



Improving the Healthy Family Index to Prevent Stunting among Children aged 0–59 Months in Indonesia

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Abstract

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BACKGROUND: In Indonesia, the prevalence of stunting which is still above the limit set by WHO, requires all parties to be involved in preventing stunting. To overcome this problem, the government is strengthening basic health efforts through the Healthy Indonesia Program with a Family Approach.

AIM: This study aims to determine the relationship between the index of healthy families and the incidence of stunting among toddlers.

MATERIALS AND METHODS: The design of this study was cross-sectional. The population in this study were all families with children aged 0–59 months who were in the working area of the Korobono Health Center. Based on the preliminary study, the number of children aged 0–59 months was 544 people. The number of sample was 202 selected by simple random sampling. Chi-square tests were used to examine the association between stunting and health family index and other related factors.

RESULTS: The prevalence of stunting was 36.1%. Hypothesis test results show a relationship between the index of healthy families and the incidence of stunting ($p = 0.008$).

CONCLUSIONS: Increasing the healthy family index can reduce the risk of stunting in the family. This research is expected to be an input for the public health center to improve the implementation and evaluation of the Healthy Indonesia Program with a Family Approach.

Introduction

Stunting is a growth and development disorder that children experience from poor nutrition, repeated infections, and inadequate psychosocial stimulation. Child growth is stunted if height per age is more than two standard deviations below the median WHO Child Growth Standards [1], [2]. Impaired growth in height per age in the First 1000 Days of Life has functional consequences detrimental to children. Some of these consequences include impaired cognition and learning achievement, lost productivity, excessive weight gain in childhood, and an increased risk of chronic nutrition-related diseases as adults [1].

Stunting in childhood is one of the most significant barriers to human development [3]. Globally, around 150.8 million or around 22.2% of children under the age of 5 are stunted. In addition, 50.5 million (7.5%) under-fives also experienced wasting, and 38.3 million (5.6%) were underweight [4], [5]. The Basic Health Research (Riskesdas) in 2018 show that 30.8% of infants under 5 years of age (toddlers) suffer from stunting. This means that as many as 7 million children under

five in Indonesia today, who are the nation's generation, are threatened with a lack of competitiveness in their future lives. The decline in the stunting rate in Indonesia over the last 10 years has not shown any significant changes [6]. The prevalence of stunting in Central Sulawesi has decreased. Based on the 2013 Riskesdas data, the prevalence of stunting decreased from 41% to 32.3% in 2018 [7], [8]. A Nutrition Status Monitoring study was also held between that year, wherein in 2016 the prevalence of stunting was 32%, and in 2017 it rose to 36.1% [9], [10]. In Poso District, the prevalence of stunting in 2013 was 39.4% and decreased to 26.2% in 2018.

The stunting emergency can become a burden on the state if it continues, especially since Indonesia will pass the demographic bonus phase in 2035. Because, apart from being short, stunting toddlers also have other health problems that are no less worrying. One of the most serious is the incomplete development of brain neurons [11]. The problem of stunting is still seen as a result of malnutrition. Its handling is still dominated by institutions and service providers in the health sector. However, in 2017, it was decided that it is essential to reduce stunting through a multi-sectorial

approach through synchronization of national, local, and community programs at the central and regional levels [12].

The program to improve the community's quality of life is carried out by preventing stunting in children under five, namely, by implementing the Healthy Indonesia Program with a Family Approach, Supplementary Food Provision, and the First 1000 Days of Life [13], [14]. In monitoring the First 1000 Days of Life by involving the family. The family has the function of healthcare or maintenance. This shows that this function maintains family members' health conditions to maintain high productivity [15]. In overcoming stunting, detection and intervention must be carried out as early as possible by closely monitoring growth by weighing infants/toddlers at the integrated health post (*Posyandu*) every month. However, Riskesdas data show the children under five proportion who have not weighed in the past 6 months tends to increase, from 25.5% in 2007 to 34.3 in 2013 unmonitored infants/toddlers. Therefore, those who do not come to the *Posyandu* should be visited at their homes. A family approach is necessary if we want early detection of stunting to be carried out properly [16]. Family involvement can increase public awareness of the problem of stunting and its prevention. In addition, environmental conditions are created that support the program to strengthen the first 1000 days of life as stunting prevention. Furthermore, a sense of unity strengthens residents informing family planning villages and strengthening the Youth Information and Counseling Center [17]. The general purpose of this study was to determine the relationship between the healthy family index and the incidence of stunting in children under five in the Korobono Health Center Working Area.

