

## The effect of maternal age on stunting incidence (Analysis of 2018 Riskesdas Secondary Data)

Feni Sulistyawati<sup>1\*</sup>, Ade Melinda<sup>1</sup>, Ririrn Ratnasar<sup>2</sup>

<sup>1</sup>Master of Public Health Science Study Program, Faculty of Medicine, Udayana University  
Jalan P.B. Sudirman, Dangin Puri Klod, Kec. Denpasar Barat, Kota Denpasar, Bali

<sup>2</sup>Midwifery Study Program, Faculty of Health Sciences, Muhammadiyah University of Ponorogo  
Jalan Budi Utomo No.10, Ronowijayan, Kec. Ponorogo, Kabupaten Ponorogo, Jawa Timur

\*Corresponding author: [fenisulistyawatia54@gmail.com](mailto:fenisulistyawatia54@gmail.com)

### ABSTRACT

**Background:** Stunting is a nutritional problem in children which is characterized by the child's height not meeting the age standards set by WHO. Indonesia is the country with the highest prevalence of stunting. Stunting has the impact of delays in various sectors, especially health, in the short term, namely increasing morbidity and mortality rates. Stunting is caused by household factors, one of which is maternal factors. One of the reasons children are stunted is the mother's age, which is still in the adolescent range. Teenage moms who become pregnant often lack the knowledge necessary to ensure their unborn kid has a healthy diet, which can lead to stunting in the infant.

**Objectives:** This study aims to determine the effect of maternal age on the incidence of stunting in children aged 0-59 months based on 2018 Riskesdas data.

**Methods:** This research is a quantitative study with an analytical cross-sectional design using secondary data analysis based on survey results from Riskesdas in 2018. Data collection was carried out in March 2018 by the Central Statistics Agency (BPS) with locations in all provinces in Indonesia consisting of 34 provinces. The sample used was adjusted to the inclusion criteria, namely 69,155 mothers and toddlers aged 0-59 months. Research analysis was carried out using SPSS in stages based on a description of the research results and frequency distribution by presenting tables on the variables studied and using bivariate analysis simple binary logistic regression with Crude OR results with a confidence level of 95%.

**Results:** The results obtained in this study were that there was a significant influence between maternal age and the incidence of stunting with a p value = 0.003. As many as 17.7% of stunting incidents in toddlers were experienced by teenage mothers.

**Conclusions:** There is an influence of maternal age on the incidence of stunting in toddlers. It is hoped that health institutions can increase awareness regarding early marriage which can cause stunting.

**KEYWORD:** stunting; toodler; age; teenagers

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## INTRODUCTION

Stunting is a nutritional problem in children which is characterized by the child's height not according to the age standards set by health organizations both nationally (Ministry of Health) and internationally (1). Globally, stunting first occurred in the 19th century (2) and most of them occur in developing countries with more than a third of children from all over the world experiencing stunting (3). Stunting is a failure of growth and development experienced by toddlers which is illustrated by the condition that the height and length of the toddler does not meet growth standards based on the WHO z value with the category of stunting (short and very short) toddlers, namely  $< 2$  standard deviations caused by chronic nutritional deficiencies since birth. pregnancy that continues until the baby is 2 years old (4).

Stunting is characterized by delayed puberty, poor performance on tests of attention and learning memory, delays in a child's teething and developmental delays (5). In addition, Imani (2020) states that children with stunting can be seen from the child's body length which is less than children of the same age (6). Children with stunts tend to have shorter body lengths due to stunted bone growth. This is easy to find out if the child's growth and development is monitored from birth. Stunting is

influenced by various factors starting from factors originating from the mother and home environment factors. One of the factors originating from the mother is related to malnutrition during the process starting from pre-conception, pregnancy to breastfeeding, short maternal height, the presence of infectious diseases in the mother and pregnancy at a young age (7).

