

NURTURING CARE AS A CAUSE OF STUNTING IN THE WORKING AREA OF BANABUNGI HEALTH CENTER, BUTON REGENCY, SOUTHEAST SULAWESI, INDONESIA

Norlina ^{1*}, A. Arsunan Arsin ², Ansariadi ³, Nur Nasry Noor ⁴,
Stang ⁵ and Atjo Wahyu ⁶

¹ Magister Student, Faculty of Public Health, Hasanuddin University, Indonesia.

*Corresponding Author

^{2,3,4} Department Epidemiology, Faculty of Public Health, Hasanuddin University, Indonesia.

⁵ Department of Biostatistics, Faculty of Public Health, Hasanuddin University, Indonesia.

⁶ Department of Occupational Health, Faculty of Public Health, Hasanuddin University, Indonesia.

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Abstract

Context: Nurturing care is very important for caregivers to ensure that children reach their maximum potential both in terms of health and safety. **Aim:** To examine the relationship between nurturing care and stunting. **Setting and design:** This study was a cross-sectional design. **Methods and Materials:** The study population was children aged 6-23 months, and the sample size was 171 children who met the inclusion and exclusion criteria. **Statistical Analysis Used:** Logistic regression analysis was used to assess the association between variables. **Results:** Time of first complementary feeding, type of first complementary feeding and nutritional status have an influence on the incidence of stunting in the Banabungi Health Center working area because they have a P value of less than 0.05. **Conclusion:** There is a relationship between nurturing care and the incidence of stunting.

Keywords: Nurturing Care; IMD; Exclusive Breastfeeding; Complementary Feeding.

BACKGROUND

The World Health Organization, the United Nations Children's Fund, and the W.B. Group suggest that investing in early childhood development is good for everyone. The period from pregnancy to age 3 is the most critical period because 80% of a child's brain is formed during this time. For healthy brain development during these years, children need a safe, secure and loving environment with proper nutrition and stimulation from their parents or caregivers.¹ This study aims to examine the nurturing care provided by caregivers and its relationship with the incidence of stunting in Banabungi Health Center, Buton Regency.

SUBJECTS AND METHODS

The subjects of this study were children aged 6 to 23 months who lived in the working area of the Banabungi Health Center and did not have a history of low birth weight. The research used a cross-sectional study design. Sampling was done using purposive sampling technique with the aim of finding samples that fit the criteria specifically determined by the researcher so that the main objectives of the study can be met. The research data consisted of secondary data and primary data. The secondary data is the data on the results of measuring children's height (PB) obtained from the measurement of height or height (PB / TB) for the last time at the posyesndu in November 2023 conducted by health workers on duty in the Banabungi Puskesmas work area. Primary data related to maternal care obtained through the results of filling out questionnaires. Secondary data analysis (child height data) to determine stunting

status using WHO anthro to find the z-score value of each sample. Then, all research variables were analyzed using logistic regression.

RESULTS

Univariate

The majority of the sample consisted of children aged 6-23 months with a male gender percentage of 54.4%. The educational level of the parents, both mothers and fathers, was almost half of high school graduates and about 30% of college graduates. This shows that the parents in this area are generally well educated. In the working area of Banabungi Health Center, the percentage of household head income is 57.9% classified as low or less than Rp. 1,500,000, 17.0% classified as middle or with an income range of Rp. 1,500,000 to Rp. 2,500,000, 4.7% classified as high or with an income range of more than Rp. 2,500,000 to Rp. 3,500,000, and 19.3% classified as very high or with an income range of more than Rp. 3,500,000. This income classification is in line with the population income classification of the Central Bureau of Statistics (BPS).

