

# INTERVENTION OF STUNTING AGED 0-59 MONTHS REVIEWING FROM NUTRITION

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## Abstract

Nutritional intervention is an effort to overcome nutritional problems with programs such as giving Fe and calcium tablets to pregnant women, giving zinc to children. To find out the factors that cause stunting and the effectiveness of Nutrition Interventions in Stunting Toddlers. This type of research is survey research with a cross-sectional design. The research sample was children aged 0-59 months with short or very short criteria, totaling 60 respondents. Sampling technique is purposive. Data analysis through Univariate and Multivariate. Univariate analysis to provide an overview of the prevalence of stunting in children aged 0-59 months and Multivariate Analysis to see the initial relationship of risk factors for stunting in children 0-59 months and the effectiveness of Nutrition Interventions for Stunting Toddlers. The analysis was performed by binary logistic regression. Of the risk factors for stunting found 5 factors that correlated with stunting, namely history of exclusive breastfeeding, p-value 0.007 <0.05 (OR 0.111, 95% CI 0.023 – 0.541), history of complementary feeding p-value 0.044 < 0, 05 (OR 0.297, 95% CI 0.091 – 0.970), the diversity of food content p-value 0.095 <0.10 and the odds ratio value of 2.743. Means that the diversity of food content consumed affects stunting by 2.743 times greater, nutritional adequacy p-value 0.042 <0.05 and odds ratio value of 3.429, meaning that nutritional adequacy affects stunting by 3.429 times greater and Immunity of toddlers with stunting p-value 0.029 <0.05 and OR 0.268, 95% CI 0.82 - 0.876. For the Nutrition Interventions studied in this study in the form of an intervention approach to pregnant women through supplementation of Fe tablets with a p-value of 0.02 <0.05 and an odds ratio of 0.194 and supplementary feeding obtained a p-value of 0.011 <0.05 and an odds ratio of 4.464. There is a significant relationship between the Nutritional Intervention of Fe tablet supplementation and feeding with stunting. History of complementary feeding, exclusive breastfeeding, nutritional adequacy, diversity of food content and immunity have an impact on stunting in toddlers. The main interventions that can be done to reduce stunting are by increasing good nutrition for pregnant and lactating women and conducting early intervention in cases of malnutrition by fulfilling a diet high in protein.

**Keywords:** Intervention, Toddler, Stunting, Nutrition.

## INTRODUCTION

The government in reducing the stunting prevalence rate by 14% in 2024 is guided by the national strategy for the acceleration of stunting prevention for the 2018-2024 period and the presidential regulation number 72 of 2021 regarding the acceleration of stunting reduction, through the Commitment and Vision of National and Regional Leadership, increasing communication of behavior change and community empowerment, increasing the convergence of Specific and Sensitive Interventions, increasing food and nutrition security at the individual, family, and community levels; and strengthening and developing systems, data, information, research, and innovation

(National for the Acceleration of Poverty Reduction, 2019, pp. 2018–2024; REGULATION OF THE PRESIDENT OF THE REPUBLIC OF INDONESIA, 2021)

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Stunting in children under five years old reflects a failure to thrive. So that the child becomes too short for his age. This is due to chronic malnutrition that occurs since the baby is in the womb until the age of two. Thus the period of the first 1000 days of life should receive special attention because it determines the level of physical growth, intelligence, and productivity of a person in the future. Based on data from the Indonesian Toddler Nutrition Status Survey (SSGBI) in 2021, the current prevalence of stunting is still at 24.4% or 5.33 million children under five. East Java (23.5%) and Central Java (20.9%) are areas with a medium stunting prevalence between 20-29%. At this time stunting still occurs a lot and continues to increase despite the availability of health facilities that are close and easily accessible to the public. The causes of the condition of failure to thrive in chronically malnourished toddlers are multidimensional, not only health factors, but also family, economic, social and cultural factors. These include the lack of malnutrition experienced by pregnant women and children under five, family factors, ranging from inadequate feeding practices, breastfeeding practices, infectious diseases and childcare patterns (National for the Acceleration of Poverty Reduction, 2019). Household food insecurity and the incidence of diarrhea in children, respiratory tract infections and parasitosis are closely related and related. In addition, the risk of stunting and underweight increases as a result of food insecurity (Hackett et al., 2009).

