

Health Indicators for Accelerating Stunting Reduction: Family Practices in Indonesian Borderland

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Received: 19 September, 2023; Accepted: 04 October, 2023; Available online: 16 January, 2024

ABSTRACT

Background: The Indonesian government has established the latest family-based approach to implement the national strategy to accelerate the reduction of stunting in Indonesia through a family-based intervention approach. Family-based intervention is proven scientifically effective in preventing growth retardation in children under five. However, this research was conducted on families with children aged 0-2 years so that all of the presented problems can be used as a reference in providing family-based interventions. This study aims to describe family health practices in preventing stunting among the people in the border areas of Indonesia and Timor Leste.

Subjects and Method: This was a quantitative descriptive study with a cross-sectional design, conducted from May to June 2022. A total of 257 families (out of a total population of 566) with children aged 0-24 months spread across 16 integrated healthcare centers (*Posyandu*) at the Haliwen Health Center, Belu District, East Nusa Tenggara Province, Indonesia. The subjects in this study were selected by simple random sampling. The single variable in this study was family health practices in preventing stunting, consists of 18 indicators adopted and elaborated from presidential regulation 72 concerning accelerating the reduction of stunting. The data collected by a set of questionnaires. The data analyze by univariate analysis to describe frequency (n) and percentage (%) of each indicators.

Results: Out of a total of 18 assessed indicators, most families still use open garbage cans, burning garbage for destruction, and did not carry out pre-marital health screening.

Conclusion: The results of this study showed that most of the health indicators had been carried out by families with infants under two years old. It is in line with the growth status of under-two, most of whom are not stunted.

Keywords: stunting, children under two, family-based intervention.

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Cite this as:

Rua YM, Nahak MPM (2024). Health Indicators for Accelerating Stunting Reduction: Family Practices in Indonesian Borderland. *J Matern Child Health*. 09(01): 14-27. <https://doi.org/10.269-11/thejmch.2024.09.01.02>.



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BACKGROUND

Stunting in a toddler is still a major nutritional problem in Indonesia. The Indonesian government has made various efforts to

accelerate the reduction of stunting. Recently, presidential regulation No. 72 of 2021 concerning the acceleration of stunting reduction is launched. This regulation is the

legal shelter for all national strategies to accelerate the removal of stunting and achieve the target of reducing it to 14% by 2024 (Presiden Republik Indonesia, 2021). The government has established the latest family-based approach to implement the national strategy to accelerate the reduction of stunting. This regulation was launched as a reorganization step to expedite the removal of stunting in Indonesia through a family-based intervention approach. It means that family health practices are a determinant of stunting. Good family health practices are the primary key to reducing the prevalence of stunting and vice versa (Nahak et al., 2022). Family-based intervention is proven scientifically effective in preventing growth retardation in children under five (Rahayu et al., 2017; Ramadhan et al., 2022)

According to the Ministry of Health of the Republic of Indonesia report in 2018, the stunting rate in Indonesia was 30.8% (The Ministry of Health of Indonesia, 2018b). This figure is spread across all provinces in Indonesia. Primary health research results show that the province with the highest stunting prevalence in Indonesia is East Nusa Tenggara Province, with a majority of 51.7% in 2013, decreasing to 42.6% in 2018. Based on the results of community-based nutrition recording and reporting, the prevalence of stunting in Belu District in 2019-2021 was 21.3%, 21.2%, and 17.9%. The data showed a decrease but have not reached the reduction target (The Ministry of Health of Indonesia, 2020b).

Stunting is caused by various factors such as low-income (Mahmudiono et al., 2017), family parenting practices (Dewey and Begum, 2011), poor access to health services (Hoddinott et al., 2013), economic (Hoddinott et al., 2013; Aguayo and Menon, 2016; Fregonese et al., 2016; Mahmudiono et al., 2017), social and cultural factors (Fregonese et al., 2016; Pacheco, Picauly and Sinaga,

2017; Januarti et al., 2020), poor environmental sanitation (Hoddinott et al., 2013; Gwavuya et al., 2014; Vir, 2016; Wirth et al., 2016; The Ministry of Health of Indonesia, 2018a; Januarti et al., 2020; UNICEF, WHO and World Bank Group, 2020), and lack of family access to nutritious food (Gleason et al., 2016; Perkins et al., 2017; Januarti et al., 2020). Multiple factors cause stunting, but family health practices determine the nutritional status of toddlers. Various research results report that stunting is mainly caused by a lack of family awareness of balanced nutrition among family members, especially toddlers (Hoddinott et al., 2013; Januarti et al., 2020; Noor, 2012; Indonesian Ministry of Health, 2018a, Noor, 2012; Indonesian Ministry of Health 2020).