The majority of mothers in the Banabungi Health Center working area are assisted by health workers during childbirth. In practice, however, there are still many mothers who prefer to give birth at home rather than at health facilities such as health centers and hospitals. During pregnancy, 73.1% of mothers in the Banabungi Health Center working area had their pregnancy checked more than or equal to 6 times. And more than 50% of the mothers used blood additive tablets (TTD) during their pregnancy. The reason why some mothers did not take blood additive tablets (TTD) was due to the side effects caused and the assumption that taking blood additive tablets (TTD) could cause bleeding.

The results showed that very few mothers initiated early breastfeeding (IMD) within one hour of delivery. On average, if breast milk does not come out within a few hours, the mother replaces breast milk with formula milk or with water, sugar water, and others. This is evidenced by the exclusive breastfeeding status, which reached only 11.1%. More than 60% of the mothers surveyed in the Banabungi Health Center working area admitted that they did not have a plan to breastfeed their children until the child was two years old, but 53% of the mothers surveyed were still breastfeeding their children at the time of the study. Many mothers in the Banabungi Health Center working area gave their children their first food when they were less than 6 months old, and 90% of mothers in the Banabungi Health Center working area did not give a variety of foods in the child's first complementary food. A total of 78.4% of the children of the mothers surveyed consumed animal protein such as fish and eggs. The research data revealed that 22.2% of the children sampled in the study were stunted.

Bivariate

Chi-squared test analysis on the variable of early initiation of breastfeeding (IMD) and stunting status among children aged 6-23 months in the Banabungi Health Center working area showed that 20% of children who did not receive early initiation of breastfeeding (IMD) were stunted. With a p-value of 0.13 greater than 0.05. As many as 24.3% of stunted children did not receive exclusive breastfeeding, with a p-value of 0.05. 22.4% of stunted children did not receive continued breastfeeding, with a p-value of 0.96 greater than 0.05. 32.4% of stunted children did not receive animal protein-rich complementary foods, with a p-value of 0.09 greater than 0.05. Children who were

initially fed mixed porridge did not experience stunting. In contrast, children who received mixed rice porridge, sunflower, and banana tended to be stunted by more than 20% on average. The p-value was 0.01, less than 0.05. As many as 33.7% of stunted children received their first complementary food at less than 6 months of age, with a p-value of 0.00 less than 0.05. And as many as 29.8% of children with a tendency to have difficulty eating experienced stunting, with a p-value of 0.01 less than 0.05. The results obtained on the basis of the Chi-square test with a tolerance limit of a wrong chance of 5%, which has a relationship with the incidence of stunting, namely the type of first complementary food, the time of giving the first complementary food and the status of eating in children.

Multivariate

The logistic regression test results indicate that the time of first complementary feeding, type of first complementary feeding, and feeding status significantly influence the incidence of stunting in the Banabungi Health Center working area ($p < 0.05$). Based on the value of $\text{Exp}(B) = \text{OR}$ or the exponent value of the regression equation coefficient, it is evident that the time of first complementary feeding has an OR value of 4.75 with a 95% CI value (2.02-11.17), which is statistically significant. This means that children who are fed before the age of 6 months have a 4.75 times higher risk of experiencing stunting. The odds ratio (OR) for the type of first complementary food given is 1.96 with a 95% confidence interval (CI) of 1.09-6.04, indicating a significant risk ($\text{OR} > 1$) for children who are given monotonous complementary food consisting of only one type of food. The OR for eating status in children is 2.57 with a 95% CI of 1.09-6.04, also indicating a significant risk. Children who experience difficulty eating are 2.57 times more likely to experience stunting.

