Original Research Article

THE EFFECT OF SUITABILITY OF PROVIDING COMPLEMENTARY FOODS ON THE INSIDENCE OF STUNTING AND ANEMIA IN TODDLERS

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Abstract

Background: Stunting is a chronic nutritional problem in toddlers characterized by height that is not appropriate for their age. Children who are stunted will be at risk for disease and when growing up are at risk for degenerative diseases. The effect of stunting does not only affect health but also affects children's intelligence. Apart from stunting, anemia in children is also a health problem in developing countries (Ministry of Health, 2018).

Objectives: The purpose of this study was to analyze the accuracy of giving complementary foods to the incidence of stunting and anemia in toddlers.

Methods: The type of research used is analytical survey with a retrospective design. The population in this study are all toddlers at Porong Public Health Center who meet the inclusion criteria. The sample of this research is taken by cluster random sampling technique of 99 respondents. Data were collected using a questionnaire on complementary complementary feeding practices based on WHO (2003) regarding the principles of providing complementary foods. The reliability test of this questionnaire obtained a Cronbach's Alpha value 0.723. Stunting Variables determined by calculating the Z-Score PB/U and Anemia variable was determined based on the measurement of the hb level Descriptive statistics and Chi-square Test with significance value less than 0.05 were used to analyzed data.

Results: The results of this study are that there is an effect of the suitability of complementary feeding on the incidence of stunting and anemia, with a (ρ value = 0.001) for the variable incidence of stunting and (ρ value = 0.021) for the variable incidence of anemia.

Conclusion: Socialization on complementary complementary foods must be carried out frequently to avoid stunting and anemia so that the government's target to reduce stunting can be achieved.

Keywords: Complementary Foods, Stunting, Anemia, Toddlers

INTRODUCTION

Stunting is a chronic nutritional problem in toddlers characterized by height that is not appropriate for their age. Children who are stunted will be at risk for disease and when growing up are at risk for degenerative

diseases. The effect of stunting does not only affect health but also affects children's intelligence. Apart from stunting, anemia in children is also a health problem in developing countries. Anemia is also a major nutritional problem in Indonesia, especially iron deficiency anemia which is often found in children.

The prevalence of stunting among children under five in the world today is really concerning. In 2017, 150.8 million children under five in the world were stunted, or around 22.2%. In 2017, more than half of stunting children in the world came from Asia (55%) while more than a third (39%) came from Africa. Of the 83.6 million stunting children under five in Asia, the highest proportion came from South Asia (58.7%) and the lowest proportion was in Central Asia (0.9%). Indonesia is the third country with the highest prevalence in the Southeast Asia / South East Asia Regional (SEAR) region. The average prevalence of stunting under five in Indonesia in 2005-2017 was 36.4%.

Based on Nutritional Status Monitoring data for the last three years, stunting has the highest prevalence compared to other nutritional problems such as malnutrition, thin, and obesity. The prevalence of short children under five has increased from 2016, namely 27.5% to 29.6% in 2017. This condition is influenced by various factors, one of which is the provision of complementary foods (MP ASI) after the child is 6 months old.

Most types of malnutrition in children under five in Indonesia are stunted and severely stunted. Branca and Ferari7 associated linear growth retardation with deficiencies in energy, protein and micronutrients including zinc, potassium, sodium and thiamine.

Short stature due to malnutrition is called stunting, while those caused by genetic or familial factors are called short stature. The data in Indonesia has not yet distinguished between the two causes of this short stature. The high prevalence of stunting among children under five indicates that this population has been undernourished for a long time. This is an indication of complex causes, including socio-economic factors that affect the nutritional value of food intake over a long period of time and the prevalence of morbidity.

Nutrient deficiency or excess in the 0-2 year age period is generally irreversible and will impact both short and long term quality of life. Stunting will affect long-term brain development which in turn has an impact on cognitive abilities and educational achievement.

Stunting is one of the targets of the Sustainable Development Goals (SDGs) which is included in the second sustainable development goal, namely eliminating hunger and all forms of malnutrition by 2030 and achieving food security. The target set is to reduce the stunting rate to 40% by 2015. To achieve this, the government has set stunting as one of the priority programs.

Based on the above background, the purpose of this study was to analyze the accuracy of giving complementary foods to the incidence of stunting and anemia in toddlers.

METHODS
Study Design

The type of research used is analytical survey, which tries to explore how and why anemia and stunting occur. This study was conducted with a retrospective approach where the incidence of anemia and stunting was identified at this time, then the accuracy of complementary breastfeeding was identified or occurred in the past.

Setting

The research was conducted at Integrated health care center in the working area of Porong Public Health Center for 10 months. Data collection was carried out in July - August 2020.

Research Subject

The population in this study are all toddlers at Porong Public Health Center, Sidoarjo who meet the inclusion criteria: 1) infant 1 - 3 years old, 2) babies visiting the

Integrated Health Care Center in the Porong Public Health Center, 3) Willing to be a respondent.

