

Description of Complementary Feeding Practice and Nutritional Study of Stunted Children (6 – 24 months) on Wilangan Health Center, Nganjuk District

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ABSTRACT

The prevalence of stunting among toddlers in Nganjuk District is >20%, and it is a nutritional problem in the community. The aim of this research is to determine the description of complementary feeding practices for stunted toddlers (aged 6-24 months) in the Wilangan Sub-district. The research design employed is cross-sectional, where independent and dependent variables are collected at relatively the same time. The study was conducted from November 2022 to May 2023. This is a descriptive study with 28 stunting children as samples using the total sampling method. Data collection of complementary feeding practices was conducted through interviews, while nutritional status by measured height. The study showed less than 50% of infants received exclusive breastfeeding and timely introduction of complementary feeding at 6 months, but more than 60% did not follow the proper principles of complementary feeding between ages 12 - 24 months. As the age increases the inaccuracy of complementary feeding is getting bigger and this affects the occurrence of stunting children. Therefore, it is recommended that mothers of toddlers more active in increasing their knowledge about providing appropriate complementary feeding for their children according to their age stages, with the assistance of community health workers and healthcare personnel.

INTRODUCTION

Stunting is a condition of impaired growth in young children due to chronic malnutrition over a prolonged period, resulting in a child's height not being appropriate for their age.¹ Nutritional deficiencies occur from fetal development in the womb and continue into early infancy, but stunting typically becomes apparent after the child reaches 2 years of age.² According to the health department data of Nganjuk Regency in 2019, there are two classifications of stunting: short children and very short children. There were 22.5% of short children and 21.8% of very short children out of a total of 463,795 children aged 0 – 4 years.³ Data from the Wilangan Public Health Center in 2022 indicated a stunting prevalence rate of 13.7%, with 4 villages identified as stunting hotspots, including Ngadipiro Village with a prevalence of 29.3% and Sukoharjo Village with a prevalence of 20.1%. These two villages have the highest number of stunting cases.⁴

Stunting in young children can occur due to inadequate food intake.⁵ The first step to meet nutritional needs is to provide exclusive breastfeeding for the first six months.⁶ The complete nutrition in breast milk positively affects growth and development in children, including brain and mental

development, and enhances the child's immune system.⁷ Additionally, breast milk is easily digested by infants, thereby boosting the infant's immunity.⁸

After the age of 6 months, it becomes necessary to introduce complementary feeding (CF). Often, there are mismatches in complementary feeding, such as the quantity of food not meeting the infant's needs and a lack of attention to the ingredients used, thus affecting the quality of the food.⁹ The quality of CF is influenced by whether there is variety in the food ingredients used, while the frequency of feeding relates to the quantity of CF.¹⁰ Complementary feeding should be done regularly and orderly, matching the frequency to the age and needs of the child.¹¹ In the initial stages of complementary feeding, provide small portions several times a day while continuing to breastfeed until the child reaches 2 years of age, as breast milk continues to contribute to meeting nutritional needs and disease protection factors.¹²

The research aims to understand the practices of complementary feeding in relation to the nutritional status of stunting in young children (6 – 24 months) in the working area of the Wilangan Public Health Center.

MATERIALS AND METHODS

This study is descriptive and utilizes a survey design. Descriptive research aims to describe or depict a situation. The research design employed is cross-sectional, where independent and dependent variables are collected at relatively the same time. The study was conducted from November 2022 to May 2023. Data collection took place in the village halls of Sukoharjo and Ngadipiro through the filling out of questionnaires that included data on the characteristics of mothers and children, exclusive breastfeeding, and the principles of complementary feeding.

RESULTS

Table 1. Frequency Distribution of Respondent Characteristics

VARIABLE	n	(%)
Mother`s Age (Years)		
20-30	12	42.9
31-40	14	50
41-50	2	7.1
Mother`s Education		
No Scholing	1	3.6
Elementary School	1	3.6
Junior High School	10	35.7
Senior High School	15	53.6
Higher Education/Equivalent	1	3.6
Mother`s Occupation		
Housewife	27	96.4
Employed	1	3.6

Family Income		
< Minimum wage (Rp 2.167.007.05)	17	60.7
≥ Minimum wage (Rp 2.167.007.05)	11	39.3
Total	28	100

Source : Primary Data, 2023

The research findings indicate that the majority of respondents in the study were mothers of young children aged between 31 and 40 years, totaling 14 individuals (50%). Education-wise, 15 respondents (53.6%) had completed high school. Regarding occupation, 27 participants (96.4%) were identified as homemakers. As for family income, 17 respondents (60.7%) reported earnings below the minimum wage per month.