The government in overcoming stunting seeks to take a specific nutrition approach, namely activities that lead to overcoming nutritional problems, such as giving calcium to pregnant women, giving zinc to children, giving salt iodization, E-ASI education, monitoring growth and development and others with maintenance on convergence activities. between the National, Regional and Village levels (KEMENDES DTT, 2017). Stunting prevention can also be seen in Hulu-Hilir. Upstream or also called level policy, the government has issued policies such as Presidential Regulation (Perpres) No.42/2013 concerning the National Movement to Accelerate Nutrition Improvement, Permenkes No.23/2014 concerning Efforts to Improve Nutrition, Government Regulation (PP) No.33/2012 regarding Exclusive Breastfeeding, National Action Plan for Food and Nutrition 2011-2015, Bappenas, 2011 etc, but from the policies issued, the reduction in stunting is still far from the target. While in the downstream, namely program implementers or people who do not have knowledge related to stunting, its impacts, causal factors, and prevention (Saputri & Tumangger, 2019). Human Development Cadres (KPM) as one of the program implementers have a role in

handling stunting in the community, but the problems faced are not yet optimal in the function of cadres, limited time to increase capacity in the field and no more training and lack of public awareness about the dangers of stunting (Hamdie et al. al., 2020). Internal and external “Nutritional Ecology” factors are considered to reduce stunting through diet approaches (nutrient exposure/nutritional status), health context (genetic/epigenetic/xenobiotic disease) and biological systems (inflammation/ebdocrine/extra gastrointestinal or intracellular environment)( Raiten & Bremer, 2020). The purpose of this study is to determine the factors that cause stunting and the effectiveness of Nutrition Interventions in Stunting Toddlers.

### Method

Data were collected through a growth monitoring survey for toddlers using a cross-sectional design. The research instrument used in the form of questionnaires, interviews and observations.

The research location is in East Java and Central Java, consisting of 2 districts in East Java (Sidoarjo and Bangkalan) and 1 district in Central Java (Sukoharjo). Each district is represented by 1 puskesmas area. Each area of the puskesmas is represented by 20 respondents as samples.

The population of this study was toddlers 0-59 months. Sample criteria: short or very short nutritional status. The sample in this study amounted to 60 respondents with purposive sampling technique.

Data analysis was carried out by Univariate Analysis, to provide an overview of stunting prevalence in children aged 0-59 months and Multivariate Analysis to see the initial relationship of stunting risk factors in children 0-59 months and the Stunting Assistance Program. The analysis was performed by binary logistic regression of the survey data.

### Results and Discussion

Table 1 Stunting Prevalence and Stunting Criteria in Children aged 0-23 months and 24-59 months. This table reveals that the prevalence of stunting and the criteria for stunting are seen from Age, Gender, Mother's Education and Occupational Level, History of Exclusive Breastfeeding, History of Complementary Breastfeeding, Types of MPASI, Diversity of Food Content, Appetite, Nutritional Adequacy and Immunity Levels.,

Table 1. Prevalence of Stunting Risk Factors

Characteristics	n	Very short (0-23 month)	short (0-23 month)	Very short (24-59 month)	short (24-59 month)
Age	60				
0-23 month	24(40%)	15 (62,5%)	9 (37,5%)		
24-59 month	36(60%)			24 (66,7%)	12 (33,3%)

