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The relationship between use of technology, nutritional knowledge, family support, culture and lifestyle with stunting incidents in toddlers aged 24-59 months in the Kapuas River Bank Area, Pontianak City

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Abstract

Background: The prevalence of stunting among toddlers in West Kalimantan Province is 31.46%, with Pontianak City reporting 15.8%. East Pontianak District has the highest rate at 20.8%. This study aims to examine the relationship between technology use, maternal nutritional knowledge, family support, culture, and lifestyle with the incidence of stunting among toddlers aged 24–59 months living along the Kapuas River in Pontianak City.
Method: The research design used case-control design with a retrospective approach was used, involving 92 children (46 cases and 46 controls) selected through simple random sampling. Data were analyzed using the chi-square test with a 95% confidence level.
Results: The results showed a significant relationship between maternal nutritional knowledge (p=0.002; OR=4.330), family support (p=0.011; OR=3.248), and lifestyle (p=0.001; OR=4.680) with stunting. However, no significant relationship was found for technology use (p=1.000; OR=1.102) and culture (p=0.210; OR=1.852).
Conclusion: These findings indicate that maternal knowledge, family involvement, and healthy lifestyle habits play a crucial role in preventing stunting. Promotive and educational interventions targeting families are essential to reduce stunting rates in both urban and rural settings.

Keywords: Stunting, Nutritional Knowledge, Family Support, Lifestyle, Kapuas River.

INTRODUCTION

Indonesia is one of the developing countries that still experiences problems in the nutrition and growth and development of toddlers. The occurrence of short or very short toddlers who do not match their age is called stunting. Stunting is a problem of malnutrition caused by chronic malnutrition over a long period of time resulting from providing food that is not in accordance with children's nutritional needs.

Based on toddler stunting prevalence data collected by the World Health Organization (WHO), Indonesia ranks third in the Southeast Asia Region (SEAR) for the highest prevalence. The average prevalence of stunted toddlers in Indonesia between 2005 and 2017 was 36.4% (1).

According to the results of Basic Health Research (RIKESDAS) in 2018, it was shown that 30.8% of Indonesian toddlers from 34 provinces experienced stunting, including the province of West Kalimantan. West Kalimantan is one of the regions that has quite high rates of stunting problems. Of the 34 provinces in Indonesia, West Kalimantan ranks 8th in 2018 with a percentage of stunting cases of 31.46% (2).

The number of stunting incidents in West Kalimantan Province is quite high, one of which occurs in Pontianak City, which is the capital of West Kalimantan. According to

data from the Pontianak City Health Service in 2018, there were 15.8% who were short and 6.3% of toddlers were diagnosed as very short. Of the 6 sub-districts in Pontianak City, East Pontianak District is the sub-district with the highest stunting rate, namely 20.8% of toddlers are stunted and 8.7% of toddlers are diagnosed as very stunted. This report provides current data on child health in West Kalimantan, including stunting rates (3).

Children who experience stunting often appear to have a normal, proportional body, but actually appear short or have a height that is not appropriate for their age. The impact of stunting is divided into short-term impacts and long-term impacts. Short-term impacts lead to increased incidence of morbidity and mortality, cognitive, motor and verbal development in children is not optimal, and health costs increase. Meanwhile, the long-term impacts include less than optimal body posture as an adult, increased risk of obesity and other diseases, decreased reproductive health, and less than optimal learning capacity and performance during school. And then, Environmental factors and dietary patterns significantly contribute to the incidence of stunting (4). So it could be the main threat to the quality of Indonesian people, as well as a threat to the nation's competitive ability to become a developed country (5).

METHOD

This study employed a case-control design with a retrospective approach to analyze the relationship between factors such as technology utilization, maternal nutritional knowledge, family support, culture, and lifestyle on the incidence of stunting among children aged 24-59 months in the Kapuas Riverside area, Pontianak City. The research was conducted in the working area of Puskesmas X from November 2021 to February 2022. The study involved a total sample of 92 children, consisting of 46 cases (stunting) and 46 controls (non-stunting), selected using simple random sampling.

