

## **The Correlation between Feeding Habit Factor and The Incidence of Stunting in Children Under Five Years**

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### **Abstract**

Stunting becomes one of the prior nutritional problems in Bangka Belitung Islands Province, especially West Bangka Regency with a high stunting rate. Feeding habit in children will continuously influence nutrition fulfillment that will directly affect the incidence of stunting. This study aimed at identifying the correlation between feeding habit (beliefs, feeding practices, and children's eating behavior) and the incidence of stunting in children under five years in West Bangka Regency. This was a quantitative study with an across-sectional approach. The total sample was 186 respondents taken using a consecutive sampling technique. The instruments for data collection were height measuring instrument, height-for-age graphic according to WHO 2006 to see the z-score and the under-five children's characteristics questionnaire, a questionnaire of food beliefs, feeding practices questionnaire (CFQ), and child eating behaviour (CEBQ). The analysis in this study used a Chi-Square test. The result showed that there was a significant correlation between child eating behavior and the incidence of stunting in children under five in West Bangka Regency with a p-value of 0.001 ( $p < 0.05$ ) and an OR of 4.89. It indicates that the low eating behavior in children under five has a possibility of 4.89 times higher to experience stunting than the high eating behavior. Also, there is no correlation between mothers' beliefs and feeding practices with the incidence of stunting (p-value of 0.2 & 0.7 respectively). This study is expected to form a peer group for the community of under-five children's families to prevent and improve the children's nutritional status and development optimally.

**Keywords:** Children under five years, feeding habit, stunting.

## **Introduction**

Nutritional status has a strong influence on children's growth and development. The efforts to fulfill good nutritional status are performed from pregnancy until the birth of babies (United Nations Children's Fund, 2017). Complete nutrition during the First 1,000 Days of Life can help brain development, improve proportional growth, and decrease the risk of being infected with diseases (Saavedra & Dattilo, 2016). The inability to fulfill children's nutrition during this period can cause growth failures (Williams & Suchdev, 2017). One of the growth failures is stunting. Stunting becomes a sign of chronic malnutrition in a long-term period (Vonaesch, Tondeur, Breurec, Bata, Nguyen, Frank, ... Vray, 2017). Stunting can affect the cognitive and non-cognitive development that will be felt during the pre-school period until adolescence (Himaz, 2018).

The prevalence of stunting in the world had been decreasing, from 32.6% in 2000 to 22.2% in 2017 (United Nations Children's Fund, 2017). The decline in the incidence rate of stunting is inversely proportional to the prevalence of stunting in Indonesia. The prevalence of stunting in Indonesia in 2010 of 35.6%, increased by 37.2% in 2013 (Kemenkes, 2016). The average prevalence of stunting in children under five in Indonesia within 2005–2017 was 36.4% (Kemenkes, 2018). The prevalence of stunting in Bangka Belitung Islands Province in 2016 was 21.9%, and it increased by 27.3% in 2017. The prevalence of stunting in West Bangka Regency in 2016 was 23.2% and it increased by 25% in 2017. The range of stunting in children under five in Bangka Belitung Islands Province in 2018 was 12.1% and the highest rate was in West Bangka Regency of 18.4% (Dinas Kesehatan Provinsi Kepulauan Bangka Belitung, 2018).

Regarding the high incidence rate of stunting and the impact, it needs a thorough management effort. Dewey (2016) stated that the management of stunting is inextricably linked to the improvement of nutrition fulfillment during the First 1,000 Days of Life. Cumming and Cairncross (2016) explained that one of the factors having

