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Breastfeeding Exclusive Status and Stunting Incidence Among Children Aged 24-36 Months in West Gunungsitoli, Nias

Yenni Gustiani Tarigan[1*], Christina Roos Etty[2], Ivan Elisabeth Purba[1], Nibenia Riaprilany[3]

UNIVERSITAS FORT DE KOCK BUKITTINGGI

Program Studi Keperawatan dan Pendidikan Ners
Universitas Fort de Kock Bukittinggi, Indonesia

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Yenni Gustiani Tarigan[1*], Christina Roos Etty[2], Ivan Elisabeth Purba[1], Nibenia Riaprilany[3]

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Korespondensi:
Yenni Gustiani Tarigan
yennigangustiani@gmail.com

[1]Public Health Study Program, Pharmacy and Health Sciences Faculty, Sari Mutiara Indonesia Univerrsity
[2]Diplom aIII Midwife Study Program, Vocational Education Faculty, Sari Mutiara Indonesia University
[3]Midwife, West Gunungsitoli District Community Health Center, Gunungsitoli City, Nias, Indonesia.

ABSTRACT

***Background**: Stunting occurs when the fetus is still in the womb and only appears when the child is two years old. Stunting in toddlers needs special attention because it can hinder children's physical and mental development. Stunting is associated with an increased risk of morbidity and death as well as hampered growth of motor and mental abilities which carries a risk of decreased intellectual abilities, productivity and increased risk of degenerative diseases. The study objective was to determine the relationship between exclusive breastfeeding and stunting incidence among children aged 24 to 36 months in West Gunungsitoli. **Methods:** This was observational study with a cross sectional design. The study population was all mothers who had stunted toddlers aged 24 to 36 months with sample of 42 respondents. We used univariate and bivariate analysis for data analysis. Chi square test was used to analyze the relationship with α =0.05. **Results:** The results of this study were 78.6% of stunted toddlers were not given exclusive breast milk and only 21.4% were given. There were 69% of stunted toddlers had a short height and 31 % toddlers with very short height. **Conclusin:** However, there was a relationship between exclusive breastfeeding and stunting incident in West Gunungsitoli with a p-value=0.032. Therefore, it is recommended that all mothers in West Gunungsitoli need to be given education about the importance of giving exclusive breast milk to babies.*

INTRODUCTION

Poor nutrition can cause stunted growth among children. One of the growth problems for toddler is the stunted height growth of children whose height does not correspond to their age, which is called short kids or stunting (De Sanctis et al., 2021). Stunting is a problem of chronic malnutrition caused by insufficient nutritional intake over a long period of time due to the provision of food that is not in accordance with nutritional needs.(Suratri & Putro, 2023) Malnutrition at an early age increases infant and child mortality rates, causing sufferers to get sick easily and have less than optimal body posture as adults (Govender, Rangiah, Kaswa, & Nzaumvila, 2021). Stunting occurs when the fetus is still in the womb and only appears when the child is two years old. Stunting in toddlers needs special attention because it can hinder children's physical and mental development (Namirembe et al., 2022). Stunting is associated with an increased risk of morbidity and death as well as hampered growth of motor and mental abilities and also carries a risk of decreased intellectual abilities, productivity and increased risk of degenerative diseases (Mustakim, Irwanto, Irawan, Irmawati, & Setyoboedi, 2022). Stunted children also tend to be more susceptible to infectious diseases, so they are at risk of experiencing a decline in the quality of learning at

school and are at risk of being absent more often, resulting in long-term economic losses for Indonesia (Organization, 2015).

Stunting is one of the nutritional problems experienced among toddlers in the world. In 2017, the stunting rate in the world reached 22.2% or around 105,800,000 children under five were stunted (Laksono & Wulandari, 2022). Based on Indofatin in the "Situation of Short Toddlers" report, it is emphasized that if there are no efforts to reduce it, the trend of short toddlers is projected to be 127 million in 2025, so the Ministry is targeting a target in 2024 to reduce by 14% the number of short toddlers or stunted toddlers in Indonesia (Translation, 2023).