The sample of this research is taken by cluster random sampling technique of 99 respondents.

Instruments

Data were collected using a questionnaire on complementary complementary feeding practices based on WHO (2003) regarding the principles of providing complementary foods which include the timing of the first complementary complementary foods, variations of complementary ingredients, frequency provision of complementary foods, and nutritional intake were obtained from a 3x24 hour food recall questionnaire (Nurkomala, 2017). The reliability test of this questionnaire obtained a Cronbach's Alpha value 0.723, which means a reliable questionnaire. Stunting Variables determined by calculating the Z-Score PB/U <-2 SD, while not stunting was determined by PB/U -2 to +2 SD. Anemia variable was determined based on the measurement of the hb level <11 gr/dl, while those who were not anemic were determined by the hb level ≥ 11 gr/dl.

Data analysis

Data obtained directly / primary data, data collection is done by filling out observation sheets and recap questionnaires then analyzed using univariate analysis by describing the frequency distribution, bivariate analysis using the chi-square test.

Ethical Consideration

This research passed the ethical test by the Health Research Ethics Commission of the Nahdlatul Ulama University Surabaya. Researchers get a certificate of ethical acceptance after going through several review processes with number 045/EC/KEPK/2020.

RESULTS

Characteristics of Respondents by Gender

Table 1 Distribution of the Frequency by Gender of Respondents at Porong Public Health Center on July - August 2020.

Gender	Frequency (f)	Percentage (%)
Male	30	30.3
Female	69	60.7
Total	99	100.0

Sources: Primary Data of Questionnaire, 2020.

Based on Table 1, it showed that the characteristics of the respondents most respondents (60.7%) were female.

Characteristics of Respondents by Parents' Job

The result of this study (table 2) found that most respondent had no job, as many as 51 respondents (51.5%).

Table 2 Distribution of the Frequency by Parents' Job of Respondents at Porong Public Health Center on July - August 2020.

Job	Frequency (f)	Percentage (%)
Have a job	48	48.5
No job	51	51.5
Total	99	100.0

Sources: Primary Data of Questionnaire, 2020.

Characteristics of Respondents by the Suitability of Providing Complementary Foods

Table 3 Distribution of the Frequency by the Suitability of Providing Complementary Foods of Respondents at Porong Public Health Center on July - August 2020.

Providing Complementary Foods	Frequency (f)	Percentage (%)
Correct	51	51.5
Incorrect	48	48.5
Total	99	100.0

Sources: Primary Data of Questionnaire, 2020.

Based on Table 3, it showed that most respondents (51,5%) were correct for the suitability of providing complementary foods.

Characteristics of Respondents by Incidence of Stunting

Table 4 Distribution of the Frequency of Respondents by Incidence of Stunting at Porong Public Health Center on July - August 2020.

Incidence of Stunting	Frequency (f)	Percentage (%)
Stunting	30	30.3
Not stunting	69	60.7
Total	99	100.0

Sources: Primary Data of Questionnaire, 2020.

Based on Table 4, it showed that most respondents were not stunting, as many as 69 respondents (60.7%).

Characteristics of Respondents by Incidence of Anemia

According the results of this study on the table 5, it found that most of the respondents did not experience anemia accidents, as many as 84 respondents (84.8%).

Table 5 Distribution of the Frequency of Respondents by Incidence of Anemia at Porong Public Health Center on July - August 2020.

Incidence of Anemia	Frequency (f)	Percentage (%)
Anemia	15	15.2
Not anemia	84	84.8
Total	99	100.0

Sources: Primary Data of Questionnaire, 2020.

Analysis of the Accuracy of Giving Complementary Foods on the Incidence of Stunting and Anemia in Toddlers using Chi Square Test

Table 6 Analysis of the Accuracy of Giving Complementary Foods on the Incidence of Stunting and Anemia in Toddler using Chi Square Test at Porong Public Health Center on July - August 2020.

		Incidence of Stunting				Total		Incidence of Anemia				Total	
		Stunting		Not Stunting				Anemia		Not Anemia			
		f	%	f	%	f	%	f	%	f	%	f	%
Providing Complementary Foods	**Correct**	6	6.1	39	39.4	45	45.5	6	6.1	39	39.4	45	45.5
	Incorrect	24	24.2	30	30.3	54	54.5	18	18.2	36	36.3	54	54.5
Total		30	30.3	69	69.7	99	100.0	24	24.3	75	75.7	99	100.0
		ρ value = 0.001; r = 11.249						ρ value = 0.021; r = 5.346					

Sources: Primary Data of Questionnaire, 2020.

Based on Table 6, the chi square statistical test results obtained on the variable of the accuracy of providing complementary foods to the incidence of stunting (ρ value = 0.001 < 0.05), which means that there is an effect of the accuracy of providing complementary foods on the incidence of stunting in toddlers. Whereas in the variable the accuracy of giving complementary foods to the incidence of anemia obtained results (ρ value = 0.021 < 0.05), which means that there is an effect of the accuracy of complementary feeding on the incidence of anemia.

