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Enhancing Maternal Behavior Towards Prevention of Stunting among Children Below 5 Years Old in the District of Tebing Tinggi Indonesia

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ABSTRACT

Introduction: This study determined the enhanced maternal behavior towards the prevention of stunting among children below 5 years old. **Methods:** A cross sectional descriptive-correlational quantitative study design was implored from June to December 2021 at Tebing Tinggi, South Sumatera Kalimantan. The purposive sampling technique with inclusion and exclusion criteria helped select the 150 mothers as respondents to answer the survey questionnaire. This research was specifically conducted at the High Cliff Health Center using a self-administered online questionnaire. **Results:** The identified enhanced maternal behaviors were the prior related behaviors of the respondents (53.52 ± 13.89349, 113%). On the contrary the perceived benefits (9.8067 ± 3.05, 24.93%), perceived barrier to action (53.52 ± 15.33987, 25.25%), preventive behavior (8.02 ± 2.25831, 18.439%) were identified to be insignificant. There was a relationship ($r \leq 0.05$) between the prior related behavior, perceived benefits, perceived barrier to action and preventive behavior. **Conclusion:** It was determined that there was still a need to enhance some of the maternal behaviors towards the prevention of stunting among children under 5 years old.

Keywords: Enhancing Maternal Behaviors; Stunting; Children Below 5 Years Old

INTRODUCTION

Stunting is a chronic malnutrition condition that starts in early life and continues throughout life. It is said by de Onis *et al.,* (2009) under the research of the World Health Organization (WHO), that stunting is conditioned with a height Z-score according to age (TB / U) less than -2 standard deviations (SD). Stunting affects around one in every four children worldwide (WHO, 2018). Stunting is common in children aged 12-36 months, with a frequency ranging from 38.3 to 41.5%. Stunting in children under the age of five is generally overlooked since the difference between a stunted kid and a normal child at that age is not readily apparent. Under five years of age is a golden era in terms of defining the quality of human resources in terms of physical development and intellect, thus this must be supported by a healthy nutritional condition. A child who is stunted at this time tends to have difficulty reaching optimal height in the next period. This may lead to poor cognitive and psychomotor development, diminished intellectual capacity, an increase in the risk of degenerative illnesses, and decreased productivity in the future.

Toddlerhood is a time when the process of growth and development happens at a breakneck speed. Toddlers require proper nutritional intake in both quantity and quality at this time since they engage in a lot of physical activity and are still learning (Welassih & Wirjatmadi, 2012). One of the most prevalent nutritional deficiencies is stunting. Stunting is a condition in which chronic malnutrition is caused by a prolonged loss of nutrients owing to diet that does not satisfy nutritional needs (Millennium Challenge Account, 2022). Malnutrition at a young age increases baby and child mortality, makes sufferers more prone to injury, and causes them to mature with the best posture possible. Sufferers' cognitive abilities are also diminished, resulting in long-term economic losses for Indonesia (Millennium Challenge Account, 2014). Stunting

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affects children more frequently between the ages of 12 and 59 months than between the ages of 0 and 24 months. Stunting has been related to an increased risk of pain, mortality, and motor and cognitive disability (Chirande *et al*, 2015; Rahmayana, Ibrahim, & Damayati, 2014)

Every year, more than 2 million children under the age of five die as a consequence of malnutrition, notably stunting and wasting. In disadvantaged and developing nations, around 195 million children reside (Rahmayana *et al.*, 2014). According to the 2013 Basic Health Research in Indonesia, the prevalence of stunting was 37.2 percent, up from 35.6 percent in 2010 and 36.8 percent in 2007 (Riskesdas, 2013). Stunting affected 38.9% of children in 2016, according to the Republic of Indonesia's Ministry of Health. Attempts to improve health are still hampered by the high rate of stunting among children under five in South Sumatra. According to Basic Health Research Data from 2018, the prevalence of stunting among infants (aged 0-5 years) in South Sumatra is 31.7 percent, which is higher than the national average of 340 percent (KBRN Palembang, 2020). Lesty Nuraini, the head of the South Sumatra Provincial Health Office, explained that the high stunting rate in South Sumatra was caused by people who did not adopt healthy lifestyles in terms of nutritional intake and parenting from conception to the first 100 days of life.