Table 2. Practices of Exclusive Breastfeeding & Complementary Feeding

Variable	Exclusive Breastfeeding			
	n	%		
Exclusive Breastfeeding				
Yes	19	32.1		
No	9	67.9		
Variable	Complementary Feeding			
	Appropriate		Inappropriate	
	n	(%)	n	(%)
Complementary Feeding (Summary)				
Age 6-9 months	3	100	0	0
Age 9-12 months	2	66.7	1	33.3
Age 12-24 months	7	31.8	15	68.2
Appropriateness of COMPLEMENTARY FEEDING According to Age				
<6 months	0	0	1	100
6 months	17	60.7	11	39.3
>6 months	0	0	10	100
Appropriateness of COMPLEMENTARY FEEDING According to Variety				
Age 6-9 months	1	33.3	2	66.7
Age 9-12 months	2	66.7	1	33.3
Age 12-24 months	2	9.1	20	90.9
Appropriateness of COMPLEMENTARY FEEDING According to Quantity				
Age 6-9 months	2	66.7	1	33.3
Age 9-12 months	2	66.7	1	33.3
Age 12-24 months	10	45.4	12	54.5
Appropriateness of COMPLEMENTARY FEEDING According to Texture				
Age 6-9 months	2	66.7	1	33.3
Age 9-12 months	2	66.7	1	33.3
Age 12-24 months	7	31.8	15	68.2
Appropriateness of COMPLEMENTARY FEEDING According to Frequency				
Age 6-9 months	2	66.7	1	33.3
Age 9-12 months	1	33.3	2	66.7

Age 12-24 months	7	40.9	13	59.1
Appropriateness of COMPLEMENTARY FEEDING According to Responsiveness				
Age 6-9 months	3	100	0	0
Age 9-12 months	3	100	0	0
Age 12-24 months	9	40.9	13	59.1
Appropriateness of COMPLEMENTARY FEEDING According to Cleanliness				
Age 6-9 months	3	100	0	0
Age 9-12 months	2	66.7	1	33.3
Age 12-24 months	12	54.5	10	45.5

Source : Primary Data, 2023

The study findings indicate that the majority of toddlers received exclusive breastfeeding, with 19 toddlers (67.9%) being breastfed exclusively. In terms of the introduction of complementary foods (CF), it was predominantly incorrect for the age group of 12-24 months, with 15 toddlers (68%) not receiving CF appropriately. The provision of CF was evaluated based on several principles, namely age, variety, quantity, texture, frequency, responsiveness, and cleanliness.

Results showed that the timing for introducing CF was mostly appropriate at 6 months for 17 toddlers (60.7%). Variety refers to a range of food types that toddlers should consume, including staple foods, animal and plant-based proteins, vegetables, and fruits. An introduction deemed inappropriate if any of these elements were missing. Data revealed that inaccuracies occurred mostly in children over the age of 1 year, at a rate of 90.9%. As for the quantity of CF provided, a greater proportion was appropriate for ages 6-12 months (66.7%), whereas for children older than 1 year, the proportion of inappropriately sized portions exceeded that of appropriately sized portions. Additionally, the incorrect texture of CF was more prevalent among children aged 12 – 24 months (>1 year) compared to appropriate textures. Regarding the frequency of CF provision, findings indicated an inappropriate frequency at the age range of 6-12 months at 66.7%, and among 22 toddlers aged 12-24 months, the percentage of inappropriate frequency was higher than that of appropriate frequency, at 59.1%.

In describing CF, not only the frequency, quantity, texture, and variety were considered but also the responsiveness and cleanliness of CF provision were deemed crucial. Responsiveness refers to the active method of feeding. Based on the data, responsive CF provision was altogether inappropriate for children aged 6 – 12 months, and for the age group of 12 – 24 months, it was inappropriately conducted at a rate of 59.1%. Cleanliness was assessed by the cleanliness of feeding utensils, food materials, and the practice of washing hands before and after feeding. The results indicated that the majority of CF provision was appropriately clean, with all instances being appropriate for the age group of 6 – 9 months, more than 60% being appropriate for the age group of

9 – 12 months, and for children over the age of 1 year, more than 50% were provided in a clean manner.

DISCUSSION

Characteristics of Mothers

The majority of mothers with children under two years of age (baduta) are of reproductive age, with most being between 20 – 40 years, although there are those above 40 years as well. More than 50% of the mothers have a medium level of education (junior and senior high school) and most are housewives. There are two categories of family income benchmarked to the Minimum Wage of Nganjuk Regency, which is IDR 2,167,007.05 per month, and it was found that more than 60% of the families have an income <Minimum Wage.

