Factors Influencing the Incidence of Stunting in Children Aged 24-59 Months in the Work Area Muara Delang Health Center, Jambi

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Abstract

Stunting can be caused by many factors such as socio-economics, exclusive breastfeeding, parenting patterns, timing of giving MP-ASI, history of infectious diseases, environmental sanitation, and the role of community leaders. The many factors that influence the occurrence of stunting mean that one of the efforts that can be made to reduce the prevalence of stunting is to identify the factors that influence the occurrence of stunting. This study aims to determine the factors that influence the occurrence of stunting in toddlers aged 24-59 months. This research is a case control study of 75 stunted toddlers and 75 control toddlers aged 24-59 months in the Muara Delang Community Health Center working area for the period February 2023. Independent variables include family income, mother's education level, parenting style, exposure to information, exclusive breastfeeding, history of infectious diseases, dental health, the role of health cadres and the role of community leaders; while the strongest variable in this study was the incidence of stunting. The instrument used in data collection is a questionnaire, then the data will be processed using regression test data analysis. The results of the study show that the factors that influence the incidence of stunting in the Muara Delang Community Health Center work area are parenting style (p=0.049 and B=1.557), exclusive breastfeeding (p=0.005 and B=1.300), dental health (p=0.048 and B = 0.764) and family income (p=0.049 and B=0.763). Parenting style is the most influential factor in the occurrence of stunting in the Muara Delang Community Health Center working area.

Keywords: *Children*, *Dental Health, Parenting, Stunting.*

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A. INTRODUCTION

Malnutrition in toddlers remains a prevalent issue worldwide, including in Indonesia. Malnutrition leads to a decrease in the quality of human resources in the future because toddlers experiencing malnutrition face increased risks of infection, growth and developmental disorders, and even death. One of the national development priorities in the National Medium-Term Development Plan (RPJMN) 2019-2024 is to realize high-quality and competitive human resources, with one of the indicators being a reduction in the prevalence of stunting in Indonesia (Lawaceng & Rahayu, 2021). Stunting is a condition where a child's height is shorter than average (Niken, et al., 2023). This condition is a priority nutritional issue due to its prolonged impacts, especially on human resource quality, as it can lead to disturbances in intelligence quotient (IQ), psychomotor development, motor skills, and neurosensory integration.

The prevalence of stunting in Indonesia remains significantly high, with the Basic Health Research in 2013 indicating that 37.2% of children suffer from stunting, meaning there are 8.9 million stunted children in Indonesia. The Basic Health

Research in 2018 also stated that the prevalence of stunting in Indonesia decreased by approximately 7.2%. Yet, this reduction is still far from the WHO target, which sets the goal for stunting prevalence below 20% (Yuwanti et al., 2021). Jambi Province is one of Indonesia's provinces with a high stunting incidence.

Based on data from the Jambi Provincial Health Office in 2022, the prevalence of stunting in Jambi Province was 30.1% in 2018, which decreased to 21.03% in 2019 but increased again to 22.4% in 2021. In 2022, the prevalence of stunting in Jambi Province again reduced to 18%, with the incidence of stunting in Merangin Regency, one of the regencies in Jambi Province, reaching 14.5% out of 312,744 toddlers surveyed. The distribution of stunting incidents according to sub-districts in Merangin Regency shows that there are 3 sub-districts with the highest prevalence rates: Tabir Ilir Sub-District with 58 cases (13%), Tabir Selatan Sub-District with 57 cases (12%), and Muara Siau Sub-District with 57 cases (12%) (Merangin District Health Office, 2022).

The high incidence of stunting prompted the President of Indonesia to target a reduction in stunting to 14% by 2024. Efforts made by the government to reduce the incidence of stunting include early initiation of breastfeeding and exclusive breastfeeding, toddler weighing, administration of vitamin A capsules to toddlers, administration of iron tablets to adolescent girls, and provision of supplementary food to malnourished pregnant women and toddlers. However, these efforts need to be more sufficient in reducing the prevalence of stunting, thus requiring optimal efforts to achieve the target within a relatively short period (Kementerian Kesehatan RI, 2018).