The data collected in this study were based on predetermined inclusion and exclusion criteria. The inclusion criteria encompassed toddlers aged 24–59 months residing in the Kapuas River bank area of Pontianak City, who had complete nutritional status data as measured by the height-for-age index (TB/U). Additionally, participation required that the parents or guardians consented to serve as respondents and completed the provided questionnaire. Toddlers identified with stunting were categorized into the case group, whereas those without stunting were placed into the control group.

The exclusion criteria included toddlers with a documented history of chronic illness or congenital anomalies that could affect physical growth, as well as toddlers who were severely ill during data collection, thereby hindering the accurate measurement of their nutritional status. Furthermore, toddlers whose parents or guardians declined to complete the study or failed to provide complete questionnaire responses were also excluded from participation.

Primary data were collected through interviews using a questionnaire, while secondary data were obtained from medical records and Puskesmas data. The dependent variable was the incidence of stunting measured using the TB/U index, while the independent variables included technology utilization, maternal nutritional knowledge, family support, culture, and lifestyle. Data analysis was conducted using univariate methods to describe the data and bivariate methods employing the chi-square test with a significance level of p-value ≤ 0.05. This study aimed to identify the factors contributing to the incidence of stunting in the research area.

RESULTS

A. Toddler Characteristics

Table 1 Frequency Distribution of Stunted and Not Stunted Toddlers in the Kapuas River Bank Area in 2021

Stunting	Case		Control		Total
	n	%	n	%	
Toddlers aged 24-36	11	23.91	3 toddlers	6.6	14
Toddlers aged 37-50	35	76.09	43 toddlers	93.4	78
Amount	46	100	46	100	92

Based on table 1 above, it shows that of the 92 toddlers, the number of toddlers aged 37-59 months, 78 toddlers, tends to be more than the number of toddlers aged 24-36 months, 14 toddlers.

B. Univariate Analysis

1. Utilization of Technology

Table 2. of Frequency Distribution of Technology Use in the Kapuas River Bank Area, Pontianak City in 2021

Utilization of Technology	Case		Control	
	N	%	n	%
Underuse	35	76.08	42	91.30
Utilise	11	23.92	4	8.70
Amount	46	100	46	100

2. Nutrition Knowledge

Table 3. Frequency Distribution Table of Maternal Nutrition Knowledge in the Kapuas River Bank Area, Pontianak City, 2021

Maternal Nutrition Knowledge	Case		Control	
	N	%	N	%
Not good	29	63.04	13	28.26
Good	17	36.96	33	71.74
Amount	46	100	56	100

Based on table 3 above, it is known that the number of cases of respondents who had poor nutritional knowledge was 29 people (63.04%) more than the proportion of cases of respondents who were good, which was 17 people (36.96%). Based on the proportion of control respondents who had good nutritional knowledge, 33 people (71.74%) were more than the proportion of control respondents who had poor knowledge, namely 13 people (28.26%).

3. Family support

Table 4. of Frequency Distribution of Family Support in the Kapuas River Bank Area, Pontianak City in 2021

Family support	Case		Control	
	n	%	N	%
Not good	27	58.69	14	30.44
Good	19	41.31	32	69.56
Amount	46	100	46	100

Based on table 4 above, it is known that the number of cases of respondents who had poor family support was 27 people (58.69%) more than the proportion of cases of respondents who were good, which was 19 people (41.31%). Based on the proportion of control respondents who had poor family support, there were 14 people (30.44%) less than the proportion of control respondents who had good family support, which was 32 people (69.56%).

