

Original Research Article

Non-exclusive breastfeeding as the risk factor of stunting among Indonesian toddler in coastal areas

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Received: 15 November 2022

Accepted: 11 January 2023

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ABSTRACT

Background: Indonesia is ranked fifth in the world for the problem of stunting. Stunting in children under the age of five requires special attention, due to its inhibiting effect on children's physical and mental development. Stunting has been associated with several factors, one of which is non-exclusive breastfeeding. This study aimed to analyse non-exclusive breastfeeding as the risk factor of stunting among Indonesian toddler in coastal area.

Methods: This study was an observational analytic study with cross sectional approach, which was carried out for 6 months, from March to September 2022. The sample population was children aged 36-59 months, who lived with their mothers in the coastal areas of Bitung city, north Sulawesi province. Sampling was done by purposive sampling to get 120 samples. Data collection using questionnaires by interview, secondary data in the maternal and child health (MCH) book, and anthropometric measurements using height for age index, for indicated stunting.

Results: The results showed the history of exclusive breastfeeding (POR=2.630), energy intake (POR=2.492) and protein intake (POR=1.857) as the risk factors of stunting. It showed that in the group of children who were not exclusively breastfed, have less energy and protein intake, and poor parenting, have a higher risk of stunting compared to children from other groups.

Conclusions: Stunting among toddler can be prevent by controlling many factors, such as guarantees that every mother provides exclusive breastfeeding, and maintains adequate energy and protein intake during the growth period, especially in the first 1000 days of a child's life.

Keywords: Coastal area, Exclusive breastfeeding, Stunting

INTRODUCTION

The current trend of nutrition problems in Indonesia is increasingly complex, this problem includes undernutrition and overnutrition. the government's focus in accelerating the improvement of community nutrition is currently with the first 1000 days of life. One of the things that is expected to be addressed through this step is the problem of stunting.¹ According to WHO, children with a height for age less than -2SD are categorized as stunted and less than -3SD are severely stunted.² Malnutrition in children can have negative impacts such as poor cognitive levels, vulnerability to disease, less productive which will hamper economic growth. The

impact is not only on children but also on the country as a whole.³ Therefore, more attention to overcoming this kind of nutritional problems is needed nowadays.

Data form United Nations International Children Emergency Fund (UNICEF) in 2017 showed there are 92 million (13.5%) under-five children who were underweight, 151 million (22%) stunting and 51 million (7.5%) wasting. Basic health research 2018 showed an improvement in nutritional status of under-five from 2013 to 2018. Underweight prevalence has decreased from 19.6% to 17.7%, stunting decreased from 37.2% to 30.8%, and the prevalence of wasting decreased from 12.1% to 10.2%.⁴ Furthermore, the latest survey in 2021

showed even better results, there was a decrease in the stunting rate in children to 21.8%.⁵ However, this numbers remain in the high category by limit threshold for prevalence of malnutrition as a problem public health established by WHO.⁶ Bitung city, which is a coastal area in north Sulawesi, according to 2021 survey data, there were 22.1% stunted children, which is higher than the average for north Sulawesi Province.⁶

Factors leading to stunting have been explained by UNICEF and has used globally. First, the direct causes are food intake (including breastfeeding) or infection disease, or a combination of both. Second, the causative factor or indirectly factors, such as the availability of food at the family level, parenting, and health services and the hygiene also sanitation (environmental factor). Third, the main problem is poverty, family characteristics, and sociodemographic. Fourth, the basic problem, such as political and economic crisis.⁷ Exclusive breastfeeding is one of the important factors to be considered during the growth and development of children. Children who are not exclusively breastfed from 0-6 months and who are given inappropriate complementary foods are at risk of stunting and sickness due to infectious diseases.^{8,9} Nutritional problems that occur at all levels of society are also felt by coastal communities.

Coastal communities are a group of people who also receive attention in the health sector. The lives of people in coastal areas generally depend on marine products, making uncertain income to support their own families and only enough to meet their needs in a very short period of time. Low income and uneven education affect maternal parenting in this case feeding practices and child care practices that are not good, and also in coastal areas many children's nutritional needs are not met and are vulnerable to disease.¹⁰ Bitung city as one of the coastal areas, makes it inseparable from health problems, especially nutrition problems in coastal areas. Based on the data above, it is necessary to conduct research that aims to analyse the association breastfeeding history with stunting among Indonesian toddler in coastal area.

METHODS

Study setting

This was an observational study with cross sectional study design. The study was conducted on April-October 2022 in Bitung city, north Sulawesi province, Indonesia. The population in this study were all children aged 36-59 months who live in the working area of Girian Weru Public Health Center. All participants involved in this study were told about the purpose of the study, and the confidentiality of the data. Participation of subjects was entirely voluntary, and before been recruited into the study, mother of the toddler has to sign the informed consent. In cases where the respondent is illiterate, we ask an educated person from the community to read the consent form and explain it to the family. Then we got the

respondent's signatures. In those cases, people who read the consent form also sign as witnesses.

