

Risk Factors of Stunting Among Children Below 5 Years

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ABSTRAK

Stunting merupakan masalah kesehatan utama pada anak usia dibawah 5 tahun di negara berpenghasilan rendah dan menengah di seluruh dunia. Stunting pada anak di bawah 5 tahun dapat menyebabkan gangguan perkembangan fisik serta memiliki efek jangka panjang pada perkembangan kognitif, pendidikan dan produktivitas ekonomi di masa dewasa. Stunting disebabkan oleh faktor multi dimensi dan tidak hanya disebabkan oleh faktor gizi buruk yang dialami oleh ibu hamil maupun anak balita. Tujuan penelitian ini untuk mengetahui faktor yang mempengaruhi stunting pada anak. Penelitian ini menggunakan desain cross sectional dengan Teknik pengambilan sampel menggunakan consecutive sampling di Puskesmas 4 ULU Palembang. Data diambil dengan melakukan pengukuran antropometri, dianalisis menggunakan growth chart serta pengisian kuisioner untuk mendapatkan faktor risiko kemudian dianalisis menggunakan uji chi square. Hasil didapatkan hubungan antara pendapatan (p value 0,000), tinggi badan ibu (p value 0,001) dan riwayat infeksi kronis (p value 0,015) dengan kejadian stunting. Tidak terdapat hubungan antara Riwayat BBLR, IMD, ASI, jarak kelahiran, riwayat konsumsi tablet tambah darah, riwayat anemia saat hamil, pendidikan ibu, pekerjaan ibu, pendidikan ayah, tinggi badan ayah dan jamban terhadap kejadian stunting. Ekonomi, pengaruh genetik dan infeksi kronis dapat mempengaruhi kejadian stunting pada anak dibawah usia 5 tahun.

Kata Kunci: Faktor Risiko, Stunting, Anak

ABSTRACT

Stunting is a major health problem in children below 5 years of age in many low- and middle-income countries around the world. Stunting in children below 5 years can cause impaired physical development and have long term effects on cognitive development, education, and economic productivity in adulthood. Stunting is caused by multi-dimensional factors and not only caused by malnutrition which is experienced by pregnant women and children under five. The purpose of this study was to determine factors of stunting in children. This study used a cross-sectional design using consecutive sampling at Puskesmas 4 ULU Palembang. Data were taken by taking anthropometric measurements, analyzed using growth charts and filling out questionnaires to obtain the risk factors and then analyzed using the chi square test. The results showed that there was a relationship between income (p value 0.000), maternal height (p value 0.001) and history of chronic infection (p value 0.015) with incident of stunting. There was no relationship between history of low birth weight, early initiation of breastfeeding, breastfeeding, birth spacing, history of consuming iron tablets, history of anemia during pregnancy, mother's education, mother's occupation, father's education, father's height and latrines with the incidence of stunting. Economic, genetic, and chronic infections can affect the incidence of stunting in children.

Keywords: Risk Factors, Stunting, Children

1. INTRODUCTION

Malnutrition in children is a significant problem in Indonesia. Stunting reflects chronic malnutrition and can have long-term impacts including growth retardation, decreased cognitive and mental abilities, susceptibility to disease, low economic productivity, and low reproductive quality.¹ In South Sumatra, the prevalence of stunting under five reached 28.98. This prevalence is decreased when

compared to the previous year. In South Sumatra, the measurement results in August 2020 for the proportion of stunting toddlers is 7.2%.²

Stunting can lead to non-optimal development of cognitive or intelligence, motor, and verbal, increased risk of obesity and other degenerative diseases, health costs, incidence of morbidity and mortality. Children

who have a level of intelligence that is not optimal due to stunting can ultimately affect economic growth, increase poverty, and widen inequality in a country. ³ Stunting is caused by multi-dimensional factors. The most decisive intervention to reduce the prevalence of stunting therefore needs to be carried out in the first 1,000 days of life of children under five. Several factors that cause stunting include poor parenting practices, limited health services, households' lack of access to nutritious food and lack of access to clean water. ⁴

The results showed that children who did not get exclusive breastfeeding, low family income, low maternal education and poor knowledge of maternal nutrition are factors associated with the incidence of stunting in toddlers. There is a relationship between the history of exclusive breastfeeding, family income, mother's education and knowledge of mother's nutrition to the incidence of stunting in toddlers. ⁵Based on the above, we are interested in examining the factors that influence stunting, which can be seen from several factors such as genetics, nutrition, history of pregnancy, economy and environment in children.

