decreased appetite in toddlers. Infections that occur repeatedly cause a rapid loss of energy (Theresia & Sudarma, 2022).

Maternal Health

Table 3 demonstrates that the occurrence of stunting is unrelated to birth length (p-value = 0.090). These results are similar to research

conducted by Dasantos & Dimiati (2020), It demonstrated that the frequency of stunting was unrelated to birth length.

Birth weight was not associated with the incidence of stunting (p-value = 0.616). These results are similar to research conducted by Trisiswati et al. (2021) which showed that there was no relationship between birth weight and the incidence of stunting, but toddlers born with low birth weight had a 1.65 times risk of stunting.

Birth spacing is not related with the incidence of stunting (p-value = 0.677). The study conclusions align with Trisyani et al. (2020), It revealed no association between the frequency of stunting and the spacing of births.

Stunting incidence was unrelated to pregnant women chronic energy deficient status (p-value = 0.677). Chronic energy deficit brought on by inadequate food intake in adolescence is characterized by a lack of energy reserves for a long time, which can be measured by upper arm circumference (Uswatun et al., 2021).

Environmental

Stunting prevalence is correlated with environmental sanitation (p-value = 0.000; OR = 9.75; 95% CI = 3.425-27.755), indicating that the likelihood of stunting in children living in unsanitary environments is 9.75 times higher. These results was also conducted by Wahdaniyah et al. (2022), It indicates that children who grow up in unsanitary environments are 2.949 times more likely to suffer from stunting. According to the interview results, unsanitary environmental conditions is caused by many things, such as the unavailability of trash bins, waste processing by burning, disposal of neighborhood garbage (near the river), room windows that are rarely opened, and disposal of baby feces not in the toilet. The state of environmental sanitation is also related to infectious diseases that occur in toddlers. An environment that does not meet health requirements allows children to get diseases such as diarrhea, worms, and ARI. Toddlers with poor water and sanitation conditions experience diarrhea more often (Lobo et al., 2019). Environmental sanitation is part of nutrition-sensitive interventions to support stunting reduction.

The Relationship Between Direct Risk Factors and Stunting

Inadequate Nutritional Intake

Energy intake is associated with stunting (p-value = 0.000; OR 11.781; 95% CI = 4.206-33.808), meaning that children who do not get enough energy intake are 11.781 times at risk of stunting. These results was also conducted by Aisyah and Yunianto (2021), This indicates that children who consume inadequate amounts of energy are 6.111 times more likely to have stunting. Toddler development and growth can be optimised when their dietary needs are met. The results of the study found that toddlers have a frequency of eating 2-3 times a day, drinking formula milk, proteins that are often consumed, eggs and chicken, and often consuming snacks. The nutritional rate of adequacy for toddlers aged 1-3 years is 1350 kcal/day, while toddlers 4-6 years are 1400 kcal/day. Research showing correlation between energy intake and nutritional status concluded that the better the energy intake in toddlers, the more regular the nutritional status (Azmy & Mundiastuti, 2018). Balanced food intake can determine the achievement of health, and the total adequacy of food consumed is a determinant of toddler growth.

Protein intake is associated with stunting (p-value = 0.001; OR = 6.4; 95% CI = 2.13-19.227), meaning that children who do not get enough protein intake are 6.4 times at risk of stunting. These results was also conducted by Fikawati et al. (2021), states that children whose protein intake is insufficient have four times the risk of stunting. Protein is essential for cell development in the body and maintaining human immunity. Children need protein for their growth period. In general, proteins are needed for growth, the synthesis of structural elements, and the production of antibodies (Azmy & Mundiastuti, 2018). The findings from the interviews with toddler mothers show that protein intake is less than the child nutritional adequacy rate can be caused by the amount of snack intake consumed by children (ice cream, donuts, chiki, biscuits), some children do not want to eat fish or chicken because of its texture, frequent consumption of instant noodles, and prefer to drink sweetened condensed milk rather than regular formula milk.

These findings concur with the study carried out by Tenriwati et al. (2019), children tend to consume instant food more often than protein, lack of drinking milk, and many children do not like fish.

Inappropriate Feeding Practice

Early Breastfeeding Initiation history is associated with the incidence of stunting (p-value = 0.006). The study findings are consistent with studies conducted by Lintang and Azkiya (2022), demonstrated a strong correlation between the occurrence of stunting and the history of early breastfeeding initiation (p-value = 0.019). The similar result was observed in another study, which linked the occurrence of stunting to the history of early breastfeeding initiation (Punuh et al., 2021). Early breastfeeding initiation is a determinant of successful breastfeeding, as it ensures that children get the proper nutritional intake. Early breastfeeding initiation ensures that babies get colostrum, which can increase children immunity to infection (Muldiasman et al., 2018).