Sample size and sampling technique

The subjects in this study were children aged 36-59 months and their parents and met the inclusion and exclusion criteria, taken by purposive sampling and total of subjects were 120 toddlers.

The inclusion criteria were children aged 36-59 months with their parents who lived for at least 6 months in the working area of Girian Weru Public Health Center, Bitung city. If there was more than one child in a household aged 36-59 months, the youngest child was selected. Then, willing to participate in the study as evidenced by the completion of informed consent. The exclusion criteria were the child was in a sick condition and was treated at an existing health facility, and then the child had a disability that interferes with the interpretation of anthropometric examinations.

Data collection

After obtaining informed consent, the trained interviewer interviewed 120 mothers of 36-59 months children using questionnaires by paying house to house visit. Data on respondents' characteristics, parenting patterns, and breastfeeding history were obtained using questionnaires, while dietary intake was collected using 24 hours food recall. Furthermore, anthropometric measurements were taken to obtain data on the height of the study subjects. In order to assess nutritional status parameters using anthropometry for toddler (height-for-age) as the WHO guidelines on anthropometry.¹¹

Statistical analysis

The data was analysed by using statistical software package. Stunting was defined using WHO Child Growth Standards for 'height-for-age'. 'Height-for-age' values below 2 standard deviations were considered as stunted. For nutritional analysis Anthro 2005 software was used.¹² Furthermore, intake data was defined by using Nutrisurvey. Data were analysed quantitatively by univariate, and bivariate. Statistical test using Chi-square and Fisher Exact with confidence interval (CI) 95%.

RESULTS

Subject characteristics

The Table 1 shows that the highest percentage of respondents' education was high, totaling 108 respondents (90%). Based on the sex of the child, the percentage of male and female gender has the same amount, namely 50%. Exclusive breastfeeding with the highest percentage of respondents who did not provide exclusive breastfeeding with 68 respondents (56.7%), energy intake with adequate category had a high

percentage of 66.7%, and protein intake with a high percentage was in the adequate category, namely 80%. Care practices carried out by respondents were in the good category with a percentage of 93.3% and feeding practices were also in the good category with a percentage of 86.7%. Maternal knowledge about balanced nutrition with the highest percentage in the good category at 96.7%.

Association of breastfeeding history with stunting in toddler

Based on the data shown in Table 2, the history of exclusive breastfeeding (POR=2.630), energy intake (POR=2.492) and protein intake (POR=1.857) were the risk factor of stunting among Indonesian toddler. They who were not exclusively breastfed, had less energy and protein intake were at higher risk of stunting compared to children from other groups. Descriptively also shows that in the group of stunted children, the largest proportion was in the category of non-exclusive breastfeeding (32%).

Table 1: Participant's characteristics.

Variables	Categories	N	%
Mother's education	Low	12	10
	High	108	90
Sex	Male	60	50
	Female	60	50
Breastfeeding History	Exclusive	52	43.3
	Non-exclusive	68	56.7
Energy intake	Adequate	80	66.7
	Less	40	33.3
Protein intake	Adequate	96	80
	Less	24	20
Child care practices	Good	112	93.3
	Poor	8	6.7
Child feeding practices	Good	104	86.7
	Poor	16	13.3
Mother's knowledge of balanced nutrition	Good	116	96.7
	Poor	4	3.3

Table 2: Association of mother's education, sex, history of breastfeeding, dietary intake, parenting practice and mother's knowledge of balanced nutrition with stunting.

Variables		Nutritional Status				Total		POR (95% CI)
		Stunting		Normal				
		N	%	N	%	N	%	
Mother's education	Low	2	17	10	83	12	10	0.571
	High	28	26	80	74	108	90	0.061-5.323
Sex	Male	12	20	48	80	60	50	0.583
	Female	18	30	42	70	60	50	0.178-1.913
Breastfeeding history	Non- exclusive	22	32	46	68	68	57	2.630
	Exclusive	8	15	44	85	44	37	0.728-9.508
Energy intake	Less	6	15	34	85	40	33	2.429
	Adequate	24	30	56	70	80	67	0.598-9.862
Protein intake	Less	4	17	20	83	24	20	1.857
	Adequate	26	27	70	73	96	80	0.358-9.634
Child care practices	Poor	2	25	6	75	8	7	1.000
	Good	28	25	84	75	112	93	0.096-10.408
Child feeding practices	Poor	2	12	14	88	16	13	2.579
	Good	28	27	76	73	104	87	0.291-22.884
Mother's knowledge of balanced nutrition	Poor	0	0	4	100	4	3	0.741
	Good	30	26	86	74	116	97	0.637-0.863