Numerous studies indicate that education and family income can influence the occurrence of stunting in children due to their crucial role in fulfilling children's nutritional needs. One of the indirect causes of stunting issues is the economic income of the family, which is affected by the parents' education level.²⁷

Well-educated parents can enhance understanding about the importance of nutrition, and educated parents tend to be more aware of healthy eating patterns. A mother's knowledge determines her attitude in maintaining and fulfilling the nutritional needs of toddlers, thereby reducing the potential for stunting incidents in toddlers. Factors influencing knowledge include education and information. Meanwhile, sufficient family income allows for providing nutritious food and access to adequate health services. The socio-economic status of the family is one of the determinants affecting the amount of food available in the family, thus influencing the family's nutritional status, including affecting children's growth.²⁹

Several factors influencing the occurrence of stunting include nutrients, breastfeeding, infectious diseases, early complementary feeding, family factors (number of toddlers in the family, socio-economic status, family education status, parents' occupation, and parenting style), low birth weight, and gender, which are indirectly related to stunting incidents. ¹⁷

Exclusive Breastfeeding

Based on Table 2, it can be seen that out of 28 children under two, the majority received exclusive breastfeeding, amounting to 17 children with a percentage of 60.7%. Exclusive breastfeeding is the practice of feeding only breast milk to infants from birth until the age of 6 months without any additional food or drink, except for medicine, vitamins, and minerals that may be prescribed by medical personnel.¹³ Exclusive breastfeeding is a crucial factor in preventing stunting.¹⁴ The presence of specific proteins in breast milk can protect infants from bacterial infections and enhance the immune system of the child.¹⁵ Inappropriate breastfeeding or not

adhering to health recommendations can increase the risk of stunting, where the pattern and duration of breastfeeding can contribute to stunting incidents in toddlers.¹⁶

Complementary Feeding

Table 2 presents findings on complementary feeding principles (age, variety, quantity, texture, frequency, responsiveness, and hygiene), showing that with increasing age, the inadequacy of these principles becomes more apparent. This is indicated by the largest percentage found in children aged 12 – 24 months, which is 68.2%. Based on interview results, as children age, they become pickier about food and tend to eat only what they like, besides being more interested in buying snacks from nearby shops. Ideally, the introduction and provision of complementary feeding to children should be gradual in form and quantity suitable for the child's digestive capacity to prevent stunting malnutrition.²⁸ Inadequate complementary feeding can be one of the factors causing stunting in children.³⁰ This occurs because inadequate complementary feeding might not contain sufficient nutrients for the child's growth and development. Therefore, the quality and quantity of complementary feeding have a significant influence on the child's growth and development process. The provision of types of food such as complementary feeding that does not align with a balanced diet is a risk factor for stunting.²⁶

The results for the appropriateness of the age of introducing complementary feeding in 28 children under two showed that the majority were given at the correct age of 6 months, amounting to 17 children with a percentage of 60.7%. The timing of introducing complementary feeding plays an important role in the child's future growth and development process, as at the age of 6 months, the infant's digestive system is still developing and not fully prepared.¹⁷ Early introduction of complementary feeding, if given to infants before the age of 6 months, can cause infections in the digestive tract, leading to disturbances in nutrient absorption for growth and development, resulting in stunting.³¹ Inappropriate complementary feeding can cause digestive problems in infants, including diarrhea.¹⁹

The results show that the majority of complementary feeding variety was not appropriately given at the age of 12-24 months, with a percentage of 90%. According to interviews conducted during the study, most mothers of children under two did not properly provide a variety of foods to their children, and many rarely offered fruits to their children, mostly giving them only foods they liked and lacked diversity. Adding a variety of foods aims to allow toddlers to experience different tastes.¹⁷ Vegetables and fruits are essential sources of micronutrients important for body metabolism and regulatory functions.²⁰ Energy, protein, iron, and zinc are nutrient intakes that play a crucial role in motor functions.²¹

The results of the study on the accuracy of complementary feeding practices (complementary feeding) show that the majority of complementary feeding quantities provided to stunted young children are inaccurate. In the age range of 6 – 9 months, 2 out of 3 children fell within the accurate category, accounting for 66.7%, a proportion that also holds for children in the age range of 9 – 12 months. Meanwhile, among children aged 12 – 24 months, 12 out of 22 were categorized as receiving inaccurate complementary feeding quantities, accounting for 54.5%. Interview results indicated that the predominant reason mothers did not adhere to age-appropriate complementary feeding quantities was due to the children being fussy and unwilling to finish their meals. According to the Ministry of Health of the Republic of Indonesia, it is recommended to start complementary feeding with small amounts of food, gradually increasing the quantity as the child ages to meet their nutritional needs.²² The food amount for infants and children aged 12-24 months should be adjusted according to their evolving nutritional requirements as they age and breastmilk intake decreases.²³ At the age of 12-24 months, children typically require more solid food to satisfy their increased nutritional needs. Therefore, feeding should start from $\frac{3}{4}$ (three-quarters) to 1 (one) bowl of 250 ml size.²⁴

