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Nutrition Awareness: Family Practices in Indonesian Borderland

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Abstract

Poor family nutritional practice is one of the major leading causes of stunting in children aged 0-59 months. Good family nutrition practices are one of the primary keys to stunting prevention. It can also reduce the prevalence of stunting and the impact it has on families, which are included in the category of stunting risk families. This study aimed to investigate nutrition-aware family practices at Haliwen Health Center, Atambua-one of the border areas of the Republic of Indonesia (RI) and Democratic Republic of Timor Leste (DRTL). It is a descriptive study with a cross-sectional design that took place at the Haliwen Health Center, Belu Regency, East Nusa Tenggara Province, Indonesia, from September 1 to October 30, 2021. A total of 147 families with children aged 0-59 months, were selected by purposive sampling. Most mothers (60%) gave exclusive breastfeeding to infants aged 0-6 months. Most mothers (78%) firstly gave complementary feeding to infants at the age of >6 months, most families and children (94%) ate a variety of nutritional sources, most families (56%) used iodized salt, most infants (95%) aged 6-11 months and children 12-59 months received vitamin A supplements, most (88%) pregnant women received iron supplement at least 90 tablets during pregnancy, most postpartum women (72%) received two capsules of vitamin A supplements. 58.5% of families at the Haliwen Health Center had implemented >75% nutrition-aware family indicators. However, none of them had performed 100% nutrition-aware family indicators. Sustainable assistance needs to be improved to reach 100% nutrition-aware family and implemented in all families.

Introduction

Good family nutrition practices are one of the primary keys to stunting prevention (Danaei et al., 2016). In addition, it can also reduce the prevalence of stunting and the impact it has on families, which are included in the category of stunting risk families (Pemerintah Republik Indonesia, 2021). Globally, the prevalence of stunting has decreased. However, stunting is still a major nutritional problem in poor and developing countries such as Indonesia (Aguayo and Menon, 2016; Danaei et al., 2016; de Onis and Branca, 2016; Dewey, 2016; Prentice, 2017; Torlesse et al., 2016). Good family nutrition practice becomes one of the vital keys to reducing stunting prevalence and its impacts (Torlesse et al., 2016). According to the Ministry of Health of the Republic of Indonesia, in 2018, the stunting rate in Indonesia was 30.8% (Kemenkes RI, 2018). This number is spread across all provinces in Indonesia. The results of national basic health research showed that the province with the highest prevalence of stunting in Indonesia is the East Nusa Tenggara Province, with a stunting majority of 51.7% in 2013 (Kemenkes RI, 2013), decreasing to 42.6% in 2018 (Kemenkes RI, 2018), and increasing to 43.8% in 2019 (Pusat Data dan Informasi Kementerian Kesehatan RI, 2020). According to the secondary data from the Health Office of East Nusa Tenggara Province, the prevalence of stunted children in Belu regency in 2019, 2020, and 2021 are 21.3%, 21.2%, and 17.9% respectively. This figure is still far from the 14%

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reduction target set by the Ministry of Health of the Republic of Indonesia. (Kemenkes RI, 2020).

The focus of stunting reduction interventions in Indonesia has been recently stipulated in Presidential Regulation Number 72 of 2021, namely family-based interventions (Pemerintah Republik Indonesia, 2021). It means the intervention focuses on changing behavior and practices for families at risk of stunting. Those included in the category of stunting risk families are families whose teenage girls, pregnant women, postpartum women, babies aged 0-6 months, and toddlers. This improvement is to gain optimal nutritional status.

Optimal nutritional status is a requirement for the quality of human resources (Aguayo and Menon, 2016; Owino et al., 2016; Atsu, Guure and Laar, 2017). Children who experience stunting can cause various negative impacts such as impairment in brain development (Muhammad, 2018), low learning abilities (de Onis and Branca, 2016; Owino et al., 2016; Mahmudiono, Sumarmi and Rosenkranz, 2017; Shekar et al., 2017; Vonaesch et al., 2017; Muhammad, 2018), and long-term impairment such as an increased risk of poor health status, short adult stature and is linked with a high risk of developing degenerative disorders like diabetes mellitus (Santos et al., 2010) and hypertension (Sawaya et al., 2005). Adult obesity is also proven to be a long-term impact on childhood stunting (Hoffman et al., 2000; Muhammad, 2018).