DISCUSSION

Based on basic health research data in 2018, the number the prevalence of stunting was 30.8%, newest data from Indonesia Nutrition Status Survey showed an improvement in nutrition, with the stunting rate dropping to 21.8%.^{4,5} If number of this prevalence is compared with the stunting prevalence Bitung city according to this study, it is seen that stunting in this city is higher, which is 25% from total 120 subjects. According to the

definition of health problems from the WHO, this number is in the high category.⁶

The first two years of a child's life are critical period of growth, because it becomes the most sensitive period of failure growth (growth faltering), and is the right time to do recovery or catch up on delays when there are disturbances development.¹³ In children under 2-3 years, low height-for-age measures represent an ongoing process of growth failure, but for those >3 years it is clear that the child is failing to thrive.¹⁴

Functionally, malnutrition is divided into acute and chronic malnutrition. Acute malnutrition characterized by wasting, and chronic malnutrition characterized by stunting.¹³ The most significant growth and development period starts from the womb until the age of 24 months, so adequate food intake is needed during this period to prevent various malnutrition problems in the future.¹⁴ This indicates that stunting is a continuous process that occurs since the child was in the mother's womb and then continues until the first 1000 days of life. The results of this study indicate that energy intake (POR=2.429) and protein intake (POR=1.857) are considered as the risk factors for stunting. This result means that the group of toddlers whose energy consumption is less has a 2.492 times higher risk of stunting compared to those whose energy consumption is adequate. Meanwhile, for the group of children whose protein consumption was less, the risk of stunting was 1.857 times higher than the group from the adequate category. A study of 873 children in Ethiopia showed that a lack of protein intake, both in quality and quantity, has a significant relationship with stunting. Intakes of tryptophan, protein, and energy, as well as serum levels of tryptophan and insulin-like growth factor 1 (IGF-1) in serum, are positively correlated with the linear growth of children.¹⁵

The result of this study was in line with research conducted in Gambir and Sawah Besar sub-districts, Central Jakarta on 121 children aged 25-30 months where in the group of children with less energy and protein intake, the risk of stunting was higher than the group with adequate intake.¹⁶ Several other studies also reported similar findings that there was significant relationship between energy intake and stunting.^{17,18} Energy is one of the factors in growth, if chronic energy deficiency for a long period of time and can lead to impaired linear growth.¹⁹ One of the sources of energy for toddlers is breast milk. Breast milk that is not given exclusively can be one of the causes of health problems in children. Breast milk is the best food for babies, exclusive breastfeeding is given for 6 months without any additional food, and can be continued until the baby is 2 years old. Breast milk can reduce infant mortality. The nutrient-rich content of breast milk can minimize the risk of infants developing infectious diseases, infectious diseases can increase malnutrition, so that if it occurs in the long term it can interfere with the absorption of nutrients, so that it can increase the risk of stunting in children under five.²⁰

The results showed that children from the non-exclusively breastfed group had 2,630 higher risk of stunting compared to the exclusively breastfed group. The results of the study are in line with the results of research from several cities in Indonesia, namely Pekanbaru, Surakarta and Banda Aceh, where the results of these studies also show the relationship between exclusive breastfeeding and stunting in children.²⁰⁻²² Breast milk was one of the factors that affect nutritional status. Mothers with optimal nutritional status and provide exclusive breastfeeding to

their children, the nutritional needs of children will be met and are very useful for optimizing their growth and development.²³

In ensuring the health status of children, in this case the optimal nutritional status of children is certainly inseparable from good parenting practices. Good child care practices and feeding practices can support children to grow optimally. The results showed that good child care practices (POR=1.000) and good feeding practices (POR=2.579) are factors that have contributed to the incidence of stunting in under-fives. The same results as this study were shown by a study that conducted in Gorontalo regency on 118 under-fives (59 toddlers in the case group and the other 59 as a control group) showed that under-fives who were raised with poor parenting had 3.831 times higher risk of stunting compared to under-fives in the good parenting group.²⁴

CONCLUSION

The conclusions of this research are the prevalence of stunting (25%) in children in Bitung city has been classified as high based on the threshold prevalence of malnutrition as a health problem set by WHO, also study result showed significant association of dietary intake, breastfeeding history and parenting care with stunting among toddler. However, if there is no further intervention, the prevalence is likely to increase and be high. There needs to be more socialization program regarding the prevention of stunting through improving knowledge of adequate intake and exclusive breastfeeding, and emphasizing the importance of proper education for mothers and mothers-to-be.

ACKNOWLEDGEMENTS

We gratefully acknowledge to Universitas Sam Ratulangi's grant funding. We also thank to all our enumerators and participants of this study. We disclosed receipt of the following financial support for the research, authorship, and/or publication of this article.

Funding: Universitas Sam Ratulangi's grant

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Kapantow NH, Sanggelorang Y, Adam H. Non-exclusive breastfeeding as the risk factor of stunting among Indonesian toddler in coastal areas. *Int J Community Med Public Health* 2023;10:581-5.