One of the efforts that can be undertaken is to identify the factors influencing the occurrence of stunting so that programs implemented can be more targeted and effective. In several studies, socioeconomic status is mentioned as the root cause of stunting. Socioeconomic conditions are related to the family's income level and the mother's education level, affecting food consumption patterns and the ability to access health services. Food consumption patterns will affect the fulfillment of age-appropriate nutrition for children to support their growth and development processes. The nutrition provided should align with the child's needs, whereas children under 6 months of age only need exclusive breastfeeding because their digestive system is still limited at that age. Children over 6 months can be given supplementary food while considering their nutritional needs (Mawaddah, 2019).

Low socioeconomic status usually affects the level of education, especially the mother's education level, which significantly influences the growth and development of children. Low education levels generally jeopardize the mother's knowledge of childcare practices and the mother's ability to access information related to stunting. Mothers with higher education tend to have better childcare practices, paying attention to every aspect of their child's growth and development. Mother's knowledge will also be more profound regarding things that need to be prepared from the prenatal period to the mother's ability to meet the child's needs (Fentiana et al., 2022; Husnaniyah et al., 2020; Tanzil & Hafriani, 2021).

Another factor influencing the family's socioeconomic status is the ability to access health services. Families with low socioeconomic status tend to pay less attention to environmental cleanliness and prioritize clothing and food needs over accessing health services. This leads to high rates of morbidity in children, such as diarrhea, acute respiratory infections, malaria, dental problems, etc., which will affect children's nutritional intake (Dimaisip-Nabuab et al., 2018; Yulnefia & Sutia, 2022).

B. METHOD

This study employs a case-control approach to analyze factors associated with stunting incidence at the Muara Delang Community Health Center (Puskesmas). The case group consists of stunted toddlers aged 24-59 months within the Muara Delang Puskesmas working area, while the control group comprises non-stunted toddlers of the same age range. Conducted in the working area of Muara Delang Community Health Center, Tabir Selatan, Merangin, Jambi, the study involved 150 respondents. Sampling was performed using a total sampling technique for stunted toddlers during February-March 2023, and non-stunted toddlers were matched accordingly, with inclusion criteria being toddlers with erupted teeth. Exclusion criteria included children with special needs or systemic diseases and parents or guardians unwilling or uncooperative to participate. Questionnaire results were analyzed using univariate analysis for frequency distribution, bivariate analysis employing the chi-square test, and multivariate analysis using logistic regression.

C. RESULT AND DISCUSSION

The factors analyzed include family income, mother's education level, parenting style, history of exclusive breastfeeding, exposure to information, history of infectious diseases, dental health condition, role of health cadres, and role of community leaders. A description of the influencing factors and stunted toddlers in the working area of Muara Delang Community Health Center using frequency distribution is presented in Table 1.

Table 1. Frequency Distribution of Factors

No	Factor	F	%
1	Family Income		
	Low	88	59%
	Good	62	41%
2	Mother's Education		
	Basic	94	63%
	Advanced	56	37%
3	Parenting Style		
	Less effective	19	13%
	Good	131	87%
4	Breastfeeding		
	Non-exclusive breastfeeding	35	23%

	Exclusive breastfeeding	115	77%
5	Information Exposure		
	Poor	4	3%
	Good	146	97%
6	History of Infection		
	History present	13	9%
	No history	137	91%
7	Dental Health		
	Poor	88	59%
	Good	62	41%
8	Role of Cadres		
	Less active	8	5%
	Active	142	95%
9	Role of Community Leaders		
	Less active	46	31%
	Active	104	69%

Based on Table 1, it is evident that the majority of mothers have a basic level of education (63%), as well as family income predominantly less than Rp. 2,643,033 (59%). Dental health among toddlers also exhibits a low frequency, with 59% of toddlers having poor dental health. This frequency contrasts with the distribution of data on parenting style, exclusive breastfeeding, information exposure, history of infection, the role of health cadres, and the role of community leaders, which indicates that respondents receive good parenting (87%), exclusive breastfeeding (77%), good information exposure (97%), no history of infection (91%), active roles of health cadres (95%), and active roles of community leaders (69%).