4. Culture

Table 5. Cultural Frequency Distribution Table in the Kapuas River Bank Area, Pontianak City, 2021

Culture	Case		Control	
	N	%	n	%
Not good	29	63.04	21	45.65
Good	17	36.96	25	54.35
Amount	46	100	46	100

Based on table 5 above, it is known that the number of cases of respondents who had a poor culture was 29 people (63.04%) more than the proportion of cases of respondents who were good, which was 17 people (36.96%). Based on the proportion of control respondents who had unfavorable culture and lifestyles, there were 21 people (45.65%) more than the proportion of control respondents who were good, which was 25 people (54.35%).

5. Lifestyle

Table 6. Lifestyle Frequency Distribution Table in the Kapuas River Bank Area, Pontianak City, 2021

Lifestyle	Case		Control	
	n	%	n	%
Not good	36	78.26	20	56.52
Good	10	21.74	26	43.48
Amount	46	100	46	100

Based on table 6 above, it is known that the number of cases of respondents who had an unfavorable lifestyle was 36 people (78.26%) more than the proportion of cases of respondents who were good, which was 10 people (21.74%). Based on the proportion of control respondents who had an unfavorable lifestyle, there were 20 people (56.52%) less than the proportion of control respondents who had a good lifestyle, which was 26 people (43.48%).

C. Bivariate Analysis

Table 7. of the Relationship between the Use of Technology and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank Area, Pontianak City, 2021

UtilizationTechnology	Stunting events				Total		p-Value	OR CI(95%)
	Case		Control					
	n	%	n	%	n	%	0.088	0.303
Not enough Utilise	35	76.08	42	91.30	31	33.69		0.089-1.036
Utilise	11	23.92	4	8.70	61	66.31		
Amount	46	100	46	100	92	100		

Based on table 7 above, it shows that in cases there were 35 people (76.08%) less than the use of technology in controls of 42 people (91.30%). The results of the bivariate test between the variable use of technology and the incidence of stunting in toddlers obtained a p-value of 0.088, which means that there is no significant relationship between the variable use of technology and the incidence of stunting in toddlers with an Odds Ratio = 0.303 and CI between 0.089 - 1.036.

Table 8. of the Relationship between Nutritional Knowledge and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank Area, Pontianak City, 2021

Maternal Nutrition Knowledge	Stunting events				Total		p-Value	OR CI(95%)
	Case		Control					
	n	%	n	%	n	%		
Not good	29	63.04	13	28.26	42	45.66		
Good	17	36.96	33	71.74	50	54.34	0.002	4,330 1,800-10,416
Amount	46	100	46	100	92	100		

Based on table 8 above, it shows that maternal nutritional knowledge in cases that was poor was 29 people (63.04%) more than the poor nutritional knowledge of mothers in controls of 13 people (28.26%). The results of the bivariate test prove that between the variable maternal nutritional knowledge and the incidence of stunting in toddlers, a p-value of 0.002 was obtained, which means that there is

There is a significant relationship between the variable maternal nutritional knowledge and the incidence of stunting in toddlers with an Odds Ratio = 4.330 with a CI between 1.800 - 10.416, which means that poor maternal nutritional knowledge in cases has a 4.330 times risk of toddlers experiencing stunting.

Table 9. of the Relationship between Family Support and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank Area, Pontianak City, 2021

Family support	Stunting events				Total		p-Value	OR CI(95%)
	Case		Control					
	n	%	n	%	n	%		
Not good	27	58.69	14	30.44	41	44.56	0.011	3,248 1,375-7,673
Good	19	41.31	32	69.56	51	55.44		
Amount	46	100	46	100	92	100		

Based on table 9 above, poor family support in cases was 27 people (58.69%) more than poor family support in controls, 14 people (30.44%). The results of the bivariate test prove that the variable family support for the incidence of stunting in toddlers has a p-value of 0.011, which means that there is a significant relationship between the variable family support for the incidence of stunting in toddlers with an Odds Ratio = 3.248 with a CI between 1.375 - 7.673 which means that Poor family support in cases carries a 3,248 times risk of toddlers experiencing stunting.

