

Teenage Pregnancy in Malang: The Analysis on Stunting Incidence in Toddler Aged 24-59 Months

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ABSTRACT

Background: Stunting is a chronic malnutrition problem characterized by short stature. Stunting toddlers are generally susceptible to disease, have a below normal level of intelligence and low productivity. The high prevalence of stunting in the long term will have an impact on economic losses for Indonesia, which one of the causes of it is early pregnancy. The aim of this study was to described teenage pregnancy with the incidence of stunting in 24-59 months toddlers.

Subjects and Method: This research was a cross-sectional study. Sampling was carried out by a two-stage cluster sampling method using purposive sampling. 96 stunted toddlers were obtained. The dependent variable was mother's age at first pregnancy. The independent variable was stunting incidence. Data was collected using questionnaire data, body length, and weight measurements. Data were analyzed with descriptive analysis using SPSS Statistic 20.

Results: 51.6% stunted toddlers were born by <20 years old mother at the time of first pregnancy. Almost all stunted toddlers were in the moderate stunting category (92.5%). 65.6% stunted toddlers didn't get exclusive breastfeeding. 5.4% of 7.5% severe stunted toddlers were born by < 20 years old-mother at the time of first pregnancy.

Conclusion: Pregnancy in teenager, when the mother herself is still growing, increases the risk of stunting. Stunting can also occur due to the lack of breastfeeding. It is necessary to make efforts to mature early marriage because it has an impact on unfavorable outcomes.

Keywords: 24-59 months, pregnancy, stunting, teenage, and toddlers.

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BACKGROUND

Stunting is a condition where there is failure to thrive in children under five years old due to chronic malnutrition so that the child is too short for his age (Yunitasari et al., 2020; Purwandari et al., 2021). Malnutrition occurs since the baby is in the womb and the early days after the baby is born. However, the new stunting condition will appear after the child is 2 years old. The age of 24-59

months is an age that is declared as a critical period to get quality human resources, especially in the first 2 years period is a golden period for optimal brain growth and development, therefore at this time, it needs serious attention (Hastuty et al., 2021; Syah et al., 2020). Children who are stunted until they reach the age of five will difficult to recover, and this can raise the chance of off-

spring with low birth weight (LBW) (Samintang et al., 2021). Stunting toddlers are generally susceptible to disease, have a below-normal level of intelligence, and have low productivity (Wali et al., 2021).

Globally, an estimated 151 million children under the age of five (22%) were stunted in 2018, with the majority of them occurring in low and middle-income nations (Alam et al., 2020). Indonesian Basic Health Research 2019 noted that Indonesia's stunting rate was 4th in the world. The stunting rate in Indonesia reached 27.7%, above the WHO tolerance (Samintang et al., 2021). The WHO tolerance for malnutrition is 10% and stunting is 20 (Ulfah et al., 2020). Thus, it makes stunting becoming a national issues (Mediani, 2020). Malang Regency is one area that still needs a lot of improvement, especially in the health sector. Official data from the Malang District Health Office, on the re-sults of weighing operations in April 2018 with an area of 39 community health centers stated with the highest stunting toddlers were on the Pakis community health center with 2,108 toddlers in the stunted category. The second position was Poncokusumo community health center with 1,941 toddlers in the stunted category of 1,159 and 782 severely stunted.

The high prevalence of stunting in the long term will have an impact on economic losses for Indonesia. In Indonesia, economic losses due to stunting are estimated to be between IDR 300 trillion and IDR 1,210 trillion per year (Samintang et al., 2021). One of the causes of stunting in children under five years is early pregnancy. After Cambodia, Indonesia has the second highest percentage of young marriages in the ASEAN area, and it is ranked 37th in the globe (Pangaribuan et al., 2020). According to the results of the 2012-2013 Susenas, the percentage of women aged 10 years and over who had married in rural areas reached

37.79% in 2012 and 37.71% in 2013. The prevalence of early marriage in East Java province itself in 2013 was also quite high, which is in the second position after the province of West Java with a prevalence of 42.77% (at the age of 16-18 years) (Larasati et al, 2018). The prevalence of marriage with the age of the bride <20 years in Malang Regency in 2013 reached 33.02% and in 2014 it reached 31.43% when compared to women who delay marriage until later in life, teen pregnancy is associated with poor health, an increased risk of domestic abuse, poor nutrition, and sexual and reproductive health problems, lower levels of education, and higher levels of poverty (Simbolon et al., 2021) (Islam et al, 2020).