a strong influence on the management of stunting is concerning the habit. The habit in the community is one of the factors affecting how parents feed their children (Batiro, Demissie, Halala, & Anjulo, 2017). There is a habit of early prelacteal feeding practices in newborn babies and early weaning practices in children under five (Illahi & Muniroh, 2016). The habit influencing these feeding practices also directly influences the children's nutrient adequacy and the incidence of stunting (Pokhrel, Nanishi, Poudel, Pokhrel, Tiwari, & Jimba, 2016). There is a gap between this study and other research. Where other research states that cultural factors related to child feeding practices, dietary restrictions such as the belief that colostrum is something that is harmful to babies that occurred in Cameroon is the cause of malnutrition in infants. This happens is also because the culture of feeding is also influenced by the low level of maternal education, which is one of the factors causing malnutrition, because it considers that colostrum is dangerous (Pemunta & Fubah, 2015). Hence, the researcher was interested in knowing the correlation between feeding habit (mothers' beliefs, feeding practices, and children's eating behavior) and the incidence of stunting in children under five in West Bangka Regency.

## **Method**

This was a quantitative study with a cross-sectional design by knowing the correlation between feeding habit and the incidence of stunting in children under five. Feeding habit consisted of three variables, namely mothers' beliefs against food, child feeding practices (restriction, supervision, and pressure), and children's eating behavior. The sample in this study was mothers and their under-five children in West Bangka Regency of 186 respondents collected using a consecutive sampling technique. The inclusion criteria for parents and under-five children in this study were children at the age of 12–59 months, mothers and their under-five children were the residents living in West Bangka Regency, mothers were able to read and write, and the mothers were willing to be the respondents after getting the information related to the

study.

The instruments for data collection in this study were a height measuring instrument to measure the child's height (length), a height-for-age graphic according to WHO 2006 to determine stunting in children under five by seeing the z-score, and questionnaire A to questionnaire D. The questionnaire B, C and D researchers took from previous research which translated in Indonesian language, and had received approval from previous researchers via electronic mail. Furthermore, the researchers tested the validity and reliability by children under five years in Pangkalpinang before conducting the research. Validity test and reliability test were applied to Questionnaire B, C, and D. Questionnaire A was the questionnaire of under-five children's characteristics consisting of under-five children's heights/lengths and their ages. Questionnaire B was a questionnaire of beliefs or traditions against food measured by using a 10-point Likert scale (1 = do not believe and 10 = strongly believe), and it obtained a validity of 0.425-0.933. Questionnaire C was Child Feeding Questionnaire to know how parents feel in feeding their children in terms of responsibility and monitoring measured using a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = mostly, 5 = always), and it obtained a validity of 0.58-0.841. Meanwhile, questionnaire D was Children's Eating Behavior Questionnaire to know the children's eating behavior

measured using a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = mostly, 5 = always), and it obtained a validity of 0.439-0.929. Questionnaire B, C, and D obtained a higher calculated-r (corrected item-total correlation) than the tabulated-r (0.361), so it could be inferred that the statements in the questionnaires were valid.

The result of the reliability test for questionnaire B, C, and D showed the Cronbach's Alpha values for each questionnaire, namely, 0.962 for questionnaire B (mothers' beliefs against food), 0.938 for questionnaire C (Child Feeding Practices), and 0.976 for questionnaire D (Children's Eating Behavior). Hence, these instruments are considered reliable since the value is equal to or more than 0.8. This study was approved by the health research ethics committee of Yogyakarta Aisyiyah University as an effort to protect the welfare of the respondents in the form of an ethical statement No. 393/KEP-UNISA/XII/2018.

The analysis method used in this study was a bivariate analysis. Bivariate analysis was aimed at knowing the correlation between feeding habit (mothers' beliefs, feeding practices, and children's eating behaviour) and the incidence of stunting in children under five. The statistical test was done using a chi-square test.

