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### **Analysis Of Risk Factors For Stunting In Toddlers Age 12-59 Months In The Working Area The Cabangbungin Bekasi District Health Center Year 2022**

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#### **ABSTRACT**

Stunting is a condition of failure to thrive in toddler caused by chronic malnutrition so that children are too short for their age, as measured according to height/age indicators. Stunting has become a national problem, and is found in many developing countries, one of which is Indonesia. Stunting is caused by multiple factors. Risk factors for stunting in toddlers include birth weight, exclusive breastfeeding, parenting patterns, infectious diseases such as diarrhea and upper respiratory infections, health services and family income. The purpose of this study was to determine the risk factors for stunting in toddler. This research is a quantitative study using case-control research methods conducted in the working area of the Cabangbungin Public Health Center, Bekasi City. The research sample was 70 in the case and control groups. Technique of collecting data using questionnaire. Data analysis was performed by univariate analysis, bivariate analysis, multivariate analysis using multiple logistic regression and Population Attributable Risk (PAR) calculations with 95% confidence intervals. The results of multiple logistic regression showed that the risk factor for stunting was health services, and was the most dominant risk factor ( $\text{Exp}(B) = 7.334$ , 95% CI; 1.250-10.758). The results of the calculation of the Population Attributable Risk (PAR) for health services were 80%, meaning that the use of health services would reduce the incidence of stunting in children under five by 80%. The health workers can provide counseling about the use of under-five health services at the puskesmas as an effort to reduce the incidence of stunting in under-five children.

**Keywords:** Analysis, Risk Factor, Stunting, Toddlers

## **INTRODUCTION**

Stunting is a condition where there is failure to thrive in children under five caused by chronic malnutrition so that children are too short for their age. These chronic nutritional problems are influenced by the mother or prospective mother, the fetus, and the period of infancy/toddler as well as other problems that indirectly affect health (Kemenkes RI, 2018). Stunting is a nutritional problem that is increasingly being found in developing countries, including Indonesia. Stunting is a short and very short body condition that exceeds a -2 SD deficit below the median length or height (Unicef,Who,World Bank, 2020).

Based on analysis data from UNICEF, WHO and the World Bank Group, stunting is estimated to affect 21.3% or 144 million children under 5 years globally in 2019. The largest cases are found in Asia with 78.2 million, while in the Southeast Asia region the ranking is the second highest was stunting cases, namely 13.9 million, below South Asia which reached 55.9 million cases (Unicef,Who,World Bank, 2020). In Southeast Asia, one of them is Indonesia, which ranks fifth in the world for the number of children with stunting conditions, namely 37.2% or as many as 9.5 million children under five suffer from malnutrition (Kemenkes RI, 2020).

Then, according to WHO, the world prevalence of stunting under five is 22 percent or as much as 149.2 million in 2020. South Asian countries have the highest number of stunted under five, namely 30.7% or as much as 54.3 million, while Australia or Zealand Only have a small number of stunted toddlers, namely 2.3% or as many as 0 million, while in Southeast Asia the number of stunted toddlers is 27.4% or as many as 15.3 million (Unicef, 2021).

In 2020 the prevalence of stunting in Indonesia is 31.8% above the global prevalence and the prevalence of stunting in the Southeast Asia region is 30.1% (WHO, 2021). The percentage of stunted children aged 0-59 months in Indonesia in 2020 is expected to decrease to 26.92%. This figure is predicted to decrease by 0.75% compared to 2019 (27.67%). In 2021, the stunting prevalence rate will be 24.4% (Kemenkes RI, 2021). When viewed per province, referring to the results of the 2021 Indonesian Nutritional Status Study (SSGI), East Nusa Tenggara is the area with the highest prevalence of stunting, namely 37.8%. Furthermore, the provinces of West Sulawesi (33.8%), Aceh (33.2%), West Nusa Tenggara (31.4%), and Southeast Sulawesi (30.2%). Meanwhile, when viewed per district, referring to data from the National Population and Family Planning Agency (BKKBN), the district with the highest prevalence of stunting under-fives in Indonesia is South Central Timor District, East Nusa Tenggara Provinsi (Kemenkes RI, 2020).

Nutritional status can be influenced by internal factors and external factors. Internal factors include nutritional intake and infectious diseases, while external factors are child care patterns in the form of attitudes and behavior of mothers or other caregivers in terms of closeness to children, providing food, caring for them, and giving affection<sup>6</sup>. The results of Kusriadi's research (2010), obtained the results that toddlers who are infected with a certain disease have a 1.31 greater chance of being at risk of stunting (Kusriadi, 2010).