Table 10. of the Relationship between Culture and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank Area, Pontianak City, 2021

Culture	Stunting events				Total		p-Value	OR CI(95%)
	Case		Control					
	n	%	n	%	n	%		
Not good	29	63.04	21	45.65	50	54.34	0.142	2,031 0.882- 4,674
Good	17	36.96	25	54.35	42	45.66		
Amount	46	100	46	100	92	100		

Based on table 10 above, the unfavorable culture in cases was 29 people more than the unfavorable culture in controls as many as 21 people (45.65%). The results of the bivariate test prove that between cultural variables and the incidence of stunting in toddlers, a p-value of 0.142 was obtained, which means that there is no significant relationship between cultural variables and the incidence of stunting in toddlers with an Odds Ratio = 2.031 with a CI between 0.882 - 4.674.

Table 11. of the Relationship between Lifestyle and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank Area, Pontianak City, 2021

Lifestyle	Stunting events				Total		p-value	OR CI(95%)
	Case		Control					
	n	%	n	%	n	%		
Not good	36	78.26	20	56.52	50	54.34	0.001	4,680 1,881-11,643
Good	10	21.74	26	43.48	42	45.66		
Amount	46	100	46	100	92	100		

Based on table 11 above, the unfavorable lifestyle in cases was 36 people (78.26%) more than the unfavorable lifestyle in controls of 20 people (56.52%). The results of the bivariate test prove that the variable between lifestyle and the incidence of stunting in toddlers obtained a p-value of 0.001, which can be interpreted that there is a significant relationship between

lifestyle variables and the incidence of stunting in toddlers with an Odds Ratio = 4.680 with a CI between 1.881 - 11.643 which is interpreted as that a poor lifestyle in cases carries a 4,680 times risk of toddlers experiencing stunting.

DISCUSSION

1. The relationship between the use of technology and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River bank area, Pontianak City

Developments in Information and Communication Technology (ICT) have had a very significant impact on all aspects of human life. This development has the impact of increasingly opening up and spreading information and knowledge throughout the world across borders, distance, place, space and time. Its influence also extends to various aspects of life in society, including in the aspect of knowledge regarding health problems in children under five, one of which is the problem of stunting. And Poor nutritional intake and infections contribute to the high rates of stunting (6).

Based on the results of research conducted by researchers who tested "the relationship between the use of technology and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas riverside area, Pontianak City" using the chi-square test, a p-value of 1,000 > 0.05 was obtained, which indicates that there is no relationship between the use of technology and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas riverside area, Pontianak City. This can happen in the environmental situation of society, even though we are currently experiencing a period of progress in information and communication technology, but there are several groups of people who experience a digital divide or digital divide, this is due to the rapid development of information and communication technology because it keeps up with the times. However, in some areas and communities, development is hampered due to economic and social conditions that are unable to keep up with current technological developments. In line with this, the study describes the pattern of smartphone use among mothers of stunted toddlers in Samigaluh Subdistrict, Kulonprogo Regency. A total of 66% of respondents used smartphones to seek information about stunting, with a search duration of 10–20 minutes per day and a frequency of 1–3 times per month. Factors such as the mother's age, education level, and occupation influenced smartphone use for seeking information about stunting (7).

Apart from that, the results of the questionnaire show that of the 92 respondents, 50% of respondents still use traditions passed down from generation to generation, namely traditional medicine when toddlers are sick. So this research is supported by the results of research conducted by Cahyani (2019) regarding social support as the main factor in providing specific nutritional interventions to children aged 6-24 months with stunting with a p value of 0.068 that there is no relationship between the use of technology and stunting (8).