## Results

**Table 1 The Frequency Distribution based of Feeding Habit in Children (n=186)**

Variables	Frequency (n)	Percentage (%)
1. Mothers' Beliefs in Feeding Practices		
Weak Belief	93	50
Strong Belief	93	50
2. Child Feeding Practices		
Low Control	93	50
High Control	93	50
a. Supervision against Children's Eating Behavior		
Low Control	119	64
High Control	67	36
b. Restrictions against Children's Eating Behavior (Food Taboos)		

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Low Control	98	52.7
High Control	88	47.3
c.Pressure against Children's Eating Behavior		
Low Control	123	66.1
High Control	63	33.9
3.Children's Eating Behavior		
Low	94	50.5
High	92	49.5

**Table 2 The Frequency Distribution of Respondents based on the Incidence of Stunting in West Bangka Regency in 2020 (n=186)**

The Incidence of Stunting	Frequency (n)	Percentage (%)
Stunting	57	30.6
Not Stunting	129	69.4

**Table 3 The Correlation between Feeding Habit and the Incidence of Stunting in West Bangka Regency in 2020 (n=186)**

Variables	Classification of Stunting				p-value	OR (95% CI) <sup>09</sup>
	Stunting		Not Stunting			
	n	%	n	%		
Mothers' Beliefs in Feeding Practices						
Weak Belief	33	35.5	60	64.5	0.2	0.63
Strong Belief	24	25.8	69	74.2		(0.33-1.18)
Child Feeding Practices						
Low Control	27	29	66	71	0.7	1.16
High Control	29	32.3	63	67.7		(0.6-2.17)
Supervision against Children's Eating Behavior						
Low Control	42	35.3	77	64.7	0.09	0.53
High Control	15	20.5	52	77.6		(0.26-1.05)
Restrictions against Children's Eating Behavior (Food Taboos)						
Low Control	25	25.5	73	74.5	0.15	1.67
High Control	32	36.4	56	63.6		(0.89-3.12)
Pressure against Children's Eating Behavior						
Low Control	35	28.5	88	71.5	0.46	1.35
High Control	22	34.9	41	65.1		(0.7-2.58)
Children's Eating Behavior						
Low	56	59.6	38	40.4	0.001	4.89
High	1	1.1	91	98.9		(2.88-6.91)

Based on table 1, it is found that the level of mothers' beliefs in feeding, namely, 50% of them are categorized as weak, and the remaining 50% is categorized as strong. For the level of child feeding practices, it showed that 50% of them were categorized as low control, and the remaining 50% was categorized as high. Besides, the control for mothers' supervision against child feeding practices was mostly categorized as low of 64%; the control of feeding restriction was categorized low of 52.7%, and the control of pressure for child feeding practices was categorized as lows of 66.1%. Besides, children's eating behaviour was mostly categorized as low of 53.2%.

Table 2 shows that, from 186 respondents, it collected 30.6% of children under five experiencing stunting and the percentage of children who did not experience stunting was 69.4%.

Table 3 shows that mothers have weak beliefs in feeding practices to stunted children of 35.5% that is higher than those with strong beliefs of 25.8%. The result of the analysis showed that there was no significant correlation between mothers' beliefs in feeding practices and the incidence of stunting in children under five in West Bangka Regency with a p-value of 0.2 ( $p > 0.05$ ). Table 4.8 shows that the percentage of respondents with a high control in feeding practices to stunted children is 32.3% that is higher than those with a low control in feeding practices of 29%. The result of the analysis showed that there was no significant correlation between child feeding practices and the incidence of stunting in children under five in West Bangka Regency with a p-value 0.7 ( $p > 0.05$ ). Child feeding practices consisted of three domains, namely supervision, restriction, and pressure against child feeding practices. All domains in child feeding practices were not significantly correlated with the incidence of stunting since the p-value was more than 0.05 (0.09, 0.15, and 0.46 consecutively).

Table 3 shows that the percentage of low eating behavior in stunted children of 59.6% is higher than the percentage of high eating behavior of 1.1%. The result of the analysis found that there was a significant correlation between children's eating behavior and the incidence of stunting in children under five

in West Bangka Regency with a p-value of 0.001 ( $p < 0.05$ ). Besides, it obtained an OR (Odds Ratio) of 4.89. It indicates that the low eating behavior in children under five has a possibility of 4.89 times higher to experience stunting than the high eating behavior.

