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## KEYWORDS



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## Food Nutrition Knowledge And Maternal Education On Nutrition Of Stunting Toddlers In Tin And Non-Mining Areas

Aning Kesuma Putri\*<sup>1</sup>, Didik Susetyo<sup>2</sup>, Nurlina T.Muhyiddin<sup>3</sup>, Azwardi<sup>4</sup>

### Abstract

*This study aims to investigate the economic impact of maternal human capital, consisting of dietary nutrition knowledge and education, on the nutrition of stunted children under five, specifically in tin mining and non-lead mining areas in Bangka Belitung Islands Province, Indonesia. This study was descriptive and quantitative, using primary data from 346 samples of stunted children living around mines (143 samples) and non-mines (203 samples). Data were analyzed using linear regression, which consisted of dummy variables of stunted toddler nutrition, nutritional food knowledge, and maternal education. As a result, knowledge of nutritious food and maternal education in tin mining areas affect the nutrition of stunted children under five by 27 percent, while in non-tin mining areas by 51 percent. While the results of testing per independent variable, in both samples, the variable of maternal knowledge about nutritious food is more influential than the variable of maternal education. The findings of this study are expected to improve the education and knowledge of mothers in tin mining areas, especially about food nutrition. Future research will be more useful if mothers' expertise in diversifying food is combined with mothers' understanding of nutritious food and education.*

**Keywords:** *Stunting, Human Capital, Food Nutrition Knowledge, Maternal Education,*

### 1. INTRODUCTION

Stunting is most at risk at the beginning of a child's life, can have an impact on decreased educational achievement, impaired cognitive abilities, reduced productivity, low potential for future income, and causes greater poverty (Himaz, 2018; Hoang, Undurraga, et al., 2018; Woldehanna, Behrman<sup>1</sup>, & Araya, 2018 Casale et al, 2020; Desmond et al, 2021; Dong, 2020). Stunting is a child's height or length development disorder due to a lack of nutritional intake (World Health Organization, 2009).

Children's nutritional intake can be caused by the investment in children's health by parents who prefer healthy food patterns that benefit their children. Highly educated parents will feel more important to invest in children's health. Inequality in child health investment occurs due to differences in parental education (Biroli, Boneva, Raja, & Rauh,2020). Poor child care and nutritious feeding practices in children are related to the education of parents, especially mothers (Nepal, 2018; Takele, Zewotir, & Ndanguza,2020; Zegeye, Shibre, Idriss-wheeler, & Yaya,2020). According to economic research, a mother's education tends to significantly impact a child's health more than a father's education ((Duflo, 2012; Fafchamps & Shilpi, 2014).

The problem of nutritional intake for stunting toddlers in Indonesia during the first two years of life is experienced by almost half of all Indonesian children. In Indonesia, 52 percent of babies under six months receive exclusive breastfeeding, which is still below the WHO target (50 percent in 2025) and the government's target in the RPJMN. The Bangka Belitung Islands Province is number 1 in Indonesia, which has inadequate parenting and feeding practices, particularly regarding exclusive breastfeeding in infants aged 0-5 months

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by 36.2 percent. Meanwhile, the percentage of infants aged 6-23 months who are exclusively breastfed is 42.3 percent (number 8 in Indonesia) (Kemkes RI & SSGI, 2021).

Another nutritional intake problem in the Bangka Belitung Islands Province is that toddlers under two years aged 0-23 months receive complementary food for over six months, 35.4 percent (the 7th lowest in Indonesia). Based on the results of a study on nutritional status in Indonesia, stunted children in the Bangka Belitung Islands Province experience acute nutritional problems because the prevalence of stunting is still below 20 percent (Kemkes RI & SSGI, 2021).

Human capital problems are another challenge in the Bangka Belitung Islands Province, as evidenced by the human development index, which ranked 16th lowest in Indonesia at 71.69 percent. Even the 12-year compulsory education program has yet to be completed, so in 2021, the average length of schooling for the people of Bangka Belitung Islands Province is 8.08 years (BPS Provinsi Kepulauan Bangka Belitung, 2021). The average length of schooling is low in Bangka Belitung Islands Province because children who drop out of school choose to work in the informal sector, namely the mining and quarrying sector, agriculture, plantations, and fisheries (Sohidin, 2020).