Based on the Indonesian Population Nutrition Status Survey (SSGI) in 2022, the prevalence of stunting among toddlers in Indonesia has reached 21.6%, the province with the highest cases is East Nusa Tenggara with a prevalence of stunting in toddlers at 35.3%, followed by West Sulawesi 35 %, West Papua 34.6% and West Nusa Tenggara 32.7%. Meanwhile, North Sumatera is ranked 19th out of 34 provinces with a prevalence of stunting under five children of 21.1% and specifically Gunungsitoli City, in 2022 the stunting prevalence rate will be around 17.7% (Health, 2022).

Stunting is influenced by several factors, including pre-natal factors such as maternal nutrition during pregnancy and birth-related factors such as exclusive breastfeeding, children's nutritional intake during the growth period, infectious diseases, socio-economics, health services, and various other factors that collaborate on outcomes and certain levels that ultimately lead to failure of linear growth (Santosa, Novanda Arif, & Abdul Ghoni, 2022). The incidence of stunting is greatly influenced by various factors, such as how the child's early life develops in the womb. This can be seen by the number of visits and the quality of each antenatal care (ANC) visit (Nomura, Bhandari, Matsumoto-Takahashi, & Takahashi, 2023). ANC is a routine control activity carried out by pregnant women to see how the fetus is and the physical condition of the mother with the aim of knowing early onset of serious illnesses in the mother and fetus so that they can be anticipated as soon as possible (Amponsah-Tabi et al., 2022). All pregnant women receive this ANC service, at least 4 times in accordance with the guidelines for maternal and child health services; once in the first trimester, once in the second trimester and twice in the third trimester (Organization, 2018).

The World Health Organization states that only two percent of babies experience Early Breastfeeding Initiation (EBI) and only around 40% of babies are given exclusive breast milk (Kehinde, O'Donnell, & Grealish, 2023). Some facts and information state that only 22.8% of children aged 0-6 months receive exclusive breast milk (Sabo et al., 2023). Babies who are not exclusively breastfed will tend to get sick easily, when babies are sick then nutritional support will be disrupted because the child will likely have difficulty eating, and this will result in poor nutrition for toddlers, affecting their balance, and resulting in stunting (Murphy et al., 2023). Providing breast milk to babies contributes to the baby's nutritional status and health. All the nutrients a 6-month-old baby needs for the first time in life can be fulfilled from breast milk and can be fulfilled according to the nutritional needs of babies aged 7-12 months (Martin, Ling, & Blackburn, 2016).

In 2022, the achievement of exclusive breast milk in North Sumatra Province is 35.96%. Specifically in Gunungsitoli City, the achievement of exclusive breastfeeding is 59.4% (Idris & Astari, 2023). In the city of Gunungsitoli, it is

known that the number of toddlers who are stunted is 359 people or 3.8% of the total number of toddlers who are 9327 people of eight Gunungsitoli Community Health Service. West Gunungsitoli Community Health Center is one of the contributors to the incidence of stunting in toddlers, there were 52 stunted toddlers out of 558 toddlers. Apart from that, from data on the achievement of exclusive breastfeeding in West Gunungsitoli District Health Center in December 2022, out of 110 six month old babies, only 72 babies (65.45%) received exclusive breastfeeding (Informatika, 2023). Based on my interview with 10 mothers who have stunted toddlers, 7 of them gave birth with low birth weight and the majority of families with stunted toddlers have a downward economic trend. Therefore, the authors were interested in conducting research regarding the relationship between exclusive breastfeeding statuses and stunting incident in toddlers aged 24-36 months West Gunungsitoli District.

METHODS

This study was an observational study with a cross-sectional research design. The location of the research was carried out in the West Gunungsitoli community health center working area, West Gunungsitoli District. This research was carried out from February to August 2023. The population in this research was mothers who have stunted children aged 24-36 months, totaling 42 children. The sample collection technique used was total sampling because the population was less than 100, so the entire population was used as a sample.