Stunting is caused by various factors such as low-income family parenting practices (Torlesse et al., 2016), poor access to health services (Singh, Upadhyay and Kumar, 2017), economic socio-cultural factors (Ahmad et al., 2015; Mosites et al., 2016; Owino et al., 2016; Vir, 2016; Fregonese et al., 2017; Jackson and Black, 2017; Mal-ed Network Investigators, 2017; Rakotomanana et al., 2017; Sarma et al., 2017; Campos, Vilar-Compte and Hawkins, 2020; Pacheco, Picauly and Sinaga, 2017), poor environmental sanitation (Nkurunziza et al., 2017; Iftikhar, 2018; Campos, Vilar-Compte and Hawkins, 2020), and lack of family access to nutritious food (Rakotomanana et al., 2017; Gleason et al., 2016; Owino et al., 2016; Fregonese et al., 2017; Schrijner and Smits, 2018). Multifactor causes stunting, but family health practices determine the nutritional status of children under five (Singh, Singh and Ram, 2014; Mahmudiono, Sumarmi and Rosenkranz, 2017).

Various research results report that stunting is commonly caused by a lack of family awareness of imbalance nutrition in the first 1,000 days of life (Singh, Singh and Ram, 2014; Torlesse et al., 2016; Mahmudiono, Sumarmi and Rosenkranz, 2017; Li et al., 2020; Abbag et al., 2021). For people in border areas, this problem is worsened by poverty (Dewey and Begum, 2011; Aguayo and Menon, 2016; Demirchyan et al., 2016; Vir, 2016; Gleason et al., 2016; Sarma et al., 2017; Nkurunziza et al., 2017; Perkins et al., 2017; Prentice, 2017; Rakotomanana et al., 2017; Iftikhar, 2018; Perumal, Bassani and Roth, 2018), low educational status (Demirchyan et al., 2016; Rakotomanana et al., 2017; Schrijner and Smits, 2018), and low family income (Sarma et al., 2017), (Hoddinott et al., 2013; Vir, 2016; Sarma et al., 2017).

This study is essential to support the regional action plan to accelerate stunting reduction in Belu Regency. It is because the study of family nutrition practices can be used as a reference in policy formulation. In addition, this study can provide family-based interventions in the context of accelerating stunting reduction. This study aimed to investigate the practice of nutrition-aware families in Haliwen Health Center, Belu Regency, the border areas of the Republic of Indonesia (RI), and the Democratic Republic of Timor Leste (DRTL).

Methods

It is a descriptive study with a cross-sectional design. This study was conducted on 147 families with children aged 0-59 months at the Haliwen Health Center, Belu Regency, East Nusa Tenggara Province, Indonesia. The study took time from September 1 to October 30, 2021. The sample selection began with selecting a village in the working area of the Haliwen Health Center, which had the highest stunting cases in Kakuluk Mesak District, and obtained 9 Posyandu in Kabuna Village in the active site of the Haliwen Health Center. In the

Indonesian language, Posyandu is an acronym for Pos Pelayanan Terpadu. Posyandu is an integrated service post providing integrated essential health services in maternal and child health, including nutrition, family planning, vaccine, and disease control. The posyandu was selected in Kabuna village by stratified random sampling, and five posyandu were selected, namely Manubaun, Weraihenek 1, Weraihenek 2, Haliwen, and Bautasik.

$$n_i = \frac{N_i}{N}\ x\ n$$

$$Stratum\ Sampel\ Size = \frac{Group\ Size\ (Stratum)}{Population\ Size}\ x\ Sampel\ Size$$

$$\text{Posyandu Manubaun} = \frac{54}{235} \text{ x } 147 = 34$$
$$\text{Posyandu Weraihenek 1} = \frac{33}{235} \text{ x } 147 = 21$$
$$\text{Posyandu Weraihenek 2} = \frac{37}{235} \text{ x } 147 = 23$$
$$\text{Posyandu Haliwen} = \frac{85}{235} \text{ x } 147 = 53$$
$$\text{Posyandu Bautasik} = \frac{26}{235} \text{ x } 147 = 16$$