Table 2. Bivariate Analysis

Factors	Group				ϱ-value	OR
	Stunting		Non-Stunting			
	F	%	F	%		
Family Income						
Poor	52	59%	36	41%	0,008	2,449
Good	23	37%	39	63%		
Mother's Education						
Elementary	54	57 %	40	43 %	0.018	2.250
Advanced	21	37 %	35	63 %		
Parenting Style						
Poor	15	79%	4	21%	0.007	4.438
Good	60	46%	71	54%		
Breastfeeding						
Non-exclusive	25	71%	10	29%	0.004	3.250
Exclusive	50	43%	65	57%		
Information Exposure						
Poor	1	25%	3	75%	0.620	0.324
Good	74	51%	72	49%		
History of Infections					0.772	1.184
Present	7	54%	6	46%		

Absent	68	49%	69	51%		
Dental Health						
Poor	55	63%	33	37%	0.000	3.500
Good	20	32%	42	68%		
Role of Cadres						
Less Active	4	50%	4	50%	1,000	1,000
Active	71	50%	71	50%		
Role of Community Leaders						
Less Active	29	63%	17	37%	0,034	2,151
Active	46	44%	58	56%		

Statistical analysis was conducted using the chi-square test, resulting in ϱ-values for family income (0.008), mother's education level (0.018), parenting style (0.007), exclusive breastfeeding (0.004), dental health (0.000), and role of community leaders (0.034). These values indicate a significant relationship between family income, the mother's education level, parenting style, exclusive breastfeeding, dental health, and the role of community leaders in the occurrence of stunting in toddlers in the working area of the Muara Delang Community Health Center. Other factors such as information exposure, history of infectious diseases, and the role of health cadres showed no significant relationship with the occurrence of stunting in the working area of the Muara Delang Community Health Center because the ϱ-values were greater than 0.05.

Table 3. Logistic Regression Test Results

Variable	B	S.E	df	Sig.	ExP(B)
Family Income	.763	.388	1	.049	2.145
Mother's Education	.537	.390	1	.168	1.710
Parenting Style	1.557	.647	1	.016	4.743
Breastfeeding	1.300	.461	1	.005	3.671
Dental Health	.764	.386	1	.048	2.147
Role of Community Leaders	.794	.421	1	.059	2.213
Constant	-9.487	1.994	1	.000	.000

Based on Table 3, it can be concluded that out of the 6 analyzed variables, 4 variables significantly influence the occurrence of stunting in the working area of the Muara Delang Community Health Center, namely family income, parenting style, exclusive breastfeeding, and dental health. The variable with the strongest influence is parenting style, with a coefficient of 1.557.

The Influence of Parenting Style on Stunting Incidence

Based on multivariate analysis, it's evident that parenting patterns, exclusive breastfeeding, family income, and exclusive breastfeeding are key factors influencing stunting in the working area of Puskesmas Muara Delang. Among these factors, parenting patterns emerge as the most significant, as indicated by a multivariate test with a ϱ-value of <0.05 and a coefficient of 1.557. These findings align with prior research, suggesting that parents, particularly mothers, who offer affection and employ effective parenting techniques positively impact their children's nutritional status, thus reducing the risk of stunting (Jannah & Nurhamidi, 2023; Laili et al., 2021;

Situmeang & Sudaryati, 2020; Wibowo et al., 2023). Good parenting practices lead parents to be more discerning in nutrition provision, environmental sanitation, child hygiene, and resource utilization. In contrast, poor parenting can hinder children's growth and development due to inadequate understanding of proper childcare. Effective parenting involves timely breastfeeding and complementary feeding, teaching correct eating habits, providing nutritious meals, controlling portion sizes, ensuring hygienic food preparation, and fostering a pleasant environment to maximize nutritional intake, ultimately preventing stunting in children (Noorhasanah & Tauhidah, 2021).

The Influence of Exclusive Breastfeeding on Stunting Incidence

Non-exclusive breastfeeding until the age of 6 months increases the risk of stunting in toddlers. This finding is consistent with Nursofiati et al., (2023), which states a relationship between exclusive breastfeeding and the occurrence of stunting in toddlers aged 24-59 months. Lestari et al., (2023) also suggest that exclusive breastfeeding is associated with an 11.2 times higher risk of stunting. Toddlers who do not receive sufficient breastfeeding as infants experience a deficit in energy intake, causing the body to utilize energy reserves that should be used for growth and development processes. Breast milk received by infants serves as the body's immune system. Suppose infants are given foods other than breast milk before 6 months. In that case, it can affect the intestines' ability to digest food and make them susceptible to diseases, ultimately impacting their growth processes (Lestari et al., 2023). Additionally, breast milk contains immunoglobulin A (IgA), immunoglobulin G (IgG), and immunoglobulin M (IgM), which act as immune substances protecting infants from gastrointestinal infections that can disrupt nutrient absorption, leading to stunting (Goudet et al., 2019).

