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## **ANALYSIS OF FACTORS INFLUENCING THE INCIDENCE OF STUNTING IN TODDLERS**

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### **ABSTRACT**

Stunting is one of the problems that hinders human development globally. Currently, there are around 162 million children under the age of five experiencing stunting. If this continues, it is projected that in 2025 there will be 127 million children under the age of five who will experience stunting. The purpose of this study was to analyze the factors that influence the incidence of stunting in toddlers in the Banyuanyar Health Center Area. Research methodology: This study is an explanatory research study with a cross-sectional method approach. The sample of this study was approximately 56 toddlers at risk of stunting who were taken using a purposive technique by using the Slovin scale. Researchers took respondents based on inclusion and exclusion criteria during the implementation of the integrated health post, asked for respondents' approval, distributed research instruments and explained how to fill out the questionnaire. After obtaining the required data, researchers rechecked the questionnaire contents and then processed the data. The analysis used was the Chi Square test. Results of the study: Factors that influence the incidence of stunting in toddlers in the Banyuanyar Health Center Working Area, namely: History of LBW (p Value = 0.042), Provision of MP-ASI (p Value = 0.000), Mother's knowledge (p Value = 0.001), Parenting Patterns (p Value = 0.005). Factors that do not affect the incidence of stunting in toddlers in the Banyuanyar Health Center Work Area, namely: Exclusive Breastfeeding (p Value = 0.279), Immunization Status (p Value = 0.094), Socioeconomic (p value = 0.066). Conclusion: There are 4 factors that affect and 3 factors that do not affect the incidence of stunting in toddlers in the Banyuanyar Health Center Work Area, Surakarta City.

Keywords: breastfeeding; history of LBW; maternal knowledge; parenting patterns; stunting incidents

### **INTRODUCTION**

Stunting is one of the problems that hinders human development globally. Currently, there are around 162 million children under the age of five experiencing stunting. If this continues, it is projected that in 2025 there will be 127 million children under the age of five who will experience stunting (Firrahmawati et al., 2023). According to the United Nations Children's Emergency Fund (UNICEF), more than half of stunted children or 56% live in ASIA and more than a third or 37% live in Africa. UNICEF said that around 80% of stunted children are in 24 developing countries in Asia and Africa. Indonesia is the fifth country with the highest prevalence of stunted children after India, China, Nigeria and Pakistan. Currently, the prevalence of stunted children under 5 years in South Asia is around 38% (Mashar et al., 2021). One of the health problems in the world due to malnutrition is the death of children under five years of age (toddlers). Indonesia still experiences problems in nutrition and child growth and development. The results of the Indonesian Nutritional Status Survey (SSGI) provide an overview of the nutritional status of toddlers and its determinants using the two-stage stratified sampling method cross-sectionally with a sample size of 334,848 infants and toddlers in 486 districts/cities in 33 provinces in Indonesia, through anthropometric measurements and interviews, the results showed an increase in wasting rates from 7.1% to 7.7%, and underweight from 17 to 17.1%, while the incidence of stunting decreased from 24.4% to 21.6%. The prevalence of stunting in Central Java Province, Surakarta City is ranked 31st with a figure of 16.2%, wasting is ranked 19th with a figure of 7.1%, and underweight is ranked 26th with a figure of 15.5% (Ministry of Health, 2023).

The problem of toddler nutrition is essentially a public health problem that has multifactorial causes, such as social, economic, cultural, parenting, education and environmental problems. In the 2020

Surakarta City Health Profile, it is stated that the problem of malnutrition is greatly influenced by the lack of public knowledge, socio-economic conditions and the incidence of disease. The development of the nutritional status of infants and toddlers can be monitored through the results of recording and reporting nutritional improvement programs which are reflected in the results of weighing infants and toddlers every month (Ministry of Health of the Republic of Indonesia, 2021c). According to the Indonesian Ministry of Health (2021), Stunting (short) or chronic malnutrition is another form of growth failure. Chronic malnutrition is a condition that has occurred for a long time, not like acute malnutrition. Children who experience stunting often appear to have normal, proportional bodies, but are actually shorter than the normal height of children their age. Stunting is a cumulative process and is caused by insufficient intake of nutrients or repeated infectious diseases, or both. Stunting can also occur before birth and is caused by very poor nutritional intake during pregnancy, very poor parenting patterns, low food quality in line with the frequency of infections so that it can inhibit growth.