2. Relationship between Nutritional Knowledge and the incidence of Stunting in Toddlers Aged 24 – 59 Months in the Kapuas River Bank area, Pontianak City

The results of the bivariate test between the variable maternal nutritional knowledge and the incidence of stunting in toddlers obtained a p-value of 0.002, which means that there is a significant relationship between the variable maternal nutritional knowledge and the incidence of stunting in toddlers. There is a relationship between maternal nutritional knowledge and the incidence of stunting because 50% of mothers under five have low education, so that a mother's poor level of nutritional knowledge has greater problems in parenting than those with a good level of knowledge. This research highlights the importance of nutritional

education for mothers to prevent stunting (9). And then, this research is the same as research by Kurniatin et al (2020). This study shows the factors influencing the incidence of stunting in the East Pontianak area, emphasizing the importance of nutritional interventions (10). Knowledge about nutrition is the initial process in changing behavior to improve nutritional status, so knowledge is an internal factor that influences behavior change. Mother's knowledge about nutrition will determine mother's behavior in providing food for her child. Mothers with good nutritional knowledge can provide the right type and amount of food to support the growth and development of children under five. And this research highlights the importance of nutritional education for mothers to prevent stunting (11).

The results of research by Ramdaniati et al (2019) on the relationship between characteristics of toddlers, maternal knowledge and sanitation on the incidence of stunting in toddlers in Labuan District, Pandeglang Regency, stated that maternal knowledge is a factor related to the incidence of stunting (12). It can be seen that mothers of toddlers in the case group have a lower level of nutritional knowledge than mothers of toddlers in the control group. This shows that low maternal knowledge about nutrition influences the incidence of stunting in toddlers. Maternal health and the environment play an important role in preventing stunting (13). Mothers play a very important role in choosing a nutritious food menu for the family. Low knowledge of mothers about nutrition can lead to a lack of nutritional quality of food for the family, especially food for toddlers. This will of course influence the lack of intake for toddlers which can hinder their growth and development during the golden age. And Provides an analysis of the determinants of stunting among toddlers.

And In line with this, a study conducted in Labuhan Haji District using a cross-sectional approach with 85 respondents found that the Spearman Rank test showed a significant relationship between the mother's level of nutritional knowledge and the incidence of stunting in toddlers aged 24–59 months (P=0.000). The higher the mother's nutritional knowledge, the lower the risk of stunting in toddlers (14). In the working area of Duren Public Health Center, Semarang Regency, using a case-control design, the study showed that maternal nutritional knowledge, nutritional intake levels, and household food security status had a significant relationship with the incidence of stunting in toddlers aged 24–59 months. Good maternal nutritional knowledge contributes to the adequate fulfillment of nutritional intake for toddlers (15).

3. The relationship between family support and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River bank area, Pontianak City

The results of the bivariate test between the variable family support and the incidence of stunting in toddlers obtained a p-value of 0.011, which means that there is a significant relationship between the variable family support and the incidence of stunting in toddlers with an Odds Ratio = 3.248 with a CI between 1.375 to 7.673. This research is in line with researchers Fiedman et al (2010) family nursing textbook, which says that families have an important role in shaping health culture and behavior. And Maternal education and access to health information significantly affect children's nutritional status (16).

Several researchers say that family support has a relationship in providing breast milk and also providing a diet to children. The more the family supports, the better the mother's motivation for child care, such as breastfeeding and a good diet. Respondents who have sufficient family support are not necessarily good at providing specific nutritional interventions. This is because the culture in the family is not beneficial for health but is still followed. Breastfeeding is one thing that

supports the baby's health. Mothers who are breastfeeding have feelings of guilt, feeling like they have failed when they cannot breastfeed their child well. For this reason, emotional support from the family is needed.

From research by Efendi et al 2009, it is said that each family member has several roles in the family, including as a motivator, educator and facilitator. The head of the family or husband plays an important role in a family, including providing motivation, education and facilitating the wife when giving food to the children. And Provides an in-depth analysis of the factors contributing to stunting (17).

4. The relationship between culture and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River bank area, Pontianak City

The relationship between cultural variables and the incidence of stunting in toddlers shows that the results of the bivariate test between cultural variables and lifestyle on the incidence of stunting in toddlers obtained a p-value of 0.142, which can be interpreted that there is no significant relationship between cultural variables and the incidence of stunting in toddlers. Odds Ratio = 2.031 with CI between 0.882 - 4.674.