2. METODE

This research is a descriptive analytic study with a cross-sectional design which was

conducted at Puskesmas 4 ULU Palembang. This research has received ethical approval from the Commission on Bioethics, Humanities and Islamic Medicine FK UM Palembang with number 012/EC/KBHKKI/ FK-UMP/X/2022. The subjects in this study were children below 5 years old. Inclusion criteria were mothers who had children below 5 years old, willing to be respondents and able to read and write, while exclusion criteria were respondents who did not fill out the questionnaire completely. Sampling used consecutive sampling technique with a formula of 2 proportions of 100 people. The data were obtained when the respondents visited the posyandu in the working area of the Puskesmas 4 ULU and were then given a questionnaire to monitor nutritional status and monitor nutrition development activities to measure their height and fill out growth charts. The statistical test used is chi square.

3. RESULT

Stunting is influenced by various factors such as maternal, paternal, nutritional and environmental factors which were examined in this study. The frequency distribution of respondents is as follows:

Table 1. Frequency distribution of stunting and factors affect stunting

Variable	Frequency (n=100)	Percentage (%)
Stunting		
- Yes	47	47
- No	53	53
Sex		
- Boy	51	51
- Girl	49	49
Low Birth Weight		
- Yes	22	22
- No	78	78
Chronic Infection		
- Yes	25	25
- No	75	75

Early Initiation of breastfeeding		
- Yes	94	94
- No	6	6
Breastfeeding		
- Yes	82	82
- No	18	18
Birth spacing		
- < 2 years	76	76
- > 2 years	24	24
History of iron tablet consumption during pregnancy		
- Yes	22	22
- No	78	78
History of anemia during pregnancy		
- Yes	19	19
- No	81	81
Mothers education		
- Lower	8	8
- Higher	92	92
Mothers occupaton		
- Working	88	88
- Not working	12	12
Mothers height		
- Short	43	43
- Normal	57	57
Fathers education		
- Lower	10	10
- Higher	90	90
Income		
- <Provincial minimum wage	69	69
- >Provincial minimum wage	31	31
Fathers Height		
- Short	43	43
- Normal	57	57
Lotrine		
- Latrine	98	98
- River	2	2

Based on Table 1, it was found that there were 53 children who were not stunting and 47 children who were stunting. The majority were boys as many as 51 people, 78 children did not have a history of Low birth weight, 75 children did not have a history of infection, 94 children have early initiation of breastfeeding and 82 children were given breastfeeding and 76 children have birth spacing < 2 years. The majority of mothers did not take iron tablets during pregnancy as many as 78 people and 81

people did not have a history of anemia during pregnancy. The educational background of the majority of mothers is higher as many as 92 people, mothers who not working as many as 88 people and have normal height as many as 57 people. The majority of the educational history of fathers who higher were 90 people and income based on provincial minimum wage) was 69 people, fathers of normal height were 57 people and had latrines for 98 people.

Table 2. Factors Affecting Stunting

Variable	Stunting	
	<i>p-value</i>	<i>α 5% value</i>
Low birth weight	0,766	>0,05
Early Initiation of breastfeeding	0,416	>0,05
Breastfeeding	0,810	>0,05
Chronic infection	0,015	<0,05
Birth Spacing	0,124	>0,05
History of iron tablet consumption during pregnancy	0,422	>0,05
Anemia during pregnancy	0,971	>0,05
Mothers education	0,276	>0,05
Mothers occupation	0,104	>0,05
Mothers heigth	0,001	<0,05
Fathers education	0,564	>0,05
Income	0,000	<0,05
Fathers height	0,251	>0,05
Latrines	0,218	>0,05

Based on table 2, factors that have a significant relationship with stunting are history of chronic disease (p value 0,015), mother's height (p value 0,001) and income (p value 0,000) with a p value below 0.05. There was no relationship between history of low birth weight, early initiation of breastfeeding, breastfeeding, birth spacing, history of consuming iron tablets, history of anemia during pregnancy, mother's education, mother's occupation, father's education, father's height and latrines with the incidence of stunting.