When a child reaches the age of two, stunting conditions become more difficult to manage. As a result, women must consume enough nutritional intake to prevent stunting in their children, particularly throughout pregnancy and until the child is 18 months old. Essentially, children's survival and health are inextricably linked to maternal health. Parenting has an impact on nutritional intake, one of which is inappropriate feeding behaviour. According to research, there is a link between parenting and stunting. The nutritional understanding of the mother has an impact on the eating habit of toddlers. One of the factors that has a substantial impact on the incidence of stunting is maternal nutrition knowledge. As a result, attempts to improve stunting can be made by enhancing information so that feeding behaviour can be improved in children is with nutritional counseling. Counseling and understanding parents in order to identify the problem that causes Stunting early on will provide parents with knowledge so that they may take action to prevent Stunting as soon as feasible (Nihwan, 2019).

In the Tebing Tinggi area, mother conduct toward stunting prevention among children under the age of five is not improved.

In addition to the length of birth, the economic position of the family is a risk factor for newborn stunting. According to Brazilian research, the prevalence of stunting has dropped from 34% in 1986 to 6% in 2006. This is due to the country's economy improving in quality during the last two decades. Many research on poor families in developing nations have discovered children whose height growth has been suboptimal since they were babies, but whose weight development has been excellent (Nihwan, 2019) Stunting is linked to the family's economic situation and parents' lack of understanding of their children's nutritional health, according to research conducted in Semarang on children aged 5 years old and below (Nihwan, 2019). Parental awareness of nutritional health and nutrition support foods for children must be increased via activities such as counselling, parenting programmes, and optimising the Integrated Healthcare Center. With this kind of exercise, parents will undoubtedly pay greater attention to their children's health and nutritional requirements throughout their prime developmental years (Nihwan, 2019).

Research in the West Kalimantan shows that mother's occupation, number of family members and total family income are risk factors for stunting in infants, whereas father's occupation, mother's education and maternal nutrition knowledge are risk factors for stunting (Nihwan, 2019). According to Sulastri (2012), the mother's educational level and socioeconomic status are the main factors of stunting in children in school. Low birth weight and low socioeconomic status were shown to be the most common causes of stunting in children under the age of five, according to Welassih (2012).

The level of parental education will influence their knowledge of nutrition and childcare routines, with poor parenting increasing the likelihood of stunting. In Lalibela City, Northern Ethiopia, the most significant factor statistically against stunting is socioeconomic, demographic, and child health, gender children, and nursing (Yalew *et al.*, 2014). Teferi *et al*., (2016) did a study that found that toddlers aged 6-59 months have a high risk of stunting. A history of chronic illness is

another risk linked to stunting. Stunting cases in Empat Lawang District accounted for 25% of all cases. Based on the results of prior investigations as described above in the Indonesian district of Tebing Tinggi Empat Lawang, a researcher is interested in learning how to improve maternal knowledge and practise in order to prevent stunting.

METHODOLOGY

This research proposes to conduct a cross sectional study design. According to Notoatmojo (2018), a cross sectional design needs to provide survey questionnaire and analyze the respondents' answer in a specific point in time. It is proposed that 150 mothers with children under the age of five be interviewed in order to answer the research questions. As a result, a sample must be calculated. The population refers to the complete collection of cases from which the researcher sample is taken. Because researchers do not have the time or resources to analyses the whole population, they use sampling techniques to decrease the number of instances (Taherdoost, 2016).

Researcher will use random and quota sampling as the pregnant women patients and pregnant staff who working in public Health center. The first steps on determining the sample size is to get population data. This study will focus on pregnant women patients who routinely attend to the Public Health Center workers who get involved on welding activities on a daily basis.

Slovin's formula will be used to determine sampling size:

$$n = \frac{N}{(1 + Ne^2)}$$

n = Number of sample

N = Total Population

e = Error tolerance

The sample size calculator will be used to confirm the result of Slovin's formula.