Indonesia as a developing country is still experiencing nutritional problems known as the triple burden, namely obesity, wasting and stunting (1). In addition, Indonesia is a country with the highest prevalence of stunting, which is number three after Timor Leste. There are as many as 15 provinces in Indonesia that experience stunting of more than 40% (8). The Indonesian Toddler Nutrition Case Study (SSGBI) revealed that the prevalence of toddlers with stunting in 2013 was 37.2%, while in 2018 it decreased by 6.4% and continued to decrease in 2019 until stunting cases became 27.67% (9). However, in 2020, at the same time as the COVID-19 pandemic, Indonesia experienced an increase in stunting cases. From 2020 to 2021 Indonesia will experience an on track status, namely the target for calculating children to find out stunting status is not met. Stunting events can only be done for some children and reported in e-PPGBM SIGIZI. Based on

data obtained from electronic community-based nutrition recording and reporting (e-PPGBM SIGIZI) as of May 2021 there were 16,990,944 children who were measured, namely 1,068,241 with short status and 384,152 children with very short status (4).

Stunting can cause various long-term effects ranging from poor health, increased risk of various diseases, cognitive development becomes worse and results in decreased child achievement to the stage where the child is threatened with deteriorating in the future (8). In addition, stunting has an impact on delays in various sectors, especially health, namely in the short term an increase in morbidity and mortality rates, while in the long term the population will have a short body length, susceptible to various diseases ranging from bleeding and damage to organs (sensory organs) thereby inhibiting growth and cognitive development in children (10).

Stunting is caused by household factors, one of which is the mother's factor. Malnutrition experienced by mothers during pre-conception, pregnancy, childbirth and breastfeeding. Furthermore, the mother's height, infectious diseases suffered by the mother, mental health and pregnancy that occurs during adolescence are factors that influence the occurrence of

stunting in children. In addition, home environmental factors are related to parents' lack of stimulation of their child's growth and development, poor care, inadequate sanitation and water supply, food insecurity, inappropriate allocation of food in the household and low caregiver education (11).

Adolescence is the phase of life between childhood and adulthood starting from the ages of 10 to 19 years. Adolescence is a stage of human development with unique characteristics and is an important period in basic health (12). Social changes that occur in society give rise to various types of juvenile delinquency, one of which is free sexual behavior which causes pregnancy in adolescence (13). Teenage pregnancy is a trigger for stunting. Most of the stunting in toddlers have mothers with a history of calorie energy deficiency with height that does not meet the requirements and low education. Adolescents are considered to be physically and psychologically immature in dealing with pregnancy, childbirth and parenting patterns. The younger the mother is, the more mature she tends to think so that at that age reproduction becomes healthier and she is able to provide the best for her child (14).

Teenage pregnancy is a pregnancy experienced by women under the age limit of 20 years on the basis of Law

Number 1 of 1974 article 7 paragraph 1 which means that the marriage of a man and a woman is carried out when both have reached the age of 19 years. This age limit is considered to be mature enough in body and soul as well as health to have offspring. One of the problems that occurs if pregnancy occurs before that age is that it will cause stunting (15). The results of a survey by the Central Statistics Agency show that as many as 23.79% of women became pregnant for the first time at the age of 19 to 20 years. Apart from that, 15.99% occurred at the age of 17 to 18 years and 6.21% occurred at the age of 16 years. This data shows that half of women in Indonesia experience their first pregnancy when they are teenagers (16). Research conducted by Marlani et al. (2021) states that the incidence of stunting is influenced by the age of the mother during pregnancy.

From the description above, the authors are interested in conducting research on the influence of teenage age on mothers with stunting incidents in Indonesia using the 2018 Riskesdas data (17). This study aims to analyze the effect of maternal age on the incidence of stunting in toddlers in Indonesia using secondary data from the 2018 Riskesdas.