Primary data on this research was obtained from the results of observations and measurements on toddlers aged 24-36 months by using an observation sheet adopted from Putri's research paper (Putri, 2019). Meanwhile, secondary data was obtained from other parties or agencies that routinely collect data. The secondary data on this implementation was obtained from the West Gunungsitoli District Health Center and other characteristics that were relevant to the implementation.

The instruments in this research were questionnaires and anthropometrics which be asked and observed by the research team, in this case the parents/ mother of toddlers aged 24-36 months. Anthropometric refers to individual measurements of humans to find out about human physical variations and questionnaires were a list of questions that have been well-arranged, well-thought-out to provide answers or provide the necessary data (Organization, 2023a).

Initially, univariate and bivariate analyses were performed in data analysis. Univariate analysis was carried out by displaying frequency distribution and percentage of each variable, whilst bivariate analysis was carried out by performing Exact Fisher to examine the relationship between breast feeding status and the incidence of stunting among children aged 24-36 months, with significance degree of 95% ($\alpha \leq 0.05$). SPSS 21 version was employed in data analysis.

RESULTS

The West Gunungsitoli Community Health Center is located in West Gunungsitoli District which is one of the 6 sub-districts in Gunungsitoli City which was formed in accordance with Nias Regency Regional Regulation No. 4 of 2008 on April 29th 2008. This is how Gunungsitoli City was created through Law Number 47 of 2008, West Gunungsitoli District became part of Gunungsitoli City Goverment.

According to its geographical location, it is located at coordinates 10 – 12,300 N and 9,300 – 38,300 E with an area of 28.7 Ha with the northern border bordering Gunungsitoli District, the South bordering Gunungsitoli Selatan District, and the West bordering Hiliduho District and Hili Serangkai District, Nias Regency, to the east borders Gunungsitoli District.

West Gunungsitoli District consists of 9 villages, namely Tumori Village (which is the District Capital), Tumori Balohili Village, Sihareio Siwahili Village, Orahili Tumori Village, Lolomoyo Tuheimbeirua Village, Gada Village, Onozikho Village, Hilinakhei Village, and Ononamolo Ili Lot Village. The population in West Gunungsitoli District as of December 2021 is 8,222 people, consisting of 3,956 men and 4,266 women. The number of family heads is 2,098 families. There are several work programs in the West Gunungsitoli Community Health Center area, namely Family Health Program, Nutrition Program, Health Promotion Program, Environmental Health Program (Inspection of drinking water facilities, Inspection of healthy latrines, Inspection of non-communicable diseases and public places), Disease prevention and control program.

The characteristics of the respondents in this study were the age of the toddler's mother, the mother's education, the mother's employment status, the toddler's gender and the toddler's newborn weight and can be seen on Table 1.

Table 1 Descriptive frequency (n=42).

Characteristics	Categories	n	%
Mother's Age (years)	15-20	7	16,7
	21-30	23	54,8
	>30	12	28,6
Mother's Education	Primary	-	-
	Junior high school	5	11,9
	Senior high school	33	78,6
	College	4	9,5
Employment Status	Work	29	69,0
	Does not work	13	31,0
Baby Gender	Male	25	59,0
	Female	17	40,5
Newborn Baby Weight	Low Birth Weight	2	4.8
	Normal Birth Weight	38	90.4
	Excessive Birth Weight	2	4.8
Exclusive Breastfeeding Status	Given	9	21.4
	Not given	33	78.6
Stunting Baby Height	Short	29	69.0
	Very short	13	31.0

Table 1 shows that the majority of mothers with stunted toddlers are at the age of 21-30 years were 23 respondents (54.8%), most of the mother's education finished senior high school 33 respondents (78.6%), 29 (69.0%) mothers also have an occupation or working. There were 25 (59.0%) of the baby male gender. The normal birth weight of newborn babies were 38 babies (90.4%). There were 33 toddlers (78.6%) did not get exclusive breastfeeding and only 9 toddlers

were given exclusive breast milk (21.4%). Stunted toddlers have a short body height were 29 toddlers (69.0%), and with very short body height 13 toddlers (31.0%).