## Discussion

Feeding habit in children consisted of mothers' beliefs about feeding, child feeding practices, and children's eating behavior. This study shows that mothers have weak beliefs in feeding practices to stunted children that is higher than those with strong beliefs. The result of the analysis showed that there was no significant correlation between mothers' beliefs in feeding practices and the incidence of stunting in children under five in West Bangka Regency. Mothers' beliefs of feeding will affect child feeding practices. It is correlated with the habit of mothers who believe the food restrictions or taboos against nutritious food in their families. Most mothers who believe against food taboos and the application of feeding practices are those with weak beliefs. It indicates that only a few people who believe the habit and the application of feeding practices based on habit or mothers' beliefs is rarely performed (Ma, 2015).

Feeding habit influenced dietary patterns in Munaethnic, however, it showed no significant correlation with the incidence of stunting. On the other hand, the cultural factors, such as prelacteal feeding practices (feeding infants before breast milk "comes out"), as the most influential factors for the incidence of stunting (Nurbiah, Rosidi, & Margawati, 2019). Giving prelacteal food is not recommended for infants since it will be one of the factors for the failure in feeding exclusive breast milk while exclusive breastfeeding to infants strongly has a role in reducing the incidence of stunting.

Another study states that stunting is a problem of malnutrition that still occurs in West Java Province. The results showed that 10.6% of children under five years had malnutrition status. This is also related to factors that trigger stunting, including the habit of parents giving breast milk together

with complementary foods given to babies before the age of 6 months (Rahayuwati, Nurhidayah, Hidayati, Hendrawati, Agustina, & Ekawati, 2019).

One of the habits for other child feeding practices was children's eating behavior, for both healthy and unhealthy food, according to mothers' beliefs. The high amount of food commonly sold by sellers in society, at both schools and other places, such as snacks and fast food, attracts children to eat unhealthy food. A study conducted by Rivami (2017) mentioned that children who consumed unhealthy food, such as snacks, relatively experienced low energy or calorie, while children with high consumption of unhealthy food tended to have a significant effect on experiencing stunting.

Another study mentioned that a mother's beliefs against a certain habit became the prior stimulant for the mother's eating behavior and children's eating behavior to be the factors causing malnutrition in children. Nevertheless, some of them were unwilling to apply the knowledge of tradition when preparing food (especially, traditional food) to feed their children (Chakona, 2020).

Stunting is a condition where chronic malnutrition occurred in infants and children. This study shows the child feeding practices consisted of three domains, namely supervision, restriction, and pressure against child feeding practices. All domains in child feeding practices were not significantly correlated with the incidence of stunting. Another study mentioned that the habit-related factors about child feeding practices and food taboos, such as the representation of colostrum as dangerous for infants happened in Cameroon, became the factors causing infant malnutrition. Feeding habit is also affected by mothers' low education, and it becomes one of the factors causing malnutrition. Consequently, this study suggested the availability of women and health professionals empowerment programs to understand local cultural beliefs, practices, and sentiments before initiating the change efforts in feeding practices since cultural beliefs and feeding practices support the therapeutic recourse to overcome malnutrition (Pemunta & Fubah, 2015).

This study shows that the percentage of

low eating behavior in stunted children is higher than the percentage of high eating behavior. The result of the analysis found that there was a significant correlation between children's eating behavior and the incidence of stunting in children under five in West Bangka Regency. It indicates that the low eating behavior in children under five has a possibility higher to experience stunting than the high eating behavior. Another study that child feeding practices illustrated how parents supervise, give pressures, and restrictions in child feeding (Ek, Sorjonen, Eli, Lindberg, Nyman, Marcus, and Nowicka, 2016) explained that child feeding practices were the parents' method to control and regulate child feeding. This child feeding practice was aimed to know the parents' beliefs, attitudes, and the application of feeding practices toward their children (Birch, Fisher, Grimm, Markey, Sawyer, & Johnson, 2001).