According to BPS Bekasi Regency (2020), the poverty rate for the West Java region, specifically Bekasi Regency, in 2020 is 4.38%. The number of poor people in Bekasi

Regency in 2013 was 134.01 thousand people. The type of work of the majority of the population is the informal sector. Meanwhile, the Nutrition Status Assessment (PSG) activity was carried out to assess the nutritional status of toddlers based on weight/age, height/age and weight/height. Data obtained through PSG activities for the prevalence of stunting (TB/U) in toddlers in Bekasi Regency in 2013 was 18.8%, consisting of a prevalence of 13.6% short and 5.2% very short. In 2014 the prevalence of stunting in toddlers was 15.6% consisting of a prevalence of 12.3% short and 3.3% very short (Marfina,2014).

Based on the results of PSG activity reports, the prevalence of stunting at the district level as a whole has decreased, but there are still areas with an increased prevalence of stunting under five. The incidence of stunting in the Cabangbungin Health Center area in 2019 consisted of a stunting prevalence of 3.5%, while in 2020 the stunting prevalence consisted of a stunting prevalence of 4.4%. And in 2021 the prevalence of stunting is 4.0%. From the description of the data above, it shows that in the Cabangbungin Health Center area there is an increase in the prevalence of stunting in toddlers from 2019 to 2020 and a decrease in 2021. Based on the information obtained, the researcher is interested in conducting research on " Analysis of the Risk Factors for Stunting in Toddlers Aged 12-59 Months in the Work Area of the Cabangbungin District Health Center in 2022.

## **RESEARCH METHODS**

The design of this study is observational analytic, namely comparing the distribution of stunted children between the case group and the control group. The sampling technique is Cluster Random Sampling. This study uses primary data obtained directly from respondents by filling out questionnaires and interviews. Based on the goals to be achieved, the population in this study were children under five aged 12-59 months who live in the working area of the Cabangbungin Health Center who met the inclusion criteria, namely in the case group, namely children under five aged 12-59 months who were stunted (short and very short) which has been measured using the anthropometric method with a height-for-age index (TB/U) (Zscore  $< -2SD$ ) and the control group, namely children under five aged 12-59 months who are not stunted (normal) who have been measured using the anthropometric method with height index for age (Zscore  $\geq -2SD$ ). And both are recorded in the weighing register book and settled at the research location. Calculation of the number of available population, the sampling technique in this study used the Cluster Random Sampling technique. Data analysis used the chi square test and multiple logistic regression tests in SPSS.

## RESEARCH RESULT

### 1. Univariat Analysis

**Table 1.**  
**Frequency Distribution of Family Characteristics Based on Education, Occupation, Family Income**

<i>Family Characteristics</i>	<i>Stunting</i>		<i>No Stunting</i>	
	N	%	N	%
<b>Mother's Education</b>				
Not going to school	3	4,3	1	1,4
SD	23	32,9	22	31,4
SLTP	22	31,4	22	31,4
SLTA	18	25,7	22	31,4
Diploma	2	2,9	3	4,3
S1	2	2,9	0	0
<b>Mother's Work</b>				
Not working	66	94,3	59	84,3
Work	4	5,7	11	15,7
<b>Dad's Education</b>				
Not going to school	0	0	0	0
SD	22	31,4	23	32,9
SLTP	24	34,3	21	30,0
SLTA	23	32,9	22	31,4
Diploma	1	1,4	2	2,9
S1	0	0	2	2,9
<b>Dad's Work</b>				
PNS	6	8,6	35	50,0
Merchant/entrepreneur	36	51,4	16	22,9
Farmer	10	14,3	0	0
Laborer	8	11,4	7	10,0
Fisherman	10	14,3	12	17,1
<b>Family income</b>				
Low	58	82,9	53	75,7
Tall	12	17,1	17	24,3

The results of table 1 show that the comparison of cases (stunting) and controls (not stunting) based on mother's education, where there were mothers who did not go to school in the case group were 3 people (4.3%), in the control group there were 1 person (1.4 %). Mothers with elementary education in the case group, namely 23 people (32.9%), relatively the same number as the control group, 22 people (31.4%), junior high school graduates in the case group, namely 22 people (31.4%), the same number as the control group. control as many as 22 people (31.4%). There were more high school graduates in the control group, namely 22 people (31.4%) than the case group, which

was 18 people (25.7%). There were more Diploma graduates in the control group, namely 3 people (4.3%) than in the case group of 2 people (2.8%), while there were more S1 graduates in the case group, namely 2 people (2.9%).

