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The Correlation between Exclusive Breastfeeding and Complementary Feeding (MP-ASI) with Stunting in Children Aged 6–24 Months at Larangan Village, Candi Health Center Area

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ABSTRACT

Larangan Village had the highest prevalence of stunting (13.9%) in the working area of the Candi Health Center in 2022. This study aims to examine and analyze the relationship between exclusive breastfeeding patterns and complementary feeding (MP-ASI) with the incidence of stunting among children aged 6–24 months in Larangan Village. This observational study used a cross-sectional design and was conducted from October 2022 to March 2023. A total of 68 infants aged 6–24 months and their mothers were selected using total sampling. Prior to data collection, all participants were given informed consent. Data on exclusive breastfeeding were obtained through structured interviews, while data on complementary feeding (MP-ASI) were collected through interviews and a Food Frequency Questionnaire (FFQ). Anthropometric measurements were conducted to assess stunting status. All data were analyzed using the chi-square test to determine the relationship between exclusive breastfeeding, complementary feeding, and stunting incidence.The results showed that the chi-square test revealed a statistically significant association between exclusive breastfeeding and stunting (p = 0.000), as well as between complementary feeding practices and stunting (p = 0.001). Contributing factors include limited maternal knowledge, suboptimal environmental hygiene, prevailing local feeding customs, and local cultural practices. Therefore, education regarding proper breastfeeding and complementary feeding practices is essential to prevent stunting.

INTRODUCTION

Stunting is defined as a condition when the z-score of the index of body length by age (PB/U) or height by age (TB/U) is less than -2 standard deviations based on the Child Growth Standards of the World Health Organization (WHO)[1]. In Sidoarjo Regency, according to the Head of the local Health Office, stunting is generally caused by a lack of nutritionally balanced food intake, rich in vitamins and minerals, and low consumption of animal protein[2]. In addition, the prevalence of stunting is also influenced by various other factors such as high maternal and newborn mortality rates, suboptimal parenting practices, clean water and sanitation quality, and raw food processing methods[3–9].

In 2020, WHO estimates that as many as 149.2 million children under five worldwide are stunted[1]. In Indonesia, the prevalence of stunting in 2018 reached 30.8%, meaning that almost one

in three children has a growth disorder. In East Java Province, the figure is even higher, which is 32.81% according to Riskesdas 2018[10].

Stunting has a serious impact both in the short and long term. Children who experience stunting are at higher risk of developing diseases, have stunted cognitive, motor, and verbal development, and lead to decreased productivity and income in adulthood. From a macro perspective, this has caused huge economic losses due to the decline in the quality of human resources and national economic potential, thus becoming a real threat to sustainable development in Indonesia[3,11].

Exclusive breastfeeding can reduce infant mortality by up to 88% (UNICEF & WHO). However, exclusive breastfeeding coverage in Indonesia is still low and continues to decline. In 2018 it was 68.7%, down to 65.8% in 2019, and only 52.5% in 2021. Until mid-2022, the coverage has only reached 66%, not meeting the national target of 80%[12].

Based on the findings of a preliminary study through a meeting with nutrition officers at the Candi District Health Center (November 2, 2022), it is known that three villages have the highest stunting rates: Larangan Village (13.9%), Gelam Village (10.5%), and Balong Dowo Village (10.4%). This research was conducted in Larangan Village because it has the highest prevalence of stunting in the work area of the Candi Health Center. It was recorded that 26 out of 189 children in this village experienced stunted growth between August and November 2022. Although the prevalence is high, there is a lack of specific studies on the factors that cause stunting in Larangan Village, especially related to exclusive breastfeeding patterns and MP-ASI. Therefore, this study was conducted to determine the relationship between exclusive breastfeeding patterns and MP-ASI and the incidence of stunting in Larangan Village as an effort to obtain a more specific overview of the causative factors in the area.

MATERIALS AND METHODS

This study employed an analytic observational design with a cross-sectional approach. The population consisted of all mothers with children aged 6–24 months in Larangan Village. A total of 68 respondents were selected using total sampling. Prior to participation, informed consent was obtained from all respondents. Data collection was conducted through structured interviews, Food Frequency Questionnaires (FFQ) to assess complementary feeding (MP-ASI) practices, and anthropometric measurements using length-for-age Z-scores to determine stunting status. Statistical analysis was performed using the chi-square test with SPSS to assess the relationship between exclusive breastfeeding and complementary feeding practices with the incidence of stunting. A p-value of less than 0.05 was considered statistically significant in indicating an association between the variables.