Figure 1. Stratified Random Sampling Formulas (Sugiyono, 2017)

The sample in this study was 147 family members, selected by purposive sampling from a total population of 235 people spread over five selected posyandu. The single variable in this study was the practice of nutrition-aware families determined by the Ministry of Health of the Republic of Indonesia (Departemen Kesehatan RI, 2008), with modified indicators as follows: (1) exclusive breastfeeding for infants aged 0-6 months; (2) the age of the toddler given complementary feeding; (3) families and toddlers eat a variety of nutritional sources; (4) the family uses iodized salt; (5) infants aged 6-11 months and children 12-59 months received vitamin A supplements; (6) pregnant women receive at least 90 iron tablets during pregnancy; (7) postpartum women receive two capsules of vitamin A supplements.

Data were collected by a set questionnaire containing seven nutrition-aware family indicators. The data collection process conside-red the rules and ethics of research by providing information and consent through the signing of informed consent. Respondents involved in this study expressed their willingness before filling out the questionnaire. Data were analyzed by univariate analysis to describe the number and percentage of each indicator of a nutrition-aware family.

Table 1. The Result of Family Characteristics

No.	Family Characteristics	n	%
1.	Mother's age (years old)		
	15 – 25	144	29.9
	26 – 35	82	55.8
	36 – 46	21	14.3
2.	Mother's education level		
	Uneducated	17	11.6
	Primary School	40	27.2
	Junior High School	17	11.6
	Senior High School	51	34.7
	Higher Education	22	15
3.	Mother's Employment Status		
	Unemployment	102	69.4
	State Employee (PNS/TNI/POLRI)	3	2
	Farmer	22	15
	Trader	5	3.4
	Private Employee	15	10.2
4.	Husband's Employment Status		
	Unemployment	12	8.2
	State Employee (PNS/TNI/POLRI)	4	2.7
	Farmer	89	60.5
	Trader	8	5.4
	Private Employee	34	23.1
5.	Family Income		
	≤ IDR 1.950.000	117	79.6
	> IDR 1.950.000	30	20.4

Source: Primary Data, 2021

Table 1 shows that most mothers (55.8%) are 26 – 35 years old, and most mothers (34.7%) have attended Senior High School. Most mothers (69.4) are unemployed. The data about the Husband's employment status also shows that most Husbands (60.5%) are farmers. These conditions are reflected in family income. The data shows that most families (79.6) earn ≤ IDR 1.950.000 monthly.

Table 2. The Distribution of Nutrition-Aware Family Indicators

No.	Nutrition-Aware Family Indicator	Yes		No	
		n	%	n	%
1.	Exclusive breastfeeding for babies aged 0-6 months	88	60	59	40
2.	Infants receive complementary feeding at the age of > 6 months	114	78	33	22
3.	Families and children eat a variety of nutritional sources	138	94	9	6
4.	Families use iodized salt	82	56	65	44
5.	Infants aged 6-11 months and children 12-59 months receive vitamin A supplements	140	95	7	5
6.	Pregnant women get at least 90 iron tablets during pregnancy	130	88	17	12
7.	Postpartum women get two capsules of vitamin A supplements	106	72	41	18

Source: Primary Data, 2021

Table 2 shows that most mothers (60%) gave exclusive breastfeeding to infants aged 0-6 months. Most mothers (78%) first gave complementary feeding to infants at the age of >6 months. Most families and children (94%) ate a var iety of nutritional sources and most families (56%) used iodized salt. Most (95%) infants aged 6-11 months and children 12-59 months received vitamin A supplements. Most (88%) pregnant women received iron tablets at least 90 tablets during pregnancy and most postpartum women (72%) received two capsules of vitamin A supplements. The result of the univariate analysis of nutrition-aware family practice showed that 58.5% of families had performed >75% nutrition-aware family indicators, and 41.5% of families had performed ≤75% nutrition-aware family indicators at Kabuna Village.