The Bangka Belitung Islands Province is one of the archipelagic provinces in Indonesia that provides permits for illegal mining for the community. The income of informal workers in the mining and quarrying sector has the highest average wage in the Bangka Belitung Islands Province, which is Rp2,352,874 (BPS Provinsi Kepulauan Bangka Belitung, 2022). Although the income of the informal/illegal mining sector is high and can help the community's economy, it can increase the dropout rate, and human capital accumulation is shallow (Ahlerup, Baskaran, & Bigsten, 2019; Bonilla Mejía, 2020). A parent's formal education affects nutrition, especially reading and arithmetic skills. Education can also empower women and prepare them for future parenting information when they become parents (Glewwe, Jacoby, & King, 2001; Glewwe & Miguel, 2008).

This research will examine the nutrition related to stunting from the perspective of human resource economics, especially related to mothers' knowledge and education in mining and non-tin mining areas if previous research examines a mother's knowledge of literacy (Hoang et al., 2018), agriculture (Baral, Paria, Behera, & Mishra, 2021), math (Cui, Liu, & Zhao, 2019), traditional herbs, communication, and the courage to speak up and express opinions (Holland & Rammohan, 2019). So this research will further examine the knowledge of mothers about nutritious food. The question consists of five questions. Then the final score will be a variable measuring the mother's knowledge about nutritious food. The education variable will be measured by the mother's years of school. So based on this background, this research will cover mothers' food nutritional knowledge and education on the nutrition of stunting toddlers in mining and non-tin mining areas in Bangka Belitung Islands Province, Indonesia.

## **2. LITERATURE REVIEW**

Family economic analysts often emphasize the role of mothers in household productivity (Becker & Tomes, 1979). Mothers who attend school can be essential in determining nutrition and health ((Haveman & Wolfe, 1984). To increase nutrition and health in underdeveloped nations, women's education may need to be improved. Human capital can take the shape of skills and abilities, personality, looks, and reputation within a family. In addition to education, the development of human capital benefits significantly from



parental investment in children (Bloom, 1976). Total human capital, including on-the-job training, is assumed to result from human capital investment during childhood (Becker & Tomes, 1986).

Some do not continue their children to attend high school because it increases the child's contribution to family income. The average inequality of school length affects the family's previous educational background (Becker & Tomes, 1986). Educated women have a low demand for several children and invest in education and training for children (Behrman, 1988; Schultz, 1997). Economic development affects birth rates and child quality not only because incomes increase but also because of high returns on investment in education and other human capital. The relationship between health to education and different types of human capital investment is related to survival rates or life expectancy (Musgrove, 2003). Increased longevity boosts the return on education investments since education expenses are incurred early in life and are repaid to the last generation (Becker, 1993).

Inequality between generations in the family is related to work, education, and parental income, which affect parental investment in children. Parents' investment in children is carried out with the hope that in the future, children will have more incredible luck than them (in terms of production, prices, education, training, and employment opportunities) (Becker & Lewis, 2015). Educated mothers can reduce the risk of death compared to uneducated mothers. Educated mothers can utilize resources as efficiently as possible in caring for children. Even the education and background of the mother in childhood can determine the quality of the child's demands (Hossain, 1990). Even in developing countries, it has been proven that increasing women's education has an impact on improving the quality of children, causing children to be motivated to apply to school to college. Potential highly educated mothers have high economic resources and bargaining power to invest in education, nutrition, and child health care (Cui et al., 2019).

This quality of health is related to an individual's perception based on the education on a diet (Demirgüç-kunt et al., (2022). Household awareness of agricultural crop nutrition depends on the nutritional preferences of women in the family (Baral, Paria, Behera, & Mishra, 2021). Mothers who attended school for eight years tended to have children whose height was more than a standard deviation. Mothers attending school for less than eight years have less knowledge about nutrition than mothers attending school for more than eight years (Moongan, 2021).

Nepal (2018) provides a comparison between the education of fathers and mothers, which one has the most influence on child nutrition. Maternal education plays a role in improving the health of children, especially those with more than 12 years of schooling. As consumers of good health, parents will demand the demand for children's health in addition to the need for goods and services. Maternal education research conducted by Biroli et al., (2020), Demirgüç-kunt (2022), Moongan (2021), and Nepal (2018) using the length of school that my mother took. At the same time, Baral et al. (2021) measured the success of maternal knowledge in improving child nutrition by utilizing and empowering crops. Holland & Rammohan (2019) state that the knowledge aspect of stunting mothers comes from the ability to manage agricultural land and make effective decisions for children's health. Hoang et al. (2018) examined young women's knowledge literacy and consumption play a role in reducing stunting.