If a woman becomes pregnant when still in her teens, she will receive less early prenatal care (Yunitasari et al., 2020). This factor is predicted to cause low birth weight (LBW) babies and infant mortality. Mortality of premature and low birth weight infants will be high in adolescent couples, the age of boys and girls has the same effect on this. Most teenage girls who are pregnant with underweight. This is caused by a lack of nutritional intake due to concerns about body shape during adolescence and a lack of education about nutrition. These two things then become the cause of the low weight gain of the mother during pregnancy. This inappropriate weight gain then increases the number of premature babies which is one of the factors for stunting in toddlers. Thus, this study focuses on teenage pregnancy and the incidence of stunting in toddlers aged 12-59 months.

SUBJECTS AND METHOD

1. Study Design

This was a cross-sectional study. Primary data was collected through body length and weight measurements. Secondary data was obtained from the Poncokusumo Public

Health Center, Malang Regency to determine the prevalence of stunting in each village area. This data is only used as a reference for selecting the area used as the research area (sampling). This study was carried out at the Poncokusumo Public Health Center, Malang Regency, East Java from April to July 2021

2. Population and Sample

The study population were all 24-59 months stunted toddlers in 17 villages in the working area of the Poncokusumo Health Center. A sample of 96 toddlers were selected by purposive sampling.

3. Study Variables

The dependent variable was maternal age at first pregnancy. The independent variable was stunting.

4. Operational Definition of Variables

Mother's age at first pregnancy is the age when a woman experiences pregnancy for the first time.

Stunting is the condition of a toddler being weighed and measured for length or height, then compared with the standard, and the results are below normal, using the Z score standard from WHO.

5. Study Instruments

The measuring instrument for stunting was using the digital weight scales and stature meter. Stunting classification status based

on indicators of height per age was categorized into severe stunted (Zscore <-3.0), moderate (Zscore <-2.0 or ≥-3.0). Data on adolescent marriage was obtained by a questionnaire

6. Data analysis

Data analysis of respondents characteristics was carried out using univariate analysis with frequency and percentage distribution. Bivariate analysis used cross tabulation to analyze teenage pregnancy with the incidence of stunting in toddlers

7. Research Ethics

This research was conducted using ethics in the form of informed consent, anonymity, and confidentiality which were carried out carefully during the study. This study has received a ethical approval from the State Polytechnic of Health, Malang, Indonesia with the registered number 208/KEPK-POLKESMA/2021

RESULTS

1. Univariate Analysis

Based on Table 1, it can be seen that from 93 respondents, most of them (51.6%) were <20 years at the time of first pregnancy. Most stunted toddlers (92.5%) were in the moderate stunted category. Most of the stunted toddlers (65.6%) didn't receive exclusive breastfeeding.

Table 1. Sample Characteristics

Characteristics	Category	Frequency	Percentage
Maternal age at first pregnancy	< 20 years	48	51.6 %
	≥ 20 years	45	48.4 %
Sex of toddlers	Male	41	44.1%
	Female	52	55.9%
Birth weight	Low Birth Weight (<2500 g)	19	20.4%
	Normal (≥ 2500 g)	74	79.6%
Birthweight	< 48 cm	36	38.7%
	≥ 48 cm	57	61.3%
Stunting category	Moderate	86	92.5%
	Severe	7	7.5%
Exclusive Breastfeeding	Yes	32	34.4%
	No	61	65.6%
Gestational Age	Aterm	86	92.5%
	Premature	7	7.5%

2. Bivariate Analysis

Based on table 2, it can be seen that mothers of toddlers whose age < 20 years during first pregnancy had more stunting toddlers in the moderate category (46.2 %). Meanwhile, mothers who were ≥ 20 years of age, most of

them had stunting toddlers in the moderate category (46.2%). Severe stunting are more likely occurred (5.4% of 7.5%) in the toddlers whose mother at the age of <20 years at first pregnancy.