The negative impacts that can be caused by nutritional problems (stunting), in the short term are disruption of brain development intelligence, physical growth disorders, and metabolic disorders in the body. While in the long term the negative effects that can be caused are decreased cognitive abilities and learning achievement, decreased immunity so that it is easy to get sick, and a high risk of diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability in old age, as well as uncompetitive work quality which results in low economic productivity (Candra, 2020). According to Nirmalasari (2020), stunting in children is a serious problem, because it is associated with a higher risk of morbidity and mortality, obesity, and non-communicable diseases in the future, short adults, poor cognitive development, and low productivity and income. Every year around 10.5 million child deaths are related to malnutrition. Where 98% of these deaths are reported to occur in developing countries. Based on 6 articles that have been analyzed in the literature review conducted by Natalia & Hertati (2023), it can be concluded that the incidence of stunting can be influenced by 2 factors, namely direct and indirect factors. Direct factors causing stunting are a history of exclusive breastfeeding, micronutrient intake, and drinking water sources, while indirect factors causing stunting are maternal occupation, maternal education, ANC status, and parental knowledge. According to the results of a systematic review conducted by Ginting & Ella Nurlaela Hadi (2023), factors that influence the incidence of stunting include maternal nutritional intake, exclusive breastfeeding, complementary feeding, attitudes towards stunting, parenting patterns, environmental cleanliness and economic status.

Exclusive breastfeeding for less than six months is also a factor that causes stunting. Improving breastfeeding practices is one of the measures to prevent stunting. Early initiation of breastfeeding and exclusive breastfeeding for six months can provide protection against gastrointestinal infections. In line with the research of Salamah & Noflidaputri (2021), most of the toddler respondents did not receive exclusive breastfeeding as many as 55 toddlers (59.8%). From the results of further statistical analysis, OR = 18.296 was obtained, which means that respondents who were not exclusively breastfed were 18 times more at risk of stunting compared to respondents who were exclusively breastfed. The results of research from Yuwanti et al., (2021), obtained data on the economic conditions of poor families, 23 toddlers (37%) experienced stunting compared to those with sufficient economic status. Economic status also has a significant effect on the incidence of stunting in children aged 0-59 months, children with families with low economic status tend to get less nutritional intake (micronutrient intake). According to the Indonesian Ministry of Health (2021), efforts to prevent stunting can be started from adolescence. Adolescent girls can begin to be given knowledge and understanding about the importance of fulfilling nutrition during adolescence. Fulfilling nutritional needs during adolescence can prevent malnutrition during pregnancy. Adequate nutrition during pregnancy can prevent stunted growth in the fetus being carried.

In addition, stunting prevention is also focused on the First 1,000 Days of Life (HPK), namely in Pregnant Women. The 1,000 HPK period is an effective period in preventing stunting because it is a period that determines the quality of life. In the 1,000 HPK period, children will experience a "Golden Period" where child growth will occur rapidly. Therefore, in this period, nutritional coverage must be met starting from 270 days during pregnancy and the first 730 days after the baby is born. However, according to WHO, prevention of stunting does not only start at 1,000 HPK, but also starts during routine early pregnancy check-ups (Firrahmawati et al., 2023) . In line with the research of Mely et al. (2021) , data on maternal examinations during pregnancy were obtained, which were carried out once every 2-3 months for 43 respondents (66%) compared to mothers who had routine check-ups every month, so that the level of knowledge about maternal and child nutrition was measured by the mother's ability or inability to obtain or receive information. The World Health Organization (WHO) has stated that the global target resolution on maternal and child nutrition is a priority. The main target aims to reduce stunting in children by 40% globally or a 3.9 % decrease per year between 2012 and 2025. The 2015-2019 National Medium-Term Development Plan states that there are four priority health development programs in Indonesia, one of which is reducing the prevalence of short toddlers (stunting) (Terawan Agus Putranto, 2020) . The purpose of this study was to analyze the factors that influence the incidence of stunting in toddlers in the Banyuwangi Health Center Working Area, Surakarta City.