4. DISCUSSION

For the variables low birth weight, breastfeeding, birth spacing, history of consumption of added blood during pregnancy, history of anemia during pregnancy, mother's education, mother's occupation, father's education, father's height, latrines have no significant relationship to the occurrence of stunting. This is in line with Warsini's study which showed that there was no relationship between a history of anemia during pregnancy

and stunting (p=0.13).⁶ The same results were obtained by nisa that there was no relationship between environmental health and the incidence of stunting.⁷ There is no relationship between imd and the mother's employment status with the incidence of stunting.⁸ Inadequate food intake such as the duration of breastfeeding and complementary foods for breastfeeding. Inadequate health care and services such as vaccinations, antenatal checks, intake of vitamin/mineral supplements, use of contraception, and visits to doctors/professionals. Unhealthy environment such as access to clean water and sanitation, open defecation, crowded housing also can affect the incident of stunting.⁹

A history of chronic infection can affect the incidence of stunting with a p value of 0.015. This is in line with research conducted in the work area of the Kerkap Health Center, North Bengkulu Regency, that there is a significant relationship between the incidence of infectious diseases and the incidence of stunting.¹⁰ The results of this study are also in line with

research finding a significant relationship between infectious diseases and the incidence of stunting. Infectious diseases and stunting have a close relationship. If a toddler experiences an infectious disease for a long time it can affect the toddler's nutritional intake and if the toddler's nutritional intake decreases it can cause chronic malnutrition in toddlers so that stunting can occur.¹¹

Respiratory Tract Infection contributes to a decrease in children's nutritional status. The link between respiratory tract infection and stunting is caused by an increase in metabolic needs and disturbances in food intake when children are sick.¹² A child who has diarrhea will experience malabsorption of nutrients and loss of nutrients, if not immediately followed up and balanced with appropriate intake, failure will occur. The presence of infection will cause a decrease in appetite so that food consumption in children also decreases, there are disturbances in the absorption of nutrients, direct loss of micronutrients, increased metabolism and catabolism, even disruption of the distribution of nutrients to body tissues. Chronic infections in toddlers can cause malnutrition. This can be caused by the transfer of energy function so that the energy needed for growth is diverted to the body's resistance to infection.¹³

The results of this study found that the mother's height can affect the occurrence of stunting (p value 0.001). This is in line with previous research that toddlers with short mothers are almost 6 times more likely to experience stunting than toddlers with mothers of normal height (p<0.001).¹⁴ Research showed height of stunting toddler mothers shows that the height of the mother is shorter than normal, with a short mother's height of 59.5% and a mother of normal height of 40.5%.¹⁵ In line with research conducted by Berhe, it was stated that mothers with short stature (<150 cm) can influence the incidence of stunting in toddlers. Short maternal stature and malnutrition can

increase the incidence of IUGR (Intrauterine Growth Restriction) in her pregnancy¹⁶.

Stunting can occur due to several factors such as genetic factors, both mothers and fathers can pass on the genes that determine height to their offspring. These intrauterine effects can be interpreted by biomechanical and biological mechanisms. Biomechanical mechanisms related to shorter mothers generally have a narrow pelvis so that the uterine environment is less than optimal for fetal growth. This also has an impact on the growth of the placenta which is not optimal which leads to biological mechanisms in the form of inadequate accumulation of nutrients which can cause oxidative stress in the fetus which in turn can trigger epigenetic modifications such as fetal DNA methylation which leads to impaired fetal growth. Gene methylation in human studies examined in fibroblasts, lymphoblasts, venous blood, cord blood, lymphoblastoid cell lines, human monocytic cell lines and mesenchymal stem cells from adipose tissue. There are several mechanisms that explain the relationship between parental height and child stunting. One of the roles of genetics, several chromosomes (such as the 7th, 8th, 20th, and sex chromosomes) have been involved in the development of human height. Thus, both mother and father can pass on the height-determining gene to their offspring¹⁷.

In this study, income can affect the incidence of stunting. This is in line with Lestari's research which found a relationship between parental income and stunting in children aged 4 to 5 years in Lubuklinggau City.¹⁸ When income increases, the amount and type of food also increases. The level of income also determines the type of food purchased with additional money, the higher the income, the greater the percentage of the income to buy fruit, vegetables, and various other types of food¹⁹. Stunting in children affects the function and structure of the brain, hinders mental

development, and can affect social progress in the long term. Stunting is linked to poor school performance and subsequent low incomes, high fertility, and poor childcare, contributing to the transmission of poverty between generations. Stunted children are usually among the most socioeconomically disadvantaged groups of the population and tend to do poorly in school, have low incomes in adulthood and contribute to intergenerational transmission of poverty and income inequality.²⁰

5. CONCLUSIONS

Stunting can be influenced by various factors, including a history of infectious diseases, mother's height, and income. It is recommended that children who have infectious diseases be immediately taken for treatment to the nearest facility to prevent growth disorders.

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