Based on the occupation of the mothers in the case (stunting) and control (not stunting) groups, the mothers in the case group did not work more as many as 66 people (94.3%) compared to the control group as many as 59 people (84.3%). Based on the father's last education, it was found that more fathers had graduated from elementary school in the control group of 23 people (32.9%) than the case group of 22 people (31.4%). There were more junior high school graduates in the case group, namely 24 people (34.3%) than the control group, 21 people (30.0%), high school graduates in the control group, namely 22 people (31.4%), relatively the same number as the case group. 23 people (32.9%). There were more Diploma graduates in the control group, namely 2 people (2.9%) than the case group, which was 1 person (1.4%), while S1 graduates were only found in the control group, 2 people (2.9%).

Based on the work of the father where there were more civil servant jobs in the control group, namely 35 people (50.0%) than the case group of 6 people (8.6%), there were more traders/self-employed workers in the case group, namely 36 people (51, 4%) than the control group of 16 people (22.9%). Father's work as a farmer was only in the case group, namely 10 people (14.3%). The father's work as a laborer was more in the case group, namely 8 people (11.4%) than the control group, which was 7 people (10.0%), while those who worked as fishermen were more in the control group, 12 people (17.1%) than case group of 10 people (14.3%).

Based on family income, in the case group there were more low-income families, namely 58 people (82.9%) than in the control group, as many as 53 people (75.7%), on the other hand, there were more high-income families in the control group, namely 17 people (24, 3%) of the case group of 12 people (17.1%).

**Table 2.**  
**Frequency Distribution of Toddler Characteristics Based on Age and Gender**

Characteristics Toddlers	Stunting		No Stunting	
	n	%	n	%
<b>Age (months)</b>				
12-23	20	28,6	9	12,9
24-35	27	38,6	25	35,7
36-47	14	20,0	26	37,1
48-60	9	12,9	10	14,3
<b>Gender</b>				
Male	38	54,3	37	52,9
Female	32	45,7	33	47,1

Table 2 shows the results of the case group (stunted toddlers) and the control group (non-stunted toddlers) based on age and sex. Stunted toddlers and non-stunted toddlers with the highest number in the case group aged 24-35 months, namely 27 people (38.6%)

and the least number were in the control group aged 12-23 months, namely 9 people (12.9%) and in case group aged 48-60 months, namely 9 people (12.9%). Meanwhile, based on gender, the number of male infants in the case and control group was greater, namely 38 infants (54.3%) and 37 infants (52.9%), while the female sex in the case and control group was 32 toddlers (45.7%) and 33 toddlers (47.1%)

## 2. Bivariate Analysis

**Tabel 3.**  
**Cross Tabulation of The Effect of Birth Weight on The Incidence of Stunting in Toddlers in the Working Area of The Puskesmas of Branchbungin District**

Effect of Weight	Stunting		No Stunting		P Value	OR (CI) 95%
	N	%	N	%		
BBLR	29	41,4	3	4,3	0,000	6,125(3,250-11,545)
No BBLR	41	58,6	67	95,7		

Table 3 show the results of the analysis of the effect of birth weight on the incidence of stunting, it was found that there were 29 toddlers (41.4%) with low birth weight who were stunted, while there were 3 toddlers (4.3%) who were not stunted. The results of the statistical test obtained a p value <0.05 indicating that there was an effect of birth weight on the incidence of stunting. OR = 6.125 (95% CI; 3.250-11.545) means that stunted toddlers with low birth weight have a risk factor 6.1 times greater than toddlers who are not stunted.

**Table 4.**  
**Cross Tabulation of The Effect of Exclusive Breastfeeding on Stunting in Toddlers**

Breastfeeding	Stunting		No Stunting		P Value	OR (CI) 95%
	N	%	N	%		
Exclusive Asi	55	78,6	66	94,3	0,000	4,170 (1,443-12,048)
Not Exclusive Breast Milk	15	21,4	4	5,7		

Table 4 shows the results of the analysis of the effect of exclusive breastfeeding on the incidence of stunting. It was found that 15 toddlers (21.4%) who did not receive exclusive breastfeeding experienced stunting, while 4 toddlers (5.7%) did not. The results of the statistical test obtained a p value <0.05 indicating that there was an effect of exclusive breastfeeding on the incidence of stunting. OR = 4.1 (95% CI; 1.443-12.048) means that stunted toddlers who do not get exclusive breastfeeding have a risk factor 4.1 times greater than toddlers who are not stunted.