### **3. RESEARCH METHODOLOGY**

The Regulation of Health Minister of Indonesia Republic (PERMENKESRI) No. 02 of 2020 concerning Child Anthropometry Standards reveals that a child stunted or very short (severely stunted) does not necessarily have malnutrition conditions. The nutritional requirement of stunted toddlers is categorized based on the height-for-age index (HAI-Z). The index is organized based on the deviation of body weight or height from average body

weight or height values according to WHO growth standards (known as z-scores). These nutrition categories were categorized into malnutrition (z-score <-3 standard deviation), undernutrition (z-score standard deviation -3 to <-2), standard nutrition (z-score standard deviation <-2 to +1), and good nutrition (z-score standard deviation >+3 (PERMENKESRI No.02 of 2020 concerning Child Anthropometry Standards, 2020). This research will examine stunted toddlers' standard and undernutrition in the Bangka Belitung Islands Province, Indonesia. Since there are only three severely malnourished toddlers, then the nutritional status of these toddlers is combined with the malnutrition of toddlers.

The research method is descriptive quantitative in the form of questionnaire surveys. The total primary data was 346 stunting mothers consisting of 143 in tin mining areas and 203 in non-tin mines. The tin mining area in question is where stunting toddler mothers live, which, up to a radius of 10 kilometers, has mining activities and excavations and includes tin processing (smelter factory). Non-tin mining areas include agriculture, plantations, fisheries, offices, markets, and housing.

This study used linear regression model analysis to determine the influence between stunting variables, nutritional food knowledge, and maternal education variables. Relationship testing will be performed in conjunction with the following models:

$$St_i = \alpha_0 + \alpha_1 FK_n + \alpha_2 ME_d_i + e_i \dots \dots \dots (1)$$

Other relationship tests will also be conducted separately with the following models:

$$St_i = b_0 + b_1 FK_n + e_1 \dots \dots \dots (2)$$

$$St_i = c_0 + c_2 ME_d_i + e_2 \dots \dots \dots (3)$$

The scope of this research material related to stunting nutrition ( $St_i$ ) problems is obtained from the z-score value of stunting toddlers, which is then categorized into standard nutrition and undernutrition. Stunted toddlers with z-score standard deviations <-3 to <- two are categorized into undernutrition dummy variables (1). Stunted toddlers with a z-score standard deviation of -2 to +1 are classified into the dummy variable of good nutrition (0).

The nutritious food knowledge (FKn) variable represents the total value of the five questions about healthy foods. The food knowledge instrument consists of five multiple-choice questions about food knowledge. The correct answer to each question will be given a score of 20 and the wrong one a 0. The nutritional food questions were prepared based on natural science subject matter in grade 3 elementary school, which was then tested for validity before being distributed to mothers of stunted toddlers with good and inadequate nutrition. The correct answer choice on one question weighs 20 points, so the total score obtained ranges from 0 to 100 points. The food knowledge instrument consists of five multiple-choice questions about food knowledge (Table 1).

**Table 1. Nutritional Food Knowledge Questions**

No	Question	Answer Options
1.	What are the benefits of calcium content in milk?	a) Bone b) Eye c) Heart
2.	What is the content of fish?	a) Protein

	b) Carbohydrates
	c) Vitamin
3. Are carb foods a good substitute for rice?	a) Yam b) Orange c) Instant Noodles
4. What are the following iron-containing foods?	a) Chicken/mutton/beef b) Egg c) Bread
5. What does healthy and nutritious food mean?	a) It contains many minerals. b) It contains vitamins. c) Food four healthy five perfect

Source: processed (2023)

The maternal education will be taken from the length of the mother's years of schooling. Mothers who do not attend school are categorized as having zero years of school, including mothers who complete school until grade six or five elementary schools. Mothers with elementary school education are categorized as six years, junior high school education takes nine years, and high school is categorized as twelve years. Mothers with diplomas and undergraduate education will be combined into the old-school category for fifteen years or more.

#### 4. RESULT AND DISCUSSION

##### 4.1. Stunting Toddler Mother Characters in Mining Areas and Not Tin Mines

Table 2 shows the distribution of characters of stunted mothers living in mining areas, not tin mines.