## METHOD

The type of research used is quantitative research, namely selecting representative samples from the population and determining the number of samples before collecting data (Adiputra et al., 2021) . This research design uses a cross-sectional approach, which is a study that studies the relationship between risk factors (independent) and effect factors (dependent), where observations or measurements of variables are carried out once and at the same time . This means that in this study each respondent was only observed once and the measurement of the respondent's variables was carried out at the time of the examination, then the researcher did not follow up (Sena Wahyu Purwanza, 2022) . This research was conducted in the Banyuwangi Health Center working area in February-July 2024. The population of this study was all children at risk and experiencing stunting in the working area of the Banyuwangi Health Center, Surakarta City, namely 65 children. The sample size in this study was calculated using the Slovin formula and obtained 56 respondents. The inclusion criteria for this study were mothers who had children with stunting in the working area of the Banyuwangi Health Center, Surakarta City and were willing to be respondents. The exclusion criteria for this study were respondents who could not be met during the study and mothers who had stunted children with complications. Researchers took respondents based on inclusion and exclusion criteria during the implementation of the integrated health post, asked for respondents' approval, distributed research instruments and explained how to fill out the questionnaire. After obtaining the required data, researchers rechecked the questionnaire contents and then processed the data. Data processing was carried out using Chi square test analysis .

## RESULT AND DISCUSSION

Table 2.

Relationship between maternal LBW history factors and stunting incidence (n = 56)

History of LBW	Stunting Incident						Total		P value
	Normal		Short		Very Short		f	%	
	f	%	f	%	f	%			
Normal	44	78.6	4	7.1	0	0	48	85,7	0.042
LBW	6	10.7	1	1,8	1	1.8	8	14,3	

Table 1.  
Respondent Characteristics Based on Age, Gender Mothers and Toddlers (n = 56)

Variables	f	%
Characteristics Mother		
Age Mother		
<20 Year	1	1.8
20-35 Year	23	41.1
>35 Year	32	57.1
Education Mother		
SD	1	1.8
Junior High School	7	12.5
Senior High School	22	39.3
College Tall	26	46.4
Characteristics Toddler		
Age Toddler		
≤ 12 Month	7	12.5
13- ≤ 35 Month	31	55.4
36- ≤60 Month	18	32.1
Type Sex		
Man	30	53.6
Woman	26	46.4

Table 3.  
Relationship between Exclusive Breastfeeding Factors and Stunting Incidence (n = 56)

Exclusive Breastfeeding	Stunting Incident						Total	P value
	Normal		Short		Very Short			
	f	%	f	%	f	%		
Exclusive Breastfeeding	35	62.5	4	7.1	0	0	39	0.279
Partial Breastfeeding	15	26.8	1	1, 8	1	1.8	17	

Table 4.  
Relationship between MP-ASI Provision Factors and Stunting Incidence (n = 56)

Providing complementary feeding	Stunting Incident						Total	P value
	Normal		Short		Very Short			
	f	%	f	%	f	%		
In accordance	50	89.3	5	8.9	0	0	55	0,000
It is not in accordance with	0	0	0	0	1	1.8	1	

Table 5.  
Relationship between Immunization Status Factors and Stunting Incidence (n = 56)

Immunization Status	Stunting Incident						Total	P value
	Normal		Short		Very Short			
	f	%	f	%	f	%		
Complete	42	75	4	7.1	0	0	46	0.094
Incomplete	8	14.3	1	1.8	1	1.8	10	

Table 6.  
Relationship between maternal knowledge factors and stunting incidence (n = 56)

Mother's Knowledge	Stunting Incident						Total	P value
	Normal		Short		Very Short			
	f	%	f	%	f	%		
Good	47	83.9	5	8.9	0	0	52	0.001
Not good	3	5.4	0	0	1	1.8	4	

Table 7.