**Table 5.**  
**Cross Tabulation of Parenting Patterns of Stunting in Toddlers**

Food Parenting Patterns	Stunting		No Stunting		P Value	OR (CI) 95%
	N	%	N	%		
Not Good	17	24,3	14	20,0	0,018	2,138 (1,085-4,212)
Good	53	75,7	56	80,0		

Table 5 show the results of the analysis of the influence of parenting patterns on the incidence of stunting, it was found that there were 17 toddlers (24.3%) with poor parenting patterns who experienced stunting, while 14 toddlers (20%) who were not stunted. The results of the statistical test, the value of  $p < 0.05$ , shows that there is an effect of parenting to eat on the incidence of stunting. OR = 2.138 (95% CI; 1.085-4.212) means that stunted toddlers with poor parenting patterns have a risk factor 2.1 times greater than toddlers who are not stunted.

**Table 6.**  
**Health Care Cross Tabulation of Stunting in Toddlers**

Health Care Parenting	Stunting		No Stunting		P Value	Or (Ci) 95%
	N	%	N	%		
Not Good	54	77,1	55	78,6	0,000	2,433 (1,192-4,963)
Good	16	22,9	15	21,4		

Table 6 show the results of the analysis of the influence of health care parenting style on the incidence of stunting found that there were 54 toddlers (77.1%) with poor health care parenting styles who experienced stunting, while those who were not stunted were 55 toddlers (78.6%). The results of the statistical test obtained a p value  $< 0.05$  indicating that there was an effect of health care parenting on the

**Table 7.**  
**Cross Tabulation of Personal Hygiene Parenting Patterns Against Stunting in Toddlers**

Personal Hygiene Parenting Pattern	Stunting		No Stunting		P Value	Or (Ci 95%)
	n	%	N	%		
Not Good	30	42,9	2	2,9	0,214	2,361 (1,174-4,750)
Good	40	57,1	68	97,1		

Table 7 show the results of the analysis of the influence of personal hygiene parenting styles on the incidence of stunting, it was found that there were 30 toddlers (42.9%) with poor personal hygiene parenting styles who experienced stunting, while 2 toddlers (2.9%) who were not stunted. The statistical test results obtained a value of  $p > 0.05$  indicating that there was no effect of personal hygiene parenting style on the incidence of stunting. OR = 2.361 (95% CI; 1.174-4.750) means that personal hygiene is not a risk factor for stunting in toddlers.

**Table 8.**  
**Cross Tabulation of Infectious Diseases Against Stunting in Toddlers**

Infectious Diseases	Stunting		No Stunting		P Value	OR (CI 95%)
	n	%	N	%		
Not Good	35	50,0	40	57,1	0,214	1,778(0,60-95,191)
Good	35	50,0	30	42,9		

Table 8 show the results of an analysis of the influence of a history of infectious diseases on the incidence of stunting, it was found that 35 toddlers (50%) had suffered from infectious diseases in the past year experiencing stunting, while 40 toddlers (57.1%) were not stunted. The statistical test results obtained a value of  $p > 0.05$  indicating that there was no effect of infectious diseases on the incidence of stunting. OR = 1.7 (95% CI; 0.609-5.191) means that infectious diseases are not a risk factor for stunting in toddlers.

**Table 9.**  
**Cross Tabulation of Health Services Against Stunting in Toddlers**

Infectious Diseases	Stunting		No Stunting		P Value	OR (CI 95%)
	n	%	n	%		
Not Good	7	10,0	2	2,9	0,012	7,344 (1,295-41,639)
Good	63	90,0	68	97,1		

Table 9 show the results of the analysis of the influence of health services on the incidence of stunting, it was found that there were 7 toddlers (10%) with poor health services experiencing stunting, while 2 toddlers (2.9%) who were not stunted. The statistical test results obtained a p value <0.05 indicating that there was an effect of health services on the incidence of stunting. OR = 7.344 (95% CI; 0.973-3.826) means that stunted toddlers who receive poor health services have a risk factor 7.3 times greater than toddlers who are not stunted.

**Table 10**  
**Cross Tabulation of Family Income on Stunting in Toddlers**

Family Income	Stunting		No Stunting		P Value	Or (Ci 95%)
	n	%	N	%		
Low	58	82,9	53	75,7	0,053	1,778 (0,744-4,249)
High	12	17,1	17	24,3		

Table 10 show the results of the analysis of the effect of family income on the incidence of stunting, it was found that there were 10 toddlers (14.3%) with parents (fathers) who had low incomes who were stunted, while those who were not stunted were 53 toddlers (75.7%). The results of the statistical test obtained a value of  $p > 0.05$  indicating that there was no effect of family income on the incidence of stunting. OR = 1.778 (95% CI; 0.744-4.249) means that family income is not a risk factor for stunting in toddlers.