Data Analysis

Univariate Analysis

When conducting univariate analysis, the author will analyze each variable. For demographical variables will consist of genders, age, marital status and education. The author will use numerical data and described the variables in proportion and percentages.

For more details, univariate analysis is explained in the following table.

Bivariate Data analysis

Bivariate analysis means the analysis of bivariate data. It is one of the Bivariate data analysis to determine the difference between two variables from the same population.

Table 1: Bivariate Analysis for Correlation Variables

Independent Variables	Dependent variable	Statistical test
Prevention of stunting	Enhanced maternal behavior	Chi square test

Ethical Approval

This research got ethical approval from Pemerintah Kabupaten Empat Lawang Dinas Kesehatan UPTD Puskesmas Tebing Tinggi (NIP:198904062019032003) dated 2nd May 2022.

RESULTS

Demography

Table 2: Demography of the Respondents

		n	%
Age	16-20 years old	24	16.0
	21-40 years old	64	42.7
	41-55 years old	62	41.3
	Total	150	100.0
Age of children <5 years	1 to 2 years old	22	14.7
	2 to 3 years old	54	36.0
	3 to 4 years old	48	32.0
	4 to 5 years old	10	6.7
	5 to <6 years old	16	10.7
	Total	150	100.0
Frequency of visit in public health centers	once a week	24	16.0
	once a month for all my children <12 years old	64	42.7
	once a month only for my toddlers <6 years old	62	41.3
	Total	150	100.0

The age group of the respondents are between 16-20 years old (n24, 16%), 21-40 years old (n64, 42.7%), and

41-55 years old (n62, 41.3%). Their children ages 5 years old and below were 1 to 2 years old (n22, 14.7%), 2 to 3 years old (n54, 36%), 3 to 4 years old (n48, 32%), 4 to 5 years old (n10, 6.7%), and 5 to <6 years old (n16, 10.7%). The respondents' frequency of visit in public health centers were once a week (n24, 16%), once a month for all my children <12 years old (n64, 42.7%), and once a month only for my toddlers <6 years old (n62, 41.3%).

Determine the relationship between prior related behavior, perceived benefits, perceived barrier to action, and preventive behavior to enhance maternal knowledge towards the prevention of stunting among children below 5 years old.

There is a relationship (r <0.05) between the dependent variables prior related behavior, perceived benefits, and perceived barrier to action among the 150 respondents.

Table 3: Correlations

		Priorrelated behavior	Perceived benefits action	Perceived to barrierto action
Prior related behavior	Pearson Correlation	1	0.915**	0.972**
	Sig. (2 -tailed)		0.000	0.000
	N	150	150	150
Perceived benefits to action	Pearson Correlation	0.915**	1	0.904**
	Sig. (2 -tailed)	0.000		0.000
	N	150	150	150
Perceived barrier to action	Pearson Correlation	0.972**	0.904**	1
	Sig. (2 -tailed)	0.000	0.000	
	N	150	150	150

On the contrary, when compared to the independent variable that is the preventive behavior to enhance maternal behavior towards the prevention of stunting among children under 5 years old, there is no relationship (sig 0.054).

Table 4. Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	173.452a	145	0.054
Likelihood Ratio	143.325	145	0.524
Linear-by-Linear Association	1.725	1	0.189
N of Valid Cases	150		

a. 180 cells (100.0%) have expected count less than 5. The minimum expected count is .03.

The Shapiro-Wilk test sometimes may be over-sensitive until falsely interpret the data as not normally distributed. Therefore, we need to refer to the two more additional statistical tests: Skewness & Kurtosis to double confirm. A normally distributed data should have the ratio of statistic to std. error (skewness and kurtosis) for medium size of sample (50<n<300) between -3.29 until 3.29 (Kim 2013). From the table, the entire calculated ratios for the specified behaviors were between -3.29 and 3.29. Since all the data are normally distributed, we need to check the linearity and homoscedasticity of data via scatter/dot graph. The data obeys the linearity criteria when we plot the pair data into the graph, we should identify a straight-line relationship. For the data to obey homoscedasticity, if we draw a best line for the linearity of the data, the data should uniformly cluster around the best line.