Materials and Methods

This study was an analytical study with a cross-sectional approach. The population in this study were all families with children aged 0–59 months who were in the working area of the Korobono Health Center. Based on the preliminary study, the number of children aged 0–59 months was 544 people. The number of sample was 202 selected by simple random sampling. sampling based on the sample frame that has been made by selecting as many samples as needed. The instrument used for data collection was a healthy family questionnaire through the ODK Collect android-based application. It can also be accessed on <https://enketo.ona.io/x/#q0Hxb5yQ>.

The dependent variable of this study is the incidence of stunting, while the independent variable is the index of healthy families. Healthy family index is

obtained from 12 indicators, namely: (1) Family planning program, (2) mother giving birth at a health facility (asked to mothers who have children aged <12 months), (3) get complete basic immunizations (asked to mothers who have children aged 12–23 months), (4) exclusive breastfeeding (only asked to mothers who have children aged 7–23 months), (5) monitoring growth at *posyandu* (only asked to mothers who have children aged 2–59 months), (6) tuberculosis (TB) patients receive regular treatment (only asked to family members diagnosed with TB), (7) patients with hypertension take regular treatment (only asked family members diagnosed with hypertension), (8) people with mental disorders get treatment and are not neglected (only asked to family members who have mental disorders), (9) no family members smoke, (10) family is already a member of national health insurance (JKN), (11) access to clean water, and (12) use a healthy latrine. Family category was divided into three categories: not healthy (if family health index [FHI] <0.50), pre healthy (if FHI 0.50–0.80), and healthy (if FHI above than 0.80) [18].

Research data are presented in tables. The analysis was performed using the WHO Anthro version 3.2.2 and Stata 15.1. The WHO Anthro was used to determine the z-score of height for age indicator then the data were exported to Stata for further analysis. Bivariate analysis between the healthy family index category variables and the incidence of stunting was using Chi-square test.

Ethical considerations

This study was approved by Health Research Ethics Commission for Polytechnic of the Ministry of Health Palu Number: LB.01.01/KE/0014.2/IV/2020.

Results

Table 1 shows that the majority of respondents are male and aged 24–59 months. The proportion of stunting is 36.1%, and the majority are pre-healthy families. Table 2 shows the achievements of 12 indicators of healthy families. Indicators of mothers giving birth in family facilities, monitoring growth at *posyandu*, access to clean water facilities and the use of healthy latrines are good, but there are some indicators that are still low, such as family members who do not smoke, the family has become a member of JKN, people with hypertension seek treatment. The achievement of exclusive breastfeeding is still low. Table 3 shows the relationship between 12 indicators of healthy families and the incidence of stunting. Statistically, only exclusive breastfeeding is significant.

Table 1: Characteristics of respondents

Variables	n (%)
Sex	
Male	103 (51.0)
Female	99 (49.0)
Age (months)	
0–12	22 (10.9)
12–23	25 (12.4)
24–59	155 (76.7)
Stunting	
Yes	73 (36.1)
No	129 (63.9)
Family category	
Not healthy	8 (4.0)
Prehealthy	143 (70.8)
Healthy	51 (25.2)

Discussion

This study indicated that the proportion of children who experience stunting was more common in families who do not participate in the family planning program (45.2%). Stunting can be prevented from adolescence, where a person can prepare and plan for the future and family life [19]. Family planning affects nutrition both directly and indirectly. By helping women and couples have the number of children they want at the healthiest times in their lives, family planning can benefit mothers, babies, and children. Well-spaced births allow a woman's body to recover and replenish essential nutrients and lead to better nutritional outcomes, such as a healthy birth weight for their baby [20]. Research in Guatemala shows that the relationship between modern contraception and HAZ in stunting children will be significant if the use is more than 15 months [21].