DISCUSSION

Nurturing a child involves ensuring their safety, health, and nutrition, while being attentive and responsive to their needs and interests. It also involves encouraging the child to explore their environment and interact with others. The components of nurturing care comprise five dimensions: good health, adequate nutrition, responsive care, early learning, and child safety and security. This study focuses on nurturing care, including early breastfeeding initiation (IMD), exclusive breastfeeding, continued breastfeeding, and animal protein-rich complementary foods in children aged 6-23 months, and its relationship with the incidence of stunting in the Banabungi Health Center working area, Buton Regency, Southeast Sulawesi. The study sample is restricted to children without a history of low birth weight, ensuring that all children in the study have normal birth weight. This approach clarifies the relationship between nurturing care and the incidence of stunting. The exclusion criterion of low birth weight is based on research conducted by Sumiati et al. (2020) and Idrus et al. (2023), which found that a history of low birth weight in children is the primary cause of stunting in children under two years of age.^{2, 3}

Globally, the percentage of stunted children continues to decline, from 33.0% in 2000 to 22.3% in 2022. From 2012 to 2022, the average annual rate of reduction in the incidence of stunting is only 1.65%. WHO targets an average annual reduction rate of 6.08% to bring the prevalence of stunting down to 13.5% or only 88.9 million stunted children.⁴ In 2022, more than half of children under 5 affected by stunting will live in Asia (52%) and two out of five will live in Africa (43%).⁴ The World Health Organization

(WHO) announced that Indonesia is the second country after Laos with the highest stunting prevalence in Southeast Asia (SEAR).[5] According to WHO, a public health problem can be considered chronic when the prevalence of stunting is more than 20 percent. Data from WHO, Unicef, and the World Bank (2023) showed that the stunting rate in Indonesia was still around 31.0% in 2022, and was classified as very high.⁴ Data from the Indonesian Nutrition Status Survey (SSGI) in (2023) the percentage of stunting cases in children in Indonesia in 2022 ranged from 21.6%. the percentage of stunting cases has decreased by 2.8% from 2021. The Indonesian government targets that by 2024 stunting cases nationally will only range as much as 14% in accordance with the target of the National Medium Term Development Plan, and to achieve this target a decrease of 3.8% is needed every year. ⁶ The results of SSGI data, (2023) also obtained that Southeast Sulawesi Province ranks 9th for the highest stunting cases nationally, where the case presentation reached 27.7% in 2022. One of the districts with high stunting cases is Buton Regency with a case percentage of 32.6% in 2022. Data from Buton Regency Health Office, (2022) in the Buton Regency Health Profile in 2021, the stunting rate in this region reached 21.3%. ⁷ Data from Banabungi Health Center, in 2021 the stunting rate in Puskesmas working area was 138 cases, in 2022 there were 92 cases and as of March 2023 there were 195 cases.

The observation data shows that over 20% of children aged 6-23 months in this region have stunting conditions. This indicates that stunting is still prevalent in this area, according to WHO provisions which define a prevalence of over 20% as chronic. Early Breastfeeding Initiation (IMD) is the act of allowing the baby to find the mother's nipple and suckle alone for at least one hour after delivery. The success of breastfeeding can be measured by early breastfeeding initiation (IMD),⁸ which also affects the achievement of exclusive breastfeeding. If breast milk is not released within a few hours or more than one day after delivery, the child has a greater potential to consume drinks other than breast milk. In the Banabungi Health Center working area, up to 86% of children did not receive breast milk as their first drink. Although Early Breastfeeding Initiation (IMD) does not statistically affect the incidence of stunting in this area, it can still be used as an effort to prevent stunting. This is because several studies have shown a significant association between early breastfeeding initiation and stunting.⁹,¹⁰

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend exclusive breastfeeding for infants from birth until they reach 6 months of age, without any other food or drink, including water. ¹¹ Despite this recommendation, exclusive breastfeeding in the Banabungi Health Center working area has not been found to have an effect on the incidence of stunting. However, the rate of exclusive breastfeeding in this area is only around 11%. Delayed onset of lactation is a condition where breast milk is released more than one day after giving birth. This can lead parents to seek alternative substitutes for breast milk, such as formula milk, sugar water, honey, and others, while waiting for breast milk to be produced. Additionally, the ability to exclusively breastfeed may be hindered due to irregular milk production and cessation of milk production.