Table 2. Prevalensi Maternal Age at First Pregnancy with Stunting Incidence

Maternal age at 1 st pregnancy	Stunting Category			
	Moderate		Severe	
	n	%	n	%
< 20 years	43	46.2	5	5.4
≥ 20 years	43	46.2	2	2.2

DISCUSSION

The results of table 1 explain that majority of the stunted toddlers (51.6%) were born by <20 years old mother at the time of delivery. Childbirth and pregnancy at a young age are closely related to early marriage. Babies born by teenager mothers will have a low chance of living and are more likely to have nutritional problems in children, such as children being short, thin, and even malnourished. <20 years age teenagers are still in the process of growth and development so that if they pregnant, they must share nutrition with the fetus in his womb, thus makes the fetus malnourished (Muslimin et al., 2019). This is in line with the research by Irwansyah et al., 2016 which states that teenage pregnancy is a factor that contributes to the occurrence of stunting in children aged 6-23 months in West Lombok (Irwansyah et al., 2016). It is also supported by the study stated that stunting is linked to the mother's age during pregnancy (Simbolon et al., 2021). The same research stated that early marriage triggers stunting in Jember. Early marriage is one of the factors causing the unpreparedness of parents in parenting. Plus the lack of education so that they do not understand good parenting patterns and the fulfillment of children's nutrition is not fulfilled. This then causes stunting (Ulfah et al., 2020). Maternal age become one of the

factors that associated with stunting in low and middle-income countries (Li et al., 20-20).

Someone who is pregnant in their teens and gets less early prenatal care can pose risks to both the mother and the fetus. It can result in infant mortality and morbidity. A mother who gives birth to a baby when she is under the age of 20 is at risk for having a baby with a low birth weight (LBW) (Simbolon et al., 2021). The existing phenomenon is that most pregnant adolescents have a BMI in the underweight category, this occurs due to lack of nutritional intake due to worry about changes in body shape and lack of education about nutrition. Both of these causes the mother's weight gain during pregnancy is not by the normal criteria of 11-16 kg during pregnancy. This situation is one of the factors in the occurrence of LBW, and in the first 1000 days of life, LBW babies will experience growth and development disorders.

Table 1 judges that most of the stunting toddlers didn't receive exclusive breastfeeding (65.6%). Stunting can occur due to the lack of breastfeeding. Pre-pregnancy, during pregnancy, and while breastfeeding, maternal diet and health status are extremely important for children's growth and development. The first 1000 days of a person's life are critical times or windows of

opportunity. If the child is having nutritional issues at this time, the implications will be lifelong and irreversible (Yunitasari et al., 2020).

As seen in the stunting category (table 2), 92.5% experienced moderate stunting, and 7.5% were severe stunting. Stunted toddlers have a height that is too low or too short based on age compared to the height of children who are under <-2 SD from the standard WHO child growth nutritional status table (Mediani, 2020). Characteristics or signs of stunted children are very short children based on WHO standards, signs of late puberty, poor attention, and memory tests, delayed tooth growth, aged 8-10 years being quiet, lack of eye contact, face looking younger than their age (Kemenkes RI, 2018). Stunting toddlers occurs because of chronic malnutrition, and this can occur in the womb so that the fetus does not get adequate nutrition. This can cause babies to be born with various health problems, one of which is LBW.

Efforts that can be made to prevent stunting require the role of a woman, starting from planning the age of marriage, gestational age, the distance between pregnancy and childbirth, and 2 years of breastfeeding. Parents, especially mothers who are always with their children, are expected to provide nutritional intake to children according to the stages of development and provide optimal care for their children up to the age of 2 years, to prevent the children of the next generation of the nation from being lost due to the long-term impact of stunting. Toddlers who suffer from stunting should receive special attention because in the future it will have an impact on increasing the risk of illness and death as well as stunting in children's motor and mental development.

The results of the crosstab analysis in table 2 explain that more than half (51.6%)

stunted children were born by < 20 years old mothers at the time of delivery, and 48.4% of the other stunting toddlers were born by ≥ 20 years old mother. Furthermore, when viewed in more detail, the incidence of stunting in the severe category turns out to be more common in mothers who gave birth at the <20 years old, (5.4% of 7.5% of the severe stunted toddlers). It is in line with the research by (Kasjono et al., 2020) stated that mothers' early marriage raises the chance of stunting in her children.

The pathophysiology of stunting is still not fully understood. Prenatal and postnatal nutritional deficiencies are thought to contribute to stunting. Short parental posture, marrying and giving birth at a very young age, low parental body mass index, and low weight gain during pregnancy are also considered to be associated with low birth weight, which is one of the risks of stunting. Another study also suggested that pediatric environmental enteropathy (PEE), chronic inflammation of the small intestine, is thought to be a major contributor to the pathophysiology of stunting. Through the Hippo pathway, mTORC1 (mechanistic target of rapamycin complex 1) regulates chondral plate growth, skeletal muscle growth, central and peripheral nervous system myelination, cellular growth and differentiation in the small intestine, hematopoiesis and iron metabolism, and organ size by integrating cues such as nutrients (primarily proteins and amino acids), growth factors, oxygen, and energy. These organs play a role in childhood stunting and its accompanying morbidities, such as anemia, decreased cognition, environmental intestinal dysfunction, and infectious disease immunity (Soliman et al., 2021).