## **MATERIALS AND METHODS**

This research is a quantitative research with an analytic cross-sectional design by analyzing secondary data from the 2018 Basic Health Research Survey (Riskesdas). Riskesdas is one of the bodies that routinely provides reports from community-based health research every five years with indicators that are able to describe results starting from the national level and lower levels, namely districts/cities. The aim of Riskesdas is to carry out routine research, namely to assess the achievements of health development outcomes over the last five years. Riskesdas 2018 is a data collection that integrates with reports from Susenas in March 2018 and is carried out by the Central Statistics Agency (BPS). The locations used in this study are all provinces in Indonesia which include 34 provinces.

The population used in this study is all households in Indonesia according to the 2018 Riskesdas sample, namely using the March 2018 Susenas sample frame. The 2018 Riskesdas sample includes 30,000 census blocks (BS) with a target of 300,000 households that have been visited. The sample in this study were children aged 0-59 months who met the requirements and were successful in conducting interviews with a sampling

design, namely the PPS (Probability Proportional to Size) method using linear systematic with two stage sampling. The target population used in this study is all mothers who have stunted children aged 0-59 months in Indonesia, while the reachable population is all mothers who have stunted children aged 0-59 months in 34 provinces in Indonesia in 2018. Samples in This study included all mothers who had children aged 0-59 months in 34 provinces in Indonesia which had been revised in the 2018 Riskesdas. The inclusion criteria for the study sample were the number of children per province in Indonesia whose height did not match their age (shorter than normal age) which is known through the calculation of the Z-Score  $TB/U < 2$  SD and the number of mothers with adolescents.

The data from this study were sourced from the 2018 Riskesdas secondary data obtained by obtaining permission to use the data from the Health Development Policy Agency (BKPK) in Jakarta. The data collection obtained from the 2018 Riskesdas was carried out by interviews, measurements and inspections carried out by local enumerators with supervision carried out by the person in charge at the Regency/City level and supervision from the administrative side by the person in charge at the Regency/City level.

Data processing is done by combining the raw data from the survey results which are entered in Microsoft Excel, carrying out cleaning, selecting samples by removing mothers with ages other than teenagers, sorting samples based on the variables to be studied, performing re-coding and scoring as well as data analysis. The research analysis was carried out using SPSS in stages, namely in the form of an overview of the results of the study using a frequency distribution by presenting tables for each variable as well as bivariate analysis using the Chi Square Test. The researcher obtained an ethical permit from the ethical commission of the Faculty of Medicine, Udayana University with number 213/UN14.2.2.VII.14/LT/2023 dated 07 February 2023.

## RESULTS AND DISCUSSION

### RESULTS

The subjects in this study were the age of the mother, marital status and the incidence of stunting. The number of subjects in this study were 69155 mothers and children obtained from secondary data. Respondents who were teenagers were 17.1%, the majority of respondents were still married (97.6%) and the incidence of stunting was 35% **Table 1**. In addition, as many as 11828 teenage mothers, 279 or 3.2% had

divorced marital status and 0.3% with divorced and dead status **Table 2**.

Based on **Table 1** using the Crosstabulation test, it was found that teenage mothers with stunted children were 17.7% compared to those who had children with normal status of 16.8%. The

Chi Square Test results conclude that there is a relationship between maternal age and the incidence of stunting in children with a p value <0.05. Characteristics and bivariable analysis are presented in the following table.

**Table 1. Frequency distribution of maternal characteristics and stunting incidence**

Characteristics	Frequency	Percent (%)
Mother's age		
Teenager	11828	17.1
Mature	57327	82.9
Marital status		
Divorced	1234	1.8
Death divorce	448	0.6
Marry	67473	97.6
Stunting incident		
Stunting	24183	35
Normal	44972	65

**Table 2. Results of analysis of the relationship between maternal age and stunting incidence**

Variable	Stunting incident				p Value
	Stunting		Normal		
	n	%	n	%	
Mother's Age					
Teenager	4277	17.7	7551	16.8	0.003
Mature	19906	82.3	37421	83.2	
Total	24183	100	44972	100	

