



Analysis of Maternal Age at Married, Number of Children, History of Breastfeeding, Mother's Education and High Risk of Pregnancy with Incidence of Stunting among Children Under Five-Years

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ABSTRACT

Background: Stunting among children is a problem that has received serious attention from the Indonesian government. Incidence of stunting has decreased from year to year, but the decline still does not meet the World Health Organization (WHO) target. Stunting occurs as a result of chronic malnutrition, especially during the first 1000 days of birth as a vital phase. Chronic nutritional deficiency as a toddler can be caused by various factors, including exclusive breastfeeding, the number of children that must be borne by the family and mother's education.

Purpose: This study aimed to analyse the age of the women at marriage, the number of children, mother's education, history of breastfeeding and pregnancy risk with the incidence of stunting in children under five years..

Methods: The design of this study was analytic with a cross-sectional approach. This research was conducted on toddlers aged 13-60 months in a village of East Java Province, Indonesia, with a sample size of 110 children under five. The statistical test used logistic regression with a confidence level of 95%.

Results: Data analysis using logistic regression reveal the relationship between the dependent variable and the incidence of toddler stunting, the following results were obtained: from the mother's age at marriage, the value of ρ 0.286, the number of family members ρ 0.587, mother's education, ρ 0.002, history of breastfeeding, ρ 0.884, risk of pregnancy ρ 0.696. of the five factors associated with the incidence of under-five stunting in this study, it shows that only mother's education has a very significant relationship with the incidence of under-five stunting ($\rho = 0.002 < \alpha = 0.05$). The OR value is 4.724, which means that mothers with primary education have a risk of 4.724 times in the incidence of child stunting.

Conclusion: The lower the mother's education provides an opportunity for the incidence of toddler stunting. Maternal education is related to the ability to receive information related to nutrition and child development so that it also has an impact on the preparation of family nutrition. In the long term, improper nutrition can lead to stunting.

Keywords: Maternal Age at Married; history of breastfeeding; High Risk of Pregnancy stunting

BACKGROUND

Toddlers are an age group that is prone to health problems, especially nutrition. Fulfilling the nutritional needs of toddlers is very important in supporting the rapid growth and development that occurs at their age. Leaving toddlers with malnutrition can interfere with their growth. One form of that disorder is stunting, which is still a big problem for toddlers. Stunting experienced by infants in the long term to the impact of economic development is to hamper economic growth and reduce the productivity of the labour market resulting in a loss of 11% of GDP (*Gross Domestic Products*) and reduced income to 20% of adult workers. Besides, the condition of stunting contribute to the occurrence of a gap/inequality for 10% of total revenue reduced lifetime and impact on inter-generation poverty (TNP2K, 2017).

World Health Organization (WHO) sets a standard for stunting in a country if it is above 20% as a public health problem (WHO, 2014). Indonesia is one of the countries with a stunting problem and is ranked the fifth largest in the world (TNP2K, 2017). In Southeast Asia, the incidence of stunting in Indonesia is ranked 3rd after Timor Leste and India [2]. The incidence of stunting in Indonesia shows a decrease from 37.2 % (almost 9 million) (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI, 2013) to 30.8 % (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI., 2018). The prevalence of children under five with stunting in 2016 to 2017 has increased from 27.5% to 29.6% (Direktorat Gizi Dirjen Kesmas Kemenkes, 2018).

Over the last three years, the problem of body short has the highest prevalence compared with other nutritional issues such as malnutrition skinny and fat. The percentage of stunting (very short and short) in the under-five group (29.6%) was higher than in the children under two-years group (20.1%). Based on the results of the survey with children of five-years group 2017, 17.8% of children under five years group suffer from malnutrition. Among the malnourished children under five years group, 12.7% were short children (Direktorat Gizi Dirjen Kesmas Kemenkes, 2018). Babies who have exclusively breastfed in East Java Province are 34.9%, however still below the coverage in Indonesia 35.7% (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI, 2018).

Stunting is a condition caused by failure to thrive in children under five as a result of chronic malnutrition that the child was too short of height and age. These conditions are indicated by the measurement results of the toddler's height less than the size of the period based on the child growth standards set by WHO (WHO, 2006). Untreated stunting toddlers will experience difficulties in the future. Stunting is not just a matter of height stunted but includes a complex problem because it affects the physical and cognitive. Children who suffer from stunting hampered in achieving their development growth, including in school performance and may low education level and low income as adults. The cause is weak intelligence and physical strength. Children who experience stunting are more likely to grow into a mature individual who is unhealthy and poor. Stunting in children is also associated with increased susceptibility to diseases, both infectious and non-communicable diseases. Stunting cases in children can be used as a predictor of the low quality of a country's human resources. The state of stunting causes poor cognitive abilities, low productivity, as well as an increased risk

of disease and results in long-term losses to the Indonesian economy (Akombi, Agho, Hall, Merom, Astell-Burt and Renzaho, 2017). A child with stunting in Indonesia turned out to be not only experienced by low-income families and underprivileged alone but also experienced by families that are not poor or who are above 40% level of social and economic welfare (Direktorat Gizi Dirjen Kesmas Kemenkes, 2018). Stunting does not only occur in malnourished children under five years because of the financial status of the low-income family, but in the economic condition of the family, on the other hand, there are also many children with stunting problems (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI, 2018). Therefore, it can be said that various factors cause stunting.