RESULT

Table 1. Frequency Distribution of Respondent Characteristics

Variabel	n	(%)
Mother's Age		
Mother's Age < 25 Years Old	7	10,3
Mother's Age > 25 Years Old	61	89,7
Educating Mothers		
Tamat SD	2	2,9
Tamat SMP	7	10,3
Tamat SMA	38	55,9
Perguruan Tinggi/Akademik	21	30,9
Mother's Work		
Tidak Bekerja/IRT	43	63,1
Pegawai Negeri	3	4,3
Pegawai Swasta	16	23,8
Wiraswasta	5	7,3
Lainnya	1	1,5
The Age of Infants		
6-12 Months	17	25
13-24 Months	51	75
Gender of Infants		
Laki-laki	32	47
Perempuan	36	53
Total	68	100

Source : Primary Data, 2023

Based on Table 1, the majority of respondents in this study were mothers over the age of 25 years (89.7%). In terms of education, most mothers have a high school education (55.9%), followed by college/academics (30.9%). Most of the respondents did not work or played the role of housewives (63.1%), while the rest were spread across jobs as civil servants (23.8%), private employees (7.3%), entrepreneurs (4.3%), and other occupations (1.5%). The age of the infants was most in the range of 13–24 months (75%), and by gender, the number of girls (53 people) was slightly more than that of boys (47 people). This data gives an idea that the majority of mothers are mature adults who do not work formally, with a secondary education level, and take care of clown-age children, most of whom are over 1 year old.

Table 2. Exclusive Breastfeeding Practices & MPASI

Variabel	Exclusive Breastfeeding		*p-value*
	n	%	
Exclusive Breastfeeding			
Yes	24	35,4	0.000
No	44	64,6	

Variabel	Complementary Feeding				*p-value*
	Compliant with standards		Not up to standard		
	n	(%)	n	(%)	
Complementary Feeding (Conclusion)	14	20,5	54	79,5	0.001
Complementary Feeding Age-Appropriate	33	48,5	35	51,5	0.000
Complementary Feeding Frequency Compliant	18	26,5	50	73,5	0.000
Complementary Feeding By Type	32	47,1	36	52,9	0.000
Complementary Feeding Texture Match	32	47,1	36	52,9	0.000
Complementary Feeding As per the Quantity	19	27,9	49	72,1	0.000

Source: Primary Data, 2023

Based on Table 2, it is known that most respondents (64.6%) do not exclusively breastfeed their babies, while only 35.4% give exclusive breastfeeding. In terms of MP-ASI administration, as many as 79.5% were non-standard (in terms of timing, frequency, type, texture, and amount), while only 20.5% were compliant. The accuracy of MP-ASI based on age is quite high (51.5%), but other aspects are still low: only 26.5% are right frequency, 47.1% are right type, 47.1% are right texture, and 27.9% are right amount. This shows that most mothers have not implemented MP-ASI feeding practices that are in accordance with standards, and the majority also do not give exclusive breastfeeding, which has the potential to increase the risk of stunting in children. These findings confirm the need for more intensive nutrition education for mothers regarding the importance of exclusive breastfeeding and proper MP-ASI

DISCUSSION

Exclusive Breastfeeding Patterns

Based on the findings of the study, as many as 24 newborns (35.4%) in Larangan Village received exclusive breastfeeding, while 44 babies (64.6%) did not receive it. The results showed that the chi-square test revealed a significant relationship between exclusive breastfeeding and the incidence of stunting (p = 0.000; OR = 12,048). This data shows that the majority of children under

the age of five do not receive exclusive breastfeeding, which indicates that the prevalence of stunting in this age group can be influenced by non-optimal exclusive breastfeeding practices[13]. The success of breastfeeding is greatly influenced by the mother's personal characteristics as well as external factors outside the home. Socio-cultural factors such as husband and family support, low public knowledge, massive promotion of formula milk, and lack of breastfeeding facilities at work for working mothers, are some of the causes that affect the practice of exclusive breastfeeding, which ultimately also depends heavily on the behavior of the mother herself[14].

Babies should only be given breast milk from birth to 6 months of age without additional food or other liquids[15]. Even though breast milk has met the nutritional needs of babies aged 0 to 6 months, many mothers still provide additional foods or drinks, including formula, along with breast milk during that period[16].

Apart from working and babies who remain fussy even though they have been breastfed, the most common reason given by mothers is that their milk does not come out. Mothers tend not to make maximum efforts to increase breast milk production because of the ease of obtaining formula[17 milk]. In fact, to ensure that the nutritional needs of babies are met and growth is not disturbed, breastfeeding is highly recommended. Formula milk does not contain antibodies like breast milk, making babies more susceptible to infections. Therefore, exclusive breastfeeding plays an important role in preventing stunting, especially in babies aged 0 to 6 months[12].