Relationship between Parenting Factors and Stunting Incidence In the Working Area of Banyuanyar Health Center, Surakarta City July 2024 n = 56

Socio-Economic	Stunting Incident						Total	P value	
	Normal		Short		Very Short				
	f	%	f	%	f	%			
Capable	38	67.9	2	3.6	0	0	40	71.4	0.066
Less fortunate	12	21.4	3	5.4	1	1.8	16	28.6	

Table 8.

Relationship between Parenting Factors and Stunting Incidence In the Working Area of Banyuanyar Health Center, Surakarta City July 2024 n = 56

Parenting	Stunting Incident						Total	P value	
	Normal		Short		Very Short				
	f	%	f	%	f	%			
Good	46	82.1	5	8.9	0	0	51	91.1	0.005
Not good	4	7.1	0	0	1	1.8	5	8.9	

The research location conducted in this study was at the Medang Kamolan RW XII Posyandu, Banyuanyar Village, Surakarta City. The geographical location of the Posyandu is strategic with various residences of the Medang Kamolan Posyandu Cadres. The Medang Kamolan Posyandu is located in the Banyuanyar sub-district area, precisely in RW XII, consisting of 5 RTs with a total of 56 children aged  $\leq 12$  months to 60 months. The research implementation time was from February to July 2024. The implementation of this research was evaluated in June 2024 and reported in July 2024 after calculating the sample size, the results were 56 respondents as a follow-up in the coming year to determine the factors that influence the incidence of stunting in the Banyuanyar Health Center Area, Surakarta City, especially RW 12, Banyuanyar Village, Surakarta City. Based on the results of the study with a sample of 56 respondents, it was found that mothers who had toddlers with a history of normal weight were 48 respondents (85.7%) and mothers who had toddlers with a history of LBW were 8 respondents (14.3%). This shows that the majority of mothers who have a history of LBW are smaller than those with normal weight. The results of this study are in line with Riyanti's 2020 study, showing that toddlers with a history of LBW were 24 toddlers (39%) smaller than those with a history of normal birth weight, which was 38 toddlers (61%) (Rianti et al., 2020).

Poor maternal nutritional conditions during pregnancy can cause LBW, which can then lead to stunting (Dewanti & Widyantini, 2023). Mothers with short stature are also at risk of giving birth to babies with LBW (Dewanti & Widyantini, 2023). If the baby suffers from LBW, it will tend to be difficult to match early growth according to standards and even has the potential for stunting later on (Khulafa'ur R & Amnah, 2019). Based on the results of the study with a sample of 56 respondents, it was found that mothers who provided exclusive breastfeeding were 39 respondents (69.6%) and mothers who provided partial breastfeeding were 17 respondents (30.4%). This shows that the majority of respondents provide exclusive breastfeeding because mothers feel that breast milk has many benefits, such as increasing children's immunity to disease. The magnitude of the influence of exclusive breastfeeding on children's nutritional status. The results of this study are in line with Sulistyaningsih's 2020 study, showing that toddlers who were given exclusive breastfeeding were 33 toddlers (55.9%) greater than toddlers who were not given exclusive breastfeeding, 26 toddlers (44.1%). The results of the questionnaire showed that mothers of toddlers gave their children exclusive breastfeeding because breast milk is very beneficial for the immune system, breastfeeding can strengthen the relationship between the child and the mother, does not require costs, can increase the child's intelligence and complementary foods are given to children after the age of six months (Sulistyaningsih & Niamah, 2020).