## DISCUSSION

The characteristics of maternal age in this study were dominated by mature mothers compared to adolescents. Adolescence is a period of an individual who often experiences difficulties and is less responsible in

making decisions (18). Although adolescence is described as a turbulent period, this period is also a period with great potential for someone at a young age to be involved in giving positive things to those around them (19). The age of adolescents used in this study

were mothers aged <20 years who were included in the late adolescent category. Salmela-Aro (2011) divides adolescence into three parts, namely a) early adolescence aged 11-13 years with signs of biological changes related to puberty, b) middle adolescence, namely ages 14-17 years with signs that most teenagers girls have reached the puberty stage while boys are still at the stage of adulthood, c) late adolescence, namely the age of 17-19 years with signs that at this time teenagers already have stable emotions and have entered the adult stage.

Adolescents have a greater percentage with divorced status than adults. Research conducted by Lestari (2015) states that there is a relationship between teenage marriage and household resilience with a percentage of 4%. Marriages that occur at a young age often cause divorce compared to marriages that are carried out at a mature age or when they are adults. This is caused by various supporting factors such as domestic violence (domestic violence), economic pressure, the surrounding environment and low education which affect the couple's mindset (22).

Mothers with teenage years have a relationship with the incidence of stunting. Research conducted by Aminatussyadiah et al. (2020) states

that maternal age is related to the incidence of stunting in children. Pregnancy that occurs at a young age, namely adolescence has a risk to the mother's life later, which will potentially affect the health of the baby she gives birth to. One of the risks if this happens to teenage mothers is that they can give birth to babies with low birth weight babies (LBW) which will lead to stunting (23). Apart from that, research conducted in Kulon Progo Regency, Yogyakarta stated that pregnancies occurring in adolescence can increase the incidence of stunting in toddlers with a risk of 24 times ( $p$  value = 0.007 and OR = 24.69) (24). Irwansyah et. al (2016) stated that teenage mothers have a strong relationship with the incidence of stunting in toddlers. Teenage pregnancies are 2.9 times more likely to be associated with stunting in children. This is because mothers who become pregnant as teenagers have less knowledge regarding meeting needs during pregnancy, childbirth and parenting patterns. Apart from that, most teenage mothers have a history of calorie energy deficiency which causes a lack of adequate nutrition and triggers stunting in children who are born (25).

Adolescents have various problems, one of which is risky sexual behavior which causes early marriage.

Adolescents who experience early marriage result in children being born at risk of stunting. Research conducted by Yulius et al. (2020) states that maternal age during pregnancy has a significant relationship to the occurrence of stunting in children. Pregnancy at a young age is prone to various things that can harm the mother and the baby she is carrying. Mothers can experience bleeding, anemia and other pregnancy diseases, while children are at risk of experiencing LBW, stunting and other childhood diseases. Pregnancy at a young age, which is <20 years, is more at high risk for health and death for the mother and the fetus she contains. Pregnant women aged <20 years are more at risk of experiencing disorders of the reproductive organs, especially the cervix and uterus because they are not yet perfect for dealing with pregnancy. This can result in delays in the process of distributing nutrients from mother to fetus so that the fetus's nutritional needs are not met (27).

#### **CONCLUSION AND RECOMMENDATION**

The number of mothers in the teenage category, namely less than 20 years, is 17.1%. From the crosstabulation results of mothers and teenagers, 17.7% had children with stunting. Based on the test results using the Chi Square Test, it was found that

teenage age in mothers affects the incidence of stunting in toddlers aged 0-59 months.

The recommendation in this research is that health agencies can increase outreach regarding early marriage which can lead to stunting. Apart from that, this research can be used as a guide as a basis for further research using qualitative methods so that it can find out more details regarding the causes of the influence of the mother's teenage age on the incidence of stunting in toddlers.

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