MP-ASI Feeding Pattern

Based on the results of the study, there were 54 newborns in Larangan Village who received complementary foods (MP-ASI) with a pattern that did not meet standards, while only 14 babies (20.5%) received MP-ASI correctly. The results showed that the chi-square test revealed a significant relationship between MP-ASI administration and the incidence of stunting (p = 0.001; OR = 12.246). In this study, it was identified that most children under five received inappropriate food intake, both in terms of time and quality, which showed a relationship between the practice of supplementary feeding and the high prevalence of stunting in children under the age of [19]. Although mothers have learned that MP-ASI milk should be given at the right time, many of them still give supplements as early[20]. This is most likely influenced by parenting, environmental conditions, and local customs. Children who start getting MP-ASI on time, namely after the age of six months and continue to be breastfed, generally have better nutritional status than children who receive MP-ASI too early[21].

Based on interviews with several mothers who have small children, it was found that newborns often show fussy behavior and cry when mothers start breastfeeding but the milk has not yet come out. In this situation, mothers tend to give formula milk as a substitute for breast milk because they

think that the baby still feels hungry[22]. During the first six months, some mothers also add foods such as instant bananas, mashed bananas, or rice porridge as MP-MILK. This practice reflects a lack of understanding of proper feeding procedures. Some common mistakes include the frequency of feeding, feeding techniques, inappropriate food textures, and the variety and amount of food given[23].

In Larangan Village, the majority of children who are stunted are known to not receive additional food at the right time. Inappropriate supplementation before or after six months of age risks iron deficiency, vitamin deficiencies, and developmental delays[24]. Malnutrition from an early age, feeding too early or too slowly, and feeding methods that are not appropriate for the baby's age are the main factors that can hinder children's growth[25]. These findings confirm that the practice of feeding supplements at an early age is closely related to the high prevalence of stunting. The survey also shows that there are still many mothers who give their children extra food before the age of six months[26].

Based on respondent characteristics data, the majority of mothers in Larangan Village are over 25 years old (89.7%) and most have the last level of high school education (55.9%). Even though they are mature and second-educated, there are still many of them who do not give exclusive breastfeeding (64,6%) and MP-ASI incorrectly (79,5%). This shows that age and education factors do not guarantee correct nutritional care practices. Low exclusive breastfeeding practices and inappropriate MP-ASI may be influenced by a lack of practical understanding, socio-cultural influences, and limited access to information, especially in the group of housewives (63.1%) who may not have adequate sources of nutritional information.

Stunting

Based on the data, 25 out of 68 newborns (36.7%) experienced stunted growth, which shows the high rate of stunting in Larangan Village as a serious problem. Researchers assume that stunting is caused by insufficient nutritional intake, such as not exclusively breastfeeding and the provision of complementary foods for breastfeeding (MP-ASI) which is not appropriate, both in terms of the time of administration less or more than six months and in terms of frequency, type, texture, amount, and variety of food. Some mothers whose children are stunted admit that their breast milk is difficult to come out or does not come out at all when they want to breastfeed[27].

This study has limitations in design and data coverage. As an observational study with a cross-sectional design, the relationships found are associative and cannot be concluded to be cause-and-effect relationships. In addition, this study was conducted in only one village with a limited number of respondents, so the results could not be generalized to a wider area. The information collected also

relies heavily on the mother's memory of breastfeeding patterns and MP-ASI, which has the potential to cause recall bias. This can affect the validity of the data obtained, especially on variables that are retrospective.

Other possible biases also arise from interview techniques conducted by researchers. Despite using standardized questionnaires, respondents may feel uncomfortable or give answers that are considered "socially desirable", especially regarding exclusive breastfeeding or the type of child food. In addition, other factors such as economic status, mother's education level, or children's health history are not studied in depth, even though they can also affect the incidence of stunting. Therefore, the results of this study should be interpreted carefully and form the basis for further studies with a stronger design and wider scope. This suggests that maternal behavior and knowledge in early feeding are key modifiable factors for stunting prevention at the community level.

CONCLUSION

This study found that 36.8% of children aged 6–24 months in Larangan Village were stunted, while 63.2% had normal nutritional status. Most children (64.6%) did not receive exclusive breastfeeding, and 79.5% received inappropriate complementary feeding (MP-ASI). Chi-square analysis showed a significant relationship between exclusive breastfeeding and stunting ($p = 0.000$; OR = 12.048), as well as between MP-ASI practices and stunting ($p = 0.001$; OR = 12.246).

SUGGESTION

This research should be continued with a wider coverage area and a larger number of respondents so that the results are more representative of the target population. The addition of other variables such as economic status and access to health services is also important to get a more comprehensive picture of the factors that affect stunting incidence. The data collection method should ideally be equipped with direct observation and medical record data to improve the validity of the results. In addition, the longitudinal approach can be used to observe relationship patterns in more depth over time. In line with that, health authorities need to strengthen education and counseling programs for mothers on the importance of exclusive breastfeeding and appropriate MP-ASI, starting from antenatal visits to the postpartum period, to ensure better nutritional outcomes for children.

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