<b>Gender</b>					
1. Woman	32(53,3%)	6 (25%)	5 (20,8%)	14 (38,9%)	7 (19,4%)
2. Man	28(46,7%)	9 (37,5%)	4 (16,7%)	10 (27,8%)	5 (13,9%)
<b>Profession</b>					
1. Work	10(16,7%)	1(4,2%)	3 (12,5%)	1 (2,8%)	5 (13,9%)
2. Doesn't work	50(83,3%)	8 (33,3%)	12 (50%)	11(30,5%)	19 (52,8%)
<b>education</b>					
1. Junior high school/Senior high school/equal	55(91,7%)	13(54,2%)	8(13,3%)	22(36,7%)	12(20%)
2. College	5(8,3%)	2 (3,3%)	1(1,7%)	2 (3,3%)	-
<b>Breastfeeding History</b>					
1. Exclusive Breastfeeding	30(50%)	5(20,8%)	4(16,7%)	13(36,1%)	8(22,2%)
2. No Exclusive Breastfeeding	30(50%)	10(41,7%)	5(20,8%)	11(30,6%)	4(11,1%)
<b>History of Complementary Feeding</b>					
1. <6 month	22(36,7%)	8(33,3%)	2(8,3%)	9(25%)	3(8,3%)
2. >6 month	38(63,3%)	7(29,2%)	7(29,2%)	15(41,7%)	9(25%)
<b>Types of solid food</b>					
1. Instant Porridge	59(98.3%)	9(37,5%)	14(58,3%)	24(66,7%)	12(33,3%)
2. Processed Porridge	1(1,7%)		1(4,2%)		
<b>Diversity of food content</b>					
1. Yes					
2. No	23(38,3%)	5(20,8%)	1(4,2%)	13(36,1%)	4(11,1%)
	37(61,7%)	10(41,7%)	8(33,3%)	11(30,6%)	8(22,2%)
<b>Nutritional Adequacy</b>					
1. Yes	32(53,3%)	3(12,5%)	4(16,7%)	5(13,9%)	20(55,6%)
2. No	28(46,7%)	12(50%)	5(20,8%)	7(19,4%)	4(11,1%)
<b>Immunity Level</b>					
1. Good	6(10%)	1(4,2%)	1(4,2%)	2(5,6%)	2(5,6%)
2. Enough	14(23,3%)	2(8,3%)	2(8,3%)	9(25%)	1((2,8%)
3. Not Enough	40(66,7%)	12(50%)	6(25%)	13(36%)	9(25%)

Table 2. Relationship of factors that affect stunting

Characteristics	B	SE	p-value	OR	95%
Education	-0.827	1,153	0,473	0,438	0,046 - 4,189
Work	-0.897	0,843	0,287	0,408	0,078 - 2,127
Gender	-0.236	0,545	0,665	0,789	0,271 - 2,298
Toddler Age	-0.075	0,548	0,891	0,928	0,317 - 2,716
MPASI History	-1,214	0,604	<b>0.044</b>	0,297	0,091 – 0,970
Exclusive breastfeeding history	-2,200	0,809	<b>0.007</b>	0,111	0,023 – 0,541
Nutritional Adequacy	1.232	0,607	<b>0.042</b>	3,429	1,043 - 11,268
Diversity of Food Content	1.009	0,605	<b>0.095</b>	2,743	0,838 - 8973
Immunity	-1,317	0,605	<b>0,029</b>	0,268	0,82 - 0,876

The prevalence table with the characteristics of under-five age shows that under five years old children aged 0-23 with very short nutritional status are 15 respondents (62.5%) and in infants aged 24-59 months very short nutritional status is 24 respondents (66.7%). In terms of gender characteristics, toddlers (aged 0-23 months) were the most dominant in the male sex with very short 9 respondents (37.5%) and toddlers (aged 24-59 months) the most with female sex 14 respondents (38,9%).

At the mother's education level, toddlers (aged 0-23 months) with high school education/equivalent very short nutritional status 13 people (54.2%) and toddlers (aged 24-59 months)

with high school education/equivalent nutritional status was very low. short (36.7%). For the multivariate analysis test, the p-value was 0.473>0.05, there was no correlation between maternal education and stunting. The occupation of mothers under five (age 0-23 months) is mostly with not working (IRT) with short nutritional status 12 people (50% and in toddlers (aged 24-59 months) with not working (IRT) with short nutritional status 19 people (52.8 %). For the multivariate analysis test, p-value 0.287>0.05, there is no correlation between mother's work and stunting. Work affects knowledge, someone who works has broader knowledge than people who don't work. People who work get more

information. Stunting is a chronic malnutrition as a result of long-lasting, such as poverty, inappropriate parenting, poor maternal knowledge about nutrition, hygiene and sanitation (SUSANTO et al., 2015). there is a relationship between mother's work and the incidence of stunting in first grade elementary school (SD) children in Semarang (Aisyah et al., 2019).