Stunting is not about chronic nutritional problems in children under five. Still, it is necessary to find its relationship with family background, parenting style, coverage and quality of health services, environment, and food security. Stunting is a result, while the trigger factors behind this incident need to be known to provide the right solution. Family conditions related to stunting are indicated by the age of the mother at marriage, the mother's education and the number of children in the family. The mother's age at marriage can provide a picture of the mother's maturity in caring for her child. Age of marriage is influenced by education, social status, and media exposure, place of residence by region, the role of religion and culture of society, ethnicity and other factors that vary geographically (Rumble, 2018). Mothers who are mature enough at marriage are at less risk of having their children suffer from stunting. The age at marriage also describes the period at first pregnancy. Pregnancy at a young age is a high risk in pregnancy because of the risk of giving birth to premature babies and low birth weight, and later the risk of stunting threatens toddlers. Likewise, the high risk experienced by the mother during pregnancy, such as anaemia can give birth to a baby with low birth weight and a higher risk of stunting (Rakotomanana, Gates, Hildebrand, Stoecker, 2017). The impact of stunting is intergenerational; mothers who are stunting are more likely to give birth to children who are also stunted (Prendergast and Humphrey, 2017). Meanwhile, the number of children cared for in the family can describe the burden on the family at that time, which means related to nutritional problems and attention for their toddlers.

The level of education is also related to income, where the level of income tends to increase with increasing levels of education. Sufficient income allows for a better quality of life. The level of education also affects the level of knowledge. A level of education helps in choosing foods wisely and appropriately, as well as handling health problems properly (Huang, 2015). Maternal education is related to the ability to receive information, primarily associated with parenting and nutrition for children and families. Maternal education is considered essential to prevent and treat poor health outcomes and disease. Various pathways have been hypothesized linking education to maternal and child health, including skills development, socialization, information provision, and postponement of childcare. Low level of education of mothers is related to the incidence of low nutritional status in children (Khan, Zaheer and Safdar, 2019). Mother's education level in the incidence of stunting is also considered to have a significant role. The education level of the mother can influence in receiving an update of information. Mothers with low levels of education do not have sufficient information

regarding the fulfilment of nutrition for their children. This condition causes the nutritional needs of children to be less precise.

Stunting also may be caused by the parenting style in the low-income families, including lack of knowledge about the mother's health and nutrition before and during pregnancy and after the birth mother as having an essential role in determining a child's growth. Some facts and information show that 60% of children aged 0-6 months do not receive breast milk exclusively, and 2 out of 3 children aged 0-24 months do not receive complementary foods with breast milk (WHO, 2016). Among children under five years is not getting exclusive breastfeeding during the first six months were twice suffered stunting compared to that exclusive breastfeeding (Zaragoza Cortes, Trejo Osti, Ocampo Torres, Maldonado Vargas, and Ortiz Gress, 2018).

The Indonesian government has made efforts in handling stunting. The government are determining efforts to accelerate stunting reduction by carrying out five pillars of stunting management. Leadership commitment and vision, national campaigns and behaviour change communication, convergence, coordination, consolidation of central, regional and village programs, nutrition and monitoring: food and monitoring and evaluation are carried out. Specific nutrition and sensitive nutrition intervention are an example of the policies in stunting in Indonesia. The expectation is that by 2030 the Indonesian government can reduce all forms of malnutrition, especially in children under five years group, including stunting (WHO, 2014a).

OBJECTIVE

This study aims to analysis the age of the women at marriage, the number of children, mother's education, history of breastfeeding and pregnancy risk with the incidence of stunting in children under five.

METHODS

Research Methods

The design of this study was analytic with a *cross-sectional* approach. The variables of this study consisted of five independent variables, namely the age of the mother at marriage, the number of children, mother's education, history of breastfeeding and pregnancy risk, while the dependent variable was the incidence of stunting in children under five years.