If the data cannot fulfill the requirement of Pearson's correlation, we have to proceed the data analysis to non-parametric correlation test, chi-square. With the positive value of Pearson correlation, r, it indicates that the relationship between variables that is positively related to each and other, that is the square value.

DISCUSSION

The strength of this study is the design. A combination of a descriptive-correlation is strong since it does not only describe the findings of the variables but assumes relationship (Gray *et al,* 2016). In that way, the result may be used in the real settings. Lastly, the strength of this design is the use of the survey questionnaire. This is less stressful to analyze especially at masters degree level where time and financial constraints are factors to be considered when doing a research study (Kim, 2013). In addition, survey may be useful in duplicating the same research since it is less complex to modify, adapt, or adopt.

The weakness of this study is the vast number of confounding variables – the age, years of children, frequency of visits in the maternal and child department. A confounding variable is an outside extraneous influence that changes the effect of a dependent and independent variable (Gray *et al*., 2016). In addition, confounding variables are considered as confusing variables as it influences the outcome of the study. However, it is essential to use a confounding

variable in order to correlate the outcomes into a deeper understanding of the real life setting especially in a quantitative survey design where lived experiences are not explored (Polit and Beck, 2015). On the contrary, a quantitative survey design is also a weakness if the respondents are not sincere and truthful of answering the questions in a written form. That is why confounding variables in this study are considered such as age, years of children, specific hospital frequency of visits of the respondents to assume maturity of the behavior and relationship of the quantified results to the survey questions answered.

Another problem is that just a couple of the factors indicated in the WHO conceptual framework for their connection with child linear growth or stunting were included in this research conducted in Indonesia. Many other variables have been studied in Indonesia, but developing intervention recommendations needs an assessment of their quantitative impact on child linear growth or stunting. The WHO framework was based on research performed across the poor globe, therefore it's acceptable to presume the identified variables are applicable to various degrees in Indonesia until information gaps are filled.

These findings suggest that larger sample size studies are needed to identify more potential predictors of childhood stunting in Indonesia. The impact of intergenerational under nutrition as defined by mother height and its relationship to the likelihood of children stunting is an important subject to research. Environmental factors, such as the availability and accessibility of health care facilities or regional disparities; household factors, such as access to nutritional sources or household food security; and individual factors, such as maternal health and nutrition status prior to pregnancy, infant and young child feeding practises. Some of these analyses may necessitate combining data from multiple rounds of the Basic Health Survey.

Indonesia ranks fifth in terms of the frequency of stunting among children under the age of five. Using information from the 2013 Indonesia Basic Health Survey, this study will examine risk factors for stunting in Indonesian children under the age of 0-2 years. Stunting predictors were found as family and housing variables, mother and fatherly characteristics, prenatal care services, and child features.

Poor nutrition, recurrent infections, and a lack of psychosocial stimulation all impede children's growth and development. Stunted children have heights for their ages that are more than two standard deviations below the median for the Child Growth Standards. Stunting has a detrimental functional effect on the kid throughout the first 1,000 days of life, from conception to the age of two. Poor cognitive and school performance, poor adult income, lost productivity, and an increased risk of nutrition-related chronic illnesses in adulthood when paired with excessive weight gain later in childhood are some of the effects. Given its link to morbidity and mortality, as well as non communicable illnesses later in life, linear growth in infancy is a significant indicator of healthy development.

Childhood is the most important time in a person's life for overall development. At this stage, brain and biological development occur (Muller and Jahn, 2009). These development consequences include physique, immune system, intellect, and social and emotional growth, and they are impacted by sufficient stimulation and nourishment (Handal *et al*., 2007). Such growth helps to ensure that every child realises their full potential and makes a positive contribution to society (Uthman, 2009). When youngsters squander their early years in a less motivated, emotionally and physically supportive environment, brain development is impeded, and symptoms of cognitive, social, and behavioural deferrals arise. Malnutrition is only one of several things that might impede a child's early growth.