The Effect of Dental Health on Stunting Incidence

Poor dental health, characterized by a high prevalence of cavities in toddlers, is associated with stunting. Findings from this study reveal that toddlers in the stunting group exhibit a significantly high level of cavities, indicating that the majority of stunted toddlers suffer from dental caries. This aligns with Simorangkir et al., (2020), which indicates a significant association between dental caries experience and stunting, with a 2.15 times greater risk. Dental caries can cause pain and discomfort, disrupting children's daily activities and potentially leading to acute or chronic infections. The pain from dental caries also affects sleep quality and eating patterns, disrupting the fulfillment of necessary nutrients for growth and development (Lutfi et al., 2021). Dental health plays a crucial role in nutrient intake, as teeth and the mouth are involved in chewing food and providing amylase enzymes for further digestion. Poor dental health makes it difficult for toddlers to chew food, increasing the risk of anemia, sleep disturbances, decreased body mass index, and inadequate nutrient intake, all of which affect growth and development. Research by Worotitjan et al., (2013) indicates that protein intake in children with poor dental health is lower

compared to those with good dental health. This is because poor dental health causes difficulties in chewing, leading children to avoid hard foods like meat.

The Effect of Family Income on Stunting Incidence

Multivariate analysis results show a significant association (ϱ-value < 0.05) between family income and stunting occurrence in the working area of Puskesmas Muara Delang, with a coefficient of 0.763. Lower family income affects the ability to fulfill primary needs, including nutrition necessary for growth. This finding aligns with Agustin dan Rahmawati (2021), indicating increased stunting risk in families with income below the regional minimum wage, as they often opt for carbohydrate-rich foods due to affordability, compromising protein intake. Hapsari et al. (2018) in Husna et al. (2023) also suggest that limited income leads families to adjust food consumption, often reducing essential nutrients like protein, vitamins, and minerals, elevating malnutrition risks, particularly in toddlers, and consequently contributing to stunting. The purchasing power for nutritious food aligns with family income; higher income facilitates better nutrition provision, while lower-income restricts access to nutrient-rich foods, affecting toddlers' growth and development. WHO notes significant links between family income and stunting, recommending stunting as an indicator of low income. Sari and Zelharsandy (2022) further elaborate that families with adequate income can fulfill primary and secondary needs for children, including access to better healthcare services, while lower-income families tend to consume less diverse and lower-quality foods.

The Effect of Information Exposure on Stunting Incidents

Chi-square test results showing a ϱ-value of 0.311 (ϱ>0.05) indicate no significant relationship between information exposure and stunting in Puskesmas Muara Delang. This result contrasts with Pratiwi and Kurniawati, (2023), who found a significant effect of information reception on stunting, suggesting that mothers who receive information can better learn preventive measures against stunting. Health education enhances maternal knowledge about high-nutrient foods and their proper preparation to preserve nutrients. It also stresses the importance of attending Posyandu (Integrated Health Post) to reduce toddler stunting (Izzati et al., 2022). The absence of a significant link in Puskesmas Muara Delang could be due to the active role of health workers in providing education on stunting prevention and demonstrating complementary feeding preparation, as indicated by 81% of respondents acknowledging receiving stunting-related information through health education.

The Effect of History of Infectious Disease on Stunting Incidents

Based on the chi-square test results, a ϱ-value of 0.722 was obtained, indicating no relationship between the history of infectious diseases and the occurrence of stunting in the area served by the Puskesmas Muara Delang. This finding contrasts with several studies stating that infectious diseases increase the risk of stunting

(Shofifah et al., 2022; Subroto et al., 2021; Yulnefia & Sutia, 2022). This could be due to the low incidence of infectious diseases in toddlers within the area served by the Puskesmas Muara Delang. The low incidence of infectious diseases could be influenced by good hygiene and environmental sanitation, regular eating patterns, habits and lifestyle, and the smoking habits of parents or those around the child (Nuraini et al., 2021).The absence of a relationship between the history of infectious diseases and the occurrence of stunting could be due to the ease of access to healthcare services, which reduces the severity and impact of such diseases, one of which is the effect of malnutrition that would lead to stunting (Sahitarani et al., 2020).