In terms of human growth and development, the endocrine gland plays an important role in the pituitary gland, located

below and slightly in front of the hypothalamus. The rich blood supply in the infundibulum, which connects the two glands, carries regulatory hormones from the hypothalamus to the pituitary gland. The pituitary has anterior and posterior lobes. The anterior lobe, or adenohypophysis, releases the main hormones that control human growth and development, namely growth hormone (Growth Hormone/GH), thyroid-stimulating hormone (TSH), prolactin, gonadotrophins (Luteinizing and follicle-stimulating hormone), and adrenocorticotrophic hormone (ACTH).

Normal growth does not only depend on the adequacy of growth hormone but is the result of a complex relationship between the nervous system and the endocrine system. Hormones rarely act alone but require the collaboration or intervention of other hormones to achieve their full effect. Growth hormone causes the release of insulin-like growth factor 1 (IGF-1) from the liver. IGF-1 directly affects skeletal muscle fibers and cartilage cells in long bones to increase the rate of absorption of amino acids and their entry into the body. new proteins, thereby contributing to linear growth during infancy and childhood. In adolescence, adolescent growth spurts occur due to collaboration with gonadal hormones, namely testosterone in boys and estrogen in girls.

There is some evidence from studies of children with abnormally short stature due to environmental factors that disrupt the endocrine system, causing a reduction in the release of growth hormone. However, other hormones are also affected, making the causes of growth disorders complex.

Pregnancy in adolescence, when the mother herself is still growing, increases the risk of stunting and can lead to poor obstetric outcomes (Mediani, 2020). The mother's short posture accompanied by the condition

of children with low birth weight and stunting can exacerbate the intergenerational cycle of stunting. Complications are more common in teenage pregnancies under the age of 20 than in healthy reproductive periods between the ages of 20 and 30.

Having children at a young age increases fertility and health risks for both the mother and the child, including maternal mortality and morbidity, as well as infant mortality, low birth weight, and child stunting, all of which are exacerbated by poverty and lack access to maternal and child health services (Islam et al., 2020).

The physical and mental unpreparedness of mothers who are pregnant at a young age results in various challenges during the pregnancy to delivery process as described previously. In the long term, the limited knowledge of mothers about the importance of nutritional preparation during the first 1,000 days of life also increases various health risks to their children, including stunting. With this big enough risk, teenagers are asked to postpone pregnancy until they are old enough. The marriage age limit is significant because marriage necessitates psychological maturity. Too young of a marriage might lead to an increase in divorce cases due to a lack of information on how to manage life as a husband and wife (Rahman et al., 2020).

It is recommended that health workers deliver more health education to potential brides and grooms on how to avoid stunting by using the Integrated Healthcare Center (center for pre and postnatal health care and information) (Yunitasari et al., 2020). Besides, exclusive and continuing breastfeeding promotion and support are key to reducing stunting incidence (Bhutta et al., 2020). The rather significant point estimates for the benefits of a nutrition supplement started three months before conception justify increased efforts to improve the

nutrition of all women of child-bearing age in resource-poor societies in these and similar conditions to reduce fetal development impairment (Dhaded et al., 2020). The other prevention is by screening the risk factor such as the mother's educational level, birth weight, exclusive breastfeeding, the child's hunger, and parenting style (Masrul et al., 2020). Stunting can be prevented by the local governments by making several attempts to assist legislative reform, which have shown themselves in institutional programs, working groups, and community activities aimed at reducing and eliminating child marriage in Indonesia. However, these efforts have not been entirely successful; to reinforce the law, it is required to execute marriage law sanctions (Ilahi, 2021). The admirable goal of legislation restricting or prohibiting early marriage must be complemented with increased ability and resources for legal enforcement (Batyra et al., 2020).

AUTHOR CONTRIBUTION

Didien Ika Setyarini raised the initial research, managed data collection, ran data analysis and planned study design. Reni Wahyu Triningsih refined research question, suggested issues in the discussion, and planned study design. Hening Ryan Aryani drew tables, interpreted results, and wrote up manuscript.

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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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