**Table 2.** The character of Toddler Mother Stunting Mining Area and Not Tin Mine

Variable	N	Min	Max	Mean	Std. Deviation
<b>Tin Area's</b>					
Z-score	143	-3,99	1,96	-1,59	0,900
Maternal Education	143	0	16	7,7	3,673
Maternal Marriage	143	15	34	19,3	3,177
Nutritional Food Knowledge	143	0	100	36,4	28,938
1. Answer about calcium in milk	143	0	20	9,93	10,035
2. Answer about protein in fish	143	0	20	5,59	9,009
3. Answer about carbohydrate replacement	143	0	20	3,78	7,855
4. Answer about zink	143	0	20	5,87	9,141
5. Answer about the meaning of nutritious healthy food	143	0	20	10,91	9,994
<b>Not Tin Area's</b>					
Z-score	203	-3,67	1,96	-1,62	0,855
Maternal Education (years)	203	0	16	8,2	3,945
Maternal Marriage (years)	203	13	37	19,5	3,433
Nutritional Food Knowledge	203	0	100	58,6	34,323
1. Answer about calcium in milk	203	0	20	14,78	8,806

2. Answer about protein in fish	203	0	20	10,05	10,025
3. Answer about carbohydrate replacement	203	0	20	8,87	9,960
4. Answer about zink	203	0	20	11,63	9,891
5. Answer about the meaning of nutritious healthy food	203	0	20	13,30	9,463

Source: processed (2023)

Stunting toddlers are standard-nourished and undernourished in tin mining areas; male toddlers dominate 35.66 percent and 29.37 percent, respectively. Meanwhile, stunted toddlers lack standard nutrition and are lacking in non-tin mining areas by 37.44 percent and 21.18 percent more male toddlers, respectively. So it can be concluded that stunted toddlers of the male sex suffer more from stunting than female toddlers.

The education of stunted mothers under five in the tin mining area is complete for an average of 7.7 years, below the standard of the middle school in Bangka, Belitung Islands Province, which is eight years. Many stunted mothers in tin mining areas do not continue to junior high school. Stunted mothers in tin mining areas are married at 19.3 years old on average, with the youngest marriage at 15 years old and the maximum marriage at 34 years old. Nutritional food knowledge averaged a score of 36.4. The question about the meaning of nutritious, healthy food has the highest average answer, with a score of 10.91. Questions about calcium in milk had the second-highest average score of 9.93.

The average z-nutritional score of stunted toddlers in non-tin mining areas was -1.69, with the lowest z-score of -3.67 and the highest of 1.96. It means there are toddlers with a malnutrition status in non-tin mining areas of as much as 1 percent with a z score of -3.67 to -3.42. As many as 1 percent of malnourished toddlers in this study were included in the dummy variable of malnutrition. The average length of schooling for stunted mothers in non-tin mining areas is 8.2 years, 0.2 percent higher than the average length of education in Bangka Belitung Islands Province. It means that the average stunted mother of toddlers in non-tin mining areas does not complete their education at the junior high school level.

The youngest marriage age of stunted mothers in non-tin mining areas is 13 years, with the highest marriage at 37 years old, while the average marriage is carried out at the age of 19.5 years. Food knowledge of maternal nutrition in non-tin mining areas averaged a score of 58.6, with a score difference of 22.2 from mothers in tin mining areas. If stunted mothers in tin mining areas scored the highest on questions about the meaning of nutritious, healthy food, then mothers in non-tin mining areas scored the highest on milk's calcium content.

The average calculation results in Table 1 only look at the outline of the z score, maternal education, and maternal knowledge. So, the average length of schooling taken by stunting toddler mothers in mining and non-tin mining areas is almost the same as that of the people of Bangka Belitung Islands Province. The average marriage age of stunting toddler mothers of 19 years meets the standards of the Indonesian marriage law, which is at the age of 18 years. However, there is still a marriage age for stunted mothers under 18 years old, both in tin mining areas (28.7 percent) and non-tin mining areas (31 percent).

#### 4.2. Mom's Knowledge of Nutritious Food

Table 3 shows the total nutritional food knowledge scores obtained by mothers under five who are well and poorly nourished in both mine and non-tin mining areas.