Regarding the accuracy of complementary feeding texture, the majority of inaccuracies were found in children aged 12-24 months, with 15 out of 22 children (68.2%) being fed inappropriate textures. Texture refers to the thickness or consistency of the food given to the child, starting from thick porridge or mashed food.³² Providing food with a texture appropriate to the child's chewing and swallowing capabilities is crucial for their development, as it affects the time needed for chewing to facilitate easy swallowing.³³ If the food texture is inappropriate, it results in the child consuming less due to prolonged chewing, leading to inadequate food intake. The purpose of gradually introducing food textures is to match the child's abilities; therefore, if the texture does not align with the child's developmental stage, it can cause difficulties in eating later on.²⁵

The study also reveals that the majority of the complementary feeding frequency provided to stunted young children aged 12-24 months was inaccurate, involving 13 children (59.1%). This was mainly because the children often consumed snacks, leading to a feeling of fullness before the main meal. Frequency refers to the number of times a child is fed per day.³² Children need to eat three times a day, in addition to snacks and breastmilk. The feeding frequency should match the child's age group: 1 – 2 times a day for children aged 6 – 8 months, and 3 – 4 times a day for children aged 9 – 24 months with additional snacks 1 – 2 times a day.³² Scheduling meals is vital for developing internal regulation, with main meals provided when hungry and avoiding snacks 2 hours before the main meal to prevent premature fullness. The frequency of complementary feeding is a key parameter, and this study aligns with previous research indicating that inappropriate complementary feeding frequency increases the risk of stunting.⁸

Based on responsive complementary feeding accuracy, the same outcome was obtained for children aged 6 – 9 and 9 – 12 months, all accurate (100%) with each age range comprising 3 children. From 22 children aged 12 – 24 months, a greater percentage received accurate rather than inaccurate complementary feeding, accounting for 86.4%. According to answered questionnaires, most mothers strive to ensure their children accept food willingly, including patiently coaxing a child who refuses to eat. Mothers also encourage children to have their own plates, which positively influences the child's interest in food and willingness to eat. Responsiveness in feeding involves actively paying attention to signs from the infant that they are ready to eat.³² To ensure responsive complementary feeding, create a pleasant atmosphere during mealtime without forcing the child to eat, as this can lead to trauma and potential refusal to eat.²⁴ Additionally, it's important to be patient and encourage the child to eat by dining together as a family, providing the child with their own plate, and turning mealtime into a fun learning experience.³²

As for complementary feeding hygiene, over 60% was provided accurately. According to questionnaires, most mothers practiced good hygiene in preparing complementary feeding for their children. This was evidenced by preparing food with clean utensils and washing hands with soap before cooking and eating. Hygiene in complementary feeding involves maintaining cleanliness of utensils, food ingredients, and washing hands with soap after using the toilet, before preparing food, before eating, and before feeding the child.³² Hygiene is an indirect factor in stunting, also related to environmental cleanliness. Poor hygiene in daily life can lead to infectious diseases in children, impacting stunting occurrence.³⁴ Four main factors required for a child to be well-nourished and healthy include food, feeding and caregiving practices, healthcare services, and hygiene, sanitation, and clean water.²⁴

CONCLUSION

The majority of mothers with stunted young children are in their reproductive age, predominantly aged between 20 and 40 years, though some are above 40 years. Over 50% of the mothers have medium levels of education (junior and senior high school) and most are homemakers with family incomes exceeding 60% below the Minimum Wage. Nearly 70% of these mothers practice exclusive breastfeeding, while the introduction of complementary feeding (complementary feeding) tends to be inappropriate for children aged 12-24 months. The most favorable aspects of complementary feeding are its age-appropriateness, responsiveness, and cleanliness. However, the variety, quantity, texture, and frequency of feedings still fall short of the recommendations issued by the Ministry of Health. Generally, the practice of complementary feeding is commendable, but discrepancies arise with the child's increasing age, leading to more frequent inappropriate practices. It is recommended that mothers of young children actively seek to broaden their understanding and

knowledge of complementary feeding principles and pay closer attention to fulfilling their children's nutritional needs in accordance with their age, with the support of health workers and local volunteers.

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