Exclusive breastfeeding history was correlated with stunting (p-value = 0.003; OR 4.230; 95% CI = 1.718-10.416), indicating that the risk of stunting was 4.23 times higher for children who were not breastfed exclusively. The study conclusions align with Samuel Rabung et al. (2021), It revealed that the incidence of stunting was 2.875 times higher for kids who were not fed only breast milk.

Table 3. Bivariate Analysis Results (Indirect Factors)

Variable	*Stunting*		*Non Stunting*		*p-value*	OR	95% CI	
	n	%	n	%			*Lower*	*Upper*
Socioeconomic Factor								
Family Income								
Low (< Rp 2.018.836)	35	77.8	15	33.3	0.000*	7.000	2.742	17.867
Sufficient (≥ Rp 2.018.836)	10	22.2	30	66.7				
Mother Education								
Low (<High school)	34	75.6	28	62.2	0.255			
High (≥ High School Graduate)	11	24.4	17	37.8				
Father Education								
Low (<High school)	29	64.4	29	64.4	1.000			
High (≥ High School Graduate)	16	35.6	16	35.6				
Access To Health Service								
Immunization Status								
Incomplete (< 18 months)	35	77.8	4	8.9	0.000*	35.875	10.338	124.488
Complete	10	22.2	41	91.1				
Maternal Health								
Birth Length								
Stunted (< 48 cm)	11	24.4	4	8.9	0.090			
Normal (≥ 48 cm)	34	75.6	41	91.1				
Birth Weight								
LBW (< 2500 gram)	3	6.7	1	2.2	0.616			
Normal (≥ 2500 gram)	42	93.3	44	97.8				
Birth Spacing								
< 3 years	4	8.9	2	4.4	0.677			
≥ 3 years	41	91.1	43	95.6				
Maternal SEZ status during pregnancy								
SEZ (< 23,5 cm)	4	8.9	2	4.4	0.677			
Normal (≥ 23,5 cm)	41	91.1	43	95.6				
Environmental								
Environmental Sanitation								
Unhealthy (< 1068)	39	86.7	18	40.0	0.000*	9.75	3.425	27.755
Healthy (≥ 1068)	6	13.3	27	60.0				

(*significant α = 0.05)

Table 4. Bivariate Analysis (Direct Factors)

Variable	*Stunting*		*Non Stunting*		*p-value*	OR	95% CI	
	n	%	n	%			*Lower*	*Upper*
Inadequate Nutrition Intake								
Energy Intake								
Low (< 100% AKG)	29	64.4	6	13.3	0.000*	11.781	4.206	33.808
Sufficient (≥ 100% AKG)	16	35.6	39	86.7				
Protein Intake								
Low (< 100% AKG)	20	44.4	5	11.1	0.001*	6.4	2.13	19.227
Sufficient (≥ 100% AKG)	25	55.6	40	88.9				
Inappropriate Feeding Practice								
Early Breastfeeding Initiation								
No	8	17.8	0	0.0	0.006*			
Yes	37	82.2	45	100.0				
Exclusive Breastfeeding								
< 6 months	26	57.8	11	24.4	0.003*	4.230	1.718	10.416
≥ 6 months	19	42.2	34	75.6				
Complementary Foods								
Less or more than 6 months	30	66.7	11	24.4	0.000*	6.182	2.464	15.512
On time 6 months	15	33.3	34	75.6				
History of Infection								
History of Diarrhea								
Yes	43	95.6	35	77.8	0.030*	6.143	1.262	29.895
No	2	4.4	10	22.2				
History of Respiratory Infection								
Yes	6	13.3	1	2.2	0.110			
No	39	86.7	44	97.8				

(*significant α = 0.05)

Children who consume exclusive breast milk may lower the likelihood of stunting because breast milk contains digestive enzymes that are easily digested and absorbed by babies (Azizah et al., 2022). Lactose is present in breast milk which functions to increase calcium absorption in the baby body. Lactose is essential for growth and health. This is because lactose provides about 40% of the baby energy needs (Heine et al., 2017) including the establishment of Bifidobacterium-rich fecal microbiota. In many populations, lactase levels decline after weaning (lactase non-persistence; LNP. Along with preventing dangerous food and water, breast milk contributes to the immune system that shields infants from infections, including diarrheal illnesses (Tello et al., 2022)feeding practices, and stunting in indigenous children. This study aimed to analyze the prevalence of breastfeeding and complementary feeding practices and explore their association with stunting in Ecuadorian indigenous children under two years of age. Methods: Cross-sectional study of secondary data analysis using the 2012 Ecuador National Health and Nutrition Study, in 625 children aged 0–23 months (48,069 expanded sample. Research conducted by Pramulya et al. (2021) demonstrates that infants who are fed formula milk have a lower height on the development curve than newborns who are breastfed exclusively. Locitasari (2015) stated that the growth of formula-fed infants had a 5.45 risk of experiencing poor growth than exclusively breastfed infants. The results of follow-up interviews related to exclusive breastfeeding found several reasons mothers did not give exclusive breastfeeding for their children. Mothers gave reasons for producing little breast milk: children often cry, so they are given food such as bananas; mothers think children want to eat because they cry; mothers want their children to get used to

eating food, and the influence of parents and mother-in-law in making decisions.