Breastfeeding is the provision of exclusive breast milk to babies aged 0 to 6 months without additional food (MP-ASI). Breast milk provides the best and ideal source of nutrition for babies. Breastfeeding begins with early initiation of breastfeeding. Exclusive breastfeeding is given to babies for six months. Breast milk can meet the baby's energy and other nutritional needs. Exclusive breastfeeding is a child's right related to the mother's commitment and the support of the family and the surrounding environment. The presence of protective factors and the right nutrients in breast milk ensures that the child's nutritional status can be at an optimal level and can reduce neonatal morbidity and mortality (EW Sinaga & Rambe, 2021). The quality and quantity of breast milk, which is the main food for babies, is highly dependent on the nutritional intake of breastfeeding mothers. The quality and quantity of breast milk should not be lacking because it can affect the nutritional status of babies, including the risk of stunting (RD Sinaga et al., 2022). Based on the results of the study with a sample of 56 respondents, it was found that 55 respondents (98.2%) of mothers provided complementary feeding according to the time of providing complementary feeding and 1 respondent (1.8%) did not comply with the time of providing complementary feeding. This shows that respondents provide appropriate complementary feeding because providing complementary feeding according to their needs can reduce the risk of stunting, because at the age of 6 months children are given complementary feeding in sufficient quantities and frequencies so that the child's nutritional needs are met which can reduce the risk of stunting.

The results of this study are in line with the research of Tatu et al., (2021) entitled Risk Factors Associated with the Incidence of Stunting in Toddlers in Kabuna Village, Kakuluk Mesak District, Belu Regency, where the age of giving MP-ASI after the baby was 6 months old was 45 respondents (72.6%) and before the baby was 6 months old was 17 respondents (27.4%). Providing Supplementary Breast Milk (MP-ASI) is a transition from a liquid-based diet to semi-solid foods. Children are introduced to the family diet known as complementary feeding for breast milk (MP-ASI) after six months of breastfeeding. When MP-ASI is used, the baby's eating habits change drastically. Food sources develop from one source to various sources that have different nutritional compositions, tastes, and textures. Using MP-ASI too early can cause malnutrition and inhibit the development of eating skills, but giving MP-ASI at the right age will reduce its negative effects (Emma Anastya Puriastuti & Budi Utomo, 2021). The use of complementary foods in children should be started gradually, both in form and quantity, according to the child's digestive ability. Providing appropriate complementary feeding not only fulfills children's nutritional needs but also improves their eating ability and self-confidence. This is because breast milk cannot continuously meet the baby's energy and nutritional needs. Complementary foods are given gradually in varying consistencies to meet the gap between the baby's overall nutritional needs and the amount of nutrients received from breast milk. This starts from liquid porridge to thick porridge, fruit juice, fresh fruit, pureed foods, soft foods, and finally solid foods (Fatimawati et al., 2021)

At the age of six to twenty-four months, MP-ASI is given to children to help them gradually learn to chew, swallow, and accept various types of food with various tastes and textures. At the age of six months, the baby's teeth have grown and their tongues no longer reject semi-solid foods, allowing them to accept non-liquid foods. In addition, the stomach functions well to digest starch. Babies are able to put objects into their mouths with their hands at the age of 9 months. As a result, babies are clearly ready to eat semi-solid foods at this time (Fatimawati et al., 2021). Based on the results of the study with a sample size of 56 respondents, it was found that the immunization status was incomplete for 10 respondents (17.9 %) and the immunization status was complete for 46 respondents (82.1%). This shows that the majority of children have complete immunization status because immunization is an effort to actively create or increase a person's immunity to a disease, so that if at some point they are exposed to the disease they will not get sick or will only experience mild illness. The results of this study are not in line with the study by Sutriyawan et al., (2020) entitled The Relationship between Immunization Status and History of Infectious Diseases with the Incidence of Stunting in Toddlers: A Retrospective Study. In 2019, there

were data showing that incomplete immunization status was greater at 79 (58.5 %) compared to complete immunization status at 56 respondents (41.5%).