**Table 3.** Total Score of Food Nutrition Knowledge in Tin and No Tin Areas

Total Score of Food Nutrition Knowledge	Tin Area				No Tin Area			
	Standard Nutrition		Undernutrition		Standard Nutrition		Undernutrition	
	N	(%)	N	(%)	N	(%)	N	(%)
0	11	11.8%	25	50%	0	0%	25	32.9%
20	9	9.7%	16	32%	1	0.8%	23	30.3%
40	28	30.1%	8	16%	14	11%	19	25%
60	26	28%	1	2%	24	18.9%	5	6.6%
80	13	14%	0	0%	40	31.5%	2	2.6%
100	6	6.45%	0	0%	48	37.8%	2	2.63%
Total	93	100%	50	100%	127	100%	76	100%

Source: processed (2023)

Mothers with standard nutrition and toddlers living in non-tin mining areas got a total score of 100, and 31.5 percent earned an 80. While the highest whole score composition of mothers under five in the mining area was 30.1 percent, getting a total score of 40, and 28.1 percent, reaching a total score of 60, in contrast to the composition of the total knowledge score of mothers with undernourished toddlers in the tin mining area, none got scores of 100 or 80. Fifty percent of the mothers of toddlers got a total score of 0, and 32 percent obtained a total score of 20 from the five questions asked. There was a difference of less than 17.1 percent between the total value of 0 and 1.7 percent of the 20 obtained by malnourished mothers under five in non-tin mining areas. Table 4 will show the composition of the percentage of correct answers of stunted mothers under five in mining and non-tin mining areas based on the nutritional food knowledge question instrument.

**Table 4.** Percentage of Correct Answers from the Nutritious Food Knowledge Instrument

Variable	Calcium in Milk (%)	Protein in Fish (%)	Sweet Potatoes as Carbohydrate Replacement	Iron Content in Chicken/Beef	Meaning of Nutritious Healthy Food
<b>Tin Area's</b>					
Standard Nutrition	63,4	41,94	25,8	44	64,52
Undernutrition	24	2	6	2	36
<b>Not Tin Area's</b>					
Standard Nutrition	95,27	71,7	64,56	85	77,95
Undernutrition	38,15	14,47	6,58	13,16	47,37

Source: processed (2023)

What do the terms "healthy and nutritious food" mean? Mothers of underweight children in mining locations (36%) and non-tin mines (47.36%) are well aware of it. It is inextricably linked to the socialization programs run by the government, affiliated organizations, and the neighborhood health post (posyandu), which continuously impart information on the



0 years education	8	8.6	8	16.0	10	7.9	10	13.2
6 years education	34	36.6	19	38.0	42	33.1	31	40.8
9 years education	23	24.7	13	26.0	30	23.6	19	25.0
12 years education	28	30.1	9	18.0	37	29.1	10	13.2
>15 years education	0	0.0	1	2.0	8	6.3	6	7.9
<b>Total</b>	<b>93</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>127</b>	<b>100</b>	<b>76</b>	<b>100</b>

Source: processed (2023)

Stunted moms, who are standard and undernourished in tin mining districts and other areas and do not attend school due to family economic circumstances, are the first cause. Families that opt to keep their kids in school must save aside a sizable sum of money. These monies are used to pay for transportation, lodging, school supplies, tuition, and other expenses. The second reason is that the mother of a small stunted toddler didn't want to attend school because she was a slacker, preferred to play, skipped class, and believed she could not study. Marriage is the third most popular explanation. At the same time, the third justification for marriage or employment is 23 percent.

Mothers who attended school for 0 to 12 years gave the standard and undernutrition the top two reasons stunted toddlers in the mining area should not continue in school. Those who claimed they did not want to pursue their education because they did not want their questions to be answered by mothers who had six years of formal education. Most moms who had completed between six and twelve years of formal education responded to the question of mothers who had stopped their education to be married.

Only 0.29 percent of the parents of stunted toddlers who attended school for 0 to 16 years reported forgetting lessons about where to get wholesome meals. Only one woman in the mining region with a well-nourished, stunted toddler used reading to provide information on nutritious dietary knowledge.

In the mine area, 31.47 percent of caregivers had received knowledge from other sources, and 16.78 percent had learned it independently. The same is true for moms of children with stunting who receive regular nutrition in non-mining areas, where 23.66% of their caregivers were self-taught. The mother's experience raising her younger siblings and nephews is the basis for the definition of "self-taught."