Kabuna is the working area of the Haliwen Community Health Center (Puskesmas). Kabuna is a village in Belu District, one of the border areas between Indonesia and East Timor. This study shows the characteristics of border communities, especially mothers, most of whom have completed high school education but there are still mothers who have never attended formal education. It has an impact on the type of work done. The data shows that more than half of the mothers involved in this study were unemployed. The job in question is a type of work that makes money. It is not supported optimally by husbands, most of whom have a livelihood as farmers. This condition causes a lack of income that can be generated to support family life, including health matters, and fulfill family nutrition adequacy. Low income also has an impact on poor nutrition practices in the family.

This study shows the practices of Kadarzi. Kadarzi is an acronym for Keluarga Sadar Gizi. It means nutrition-aware family, a program initiated by the Ministry of Health of the Republic of Indonesia as one of the solutions to the nutritional problem in Indonesia (Departemen Kesehatan RI, 2008). A Nutrition-aware Family is a family that can recognize, prevent, and overcome nutritional problems in every member of their family (Departemen Kesehatan RI, 2008).

This study shows that most mothers gave exclusive breastfeeding to infants aged 0-6 months. Based on the characteristics of the occupation of the border areas, most married women choose to take care of the household, so they have plenty of time only to give breast milk until the baby is six months old. In addition, breastfeeding mothers continue to be given health education by Posyandu officers to increase the coverage of exclusive breastfeeding. This finding also shows a small proportion of mothers who do not provide exclusive breastfeeding. It is caused by several conditions in the research location, which are related to

the low level of education. It makes it difficult to find decent work, forcing women, including nursing mothers, to look for work outside the Kabuna Village. This condition causes the mother to leave her child in the care of her grandmother or family. Most children who do not get exclusive breastfeeding are children born and raised by other family members, so children do not get exclusive breastfeeding.

Exclusive breastfeeding means only breast milk without additional food until six months (Campos, Vilar-Compte and Hawkins, 2020). Exclusive breastfeeding is proven to be effective in reducing the risk of stunting (Campos, Vilar-Compte and Hawkins, 2020). Breast milk contains carbohydrates, water, fat, protein, and essential nutrients that contribute to the growth and development of toddlers (Ahmad et al., 2015; Oliveira, Allert and East, 2016; Akombi et al., 2017; Mahmudiono, Sumarmi and Rosenkranz, 2017).

The age of toddlers being given complementary feeding for the first time also contributes to the growth and development of toddlers (Binns et al., 2020). This study shows that most mothers gave complementary feeding at the age of >6 months. The existence of regular health education at the time of Posyandu implementation causes most mothers to have a good understanding of the importance of giving complementary feeding. It is manifested in positive behavior in giving complementary feeding when the baby is >6 months old. This finding also shows that a small proportion of infants get complementary feeding at the age of <6 months. Previous cultural practices trigger this: breastfeeding for four months does not harm the baby. It is mainly practiced on babies whose grandmothers or families raise them because their mothers work outside the village or even farther.

At the age of >6 months, breast milk cannot meet children's daily nutritional needs (Oliveira, Allert and East, 2016). The results of previous studies reported that toddlers who get complementary feeding at the age of >6 months showed a lower risk of stunting (Dewey, 2016; Abdulahi et al., 2017). Contrarily, giving complementary feeding at the age of <6 months may have a negative impact because the digestive system of babies <6 months is still not perfect, so it disturbs the absorption of the nutrients (Owino et al., 2016).

This study shows that most families and toddlers ate a variety of nutritional sources. They are consuming various sources of essential nutrients to maintain body functions. One of the characteristics of rural communities is that they have a residence with a large yard so that even though family income is below the district minimum wage, they still consume various sources of nutrition obtained from their yard. This finding also shows a small proportion of families who do not consume a variety of nutritional sources. This condition partially occurs in ex-refugee families who occupy communal lands shared with fellow ex-refugees. It causes limited access to various dietary sources. Children under five are the golden period. It is the most important stage of growth and development, where the brain and physical growth occurs rapidly (Deki, 2016). Lack of nutritional intake at this age will impact growth failure and is irreversible, so adequate nutrition is needed to support children's growth.