Tabel 2 Relationship between breastfeeding statuses with stunting incidence among children.

Exclusive breastfeeding status	**Stunting Baby Height**				**Total**		***p-value***
	Short		**Very short**				
	N	**%**	**N**	**%**	**n**	**%**	
Given	9	21,4	0	0	9	21,4	0,032
Not given	21	50,0	12	28,6	33	78,6	
Total	30	71,4	12	28,6	42	100,0	

Table 2 shows that there were 9 (21.4%) stunted baby had exclusive breast milk and 33 (78.6%) of stunted baby were not given exclusive breast milk, 28.6% very short stunted baby had not given exclusive breastfeed and 50.0% were short. The results of the analysis found that there was a significant relationship between the exclusive breastfeeding status and the incidence of stunting with p-value 0.032.

DISCUSSIONS

In this study, the majority of toddler mothers were <23 years old. The age of the pregnant mother is related to the occurrence of stunting, the age of the mother who is less than 20 years is more likely to experience anemia, there can also be disruption in the process of transporting food to the fetus she is carrying due to blood circulation in the uterus and the uterus is still not perfect as a result the baby is at risk of experiencing low birth weight (LBW) which is a risk factor stunting (Ntenda, Nkoka, Bass, & Senghore, 2018). Pregnant women who are older than 35 years will experience a decline in the body's immune system and absorption capacity of nutrients, as a result of which there is a chance of experiencing various diseases (Bae, 2011). This study is in line with Mira & Sani's research which concluded that there was a relationship between the age of the mother during pregnancy and stunting in toddlers aged 24-59 months in the work area of the Citeras Community Health Center (Sani, 2019). Mothers with low education are more likely to have children who experience stunting. This can be attributed to the mother's lack of ability to meet the family's nutritional needs (Suratri & Putro, 2023). Studies also concluded that there was a relationship between the mother's level of education and the occurrence of stunting in children aged 6-59 months, where mothers who had a higher level of education had a 3.313 times higher risk of experiencing stunting than mothers who were born with high education (Abeway, Gebremichael, Murugan, Assefa, & Adinew, 2018; Ahmed et al., 2022).

In this study, some of the working mothers' profession was as farmer, so they went out in the morning and came home in the afternoon. A study conducted in Ethiopia proved that there was a relationship between maternal employment and the incidence of stunting among 6-59 months of children (Ahmed et al., 2022). The mother's work becomes the direction of the mother's behavior when giving food to the toddler. In addition, working mothers will spend

less time with their children as a result of which the child's food intake is less aware and the need for exclusive breast milk is not met. The amount of time given also causes the mother's attention to the child's growth and balance to become less (Datar, Nicosia, & Shier, 2014). The age characteristics of toddlers in this study were in the age range of 24-36 months or 2-3 years. A study conducted in Bangladesh also showed that wealth index, exposure of mother to the mass media, age of child, size of child at birth, and parents' education were significantly associated with stunting among children under five (Sarma et al., 2017).

Our study showed that 33 toddlers (78.6%) were not provided with exclusive breastfeeding, this could occur due to the mother's lack of knowledge about exclusive breastfeeding which could be caused by the low level of maternal education. The results of the study show that the majority of toddler mothers enrolled in high school. In addition, work is one of the factors in which mothers do not provide exclusive breast milk to their babies because they do not have shortages or lack of time. Some studies showed that the most obvious factors causing failure to provide exclusive breast milk is the mothers' knowledge because mothers don't know about the exclusive breast milk (Gala, Shetye, Sadawarte, & Autade, 2023; Quebu, Murray, & Okafor, 2023), mothers are working (Balogun, Dagvadorj, Anigo, Ota, & Sasaki, 2015), breast milk does not come out (Hashim, Ishak, & Muhammad, 2020) and the mothers feel that their babies will not be full if they only feeding the breast milk (Maharlouei, Pourhaghighi, Raeisi Shahraki, Zohoori, & Lankarani, 2018).