History of exclusive breastfeeding, most toddlers (aged 0-23 months) are not exclusively breastfed with very short nutritional status 10 toddlers (41.7%) while toddlers (aged 24-59 months) are given exclusive breastfeeding with very short nutritional status 13 toddlers (36.1%). Multivariate results with logistic regression test revealed a significant correlation between exclusive breastfeeding and stunting p-value 0.007 <0.05 (OR 0.111, 95% CI 0.023 – 0.541). Children aged 2-5 years with 2-5 years with a history of not exclusive breastfeeding and low birth weight babies are associated with stunting (Lestari et al., 2018). The results of another study stated that delayed initiation of breastfeeding resulted in a 1.3 times higher risk of stunting in addition to this, early initiation of breastfeeding reduces the risk of consuming polluted water, which poses health risks and results in stunting (Muldiasman et al., 2018).

In the history of giving MPASI, the most toddlers (aged 0-23 months) were given at the age of <6 months with very short nutritional status 8 toddlers (33.3%) and for toddlers (24-59 months) MPASI was given >6 months with nutritional status very short 15 toddlers (41.7%). Types of complementary foods in toddlers (aged 0-23 months) are mostly given instant porridge with short nutritional status 14 toddlers (58.3%) and toddlers (aged 24-59 months) are given instant porridge with very short nutritional status 24 people (66, 7%). Multivariate results with logistic regression test revealed a significant correlation between history of complementary feeding and stunting p-value 0.044 < 0.05 (OR 0.297, 95% CI 0.091 – 0.970). Early feeding in the first 3 months is at risk of stunting (Mamabolo et al., 2004). In Pratik's research, complementary feeding was given by giving instant porridge, small portions, less diverse composition and less than optimal intake of vitamins and minerals. This is in line with research conducted in Jakarta by interviewing 15 participants regarding the practice of feeding children, stating that children who experience stunting are caused by the provision of complementary foods in the form of instant porridge or steamed porridge, schedule small meals 2-3 times per day, food does not vary

and toddlers are iron deficient (Damanik et al., 2020).

The diversity of food content that is consumed at most does not vary in toddlers aged 0-23 months with very short nutritional status 10 toddlers (41.7%) and toddlers aged 24-59 months with various content of very short nutritional status 13 toddlers (36, 1%). The results of multivariate analysis showed that there was a correlation between the diversity of food content on stunting, p-value 0.095 <0.10 and for the known odds ratio value of 2.743, it means that the diversity of food content consumed affects stunting by 2.743 times greater. In addition, for the most nutritional adequacy in insufficient nutrition and very short nutritional status (age 0-23 months) there are 12 toddlers (50%), while for toddlers (aged 24-59 months) adequate nutrition and short nutritional status there are 20 toddlers ( 55.6%). The results of multivariate analysis showed that there was a correlation between nutritional adequacy on stunting, p-value 0.042 <0.05 and for the known odds ratio value of 3.429, it means that nutritional adequacy affects stunting by 3,429 times greater. Inappropriate infant and young child feeding (IYCF) practices contribute to stunted growth of toddlers (Bukusuba et al., 2017). The provision of complementary feeding that does not pay attention to the frequency, texture, and timing of feeding is associated with the incidence of stunting in toddlers (Anggryni et al., 2021). Breastfeeding >12 months does not guarantee adequate early childhood growth, so various complementary foods are needed in the diet of children aged 1-3 years (Onyango et al., 1998).

The immunity level of toddlers is very short aged 0-23 months which is less (50%) and at the age of 24-59 months the level of immunity is less and nutritional status is very short (36%). Multivariate analysis explained that there was an effect of under-five immunity with stunting p-value 0.029 <0.05 and OR 0.268, 95% CI 0.82 - 0.876. Stunting toddlers are at risk of frequent diarrhea and ARI for a long time (Arini et al., 2020). The results of the literature review state that stunting under five is one of the risk factors for contracting Soil-Transmitted Helminth (STH) infection (Fauziah et al., 2022). Infectious diseases are associated with stunting in infants, where infants with infectious diseases have a risk of 8.84 times stunting (Kusumawati et al., 2015). Infection is one of the factors that can affect the occurrence of stunting, because infection can make energy for toddler growth diverted to face pathogens, so nutrients are difficult to absorb and inhibit growth (Miranti et al., 2020)