Vaccination is a program that deliberately introduces weak antigens to stimulate antibodies to help the body fight certain diseases. Immunization is an effort to actively create/strengthen a person's immunity against a particular disease so that if one day they are exposed to the disease they will not get sick or only get a mild illness. According to the Ministry of Health, if vaccination is incomplete, a child's immunity can weaken, making them susceptible to infection. If a toddler experiences an infection and is left alone, it is likely that the toddler will experience developmental delays (Ministry of Health of the Republic of Indonesia, 2021b). Based on the results of the study with a sample of 56 respondents, it was found that mothers who had a poor level of knowledge were 4 respondents (7.1 %) and mothers who had a good level of knowledge were 52 respondents (92.9%). This shows that the majority of respondents have a good level of knowledge because mothers who have a good and broader level of knowledge about child care practices are able to maintain and care for their environment to keep it clean and healthy. This picture can also be seen from the characteristics of maternal education in RW 12, Banyuwanyar Village, where most mothers graduated from college, 26 respondents (46.4 %).

The results of this study are in line with the research of Fatimawati et al. (2021) entitled Health Education to Improve Mothers' Knowledge About Providing Complementary Foods to Infants and Toddlers in Sukolilo Village, Surabaya. The results of the study showed that 24 respondents (82%) had good knowledge and 104 respondents (18%) had poor knowledge. Mothers with low nutritional knowledge tend to provide food with quality and quantity that is insufficient to meet children's nutritional needs, thus triggering stunting in toddlers (Huriah et al., 2019). Maternal education is a very important factor because the level of maternal education is closely related to the level of health services, knowledge about pregnancy and child and family nutrition. Education level also determines how easily someone absorbs and understands nutritional knowledge. The mother's education level is one of the factors that influences the child's nutritional status because it directly affects the parents' habits which will then affect the child's eating patterns. Parents with higher education levels often have better knowledge and ability to apply knowledge than parents with lower education levels. The mother's education level and good encouragement at home can act as protective influences (Yanti et al., 2023).

Based on the results of the study with a sample of 56 respondents, it was found that 40 respondents (71.4%) of mothers with socio-economic abilities exceeded the minimum wage and 16 respondents (28.6%) of mothers with socio-economic abilities exceeded the minimum wage. In line with the research of Farah Okky Aridiyah (2015), the data shows that the low family income between villages and cities is 100% in the village area, while for the city area it is 93.3%. Groups with low or sufficient economic status have mothers who lack nutritional knowledge. Lower purchasing power, which means they cannot buy good food (Kusumajaya et al., 2023). 91.1 % had good parenting patterns and 5 respondents (8.9%) had poor parenting patterns. This shows that the majority of respondents have good parenting patterns. The results of this study are in line with the research of Tiara et al. (2022) entitled Risk Factors Affecting the Incidence of Stunting at the Amplas Health Center, Harjosari 1 Village, Amplas District, Medan City in 2020, it was found that 205 respondents (85.8%) had good parenting patterns and 34 respondents (14.2%) had poor parenting patterns. Good parenting patterns are greater than poor parenting patterns, meaning that mothers have good parenting patterns to ensure adequate nutrition. The role of the family is important in supporting children's growth and development by fulfilling nutritional, health, emotional and hygiene needs. The ability to fulfill family needs is reflected in the role of parents which will greatly affect the optimal conditions for children's growth and development (Rambe, 2022).