Breast milk is considered to be the ideal source of nutrition for infants due to its unique combination of nutrients, proteins, growth factors, and hormones that are not present in formula milk. These components are crucial for the development of the child's brain. Breast milk contains easily absorbed multi-vitamins and minerals that do not affect the baby's still weak kidney function. ¹², ¹³ It also contains white blood cells, immune

substances, enzymes, hormones, and proteins suitable for babies. Feeding infants anything other than breast milk for less than 6 months can negatively impact milk production, increase the risk of infection and allergies, and potentially weaken the bond between mother and child.¹² A study conducted in the Pangkep region of South Sulawesi, Indonesia, demonstrated that breastfeeding can help prevent stunting in children.¹⁴ The research conducted in East Luwu Regency and Sigi Regency, Central Sulawesi, Indonesia, found a correlation between breastfeeding and exclusive breastfeeding history with the incidence of stunting in children. This finding was also supported by other studies.^{15, 16} Additionally, a study conducted in Makassar City, Indonesia, revealed suboptimal conditions for exclusive breastfeeding among children with stunting conditions.⁵

The World Health Organization (WHO) actively promotes and strives to increase exclusive breastfeeding rates to at least 50% by 2025 due to its importance for children's health.¹¹ Breast milk is necessary for children not only during the first 6 months of life but also until the age of two. This feeding pattern is expected to improve the child's nutritional status and overall health in the future.⁸

The World Health Organization (WHO) recommends that 10-15% of energy intake should come from protein to support children's growth. The majority of animal proteins fall into the excellent protein quality category, with a Digestible Indispensable Amino Acid Score (DIAAS) of ≥ 100 .¹⁷ Providing multiple sources of animal protein can reduce the incidence of stunting. According to a study conducted in the Banabungi Health Center area, the provision of complementary foods rich in animal protein did not have a significant effect on the incidence of stunting. It is worth noting that over 78% of children in the area consume fish as a source of animal protein.

In addition to the four main variables studied, the researcher also developed several other questions about the time of first complementary feeding, the type of first complementary feeding given, and the child's eating status. The study found that all three were statistically significant and associated with a lower incidence of stunting in the Banabungi Health Center working area. Almost 50% of the mothers surveyed admitted to feeding their children before they were 6 months old. This practice is often due to hereditary habits taught by elders in the household, as well as the belief that a crying child is hungry and needs to be fed prematurely. This practice is still common in developing countries such as South Africa, Ethiopia, and Tanzania, in addition to Indonesia.¹⁸⁻²⁰ In the Ethiopian region, only 14% of mothers initiate age-appropriate complementary feeding practices. This is influenced by individuals in their social circle, such as husbands, mothers, and grandmothers.²¹ Several studies have shown that the timing of introducing supplementary food is strongly related to the nutritional status and stunting of children.^{15, 19}

As many as 90% of mothers in this health center work area feed their children monotonously on one type of food for several months. Generally, the first type of complementary food given is sun, banana, or rice porridge that is filtered to make it smoother without any mixture such as vegetables, or eggs. This is because children do not like rice porridge mixed with anything else. This certainly does not meet the minimum food diversity. The results of research based on data from the Basic Health Research in 2018 obtained that the diversity of food consumed is an important factor in determining the nutritional status of children.²² Another study also obtained that dietary diversity is related to stunting status in children aged 6-23 months.⁹

During the observation, the researcher saw that many mothers complained about the condition of their children who were difficult to eat, and even did not want to eat at all even though they were more than one year old. The majority of children who have difficulty eating are children who are not breastfed, and only rely on formula milk as food intake. If the child wants to eat, it is only 1-2 tablespoons. This certainly has an impact on the child's growth and development. The study conducted by Binamungu et al. (2023) investigated the knowledge of Maasai mothers in Tanzania regarding complementary feeding. The findings suggest that mothers who believe that children aged one year who only eat 1-2 spoons are likely to suffer from malnutrition.¹⁹ Another study conducted in Southeast Ethiopia found that formula feeding was associated with stunting.²³

CONCLUSION

The timing and type of first complementary food, as well as feeding difficulties, are associated with an increased risk of stunting in children aged 6-23 months in the Banabungi Health Center working area.