DISCUSSION

The Accuracy of Giving Complementary Foods

Based on the results of the research conducted, it was found that most of the respondents (54.5%) did not give MPASI appropriately. This can be influenced by several factors such as mother's knowledge, and mother's job. Giving complementary solids that is not appropriate includes the initial time of giving complementary foods, the form of complementary foods, frequency, and portions given to toddlers. The initial time of giving complementary foods <6 months is not recommended because the baby's digestive process is still immature. The form of complementary foods given also affects the nutrients the baby will get. The frequency and portion as well as the procedure for serving complementary foods are also a measure of the accuracy of providing complementary foods.

Global recommendations for proper feeding of infants and children are early initiation of breastfeeding (IMD) within one hour of delivery, exclusive breastfeeding for six months, and providing complementary foods according to needs from six months of age with continued breastfeeding until two years. or more (WHO, 2003).

Good and correct practice of giving complementary foods includes the variety and frequency of minimal complementary feeding. The frequency of complementary foods is the

proportion of children who receive the recommended minimum complementary foods (Hendricks, 2005). Without the frequency of eating and various complementary ingredients, babies and children are at risk of experiencing nutritional deficiencies, leading to stunting which in turn increases morbidity and mortality. The WHO recommended consumption frequency for the 9-24 month age group is 3-4 times / day (WHO, 2010).

Effect of Accuracy of Giving Complementary Foods on the Incidence of Stunting

Based on the research data tested using the Chi Square test, it can be concluded that there is an effect of the accuracy of providing complementary foods on the incidence of stunting with a ρ value of 0.001 (ρ <0.05). This is in line with several previous studies, such as in Hanum's research (2019) which states that the more appropriate the practice of giving complementary foods to a toddler, the lower the incidence of stunting. The study also revealed that giving the right complementary foods had 1,568 times the chance of not being stunted than toddlers who got the right complementary foods.

Another study conducted by Prihutama (2018) states that there is a relationship between timely provision of complementary foods and the incidence of stunting in the Rowosari Public Health Center Semarang. This is also in line with the theory presented by WHO (2010) that the digestive tract of infants at 6 months of age is ready to receive additional food. Early provision of complementary foods before 6 months or more than 6 months can cause babies to become malnourished and experience developmental delays (WHO, 2010). Research conducted by Widyaswari (2011) also states that babies who are given complementary foods at the age of 6 months have better nutritional status when compared to those who receive complementary foods for less than 6 months.

However, it is different from the research conducted by Dwitama (2018) which states that there is no relationship between the practice of giving complementary foods and the incidence

of stunting in the Jatinangor area. Dwitama also revealed that what is not related to the incidence of stunting is the type of solids and the texture of solids. MPASI has many variations, children will choose foods that can be put into the mouth easily and tastefully, so they tend not to have a relationship with the incidence of stunting.

Effect of Accuracy of Giving Complementary Foods on the Incidence of Anemia

Based on the research data tested using the Chi Square test, it can be concluded that there is no effect of the accuracy of providing complementary foods on the incidence of anemia in toddlers in the Porong Public Health Center area with a ρ value of 0.021 (ρ > 0.05). This is supported by research conducted by Agustin (2018) which states that there is a significant relationship between the accuracy of providing complementary foods and the incidence of anemia in the Tasikmadu Public Health Center area. Researchers revealed that toddlers who do not get various complementary foods will affect their iron needs which cannot be obtained from breast milk. Agustin also mentioned that the incidence of anemia in children with complementary foods at the age of 6 months is lower than those who are not on time. Anemia can also be affected by inappropriate complementary feeding in quality and quantity.

IDAI also stated that the incidence of anemia in toddlers is mostly due to the provision of complementary foods with insufficient iron levels, as well as the processing of complementary foods, causing the iron content in food to be lost due to improper processing. In addition, the iron content that is not found in breast milk from the age of 6 months can also cause anemia, therefore toddlers need iron supplementation from an early age (IDAI, 2012).

CONCLUSION

Based on the results of the above research, it can be concluded that there is an effect of the accuracy of giving complementary foods on the incidence of stunting and anemia.

SUGGESTIONS

Researchers hope that health workers in Public Health Centers will be more active in disseminating information to the community, especially mothers who have toddlers, about the practice of giving complementary foods so that the incidence of stunting and anemia in children can meet the government's target.

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DECLARATION OF CONFLICTING INTEREST

At the time of conducting the research, researchers encountered obstacles because it coincided with the Covid-19 pandemic so that the implementation of the study had to be delayed.

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AUTHOR CONTRIBUTION

Lailatul Khusnul Rizki: Conduct research and compile research articles.

Esty Puji Rahayu: Conduct research.

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