Another factor that impacts stunting is the consumption of iodized salt (Danaei et al., 2016). The results of this study showed that most families consume iodized salt. Until now, iodized salt has been sold freely at an affordable price. Continuous education that Puskesmas officers always give increases public awareness of using iodized salt. However, a small proportion of people do not consume iodized salt. It is due to the assumption that coarse or non-iodized salt gives a more delicious taste to dishes, so a small number of people prefer non-iodized salt.

Iodine is an important micronutrient that plays a vital role in synthesizing the hormone thyroxine by the thyroid gland (Rakotomanana et al., 2017; Abbag et al., 2021). Thyroxine hormone plays a role in metabolic control and growth processes, so iodine deficiency will interfere with the growth process of toddlers (Rakotomanana et al., 2017; Abbag et al., 2021). Previous findings proved that the lack of consumption of iodized salt increased the risk of stunting in children under five by 3% (Krämer et al., 2016). The absence of iodine in food had an impact on the growth failure of children.

Among the micronutrients that play a role in children's growth is vitamin A. Most infants aged 6-11 months and children aged 12-59 months have received vitamin A supplements. Vitamin A is routinely given to infants, according to their age, who attend the Posyandu. A small proportion of babies who do not receive Posyandu are babies who do not regularly come to the Posyandu every month. Vitamin A plays a role in metabolic processes, but the body itself does not produce vitamin A (Iftikhar, 2018). Vitamin deficiency can cause growth failure, manifested by stunting (Ssentongo et al., 2020). The results of previous studies had proven that vitamin A deficiency is a determinant of stunting in toddlers (Ssentongo et al., 2020).

Maternal factors also play a role in causing stunting, especially during the pregnancy process. The results of this study indicate that most pregnant women receive at least 90 iron tablets during pregnancy. It is due to the high participation rate of pregnant women in each Posyandu and visits to the Puskesmas. In addition, the increased coverage of giving iron tablets in the Kabuna Village is supported by home visits that Puskesmas officers and health cadres always carry out care to ensure pregnant women get iron tablets. This finding shows that only a small proportion of women did not receive iron tablets during pregnancy because they did not attend the Posyandu and had changed their domicile but did not report it to health workers. Consumption of iron is necessary for pregnant women to pass the pregnancy process healthily. Regular consumption of iron tablets is proven effective in supporting optimal growth and development of the fetus in the uterus and minimizes adverse effects after the baby is born. Iron tablet supplementation was significantly associated with a reduced risk of stunted and severe stunted in children (Nisar, Dibley and Aguayo, 2016). A study in South Asia showed that receiving supplemented iron tablets earlier in pregnancy increased the growth of toddlers living in poor and developing countries (Nisar et al., 2020).

This study implies that most women obtain two capsules of vitamin A during the period. Postpartum women receiving two capsules of vitamin A is one of the essential services for women who gave birth at puskesmas or hospitals. However, there are a small number of postpartum women who missed two capsules of vitamin A during the postpartum period due to cultural practice in Kabuna village. This condition is experienced by women who gave birth assisted by a traditional birth attendant. In addition, there are cultural beliefs that women should be at home for the first 40 days after delivery.

Two capsules of Vitamin A supplementation in postpartum women is also one of the determinants of reducing stunting in toddlers (Gwavuya et al., 2014). The only source of nutrition for infants aged 0-6 months is breast milk, so women with vitamin A deficiency will not be able to provide enough food for their babies (Oliveira, Allert and East, 2016). It will impact growth failure will be seen at the age of toddlers.

Conclusions

This study showed that most families had implemented nutrition-aware family indicators. However, none of them had performed 100% nutrition-aware family indicators. The efforts to assist and promote health at the Haliwen Health Center need to be improved so that the nutrition-aware family indicator can be 100% implemented by all families.

It was a descriptive study. Continuous research needs to be conducted to get complex situations and to analyze the determinant factors of nutrition-aware family practices in the Indonesian borderland area.

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