This research was conducted on families with infants aged 0-2 years because at this age, usually found the failure to thrive can be treated and prevented to improve the child's health status in the future (Badriyah and Syafiq, 2017; Islam et al., 2020). Optimal health status is a prerequisite for the establishment of quality human resources (de Onis and Branca, 2016). Infants usually experience stunting that can cause various negative impacts, such as slowing brain development (Muhammad, 2018). low learning ability (Perkins et al., 2017) and long-term effects, such as the increased risk of developing metabolic disorders such as diabetes mellitus (Santos et al., 2010; (The Ministry of Health of Indonesia, 2020b), hypertension (Sawaya et al., 2005; (The Ministry of Health of Indonesia, 2020a) and obesity (Hoffman et al., 2000; de Onis and Branca, 2016; Muhammad, 2018; Rolfe et al., 2018).

For people in border areas, the urgency of this problem is evident with difficult access to information that results in insufficient knowledge about good family health practices (Nahak et al., 2022). Furthermore,

this research is essential because an illustration of the situation of border people becomes valid data in setting policies for accelerating stunting reduction. This study was conducted on families with children aged 0-2 years so that all of the presented problems can be used as a reference in providing family-based interventions. Thus, this study aimed to describe family health practices in preventing stunting among the people in the border areas of Indonesia and Timor Leste.

SUBJECTS AND METHOD

1. Study Design

This was a quantitative descriptive study with a cross-sectional design, conducted from May to June, 2022, at 16 integrated healthcare center in Haliwen Health Center working area, Belu District, East Nusa Tenggara Province, Indonesia.

2. Population and Sample

Population in this study were 566 families with children aged 0-24 months. A total of 257 families were selected by simple random sampling.

3. Study Variables

The single variable in this study was family health practices in stunting prevention, consists of 18 indicators, adopted and elaborated from presidential regulation number 72 released in 2021, concerning in accelerating the reduction of stunting. The indicators were: (1) Family knowledge about stunting; (2) Infants who are weighed every month (3) Infants who are measured in weight and height every month; (4) Infants who have growth chart; (5) Infants are given exclusive breastfeeding; (6) Age of Infants was received weaning food; (7) Mothers get Fe tablets

during pregnancy; (8) Infants have received age-appropriate immunizations; (9) Mother and partner carry out health checks as part of pre-marital services; (10) Mother use family planning; (11) Use of latrines; (12) Source of water used by family; (13) Building of family house; (14) Condition of trash bins; (15) Waste destruction; (16) Condition of waterways; (17) Condition of trash bins; and (18) National health insurance membership.

4. Operational Definition of Variables

Family health practice is defined as a performance of specific health behavior which meets the health indicators to prevents and accelerate stunting reduction in families with children aged 0–24 months. The dichotomic data of each indicator defined by: 1: positive behavior, 0: negative behavior.

5. Study Instruments

The data collected by a set of questionnaires, consist of 18 indicators, adopted and elaborated from presidential regulation number 72 released in 2021, concerning in accelerating the reduction of stunting.

5. Data analysis

The data analyze by univariate analysis to describe frequency (n) and percentage (%) of each indicator.

6. Research Ethics

This study has been declared ethically feasible based on WHO standards. An ethical test was carried out by the Health Research Ethics Committee, Faculty of Medicine, Airlangga University, Indonesia, with letter number 129/EC/KEPK/FKUA/2022.

RESULTS

Based on Table 1, it can be seen that the family health indicators related to stunting reduction.