Table 2: Achievements of 12 healthy family indicators

Number	Healthy family indicators	Achievements (%)
1	Family joins family planning program	79.7
2	Mother giving birth at a health facility	100.0
3	Babies get complete basic immunizations	78.6
4	Exclusive breastfeeding	54.5
5	Monitoring growth at posyandu	83.7
6	TB patients receive regular treatment	75.0
7	Patients with hypertension take regular treatment	32.0
8	People with mental disorders get treatment and are not neglected	50.0
9	No family members smoke	33.2
10	Family is already a member of JKN	23.8
11	access to clean water	98.0
12	use a healthy latrine	98.0

TB: Tuberculosis, JKN: National Health Insurance.

In this study, the majority of children who were breastfed had normal nutritional status. Breast milk is vital for child nutrition. Several previous studies have shown that breastfeeding is very useful in preventing stunting [22], [23], [24]. Breast milk is produced by the mother and contains the nutrients needed for the needs and development of the baby. Breast milk has a high calcium content and has high bioavailability to be absorbed optimally, especially in bone formation. Breastfeeding is the best choice because many scientific studies have shown that breastfed babies have a lower risk of stunting compared to those who are not breastfed [25], [26], [27].

Table 3: Relationship of 12 healthy family indicators with stunting incidence

Variables	Stunting (n = 73; 36.1%), n (%)	Normal (n = 129; 63.9%), n (%)	p
Health family index category			
Not healthy	7 (87.5)	1 (12.5)	0.008**
Prehealthy	48 (33.6)	95 (66.4)	
Healthy	18 (35.3)	33 (64.7)	
Family joins family planning program			
No	18 (43.9)	23 (56.1)	0.277
Yes	55 (34.2)	106 (65.8)	
Mother giving birth at a health facility			
No	0	0	NA
Yes	8 (36.4)	14 (63.6)	
Exclusive breastfeeding			
No	14 (70.0)	6 (30.0)	0.032*
Yes	9 (37.5)	15 (62.5)	
Babies get complete basic immunizations			
No	4 (66.7)	2 (33.3)	1.000
Yes	13 (59.1)	9 (40.9)	
Monitoring growth at posyandu			
No	13 (39.4)	20 (60.6)	0.820
Yes	60 (35.5)	109 (64.5)	
TB patients receive regular treatment			
No	1 (100.0)	0	1.000
Yes	2 (66.7)	1 (33.3)	
Patients with hypertension take regular treatment			
No	10 (58.8)	7 (41.2)	0.202
Yes	2 (25.0)	6 (75.0)	
People with mental disorders get treatment and are not neglected			
No	0	2 (100.0)	NA
Yes	0	2 (100.0)	
Family members who smoke			
No	46 (34.1)	89 (65.9)	0.477
Yes	27 (40.3)	40 (59.7)	
Family is already a member of JKN			
No	57 (37.0)	97 (63.0)	0.771
Yes	16 (33.3)	32 (66.7)	
Access to clean water			
No	2 (50.0)	2 (50.0)	0.621
Yes	71 (35.9)	127 (64.1)	
Use a healthy latrine			
No	2 (50.0)	2 (50.0)	0.621
Yes	71 (35.9)	127 (64.1)	

*p < 0.05, **p < 0.01, ***p < 0.001. NA: Not available, TB: Tuberculosis, JKN: National Health Insurance.

This study indicated that the proportion of stunted children was more common in children whose immunizations are incomplete. This is in line with previous research, which showed stunting children were more commonly found in incomplete children [28]. Children with incomplete immunizations are 1.78 times more likely to be stunted [29]. Another study showed that early vaccination reduced the likelihood of stunting, while vaccination in infancy increased stunting compared to children not vaccinated [30]. Incomplete vaccination can lead to an increased incidence of underweight, stunting, and wasting [31]. Further studies and different experimental approaches are needed to confirm and better investigate the sex-specific association for wasting and stunting [32].