In non-mining areas, a minor improvement in knowledge is needed regarding parenting by malnourished mothers. Mothers are the primary source of parenting advice, particularly those of toddlers with six to nine years of formal education. Experience-based knowledge is the second-most helpful resource, particularly for moms of toddlers who have completed six years of formal education. The first is taken from the experience of mothers before marriage, according to the pattern of information sources for parenting for appropriate nutrition among moms in the mining area. There is just one mother of a well-nourished toddler with a high school education (12 years of school) in the mining area who reads extensively to learn about parenting (both about food knowledge, feeding techniques, and other topics). Information was read from online media over the phone. Therefore, no mother asserts that the information kids learn in school will help children understand the need to eat wholesome foods. Even if posyandu, midwives, and other health professionals are the source of the stunted moms' knowledge on nutrition.

#### 4.4. The Relationship Between Nutritional Food Knowledge and Maternal Education

Testing of nutritional food knowledge and maternal education if done one by one has the results as shown in Table 6.

**Table 6.** Testing the Effect of Nutritional Food Knowledge and Maternal Education

Variable	Tin Area	Not Tin Area
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Constant	0,783	0,925
FKn	-0,009	-0,11
MEd	-0,012	0,014
Adj R-sq	0,323	0,593

Source: processed (2023)

The relationship between nutritional food knowledge and maternal education in non-tin mining areas was greater than in tin mining areas, namely 59.3 percent and 32.3 percent. The results of the analysis in the tin mining area, namely that every increase in nutritional food knowledge by 1 percent will reduce the nutrition of stunting toddlers by 0.009, while an increase of 1 percent in maternal education will reduce the nutrition of stunting toddlers by 0.012. Meanwhile, in non-tin mining areas, increasing knowledge of nutritious foods by 1 percent will reduce the nutrition of stunting toddlers by 0.11. Maternal education decreased by 1 percent will reduce the nutrition of stunted toddlers by 0.014. The relationship between nutritional food knowledge and maternal education on the nutrition of stunted toddlers depends on the feeding practices given by mothers to children. So the results of this study are the same as those found by Nepal ((Nepal, 2018)2018), (Desmond, 2021; Rashad & Sharaf, 2018).

Then in Table 7, it can be seen the influence of independent variables of food knowledge, nutrition, and maternal education separately.

**Table 7.** Testing the influence of independent variables separately

Variable	Tin Area	Not Tin Area
Constant	0,692	1,009
FKn	-0,009	-0,011
R <sup>2</sup>	0,569	0,765
Constant	0,472	0,507
MEd	-0,16	-0,16
R <sup>2</sup>	0,121	0,132

Source: processed (2023)

The nutrition of toddlers with stunted growth will be impacted by 56.9% of the knowledge of nutrient-rich foods in the tin mining region. The nutrition of children who are stunted is only affected % by maternal education in the tin mining region by 12.1%. Education had a less significant impact than food knowledge, and other factors not included in this study accounted for 31.3 percent of the variance. In non-tin mining regions, maternal nutrition awareness accounted for 76.5 percent of the nutritional deficiency among toddlers, while maternal education accounted for 13.2 percent. Other factors that were not identified affected the remaining 10.3 percent.

Therefore, given that mothers are still teenagers, they need to be empowered with knowledge regarding nourishing foods (Holland & Rammohan, 2019). Empowering may involve raising maternal literacy levels through community and nutrient-dense food knowledge (Hoang et al., 2018; Rukundo et al., 2020). Indeed, the government has never strictly enforced the provision of wholesome food. Posyandu makes the most efforts



possible by offering milk and additional nutritional support to enhance the nutrition of toddlers with stunted growth.

## 5. CONCLUSION

The results found that food knowledge, nutrition, and maternal education affected the nutrition of stunted toddlers by 32.3 percent in tin mining areas and 59.3 percent in non-tin mining areas. While the results of independent variable testing separately show that nutritional food knowledge has a more significant effect on improving the nutrition of stunted toddlers than maternal education, The impact of nutritional food knowledge on improving stunted toddler nutrition in tin mining areas by 56.9 percent and maternal education by 12.1 percent Meanwhile, in non-tin mining areas, 76.5 percent for food knowledge, nutrition on toddler nutrition, stunting, and education were 13.2 percent. Food nutrition knowledge and maternal education must be included in efforts to improve feeding practices. It can be done through empowerment for adolescents, increasing literacy in nutritious food knowledge, building women's empowerment communities, and maximizing posyandu as agents of nutritional improvement. Future research will be better if nutritional food knowledge and maternal education are combined with maternal skills in food differentiation.

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