Table 1. Family Health Indicators related to Stunting Reduction

Indicators	Frequency (n)	Percentage (%)
Family knowledge about stunting		
Know	228	88.7
Do not know	29	11.3
A monthly routine of body weight/body length measurement of infants		
Yes	237	92.2
Not always	20	7.8
Infants are weighed every month		
Yes	248	96.5
Not Always	9	3.5
Infants who have a growth chart		
Have	251	97.7
Do not have	6	2.3
Infants are given exclusive breastfeeding		
Yes	224	87.2
No	33	12.8
Age of Infants who receive breast milk complementary food		
≥6 months	226	87.9
<6 months	31	12.1
Mothers get iron tablets during pregnancy		
Yes	254	98.8
No	3	1.2
Infants have received age-appropriate immunizations		
Done	217	84.4
Not yet	40	15.6
Pre-marital health screening		
Yes	10	3.9
No	247	96.1
Mother uses birth control		
Yes	147	57.2
No	110	42.8
Use of latrines		
Yes	257	100
No	0	0
Latrine ownership status		
Private ownership	253	98.4
Neighbour ownership	4	1.6
Source of water used by the family		
Waterway	257	0
River	0	0
Family house building		
Permanent	130	50.6
No	127	49.4
Garbage condition		
Close	66	25.7
Open	191	74.3
Garbage destruction		
Landfill	20	7.8
Burnt	237	92.2
Condition of drains		
Flow	246	95.7

Indicators	Frequency (n)	Percentage (%)
Pooled	11	4.3
National health insurance membership		
Yes	174	67.7
No	83	32.3
Nutritional status		
Not Stunting	205	79.8
Stunting	52	20.2

DISCUSSION

Stunting is a failure to grow in children due to chronic malnutrition (Cumming and Cairncross, 2016; Akombi et al., 2017; Maled Network Investigators, 2017; Perkins et al., 2017; Prentice, 2017). The results of this study explained family health practices that describe sensitive and specific services according to presidential Presidential regulation number 72 of 2021 concerning accelerating the reduction of stunting. Stunting is a failure condition to thrive due to a deficiency of essential nutrients in the first 1000 days of life (Hoddinott et al., 2013; Deki, 2016; Akombi et al., 2017; Zubaeda et al., 2020; Hijrawati et al., 2021). Stunting prevention should have started before marriage. It can be done through a pre-marital health check as one of the first steps to prevent stunting in children. Pre-marital health checks screen health problems and assess the health status of partners, pregnancy plan, and deal with new roles as parents (Zubaeda et al., 2020; Wijayanti, 2022).

This study showed that most families did not carry out pre-marital health screening. It is due to the lack of public understanding of the importance of pre-marital health checks. Furthermore, the socio-cultural factor is an obstacle not to carrying out pre-marital health checks. Socio-cultural factors, such as customs procedures before marriage, must be followed by prospective spouses. Hence, the two extended families focus more on fulfilling traditional obligations and putting aside pre-marital medical examinations. This condition occurs in

the majority of people in the border area.

Adequate knowledge will form healthy behaviour patterns in fulfilling child nutrition (Simanjuntak et al., 2019; Anggraini and Rachmawati, 2020; Zubaeda et al., 2020; Rachmawati et al., 2021). The results of the research showed that most families knew about stunting. Good family knowledge is supported by the continuity of health information provided by health workers and health education institutions around the working area of the Haliwen Health Center. Good knowledge of families will increase awareness of bringing their infants to Posyandu (health integration centres) (Hadi et al., 2022; Sari et al., 2022). The results of this study showed that most of the infants had their height and length measured every month. This finding also showed that most infants are always weighed every month. It is to monitor developments and provide interventions based on the results. The age of infants includes the golden age, which means that lack of monitoring at this age will cause growth failure and is irreversible (Islam et al., 2020).

Monitoring nutritional status at the posyandu (health integration centres) is carried out by measuring height or body length and weighing children under five (Hadi et al., 2022; Sari et al., 2022). The results of monitoring nutritional status were well documented in the growth chart. Ownership status was an indirect determinant of the occurrence of stunting because the growth chart contains information on the nutritional status of children (Hadi et al., 2022;

Sari et al., 2022). It can ease intervention based on regular monitoring. The absence of a growth chart can make it difficult for health workers to monitor the development of children's nutritional status. This study's results showed that most infants had growth charts. Posyandu (integrated health centre) services are not limited to monitoring nutritional status but ensuring that all mothers are required to provide exclusive breastfeeding for infants aged 0-6 months (Hadi et al., 2022).