### 3. Multivariate Analysis

**Table 11**  
**Initial Multiple Logistic Regression Test Results of the Risk Factors for Stunting in Toddlers in The Working Area of The Cabangbungin Health Center**

Variabel Independen	B	Sig.	Exp (B)	95% CI
BBL history	22,697	0,999	2,542	0,838-3,710
History of Exclusive Breastfeeding	20,721	0,998	9,977	1,007-10,543
History of infection	21,608	0,997	2,423	0,275-3,233
Feeding Parenting	-20,782	0,998	1,359	0,620-2,977
Health Care Parenting	20,751	0,998	1,028	0,841-4,066
Personal Hygiene Parenting Pattern	22,050	0,997	3,403	0,618-3,187
Family Income	22,697	0,999	1,355	0,516-3,555
Health services	1,1819	0,049	3,258	0,695-9,284
Constant	-76,694	0,000	0,02	

\*= issued gradually (backward selection)

In carrying out the multiple logistic regression test there were several variables with a p-value > 0.05 which were excluded in stages, while these variables were a history of low birth weight, exclusive breastfeeding, infectious diseases, parenting patterns, family income, parenting hygiene self and health care. After these variables were removed, 1 variable was obtained which was the final model for determining the risk factors that most influenced the incidence of stunting, namely the health service variable.

**Table 12**  
**Final Model Multiple Logistic Regression Test Results of Risk Factors for Stunting in Toddlers in The Work Area of The Cabangbungin Health Center**

Variabel Independen	B	SE	Wald	df	Sig	Exp(B)	95% CI
Health Service	1,2999	0,549	5,601	1	0,024	7,344	1,250-10,758
Constant	-2,760	0,851	10,532	1	0,001	0,054	

Based on table 12, it shows that of all the variables resulting from the bivariate analysis that had a p value  $<0.25$  which were tested together in the multivariate analysis, one variable was obtained which was significantly ( $p \leq 0.05$ ) a risk factor for stunting, namely the health service variable with OR (Exp B) = 7.344 means that stunted toddlers who do not get health services have a risk factor 7.3 times greater than toddlers who are not stunted. The most dominant variable influencing the incidence of stunting in toddlers is health services with a high OR value. The greater the value of the OR variable, the greater the possibility that it will be a factor influencing toddlers to experience stunting.

The results of the multivariate analysis showed that the most dominant variable influencing the incidence of stunting was health services with OR (Exp B) = 7.344. To further explain how large the proportion of cases of stunting in toddlers in the population can be prevented by eliminating risk factors, a population attributable risk (PAR) calculation is performed to obtain 0.80. This means that health services will reduce the incidence of stunting by 80%.

## **DISCUSSION**

### **a. The Effect of Birth Weight on The Incidence of Stunting**

Based on the results of the study, it was found that the p-value was 0.000, which meant that there was an effect of birth weight on the incidence of stunting. The OR value is 6.125 (95% CI; 3.250-11.545) so a toddler with a birth weight  $< 2500$  grams has a greater chance of experiencing stunting 6.1 times than a toddler with a birth weight  $> 2500$  grams. In this study, it was found that 58.6% of children under five who were stunted had a history of normal birth weight, while for children under five who were not stunted the percentage was much different at 95.7%. The proportion of stunted toddlers who have a history of low birth weight is higher but toddlers with a history of normal birth weight can eventually experience stunting because apart from birth weight, stunting is also influenced by other factors. This can occur due to insufficient intake of nutrients in normal toddlers, causing growth faltering (failure to thrive). This condition will get worse if it is coupled with exposure to infectious diseases. Conversely, premature babies who experience growth faltering if adequate nutritional support is provided, the normal growth pattern can be caught up (catch up). Failure to thrive due to malnutrition in toddlers will have bad consequences in the next life and is difficult to repair. Low nutritional intake in babies born normally also contributes to stunting.

These results are in accordance with Pohan's research (2017), namely that there is an effect of birth weight on stunting. This is in line with Lestari's research (2018) which found that a history of low birth weight increases the risk of stunting by more than 12 times compared to normal birth weight. The effect of birth weight on stunting occurs in the first 6 months of life, then declines until 24 months of age. If babies can catch up with their growth in the first 6 months of life, there is a higher chance of them achieving normal height (Lestari, 2018).