The occurrence of stunting is correlated with the history of complementary feeding. (p-value = 0.000; OR = 6.182; 95% CI = 2.464-15.512), meaning that children who do not get complementary food on time are 6.182 times at risk of stunting. These results are in line with research conducted by Virginia et al. (2020), which showed that children who were given complementary foods not on time had a 4.583 times risk of stunting. Complementary foods are given in a timely manner at the age of 6 months (Mayangsari et al., 2023). Short-term interview results revealed that the causes of mothers provide complementary foods at an early age were due to children who often cried, mothers who thought the children were hungry, and the influence of families who lived together (mother/father/parents). These findings are consistent with studies carried out by Virginia et al. (2020), which states that the reason mothers give complementary foods to children under six years of age is that children are fussy and mothers think children are hungry.

History of Infection

A history of diarrhea is associated with stunting (p-value = 0.030; OR 6.143; 95% CI = 1.262-29.895), meaning that children who have a history of diarrhea are 6.143 times at risk of stunting. These findings are consistent with studies carried out by Desyanti and Nindya (2017)whereas children in non stunting group had the diarrheal disease rarely (57.6%, It indicates that children with a history of diarrhoea are 3.619 times more likely to be stunted. Children who experience diarrhea will lose their appetite, so nutrient intake is reduced and cannot be adequately absorbed by the body. This condition can cause children weight to decrease slowly and be followed by stunted height growth (Firmansyah et al., 2023). Diarrhea can occur due to consumption of contaminated food or drinks and poor hygiene behavior. In follow-up interviews conducted, there are several reasons toddlers experience diarrhea. The mother gave the reason for the diarrhea: a neighbor gave the child snacks, the child likes to bite his toys and drink ice, the child nails are sometimes not cut, and the child often plays with sand or soil. These poor hygiene practices can raise the chance of contracting infectious diseases characterized by disruption of appetite, nausea, vomiting, and diarrhea.

Stunting incidence is not correlated with a history of respiratory infections (p-value=0.110). The findings of this study are consistent with those of studies carried out by Al-firdausyah et al. (2021) in the Patimpeng Public Health Center working area, demonstrating that the incidence of stunting had no correlation with the history of respiratory illnesses (p=0.839).

Tabel 5. Multivariate Analysis Results

Variable	B	OR	95% CI	*p-value*
Immunization Status	-2.975	0.051	0.012-0.210	0.000
Energy Intake	-2.637	0.072	0.015-0.343	0.001
Constant	4.481			

Table 5 demonstrates that vaccination status is the factor that most affects the incidence of stunting in children between the ages of 24 and 59 months. There is a strong correlation between immunization status and the incidence of stunting (p-value=0.000, p<0.05), the results of the OR (Odds Ratio) statistical test are 0.051 (95% CI: 0.012-0.210), It demonstrates that toddlers with inadequate immunization status had a 5.1% higher likelihood of stunting than toddlers with complete immunization status. The following most influential variable is energy intake, with a p-value of 0.001 and an OR value of 0.072 (95% CI: 0.015-0.343); these results indicate that inadequate energy intake of toddlers has a 7.2% chance of being stunted compared to toddlers with adequate energy intake. OR < 1 suggests that both factors are classified as preventive factors, which, Stunting is less likely to occur in the child if it can be prevented. Based on the calculation of the results, the probability of children who have incomplete immunization and low energy intake experiencing stunting is 98.8%.

CONCLUSION

In the work area of the Kersana Public Health Center, factors linked to the prevalence of stunting in children between the ages of 24 and 59 months are the history of early breastfeeding initiation, history of exclusive breastfeeding,

history of complementary feeding, history of diarrhoea, immunization status, family income, environmental sanitation, energy intake, and protein intakeThe two main factors influencing the occurrence of stunting are energy intake and immunization status.

Researchers advise families, especially mothers, to pay attention to the food consumed by children to match the nutritional needs of children based on the established nutritional adequacy rate. Parents should provide complete immunization of children.

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