Table 3. Programs to Reduce Stunting

Program	Age 0-23 Month		Age 24-59 Month		p-value	OR
	Short	Very Short	Short	Very Short		
supplementation tablet Fe					0,02	0.194
1. Not 90 tablets	8(33,3%)	6(25%)	10(27,8%)	15(41,7%)		
2. Yes 90 tablets	1(4,2%)	9(37,5%)	2(5,6%)	9(25%)		
Supplementary Feeding					0,011	4.464
1. Yes						
2. No	7(29,2%)	5(20,8%)	8(22,2%)	9(25%)		
	2(8,3%)	10(41,7%)	4(11,1%)	15(41,7%)		

Based on the research output above, it can be concluded that Fe tablet supplementation is dominant in consuming 90 Fe tablets with very short nutritional status in infants aged 0-23 months (37.5%) and not consuming Fe tablets (not 90 tablets) with very short nutritional status (41.7%). While the results of the multivariate logistic regression analysis,  $p$ -value  $0.02 < 0.05$  and odds ratio 0.194. So it can be concluded that there is a correlation between the history of giving Fe during pregnancy and the occurrence of stunting. Anemia in pregnant women is caused by lack of nutrition and iron in the consumption. Pregnant women with anemia, malnutrition or iron deficiency are vulnerable to the risk of giving birth to stunting babies (Saputri, 2019). In another study, it was explained that pregnant women who were anemic had 4 times the risk of children experiencing stunting compared to mothers who were not anemic (Widyaningrum, 2018). The nutrients obtained by pregnant women before and during pregnancy affect the growth and development of the baby in the womb. If all the nutrients needed by pregnant women both before and during pregnancy are met, they will give birth to healthy babies (Farisni, 2022). In research in Rwanda, family-level factors are the main driver of stunting. Interventions to improve nutrition for pregnant and lactating mothers so as to prevent low birth weight babies, reduce poverty, promote girls' education and early intervention in cases of malnutrition are urgently needed (Bukusuba et al., 2017). Specific interventions that target pregnant women, namely the administration of iron (Fe) supplement tablets, providing additional food, and administering deworming drugs to pregnant women. Of these programs do not meet the targeted planning strategy. In this study, the administration of Fe tablets was properly distributed according to the standard. However, no monitoring has been carried out to confirm the intensity of consumption of Fe tablets.

Most supplementary feeding programs are not given with very very short nutritional status to toddlers aged 0-23 months (41.7%) and to toddlers aged 24-59 months who are not given Supplementary Foods, nutritional status is very short (41.7%). Logistic regression analysis obtained a  $p$ -value of  $0.011 < 0.05$  and an odds ratio of 4.464, which means that there is a significant relationship between the feeding program and stunting. It can also be interpreted that if the supplementary feeding program is not carried out, there will be a 4,464 times greater risk of stunting. In one study, it was explained that the treatment of malnutrition with the approach of providing additional food in the form of ready-to-use food (RTUF) was used as an acceptable alternative as food supplementation for moderately malnourished children. RTUF contains a mixture of corn and soybean flour (Maleta et al., 2004). From several articles analyzed regarding interventions that are often carried out to reduce stunting, namely the provision of iron supplement tablets for pregnant women, additional food for underweight toddlers, complementary foods for breastfeeding, vitamin A provision, provision of facilities, access to drinking water,

and proper sanitation. Zaleha & Idris, (2022). Based on the results of the analysis of several studies on the impact of giving appropriate complementary foods and nutrition counseling resulted in a significant increase in the weight of toddlers by 0.25 kg and height of 0.54 cm (Imdad et al., 2011). In Bangladesh providing fortified food (wheat-soy mixture) every day for one year and counseling also slightly increases growth and reduces stunting in toddlers aged 18 months (Christian et al., 2015). Recommendations that can be given to increase the weight and height of stunting toddlers are through the provision of additional foods that will be high in protein.

## Conclusion

History of complementary feeding, exclusive breastfeeding, nutritional adequacy, diversity of food content and immunity have an impact on stunting in toddlers.

The main interventions that can be done to reduce stunting are by increasing good nutrition for pregnant and lactating mothers and conducting early intervention in cases of malnutrition by fulfilling a diet high in protein. This intervention is carried out in accordance with government regulations. However, this program must also be monitored, mentored and evaluated continuously

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