According to the researchers, this condition needs to be addressed early on considering that low birth weight is a public health problem that occurs in many poor and developing countries related to mortality and morbidity for fetuses, children and

future generations. Prevention of malnutrition is urgently needed for the first two years of age group because children's susceptibility to disease and the risk of death are still high at that age, so many health and nutrition interventions are focused on them.

#### **b. The Effect of Exclusive Breastfeeding on Stunting Incidence**

The results of the study found that there was an effect of exclusive breastfeeding on the incidence of stunting. The results of the statistical test obtained a value of  $p = 0.000$  indicating that the incidence of stunting in children under five was caused by not receiving exclusive breastfeeding. The results of the analysis obtained  $OR = 4.170$  (95% CI; 1.443-12.048) meaning that stunted toddlers who do not get exclusive breastfeeding are 4.1 times greater than toddlers who are not stunted. The results of this study are in line with research conducted by Sri Indrawati (2016), stating that there is a significant relationship between exclusive breastfeeding and the incidence of stunting in toddlers, with a  $p$  value = 0.000. Exclusive breastfeeding means that the baby receives only breast milk without being given liquids or solid food except for oral dehydrating solutions, vitamin syrups, minerals or medicines. Breast milk is a nutritional intake in accordance with the needs that will help the growth and development of children. Babies who do not get enough breast milk mean they have poor nutritional intake and cause malnutrition, one of which is stunting (Indrawati, 2016). Exclusive breastfeeding can prevent stunting and failure to thrive. Exclusive breastfeeding from birth to 6 months of age and babies must be breastfed often without being limited by time (Kemenkes RI, 2018).

The benefits of ASI as the best and most ideal source of nutrition with a balanced composition according to the needs of the baby during the growth period. Breast milk contains macro and micro nutrient components. Macronutrients include carbohydrates, proteins and fats, while micronutrients include vitamins and minerals. Colostrum which is produced between days 1-5 of breastfeeding is rich in nutrients, especially protein.

Transitional milk contains a lot of fat and lactose. The amount of milk production and intake for the baby varies each breastfeeding time with amounts ranging from 450-1200 ml with an average between 750-850 ml per day. The amount of breast milk that comes from mothers who have poor nutritional status can decrease to only 100-200 ml per day. Other foods given too early can actually increase infectious diseases in infants which directly affect the nutritional status of infants (Rahayu et al, 2018).

According to the researchers, exclusive breastfeeding greatly influences the incidence of stunting, but it is not only enough to give exclusive breastfeeding, but also the quality of the milk itself and the frequency of giving exclusive breastfeeding must be considered. Exclusive breastfeeding has many benefits for babies. The role of midwives in preventing stunting is by providing counseling and education about the importance of exclusive breastfeeding. This can increase the knowledge and motivation of mothers to breastfeed their babies.

### **c. The Effect of Parenting Patterns on Stunting Incidence**

The results of the study found that there was an effect of parenting to eat on the incidence of stunting. The results of the statistical test obtained a value of  $p = 0.018$  indicating that the incidence of stunting in children under five is caused by poor parenting patterns. The results of the analysis obtained  $OR = 2.138$  (95% CI; 1.085-4.212) meaning that stunted toddlers who received poor parenting were 2.1 times greater than toddlers who were not stunted. The results of this study are in line with research by Farah (2018), explaining that there is an effect of feeding patterns on the incidence of stunting in toddlers. The risk magnitude is 5.1, which means that families who apply good feeding patterns for toddlers will reduce the risk of stunting. Conversely, families who adopt poor feeding patterns will increase the risk of stunting in toddlers (Farah, 2018).

In the study of Mugianti et al (2018), it showed that children with insufficient energy intake according to needs, namely 93.5% (29 children), some 6.5% (2 children) had adequate energy intake according to needs (Mugianti et al, 2018). This is in accordance with Fitri's research (2012), stating that there is a significant relationship between energy consumption and the incidence of stunting in toddlers. This is because inadequate nutritional intake, especially from total energy, is directly related to physical growth deficits in children. Energy and protein intake is closely related to nutritional status, low and excess intake will have an impact on poor nutritional status (Fitri, 2012).

According to the researchers, the nutritional status of stunting toddlers is an accumulation of previous eating habits, so that the pattern of feeding on a certain day cannot directly affect their nutritional status. The key to success in fulfilling toddler nutrition lies in the mother. The role of midwives in preventing stunting with the collaboration of nutritionists to provide knowledge and skills in preparing food that meets nutritional requirements, this is so that good eating habits are implemented.