The Effect of the Role of Health Cadres on Stunting Incidents

Based on the chi-square test results, the ϱ-value of 1 was obtained, indicating no significant relationship between the role of health cadres and the occurrence of stunting in the Muara Delang Health Center working area. The absence of a relationship between the role of health cadres and the incidence of stunting in the Muara Delang Puskesmas working area can be caused by the cadres playing an active role in reducing stunting rates by increasing knowledge and routine guidance from the Muara Delang Puskesmas. The existence of routine coaching will increase the knowledge of cadres so that the role of cadres becomes more optimal. Cadres with good and sufficient knowledge will tend to be more active in carrying out activities because they have a higher awareness of handling and preventing stunting. In addition, most of the cadres have been working for a long time, so they have more knowledge and training, which makes the cadres have good productivity and can innovate to help prevent stunting, for example, innovations so that parents routinely bring their children to posyandu (Damayanti et al., 2022).

The Effect of Mother's Education on Stunting Incidents

Based on the results of the multivariate test, the ϱ-value> 0.05 indicates that maternal education does not significantly affect the incidence of stunting in the Muara Delang Health Center working area. The results in this study indicate that the basic level of maternal education does not increase the risk of toddlers experiencing stunting.These results are not in line with research conducted by Nurmalasari et al., (2020) which states that mothers with low levels of education have a 3.3 times higher risk than mothers with higher education. This is because the mother is the first and main coach in terms of child health, food management and plays an important role in improving the nutritional status of family members. In addition, the incidence of stunting occurs mostly in mothers with low education because indirectly the mother's level of education will affect the mother's ability and knowledge in caring for the health of toddlers. One of the abilities that affect the occurrence of stunting is the ability to choose food at a low price but still meet quality and balanced nutritional values. Husnaniyah et al., (2020) also stated that mothers are decision makers in serving food in the family, so the higher the mother's education, the higher the

mother's ability to choose food ingredients that can meet the nutritional needs of the family.

The Effect of the Role of Community Leaders on Stunting Incidents

The multivariate test results show that the ϱ-value> 0.05, which means that the role of community leaders does not affect the incidence of stunting in the Muara Delang Health Center working area. Community leaders have an important role in motivating the community to attend posyandu activities and help procure the facilities and infrastructure needed for posyandu operations (Anggraini & Rusdy, 2019). Support from community leaders is needed because often parents only come to the posyandu to get immunization services, so that when the child has completed complete immunization, parents feel no need to come to the posyandu, which causes monitoring of child growth not to be carried out (Anggraini & Rusdy, 2019). The important role of community leaders in stunting prevention makes stunting control an indicator of the success of village development, in addition to health services, basic food assistance, provision of clean water needs, and road improvements to improve the standard of living of the community (Hidayatulloh & Yani, 2022). The active role of community leaders such as lurah and kepala desa is influenced by their knowledge of community health and nutrition. High levels of knowledge encourage community leaders to be more active in stunting campaigns in their areas (Viaduri et al., 2023). This knowledge also affects their attitudes; if they have limited knowledge about the prevention and impact of stunting, their attitudes tend to be negative (Viaduri et al., 2023).

D. CONCLUSIONS

The conclusion of the research indicates that factors such as parenting patterns, exclusive breastfeeding, dental health, and family income significantly influence the occurrence of stunting in children aged 24-59 months in the working area of Puskesmas Muara Delang. The importance of the roles of health cadres and community leaders in efforts to prevent stunting is also highlighted in this study. However, exposure to unrelated information is not significantly associated with the occurrence of stunting.To reduce the occurrence of stunting, there is a need to focus on improving good parenting practices, promoting exclusive breastfeeding, paying attention to dental health, and improving the socioeconomic conditions of families. Involving health cadres and community leaders in educating and supporting the community is key to addressing the issue of stunting in children. In the effort of public health interventions, a deep understanding of the factors influencing stunting is crucial for designing effective and sustainable programs to improve the health of children and the community as a whole. Therefore, targeted and evidence-based measures can help address the issue of stunting and improve the well-being of children in the area.

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