Parenting is a parenting style that is applied to children relatively consistently over time. The way parents treat their children greatly influences the child's social, emotional, and intellectual abilities (Adinda Putri Sari Dewi, Kusumastuti, 2022) . Democratic parenting is a parenting style that requires parents to set rules. Parents have the right to set certain rules that apply to family members, including respect for their children. Even though the rules are completely determined by the parents, they always have the opportunity to question what motivates them (Mashar et al., 2021) .Factors Influencing the Incidence of Stunting in Toddlers in the Banyuanyar Health Center Work Area LBW is an important factor in child growth and development, and if not managed properly, it can cause growth failure ( Tatu et al., 2021) . The results of the study showed that there was an influence of the history of LBW with the incidence of stunting in toddlers in the Banyuanyar Health Center work area ( $p$  value =  $0.042 < 0.05$  ) . In line with the research of Siallagan et al., (2021) , there was a significant relationship between birth weight and the incidence of stunting ( $p$  value =  $0.005$ ). Toddlers with a history of LBW are at 3.77 times higher risk of experiencing stunting compared to toddlers who do not have a history of LBW. Exclusive breastfeeding is the provision of food only in the form of breast milk without the provision of complementary foods (MP-ASI) in children aged 0-6 months (Ramadhaniah et al., 2021) . Exclusive breastfeeding in the first 6 months can result in optimal height growth. Insufficient duration of breastfeeding is one of the risk factors that cause macronutrient and micronutrient deficiencies at an early age (Sinaga et al., 2022) . This study is in line with the study conducted by Firrahmawati et al., (2023) with the title Analysis of causal factors influencing the incidence of stunting conveying the results of a  $p$ -value of  $0.706 > 0.05$  indicating that there is no relationship between exclusive breastfeeding and the incidence of stunting in toddlers. This can occur due to the lack of quality of environmental care which causes children to continue to suffer from stunting even though they have been given exclusive breastfeeding (Siahaineinia & Purba, 2021)

The results of the study showed that the factor of Complementary Breast Milk Feeding (MP-ASI) can influence the incidence of stunting in Banyunayar sub-district ( $p$  value =  $0.000 < 0.05$  ) . In line with Masitah's research in Ernawati (2022) , there is an influence of maternal nutrition education with a combination of poster and flyer methods on maternal knowledge related to stunting, exclusive breastfeeding and complementary foods ( $p$ -value =  $0.000$ ). These results indicate that maternal nutrition education is very important to provide information in meeting infant nutritional needs and development, providing MP-ASI at the right time is very helpful. This is also a transition period from exclusive breastfeeding to family food. It should be noted that if MP-ASI is given too early to meet the baby's nutritional needs, the baby will also experience digestive problems such as allergies, constipation, and stomach aches. In addition, babies who are given MP-ASI early will have difficulty sleeping at night (Supariasa & Purwaningsih, 2019) .Not only the provision of MP-ASI that is not age-appropriate to babies but also the provision of MP-ASI that is of poor quality, ranging from porridge to mashed food, soft food, and finally solid food, contributes to stunting. Diarrhea can occur if babies receive soft food even though they are not used to liquid food. Many parents believe that babies cry because they are hungry, so they give them food that is not filling without paying attention to its nutritional quality, resulting in malnutrition and the risk of stunting that cannot be prevented (Tatu et al., 2021) . Immunization is one of the effective ways to prevent and reduce the transmission of disease in toddlers. Toddlers who are not immunized or whose immunization status is incomplete will not be immune to certain infectious diseases, so that children become sick which can cause a decrease in nutritional status (Farida & Mardianti, 2020) .