### **d. The Effect of Health Care Parenting Style on Stunting Incidence**

The results of the study found that there was an influence of health care parenting styles on the incidence of stunting. The results of the statistical test obtained a value of  $p = 0.000$  where the incidence of stunting in toddlers was caused by poor health care parenting styles. The results of the analysis obtained  $OR = 2.433$  (95% CI; 1.192-4.963) meaning that stunted children under five who receive poor health care parenting are 2.4 times greater than children under five who are not stunted. These results are in line with Marfina's research (2014), explaining that there is a significant influence between health care parenting styles on the incidence of stunting with a  $p$  value = 0.021. Children with poor health care parenting patterns are 3.37 times more likely to experience stunting than children with good health care parenting styles. These results are in accordance with Hasanah's research (2013), that there is a significant relationship between health care parenting styles and the nutritional status of toddlers in the working area of the East Aceh Geureubak Health Center, the Exp value (B) is 7.8, this means that the health care parenting style is not good 7 times greater risk of having poor nutritional status compared to good health care patterns (A.U.H, 2013).

Health care parenting patterns include immunization status, frequency of illness in the last month, places to seek treatment when children are sick, feeding practices when

children are sick. Factors of nutritional status, immunization status, ventilation status of the house, mother's education, mother's knowledge, and family's socio-economic status have a significant relationship with ARI (Acute Respiratory Infection) in toddlers (Nuryanto, 2017).

According to researchers, the problem of malnutrition (stunting) is not only due to insufficient food intake, but also caused by disease. If the toddler is sick, sometimes the mother pays less attention to the toddler's food intake so that later illness will arise and cause the toddler to lack nutrition which causes the toddler to become stunted. The role of midwives in preventing stunting is by motivating and promoting health to mothers regarding toddler health care such as the importance of complete immunization for toddlers.

#### **e. The Effect of Parenting Personal Hygiene on Stunting Incidents**

The results of the study found that there was no effect of personal hygiene parenting style on the incidence of stunting, with a value of  $p = 0.214$ . The results of the analysis obtained  $OR = 2.361$  (95% CI; 1.174-4.750) meaning that personal hygiene is not a risk factor for stunting in toddlers. This is in line with research by Rejeki (2015), explaining that there is no relationship between hygiene patterns and the incidence of stunting in toddlers, because there are other factors that affect the incidence of stunting such as socioeconomic status which can affect the mother's personal hygiene and can influence the incidence of stunting to meet food needs. This is not in line with research by Pagya et al (2022), explaining that there is a relationship between hygiene patterns and stunting. Personal and environmental hygiene plays an important role in the growth and development of toddlers, by covering mother's behavior in maintaining house cleanliness, food hygiene and personal hygiene.

According to researchers, environmental sanitation and poor personal hygiene trigger the emergence of an infectious disease that will affect nutritional problems for toddlers. The role of the midwife in overcoming this problem is by promoting health through a family approach regarding the importance of clean and healthy living in the family.

#### **f. The Influence of Infectious Diseases on the Incidence of Stunting**

The results of the study found that there was an effect of a history of infectious diseases on the incidence of stunting in toddlers, with a value of  $p = 0.214$ . Infectious disease is not a factor that influences the occurrence of stunting in toddlers with  $OR = 1.778$  (95% CI; 0.609-5.191). This is because the incidence of infectious diseases in children under five who are stunted and those who are not stunted is almost the same where the proportion of stunted children has ever suffered from an infectious disease by 50% while the proportion of children who are not stunted has had an infectious disease of 57.1%. This is in line with Dewi's research (2019) which found that infectious diseases are related to stunting. This is caused by factors of poor sanitation hygiene practices such as not washing hands with soap, not keeping food sanitation clean which is the etiology of diarrhea. When toddlers have diarrhea, it will cause a deficit of fluids in the body and important nutrients so that they are at risk of stunting. Some examples of infections that are often experienced, such as diarrhea, enteropathy, and worms, can also be caused by

respiratory infections (ARI), malaria, decreased appetite due to infection and inflammation (Rahayu et al, 2018).

According to the researchers, the children in the study sample did not receive complete immunization, but many also received complete immunization, even in one village, complete immunization coverage reached 100%. Mothers who were respondents did not know about the importance of immunization for children's health and basic immunization is very important for the child's immune system. If a child is not provided with complete basic immunization, the child will not have immunity against disease and will be attacked by an infectious disease.