Breast milk has an exclusive influence on the nutritional status of children due to the immune globulin content of breast milk as a precursor to infection. Breast milk is the best food for babies which contains all the nutritional substances needed in the ideal composition of the body (Ballard & Morrow, 2013). In addition to provide nutrients, breast milk is rich in microbiota and non-immune and also immune components to ensure the infant protection against numerous diseases and support maturation of the developing immune system of an infant, preventing the occurrence of infectious diseases and reducing the risk of nutritional problems (Khan & Islam, 2017). Breast feeding practices will also have an impact because inappropriate breast milk supply practices will have the potential for stunting to occur. A study conducted in Pakistan also showed that odds of being stunted were significantly higher for children in their 3rd year of life [AOR: 4.35, CI 95% = (2.01, 9.33)] compared to children being breastfed in their 2nd year of life [AOR: 2.43, CI 95% = (1.55, 3.79) after being adjusted for maternal, child, demographic and healthcare access variables. It concluded that breastfeeding in the 2nd and 3rd year of life was found to have significant relationship with stunting and severe stunting (Syeda, Agho, Wilson, Maheshwari, & Raza, 2021). Exclusive breast feeding preparation is the provision of breast milk without the addition of other fluids such as formula milk, honey, tea water, white water and without the addition of other additional foods such as bananas, oranges, milk porridge, biscuits, and porridge or rice noodles (Organization, 2023b).

Breast milk has a nutrient composition that matches the nutritional needs of children and is believed to be able to have a positive influence on the infant's growth. Breast milk contains lactose which functions to increase the passive absorption of calcium in the body during the baby's growth period. Like study in Ecuador found that children who did not receive the

minimum frequency of meals for their age had higher odds of stunting (OR 3.28; 95% CI 1.3, 8.27). Children from age 19 to 23 months who consumed foods rich in iron showed lower probabilities of stunting (OR 0.04; 95% CI 0.00, 0.51) (Tello et al., 2022). The main benefit of calcium is for bone and tooth growth. Low levels of calcium during the growth period can result in the baby's bone growth not being perfect so that growth disorders occur and stunting can occur. This is why pregnant woman needs to take enough calcium supplement so she can give the nutrition to the baby during breastfeed (Ward, Jarjou, & Prentice, 2017). When the babies are not provided exclusively with breast milk, their nutritional intake does not meet their needs and can lead to nutritional deficiencies so that their growth will be hampered to a greater extent than their age or stunting. A study conducted in Indonesia showed that breastfeeding practice was effective in preventing stunting in poor family children (Sirajuddin, Asbar, Nursalim, & Tamrin, 2020). Even a study conducted in poor country like Malawi showed that exclusive breastfeeding of infants under 6 months is associated with prevalence of stunting (Kuchenbecker et al., 2015). Therefore, promotion of exclusive breastfeeding in low-income countries or to poor family are important in preventing growth retardation.

CONCLUSION

There was a significant relationship between exclusive breastfeeding status and the incidence of stunting in toddlers aged 24-26 months in West Gunungsitoli District. Therefore, it is recommended that the government and the West Gunungsitoli District health service, Gunungsitoli City, collaborate with the community health center in providing outreach or providing education to the community, especially mothers, regarding the importance of giving exclusive breast milk to babies and regarding the incidence of stunting. Especially for mothers to always take their children to Posyandu (integrated service post) and for pregnant women to have regular pregnancy checks. Further research is needed regarding other factors that might cause stunting in Nias with a larger sample size. Hopefully, this results of this research can be used as a study for students and lecturers that the incidence of stunting is related to exclusive breastfeeding for children under five years.

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DECLARATION OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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