Some mothers still agree that grandmothers or in-laws are people who are experienced in caring for children, so the prohibitions and recommendations from mothers/in-laws/grandmothers must be adhered to even though they sometimes conflict with the advice of health workers, but the majority have answered in the affirmative. This research is strengthened by Ibrahim et al (2021) which found that the socio-cultural p value was 0.001, which means there is no relationship with the incidence of stunting. Because cultural influence on mothers of toddlers depends on the social system, parenting patterns such as MP-ASI are still carried out by mothers for babies before the age of 6 months. In line with this, the study analyzed the relationship between maternal characteristics, knowledge, and socio-cultural factors with the incidence of stunting in East Jambi District. The results showed that dietary culture was the dominant factor influencing the incidence of stunting, in addition to maternal age, education, occupation, and knowledge (18).

And he influence of cultural dietary patterns on the incidence of stunting at the Kembayan Community Health Center, Sanggau Regency, West Kalimantan. The results showed that cultural dietary practices, such as food restrictions during pregnancy, had a significant impact on the incidence of stunting, with food restrictions increasing the risk of stunting by 139.6 times (19).

5. The relationship between lifestyle and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River bank area, Pontianak City

The results of the bivariate test between lifestyle variables and the incidence of stunting in toddlers obtained a p-value of 0.001, which means that there is a significant relationship between lifestyle variables and the incidence of stunting in toddlers with an Odds Ratio = 4.680 with a CI between 1.881 - 11.643. This research is in line with researchers Cahyani et al (2019) regarding social support as the main factor in providing specific interventions for children aged 6-24 months with stunting based on transcultural nursing, who said that lifestyle factors do not support the provision of specific nutritional interventions. Respondents who have lifestyle factors that do not support health tend to be negative about providing specific nutritional interventions as an effort to prevent stunting for children. And Malnutrition at an early age can increase infant and child mortality rates, make individuals more susceptible to illness, and result in suboptimal physical stature in adulthood (20).

Lifestyle influences a person's health behavior which will then have an impact on that person's health status. Lifestyle

describes the way a person perceives things, behaves, and assesses things around him. The actions of group members are studied and shared and provide guidance for thinking, acting and making decisions. explains that lifestyle is the view of life of an individual or group by referring to the values, beliefs, norms, patterns and practices that are learned, shared and passed down between generations.

Leininger also believes that humans tend to maintain their culture even though it is not good. This respondent's behavior is also supported by the respondent's environment which is a means of unification in society. Lifestyle views can influence attitudes, behavior and responses given by mothers to their children. Apart from that, belief in children plays an important role in maintaining behavior in controlling one's eating patterns and the mother's feeding patterns for babies because Risk factors such as nutritional intake and sanitation play an important role in the incidence of stunting (21).

CONCLUSIONS

Based on the results and discussion of this research, the following conclusions can be drawn:

There is a relationship between maternal nutritional knowledge and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River Bank area, Pontianak City with a p value of 0.002 with OR 4.330 and CI = 1.800 - 10.416

1. There is a relationship between family support and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River Bank area, Pontianak City with a p value of 0.011 with OR 3.248 and CI = 1.275 – 7673
2. There is a relationship between lifestyle and the incidence of stunting in toddlers aged 24-59 months in the Kapuas River Bank area, Pontianak City with a p value of 0.001 with OR 4.680 and CI 1.881 – 11.643
3. There is no relationship between the use of technology and the incidence of stunting in toddlers aged 24 – 59 months in the Kapuas River bank area, Pontianak City with a p value of 0.088 with OR 0.303 and CI = 0.089 – 1.036
4. There is no relationship between culture and the incidence of stunting in toddlers aged 24 - 59 months in the Kapuas River Bank area, Pontianak City with a p value of 0.142 with OR 2.031 and CI = 0.882 - 4.674

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