Malnutrition is a serious public health concern around the globe, especially in underdeveloped nations (Hioui *et al.* 2010). The risk of mortality from infectious diseases is increased by malnutrition, which also increases the risk of acute infections, is a leading cause of death, and adds to the psychological burden (Jesmin *et al*., 2011). Stunting is defined as shortness-for-age or a measure of linear growth retardation, a sign of chronic malnutrition computed by comparing a child's height/length with age to a well-nourished and healthy reference population (Muller and Jahn, 2009; Sunil, 2009). Wasting reflects a recent and acute process that resulted in considerable weight loss. It is generally related with malnutrition and/or illness; measured by

comparing a child's weight and height/length to a reference group of well-fed and healthy youngsters. Because of its strong correlation to mortality, acute malnutrition is commonly used to evaluate the severity of crises and to show the current nutritional condition of children (Muller and Jahn, 2009; Sunil, 2009).

A kid is considered underweight when their weight-for-age comparison falls below that of a healthy reference group. This metric may be used to detect both short-term and long-term malnutrition (Muller and Jahn, 2009; Sunil, 2009).

Some of the things about mothers that might affect whether or not their children suffer from malnutrition include their age, profession, and level of education (Uthman, 2009). The likelihood of malnutrition and other nutritional deficiencies is reduced in households where mothers have higher levels of education. The effects of mother's education on improved health and nutrition knowledge, psychological changes, and improved nutritional behaviour, as well as the modification of power relations within the household to encourage better nutrition, including breastfeeding, weaning practise, and child feeding, may lead to more effective dietary behaviour on the part of mothers who manage food resources. There are a variety of household characteristics that contribute to the prevalence of malnutrition, including single-parent homes, two-parent households, and extended families. For children, the home performances provide both a setting and a source of encouragement for positive health development (Noughani, 2014). No of the circumstances of the family head's marital status (single, married, divorced, etc.), the primary caregiver in the home is always the biological parent. The term "two-parent home" refers to a family unit that consists of a father, a mother, and their minor children all residing in the same residence. One definition of a family is a group of people who live together and share a variety of responsibilities and financial obligations, such as parents, siblings, and other close relatives (Friedman, 2003).

For the purpose of determining Z-scores for height/length with age, weight with age, and weight with height/length, the WHO and National Center for Health Statistics (NCHS) criteria were used as the reference population. In children under the age of five, the X2 test may identify stunting, underweight, and wasting. Background factors (independent variables) that were substantially linked with malnutrition were identified using bivariate and multivariate analyses (dependent variable). The independent variables include category, ordinal, and interval/ratio variables, whereas the dependent variable is binary. To investigate the connections between categorical or ordinal independent factors and malnutrition, the X2 test was utilised. Logistic regression was used as the multivariate analysis due to the dependent variable's binary character.

CONCLUSION

The Tebing Tinggi, at South Sumatera showed that mother's occupation, number of family members and total family income are risk factors for stunting in infants. The strongest determinants identified were childbirth size and recent illness, as well as maternal stature and education. However, certain individual micronutrients (vitamin A, zinc, and iodine) and combinations of iron+zinc and iron+zinc+vitaminA have been shown to reduce child stunting in Indonesia. The identified prior related behaviors of the respondents were excellent (53.52 ± 13.89349, 113%). The identified perceived benefits of the respondents were poor (9.8067 ± 3.05, 24.93%). The identified perceived barriers to action of the respondents were poor (53.52 ± 15.33987, 25.25%). The identified preventive or of the respondents were poor (8.02 ± 2.25831, 18.439%). There is a relationship (r <0.05) between the dependent variables prior related behavior, perceived benefits, and perceived barrier to action among the 150 respondents. On the contrary, when compared to the independent variable that is the preventive behavior to enhance maternal behavior towards the prevention of stunting among children under 5 years old, there is no relationship (sig 0.054).

Conflict of Interest

The authors declare they have no competing interests.

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