The results showed that most mothers gave exclusive breastfeeding to infants aged 0-6 months. Exclusive breastfeeding means the baby gets only breast milk without any additional food (except medicines, vitamins and minerals) until six months (Binns et al., 2020; Hadi et al., 2022; Nahak et al., 2022). Breast milk is the primary source of food for newborns up to 6 months of age (Ahmad et al., 2015; Beal et al., 2018; Gannon et al., 2020). Breast milk contains carbohydrates, water, fat, protein and essential nutrients that contribute to the growth and development of toddlers (Ahmad et al., 2015). Exclusive breastfeeding has been proven to reduce the risk of stunting effectively (Hijra et al., 2016; Badriyah and Syafiq, 2017; Uwiringiyimana et al., 2019; Binns et al., 2020; Nur et al., 2021; Hadi et al., 2022; Nahak et al., 2022). It is because breast milk contains nutrients for physical development and antibodies, thereby reducing morbidity and the incidence of infection in infants. Infectious diseases will interfere with the absorption of essential nutrients, cause failure to thrive, and reduce children's health status (Soesanti et al., 2020).

To improve children's health status, breastfeeding can be continued after six months to 2 years of age (World Health Organization, 2000). At six months, there is an increase in nutritional needs, so that breast milk is not enough (Stewart et al.,

2013; Binns et al., 2020; Soesanti et al., 2020; Babys et al., 2022). Children need to get complementary food for breast milk to meet their daily dietary requirements of children. It is necessary to pay attention to the age of the baby when it is given breast milk. Infants who receive weaning food at less than 6 months can trigger health problems and child development because the child's metabolic system is not yet perfect to absorb the additional nutrients besides breast milk (Hijra et al., 2016). Likewise, the long breastfeeding period will increase the risk of growth disorders because breast milk can no longer meet the daily needs of children over the age of 6 months (Masuke et al., 2021). The results of previous studies reported that toddlers who get weaning food at the age of ≥ 6 months were proven to reduce the risk of stunting (Hijra, Fatimah-Muis and Kartasurya, 2016). On the other hand, giving weaning food at < 6 months of age may have a negative impact because the infants' digestive system < 6 months is not perfect, interfering with the absorption of nutrients (Masuke et al., 2021). This can cause failure to grow.

Maternal factors are a determinant of stunting, especially during pregnancy. This study showed that most pregnant women obtained Fe tablets of at least 90 tablets during pregnancy. Iron tablet supplementation is significantly associated with a reduced risk of short and very short toddlers (Gwavuya et al., 2014; Nisar, Dibley and Aguayo, 2016). Previous study in South Asia state that the proper use of iron tablets increases the growth of children under five in poor and developing countries (Dewey, 2016; Vir, 2016; Nisar et al., 2020). Another factor that has been identified as capable of preventing stunting is age-appropriate immunization (The National Team for the Acceleration of Poverty Reduction, 2017). Immunization can strengthen a child's

immune system so that children will be stronger (Pacheco et al., 2017; Singh et al., 2017). Children who do not get immunizations according to their age are susceptible to infectious diseases (Pacheco et al., 2017). This reduces the absorption of essential nutrients and will impact growth failure, seen at the age of five (Owino et al., 2016).

Various research results have proven that stunting is caused by close birth distance and having many children (Mauluddin and Novianti, 2020). The results showed that the recommended length for childbirth is ≥ 4 years (Meo and Nahak, 2020). It aims to restore the body's nutritional adequacy to accommodate the fetus's growth and development in the subsequent pregnancy. Not using family planning will affect the close birth distance and may cause a lack of nutritional supply in subsequent pregnancies. This condition causes growth delays in the fetus in the womb, which will bear a short child.

In this study, it was also found that all families used the latrine to defecate. It shows that the government target through the tagline "stop open defecation" was achieved. There are still a small number of families who do not have their latrines. The use of a latrine contributes to the health status of the family. Research results have proven that open defecation increases the incidence of infection in children (Rahman et al., 2020). The condition will inhibit the absorption of essential nutrients and eventually cause growth disorders in children.