Univariate

Table 1: Nurturing care by the mother

Early breastfeeding initiation (IMD)	Frequency (n)	Percentages (%)
Yes	31	18,1 %
No	140	81,9 %
Actions to take if breast milk is not produced within a few hours	Frequency (n)	Percentages (%)
The infant is brought closer to the nipple to suck	5	2,9 %
Immediately given formula	104	60,8 %
Giving honey, water, etc.	30	17,5 %
Mother's first drink to a child	Frequency (n)	Percentages (%)
Breast milk	24	14,0 %
Non-breast milk (plain water, sugar water, etc.)	147	86,0 %
Exclusive breastfeeding	Frequency (n)	Percentages (%)
Yes	19	11,1 %
No	152	88,9 %
Advanced breast milk plan	Frequency (n)	Percentages (%)
Yes	63	36,8 %
No	108	63,2 %
Advanced breastfeeding	Frequency (n)	Percentages (%)
Yes	86	50,3 %
No	85	49,7 %
Timing of the first complementary food	Frequency (n)	Percentages (%)
≥ 6 month	88	51,5 %
< 6 month	83	48,5 %
First type of complementary food given	Frequency (n)	Percentages (%)
Mixed porridge	17	9,9 %
Rice porridge without mixture	26	15,2 %
Sun	67	39,2 %
Banana	61	35,7 %
Diversity of food consumed	Frequency (n)	Percentages (%)
Various	17	9,9 %
not varied	154	90,1 %
Protein-rich complementary food	Frequency (n)	Percentages (%)
Yes	134	78,4
No	37	21,6
Total	171	100 %

Source: primary data

Bivariate

Table 2: cross tabulation result of nurturing care and stunting status

Nurturing care	Stunting status				Total		P value
	Not stunting		stunting		(n)	(%)	
Early breastfeeding initiation (IMD)	(n)	(%)	(n)	(%)	(n)	(%)	0,13
Yes	21	67,7 %	10	32,3 %	31	100 %	
No	112	80,0 %	28	20,0 %	140	100 %	
Exclusive breastfeeding							
Yes	18	94,7 %	1	5,27 %	19	100 %	0,05
No	115	75,7 %	37	24,3 %	152	100 %	
Advanced breastfeeding							
Yes	67	77,7 %	19	22,4 %	86	100 %	0,96
No	66	77,9 %	19	22,1 %	85	100 %	
Protein-rich complementary food							
Yes	108	80,6 %	26	19,4 %	134	100 %	0,09
No	25	67,6 %	12	32,4 %	37	100 %	
First type of complementary food given							
Mixed porridge	26	100 %	0	0 %	17	100 %	0,01
Rice porridge without mixture	10	64,7 %	6	35,3 %	26	100 %	
Sun	49	73,1 %	18	26,9 %	67	100 %	
Banana	47	77,0 %	14	23,0 %	61	100 %	
Timing of the first complementary food							
≥ 6 month	78	88,6 %	10	11,4 %	88	100 %	0,00
< 6 month	55	66,3 %	28	33,7%	83	100 %	
Eating status							
it's not difficult to eat	67	87,0 %	10	13,0 %	77	100 %	0,00
difficult to eat	66	70,2 %	28	29,8 %	94	100 %	

Source: primary data

Multivariate

Table 3: logistic regression test result

Nurturing care	P value	Exp (B) OR	95 % CI for EXP (B)	
			Lower	upper
Timing of the first complementary food	0,00	4,75	2,02	11,17
First type of complementary food given	0,01	1,94	1,09	6,04
Eating status	0,03	2,57	1,09	6,04

Source: primary data

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