Research site

The study was conducted in a village of East Java Province, Indonesia. This site is located more than 12 kilometres south of the district headquarters and has a population of 40.584 in 2012. District of Kayen Kidul is divided into twelve villages for administrative process, and Padangan is one of those villages. The study site has one hospital and one public health centre to provide maternal and child health services to all population in the village. Strong kinship relationships where the bonds between one family member and another are good. In the community, there are many young marriages, but before marriage, there is an obligation to follow pre-marital counselling guidance at the religious affairs office.

Methods

This research was conducted on mothers who have toddlers aged 24 - 59 months under a public health centre working area with a population of 480 children under five and a sample size of 110 toddlers in October 2019. The Institutional Review Board of Karya Husada Institute of Health Sciences, Kediri, East Java, Indonesia approved this study on ethical reviewed number 122/EC/STIKES/KH/X/2019. Signed informed consent was obtained from the 110 mothers who have KIA (Kesehatan Ibu dan Anak)/ maternal and child book. KIA (Kesehatan Ibu dan Anak)/ maternal and child book utilised to gather the information required followed by a mini interview with mother of toddlers aged 24 – 59 months. Stunting data were obtained from measuring height versus age. Multivariate data analysis used logistic regression with a confidence level of 95% and processed with SPSS version 24 software.

RESULTS

Results

The following is a presentation of the data obtained from mothers and toddlers consisting of the sex of the toddler, the age of the mother at marriage, the history of exclusive breastfeeding, the number of family members, the mother's education, the risk during pregnancy and the incidence of stunting.

Table 1. Frequency Distribution of Research Data

Data	Criteria	Frequency	Percentage (%)
Gender	Male	61	55.5
	Women	49	44.5
Mother's age at marriage	<20 years	60	54.5
	≥ 20 years	50	45.5
Number of Family Members	4	62	56.4
	≥ 5	48	43.7
Exclusive breastfeeding	Exclusive breastfeeding	80	72.7
	Not	30	27.3
Education	primary	63	57.3
	Secondary and tertiary	47	42.7
Pregnancy risks	There are risks	25	22.7
	There is no risk	85	77.3
Stunting Incidents	Stunting	33	30.0
	Not	77	70.0

Data analysis using logistic regression to show the relationship between the dependent variable and the incidence of toddler stunting, the following results were obtained: from the mother's age at marriage, the value of p 0.286, the number of family members p 0.587, mother's education p 0.002, history of breastfeeding 0, 0.884, risk of pregnancy p 0.696. Of the five factors associated with the incidence of under-five stunting in this study, it was shown that only mother's education had a very significant relationship with the incidence of under-five stunting ($p = 0.002 < \alpha = 0.05$). The OR value is 4.724, which means that mothers with primary education have a risk of 4.724 times in the incidence of child stunting.

DISCUSSION

The percentage incidence of stunting in the study of this amounted to 30%. This percentage is lower than the national prevalence of stunting (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI, 2013) which is 37.2 % but higher than the global stunting percentage according to UNICEF, which is 22.9 % (TNP2K, 2017). The logistic regression test results on the variables of maternal age at marriage, number of children, mother's education, history of breastfeeding, and risk of pregnancy showed that only mother's education had a very significant relationship with the incidence of under-five stunting ($p = 0.002 < \alpha = 0.05$).

Maternal age at marriage

Early marriage often compromises a girl's development by resulting in early pregnancy and social isolation, limiting her opportunities for career and vocational advancement because interrupting her schooling factor. Early marriage may women in an adult role for which they are unprepared, and may place economic pressures on them (UNICEF, 2020)

Early maternal age at childbearing age was associated with an increased risk of preterm delivery and intrauterine growth restriction, infant mortality, and child malnutrition. This relationship results from behavioural, social and biological factors. Younger mothers may breastfeed for a shorter duration than older mothers and be behaviorally immature and therefore less able to meet the needs of their babies. They tend to have lower socioeconomic status, fewer schools, and less stable partnerships than older mothers. If they are still growing, their nutritional needs compete with the fetus. Being stunted were found higher, respectively, for children born to women who married before age 18 compared to those whose mothers married later (Efevbera, Bhabha, Farmer and Fink, 2017).

The results of this study indicate that 55.5% of young people are young married, but there is no relationship with the incidence of toddler stunting. Possible cause is the preparation for the moment before marriage which is carried out by following the guidance of marriage. This makes prospective mothers ready to get pregnant after marriage so that they are able to maintain their pregnancy.

Number of Children in Families

The number of children in the family affects the availability of family food. At different income levels will result in different levels of food availability. A large number of children in families with low economic status has the opportunity for children to suffer from malnutrition. The involvement of mothers in earning a living to help the family economy causes the fulfilment of nutrition for children under five to be neglected (Fikadu, Assegid, and Dube, 2014).