This research is in line with research conducted by Ujang Daud et al. (Ujang Daud et al., 2023) entitled The Relationship between Basic Immunization Completeness Status and the Incidence of Stunting in Children Aged 24 - 59 Months, stated the results of  $p$ -value =  $0.208 > 0.05$  which stated that there was no relationship between the status of basic immunization completeness and the incidence of stunting in

children aged 24 - 59 months. This incident could occur because stunting is caused by the emergence of infectious diseases in children, poor economic status and poor parenting patterns even though they already have complete immunization status (Vasera & Kurniawan, 2023) . The results of the study showed that there was an influence of maternal knowledge factors on the incidence of stunting in Banyuwangi sub-district ( $p\text{-value} = 0.001 < 0.05$  ). One of the causes of nutritional disorders is a person's lack of knowledge and ability to apply information about nutrition in everyday life. The level of maternal nutritional knowledge affects her attitude and behavior in choosing food ingredients which will then affect the fulfillment of nutrition in her family (Aghadiati et al ., 2023) .This research is in line with research conducted by Hamdin et al. (Hamdin et al., 2023) entitled The Relationship between Mother's Knowledge About Stunting in Toddlers in the Moyo Hilir Health Center Work Area explains that there is a relationship between mother's knowledge and the incidence of stunting in the Moyo Hilir Health Center work area with a  $p\text{-value} = 0.006 < 0.05$ . Good parental knowledge in providing food with the right type and amount can help children improve nutrition and achieve optimal growth and development maturity.

Socioeconomic is a description of the economy and social structure owned by a person in society which is determined by education, income, and type of work. The socioeconomic level of a family affects the ability to meet the nutritional needs of toddlers, low socioeconomic status causes a lack of nutritional fulfillment which results in stunting (Yunita et al ., 2022). The results of the study showed a  $p\text{-value}$  of  $0.066 > 0.05$ , so there was no relationship between socio-economic and stunting in Banyuwangi sub-district. This is not in line with the results of Ahnafani et al.'s research. (Ahnafani et al., 2024) which shows that there is a relationship between economic status and the incidence of stunting in toddlers with a  $p\text{-value} = 0.027 < 0.05$  with the statement that low economic status has a 3 times greater risk of experiencing stunting compared to respondents with high economic status. This study is in line with the study conducted by Nisa Kartika Ningsih, (2024) which stated that there was no relationship between socio-economics and the incidence of stunting in the Sungai Bahar V Health Center work area with a  $p\text{-value} = 0.070 > 0.05$ . This can happen because someone with a high socio-economic tends to put their income into the health sector.

The results of the study suggest that there is a relationship between parenting patterns and stunting incidents in Banyuwangi sub-district ( $p\text{-value} = 0.005 < 0.05$  ). Parenting patterns include home care, availability of nutritious food, and care for toddler growth and development. Parents who have good parenting patterns will improve toddler nutrition by implementing care and protection so that toddlers feel comfortable, have a high appetite, and avoid all health problems (Fauziyah et al ., 2023) . This research is in line with research conducted by Hikmatul Khoiriyah & Wantonoro (2024) entitled Analysis of the Relationship between Parenting Patterns and the Incidence of Stunting in Toddlers, which states that there is a relationship between parenting patterns and the incidence of stunting with a  $p\text{-value} = 0.000 < 0.05$ . The quality of parenting patterns provided can play an important role in the growth and development of children because the better the parenting patterns provided by parents, the lower the morbidity rate and the nutritional status of toddlers will be better than poor parenting patterns (Elvera Juwita, Susilowati, Novie E Mauliku, 2020) .

## CONCLUSION

Based on the research that has been conducted, the following conclusions can be drawn: there are factors that influence and there are factors that do not influence the incidence of stunting in the Banyuwangi Health Center Work Area, Surakarta with proven results as following: Factors that influence the incidence of stunting in toddlers in the Banyuwangi Health Center Working Area, namely: History of LBW ( $p\text{ Value} = 0.042$ ), Provision of MP-ASI ( $p\text{ Value} = 0.000$ ), Maternal knowledge ( $p\text{ Value} = 0.001$ ), Parenting Patterns ( $p\text{ Value} = 0.005$ ). Factors that do not affect the incidence of stunting in

toddlers in the Banyuwang Health Center Work Area are: Exclusive Breastfeeding (p Value = 0.279), Immunization Status (p Value = 0.094), Socioeconomic (p value = 0.066).

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