Child feeding practice is one of the factors affecting children's nutrition. One of the causes is that children's food intake at pre-school age strongly depends on feeding practices by their parents. It was in line with a study by Birch, Fisher, Grimm-thomas, Markey, Sawyer, & Johnson (2001) that parents having infants and preschoolers played an important role in deciding which food consumed by their children, responding to the children's desire to eat, and deciding the sufficient amount of food for their children. In this study, child feeding practices were mostly low. It shows that the efforts in controlling and regulating children's food intake are also low. Birch, Fisher, Grimm-thomas, Markey, Sawyer, & Johnson (2001) explained that if the feeding practices done by parents were low, the children's food intake was also low. It can be inferred that low child feeding practices will influence their nutrient adequacy.

Children's eating behavior consisted of two domains, namely, children's refusal to eat and children's acceptance to eat. In this study, children's eating behavior was mostly low, and there was a significant correlation between children's eating behavior and the incidence of stunting. The proportion of children refusing to eat food is higher than to accept food. This affects the inadequate nutritional intake for children so that they are at risk of stunting, because the nutritional

needs for growth and development are insufficient. It is in line with a study by Julianti and Elni (2020) stating that there was a significant correlation between children's eating behavior and the incidence of stunting in children in Pangkalpinang city. Children's eating behavior might influence food intake that would influence children's nutrition, such as stunting (Biondi, 2007).

Birch, Fisher, Grimm-thomas, Markey, Sawyer, and Johnson (2001) explained that preschoolers had already had a desire to eat food they like or dislike. It confirms that the children's desire to choose food will allow the possibility of children to have eating behavior that is not appropriate with the efforts to fulfill the children's optimum nutrition. On the other hand, parents should have a good ability to control the feeding to their children. It is in line with a study by Birch, Fisher, Grimm-thomas, Markey, Sawyer, and Johnson (2001) describing that child feeding practices strongly correlated with children's eating behavior. Another research finding showed that initiating improperly feed weaning food positively and directly correlated with stunting in children (Abeway, Gebremichael, Murugan, & Assefa, 2018).

The failure in exclusive breastfeeding due to prelacteal food is shown in a study by Rohmin, dan Malahayati (2015) stating that feeding practices with prelacteal food are one of the factors for the failure in breastfeeding, whereby it can be caused by mothers' behavior and family tradition. Another study also mentioned that habit influences a mother's control against feeding practices. A research finding mentioned that mothers' choices toward food for their children were strongly influenced by a certain cultural norm. Habit believed by a mother directly influences the children's nutrition intake and the mother's attitude and behavior control in child feeding practices (Baloch, Jomezai, & Ismail, 2020).

The incidence of stunting is besides being influenced by low eating habits in children, is also caused by the nutritional status of the mother during pregnancy which affects the risk factors for stunting in children. Inadequate supply of nutrients to pregnant women impairs fetal growth. This shows that the mother's eating habits during pregnancy, which is a source of nutrition for the fetus, will

affect the mother's nutritional status during pregnancy and are associated with child stunting (Fitriani, Setya, & Nurdiana, 2020). This means that the incidence of stunting is not only caused by the child's eating habits, but also influenced by the mother's nutritional status which is obtained from the habits and mother's food intake.

## Conclusion

The prevalence of stunting in this study was 30.6%. Low eating behavior occurred in stunted children is more than high eating behavior. The result of the analysis finds that there is a significant correlation between children's eating behavior and the incidence of stunting in children under five in West Bangka Regency. The results of this study is expected the formation of a peer group for family communities with stunting toddlers in overcoming problems that arise due to stunting so that the incidence of stunting decreases and increases the nutritional status.

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