Analysis of the data concluded that the number of children in the family. In this study, the incidence of stunting does not have a significant relationship. The factor behind the relationship between the number of children and the incidence of stunting is that mothers who already have several children already have experience in caring for children. The number of children associated with the mother's experience of caring for her child in fulfilling the nutritional needs of her child where mothers who have had children before are more aware of

how to care because of their previous experience of caring for children (Karundeng, Ismanto and Kundre, 2015). The number of household members does not absolutely guarantee the nutritional status of the members. A large number of household members, when balanced with adequate nutrient intake, will reduce the risk of stunting. The results of the study in India were contrary to this study, which states that the number of family members determines stunting in toddlers because considering the size of the family members increases the risk of maternal anaemia, which triggers premature birth and low birth weight. Size household members cause competition for maternal attention and sources household power and one of which is lack of healthy nutrition as a cause of stunting (Gupta and Santhya, 2020).

Exclusive Breastfeeding

Exclusive breastfeeding status did not have a significant relationship with the incidence of stunting. Likewise, the duration of breastfeeding has a significant influence on the incidence of stunting. The duration of breastfeeding is closely related to the incidence of toddler stunting. Stunting is even more common in infants who are breastfed for more than 12 months than those who are breastfed for less than 12 months. This shows that there are other factors that play a role in the incidence of toddler stunting in this study. The risk of stunting in ankles aged 0-23 months is more remarkable in children who have a history of diarrhoea and fever > 2 weeks, whereas at ages 0-59 months (Akombi, et al, 2015). Parenting style of mothers on the infant at birth is indicated by the early initiation of breastfeeding, exclusive breastfeeding up to 6 months, and continued breastfeeding with complementary foods (solids) up to 2 years (WHO, 2014a).

High Risk of Pregnancy

The high risk experienced by the mother during pregnancy, such as anaemia can result in a low birth weight baby and a higher risk of stunting (Rakotomanana, Gates, Hildebrand, Stoecker, 2017). However, finding in this study was not found to be associated with the risk of maternal pregnancy. The results of this study are inconsistent with studies in India where the significant factors associated with under-five stunting include a history of infants with low birth weight, born to mothers with height > 145 cm (Aguayo and Menon, 2016). This shows that the risk of stunting under five can be reduced if during pregnancy checks and screening efforts are carried out. Pregnant women who visit health services than three times during pregnancy are less likely to have a stunted child (Khan, Zaheer and Safdar, 2019). One of the most common risk factors for mothers during pregnancy is anemia. In 2011 38% (32.4 million) pregnant women aged 15-49 years had anemia. The causes of anemia vary, but half of the cases are due to iron deficiency. Further action is needed to achieve the World Health Assembly's target of a 50% reduction in anemia in women of childbearing age by 2025 (WHO, 2014 b).

Relationship between Education Level and Stunting Incidence

There is a significant relationship between maternal education level and the incidence of stunting. Maternal education is a factor that has the most dominant relationship with the incidence of stunting in children. Education level has an influence on health, one of which is

nutritional status. Individuals who have a higher education level are more likely to know about healthy lifestyles and how to keep the body in shape, which is reflected in the implementation of a healthy lifestyle such as consuming a nutritious diet. Individuals with higher levels of education tend to avoid bad habits for health so that they have a better health status. The level of education is also related to income, where the level of income tends to increase with increasing levels of education. Sufficient income allows for a better quality of life. The level of education also affects the level of knowledge. A good level of education helps in choosing foods wisely and appropriately, as well as handling health problems properly (Huang, 2015). Stunting in toddlers is found in mothers who cannot regulate the daily menu for their babies so that their nutritional intake is lacking. The types of food are less varied and mostly eat less protein and milk. Likewise, the frequency of meals is not up to the standard (Aguayo, Nair, Badgaiyan and Krishna, 2016).

Our study have strength and limitation. It was conducted among women who have toddlers in a rural village using maternal and child book. The importance of this study was analytically show five variables with the incidence of stunting among children five years. However, one village in one of District of Kediri, East Java Province, Indonesia as the research sites could be noted as a limitation of this study. Thus, the findings might not be generalized to other settings. Therefore, the recommendations for future studies needed to consider of the large of population and sample.

CONCLUSION

This study shows that the level of mother's education is closely related to the incidence of stunting in children under five years. Therefore, constant motivation to increase the level of education for women and girls is urgently needed. Motivation and continuous promotion to increase the level of education for girls pre-marital, at least secondary education are required.

The factors of maternal age at marriage, number of children in the family, history of exclusive breastfeeding and high risk of pregnancy were not associated with the incidence of stunting in children under five years. However, other factors might be influence the incidence of stunting in children under five years. Further research needs to be done to look at other factors that could be correlated with stunting in children under five years.

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