#### **g. The Effect of Health Services on Stunting Incidents**

The results of the study found that there was an effect of health services on the incidence of stunting, with a value of  $p = 0.012$ .  $OR = 7.344$  (95% CI; 0.973-3.826) means that stunted toddlers who receive poor health services have a risk factor 7.3 times greater than toddlers who are not stunted. This is in line with research by Aisyah et al (2022), explaining that there is a significant influence between health services and the incidence of stunting, with a p-value of 0.00120. The results of Ningsih's research (2015), which stated that there was a significant relationship between health service facilities and the incidence of stunting ( $p=0.039$ ) in children aged 2-3 years in the West Nusa Tenggara Islands.

Health services are access to disease prevention and health care efforts such as immunization, child weighing, health and nutrition counseling, as well as good health facilities such as posyandu, health centers, midwives, doctors and hospitals. At the Lakudo Health Center, it was shown that toddlers who did not utilize health services had the highest proportion of stunting, with 30 toddlers. Meanwhile, under-fives who sufficiently use health facilities have the highest proportion not stunted with a total of 18 under-fives (Aisyah et al, 2022).

According to the researchers, based on the data obtained, the health services provided by health workers reach almost the entire community. Health services are one of the factors that determine success in stunting prevention. The health services used in this study included A health services (hospitals, health centers, auxiliary health centers, practicing doctors, and practicing midwives) and B health services (posyandu, poskesdes, and polindes). As well as the posyandu being a facility that utilizes community resources and is managed by the community. The role of midwives according to Law Number 4 of 2019 concerning Midwifery article 46 explains that midwives' duties include maternal and child health services, one of which is by providing nutrition and health counseling, as well as toddler nutrition counseling. Habits in the effort to get health services play a very important role in improving the nutritional status of children, this is so that children are healthy in the process of growth and development at the beginning of their lives.

#### **h. The Effect of Family Income on Stunting Incidence**

The results of the study found that there was no effect of family income on the incidence of stunting in toddlers. Family income is not a factor influencing the occurrence of stunting in toddlers with OR = 1.778 (95% CI; 0.744-4.249). This is because the proportion of children under five who are stunted and those who are not stunted is not the same in proportion from low-income families. Stunted toddlers who come from low-income families are 82.9% while the proportion of toddlers who are not stunted comes from families with low incomes of 75.7%.

This is in line with Alwin's research (2018), which explains that there is no significant relationship between family income and stunting, with p value of 0.134. It is known that the low family income of stunting toddlers is 41.9%, while the high family income is 27.7%. Family income depends on the type of work of the head of the family and other family members. If income is still low, food needs tend to be more dominant than non-food needs. Conversely, if income increases, spending on non-food items will increase, considering that basic food needs have been met.

Children from families with low incomes consume less food and nutrients than families with better incomes. Studies on nutritional status show that children from underprivileged families have lower weight and height than those with good incomes (Rahayu et al, 2018).

According to researchers, the amount of income earned or received by a household can describe a social welfare. However, accurate income data is difficult to obtain, so an approach is taken through household expenditure. Household expenditure can be differentiated according to food and non-food spending, by being able to allocate household needs. In developing countries, meeting food needs is still a top priority, because to meet nutritional needs.

#### **CONCLUSION**

1. There is an effect of history of birth weight on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency. Stunted toddlers have a 6.1 times greater risk due to low birth weight than toddlers who are not stunted.
2. here is an effect of exclusive breastfeeding on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency. Stunted toddlers have a 4.1 times greater risk of not getting exclusive breastfeeding than toddlers who are not stunted.
3. There is an influence of parenting style on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency. Stunted toddlers have a 2.1 times greater risk due to poor parenting patterns than toddlers who are not stunted.
4. There is an influence of health care parenting style on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency. Stunted toddlers have a 2.4 times greater risk due to poor health care parenting styles than toddlers who are not stunted
5. There is an influence of health services on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency. Stunted toddlers

- have a 7.3 times greater risk due to poor health services than toddlers who are not stunted.
6. There is no influence of personal hygiene parenting style on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency.
  7. There is no effect of infectious diseases on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency.
  8. There is no effect of family income on the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency.
  9. The most dominant risk factor influencing the incidence of stunting is health services with a percentage of 80% which can reduce the incidence of stunting in toddlers in the working area of the Branchbungin Health Center, Bekasi Regency.

### **SUGGESTION**

1. The Bekasi District Health Office can collaborate across sectors in an effort to reduce stunting by promoting the 1000 HPK movement.
2. Health centers can improve health services through monitoring the growth and development of toddlers, health promotion nutrition programs, home visit programs, and the program for forming a nutrition-aware family (Kadarzi) in posyandu activities to reduce stunting rates.
3. In further research, you can add other variables and research instruments so that they become more optimal.

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