The results of this study showed that all families used clean water according to the proper consumption standards set by the government. Using pure water may reduce morbidity due to water pollution and ultimately improve the family's health status (Rode, 2015; Beal et al., 2018; Mulyaningsih et al., 2021). Conversely, polluted water can increase the risk of infection (Fadillah et al.,

2022). This condition inhibits the absorption of essential nutrients and can interfere with the growth status of infants. Infectious diseases can come from a lack of environmental sanitation (Beal et al., 2018, 2018; Vilcins et al., 2018). Poor ecological sanitation can cause children easy to get diseases and infections (Rahman et al., 2020). In this study, good environmental sanitation is assessed from several aspects, such as the feasibility of building the family house, the condition of the trash can, how the family destroys the garbage and the state of the waterways around the house. Another factor that lead to child stunted is the type of house. To achieve an optimal health status, families with children under two are expected to a permanent house.

A permanent house is identified as a type of house with walls, roof and a solid foundation, and a floor made of walls. Meanwhile, non-permanent houses are built with local materials such as wooden boards, using only part of the walls, thatched roofs and earthen or tiled floors. House construction may affect the health status of family members who live there (Ayelign and Zerfu, 2021). Non-permanent houses with dirt floors can cause respiratory problems in families and toddlers and ultimately reduce health status. In under-fives children, this condition can interfere with growth and cause stunting. Good environmental sanitation can be seen from the condition of the trash bins used by the family. Most families still use open containers. This condition causes the families to be easily exposed to various bacteria, viruses, and parasites (Beal et al., 2018; Vilcins et al., 2018). It may rise to multiple infectious diseases and ultimately interfere with the infants' growth (Beal et al., 2018; Rahman et al., 2020). Likewise, the destruction of waste can affect the health status of the family (Badriyah and Syafiq, 2017). Most families destroy garbage by

burning it. The study showed that burning garbage in the home environment may trigger air pollution (Torlesse et al., 2016). Inhaled smoke from burning waste can cause respiratory problems and red and watery eyes (Badriyah and Syafiq, 2017). These various conditions can increase the risk of infection in under-fives which ultimately causes failure to thrive.

Another factor that increases the risk of disease is the need for family drains (Rode, 2015; Torlesse et al., 2016; Dearden et al., 2017). The study results showed that most families lived in conditions with running water channels. A stagnant waterway is a breeding ground for mosquito larvae, thereby increasing the risk of mosquito-borne diseases (Rode, 2015; Torlesse et al., 2016; Dearden et al., 2017). Good environmental sanitation can improve family health and keep infants from diseases caused by environmental pollution. On the other hand, poor ecological sanitation can increase the risk of infection and cause delays in the absorption of essential nutrients that causes failure to thrive in under-fives children.

In the end, if the family falls ill, health services will determine the health status of the family. Family can optimally reach health services according to their needs if they are registered as recipients of social health insurance (Chen and Chu, 2019; Nshakira-Rukundo et al., 2020; Riestiyowati and Rustam, 2022), so the level of participation in national health insurance also plays an essential role in improving family health status (Simbolon, 2014; Nshakira-Rukundo et al., 2019). National health insurance is a government program to reduce disparities in access to health services and ensure equal distribution of health services between social classes. The family registered as participants in the national health insurance will be able to reach quality health services in improving

health status.

The results of this study showed that most of the health indicators had been carried out by families with infants under two years old. It is in line with the growth status of under-two, most of whom are not stunted. Despite all of this results, regular assistance from the local government and family support team needs to be done continually. Family support team generally provides important service in accelerating stunting reduction to reach its target by 14% in 2024 by assisting families to improve and maintain their positive health behavior. Family support team also work alongside with the other stakeholder to promote best family practices in order to help vulnerable family to prevent stunting in infants under two.

The results of this study showed that most of the health indicators had been carried out by families with infants under two years old. It is in line with the growth status of under-two, most of whom are not stunted. These findings are expected to be input for the Haliwen Health Center and the regional government to provide targeted interventions based on family health indicators.

AUTHOR CONTRIBUTION

Maria Paula Marla Nahak is responsible at preliminary study, data collections, data analysis, and manuscript submission. Yusfina Modesta Rua is in charge for data collection and manuscript preparation.

ACKNOWLEDGMENT

The authors would like to thank Universitas Timor for funding this study.

FUNDING AND SPONSORSHIP

This work was supported by Universitas Timor Research and Community Service Institute through the beginner lecturer

research scheme.

CONFLICT OF INTEREST

The authors declare that the study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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