The results showed that the proportion of stunted children was more found in children who did not monitor growth at the *posyandu* (39.4%). *Posyandu* should be the right tool for the success of the stunting prevention program by intensifying the approach to the community. Activating preventive efforts by maximizing the role of *posyandu* in early detection of child development [33]. Stunting prevention is a shared responsibility. *Posyandu* cadres as community representatives have a significant role in implementing effective interventions to reduce stunting rates for children under five [34]. Therefore, it is necessary to increase the capacity of cadres. Suppose the cadres have good knowledge of *posyandu*. In that case, the

cadres will be more skilled in carrying out their duties at the *Posyandu* [35].

The proportion of children who experience stunting is more found in those who have family members who smoke. Recent research has shown that exposure to cigarette smoke for more than 3 h a day increases the risk of stunting by 10.3 times [36]. Exposure to cigarette smoke for too long causes an increase in nicotine levels in the body. Nicotine can reduce 30%–40% of oxygen supply and interfere with the absorption of nutrients such as calcium, minerals, and Vitamin C, which are important for children's height growth [37]. The majority of children with stunting in this study had a smoking father. This shows that exposure to secondhand smoke is constant and over a long period, especially in the early 1000 days of a child's life. Exposure to secondhand smoke in the first 1000 days of life increases the risk of stunting by 2.04 times [38]. The majority of families do not have a smoking ban at home. Shah *et al.* showed that children living with smokers had higher nicotine levels of 0.36 mg/mL than those who did not live with smokers [39]. Public policies need to provide health education to the community and families about the impact of cigarette smoke on increasing the risk of stunting in children.

In general, in this study, the National Health Insurance (JKN) ownership rate was only 23.8%. The study results found that the proportion of children experiencing stunting was higher in families where not all family members became members of the National Health Insurance. The previous research has shown that the ownership of health insurance has an impact on the incidence of stunting. Children from families participated in Non-ASKESKIN (Poor Public Health Insurance) health insurance as a protective factor for stunting [40]. The important thing to pay attention to is the new BPJS regulation limiting the delivery of healthy baby packages, threatening babies to grow stunted. Because if the baby experiences problems at birth, the financing is limited [41].

This study shows that the proportion of stunting is higher in families with latrines and access to clean water, although it is not related statistically. One indirect factor causing stunting is water, sanitation, and hygiene (WASH), consisting of drinking water sources, physical quality of drinking water, latrine ownership, and hygiene, namely, hand washing habits. WASH affects the nutritional status of stunting in toddlers, namely, through infectious diseases experienced [42], [43], [44]. Another study showed that families who did not have healthy latrines were 3438 times more at risk of stunting in their toddlers than families who had healthy latrines [45].

The role of the family is crucial in preventing stunting in fulfilling the nutritional intake of children under five because, at the age of toddlers, the family has full decisions in caring for and caring for toddlers [46]. Prevention of stunting is important in the

golden period, which is the first 1000 lives. It covers the period of children in the womb until the child is 2 years old. The role of the family is also significant in this phase [47]. The family must become an educational space and supervision in carrying out prevention programs, starting from a healthy lifestyle and providing the necessary food intake [48]. Involvement of fathers in parenting also needs to be done. Fathers should be present not only physically but also psychologically. Invite mothers to check their pregnancy, ensure the availability of good water and sanitation, be an example in implementing Clean and Healthy Life Behavior, not smoke, ensure that all families have access to adequate health services, ensure that toddlers are routinely weighed at the *Posyandu* every month to monitor their nutritional status, and so on. If the father plays various roles above, then stunting prevention and control efforts can be carried out starting from the family level. Stunting can be suppressed and even eliminated [49]. Therefore, efforts to empower families are also very necessary.

The limitation of the study namely, in collecting data from several families, all family members aged over 15 years were interviewed, but they were not in place so that the information was asked to the mother, so that it could cause information bias.

Conclusions

Based on the study results, it can be concluded that the proportion of stunting in children 0–59 months was 36.1%, and the majority of the family category was Prehealth at 70.8%. This study suggests for Community Health Center (*puskesmas*) that data collection on healthy families should be carried out thoroughly. There should be a follow-up on the findings during data collection. For the village government, with the support of village funds from the government, it is hoped that it will be followed up by carrying out specific and sensitive intervention activities involving village cadres and midwives.

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