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DETERMINANTS OF *STUNTING* IN PRE-SCHOOL-AGED CHILDREN IN UJUNG BULU SUBDISTRICT

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ABSTRACT

Stunting is one of the main nutritional problems in children in Indonesia. *Stunting* becomes a serious problem because it is associated with the quality of human resources in the future. Stunted toddlers will experience a level of intelligence that is not optimal, making children more susceptible to disease and in the future will be at risk of decreasing productivity levels. The purpose of this study was to determine the factors related to the incidence of *stunting* in pre-school age children. This type of research is *observational analytics* with *a case-control* design. The subjects of the study studied were toddlers who experienced and did not experience *stunting*. The sample of this study was children in PAUD schools and kindergartens in Ujung Bulu District, a total of 43 people consisting of 23 *stunted* children as cases and 20 children who were not *stunted* as controls. The results showed that the results of the statistical factor test of ANC services (p = 0.001), breastfeeding (p = 0.000) and consumption of Fe tablets (p = 0.012) were related to *stunting* events. Meanwhile, the factor of the child's immunization history (p = 0.091) is not related to the incidence of *stunting*. It is recommended to pregnant women to pay more attention to ANC visiting services, breastfeeding and child immunization because it plays a very important role in *stunting* events.

Keywords: PAUD; preschool age child; stunting

INTRODUCTION

The incidence of short toddlers or commonly referred to as *stunting* is one of the nutritional problems experienced by toddlers in the world today. Data on the prevalence of stunting toddlers collected by the World Health Organization (WHO), Indonesia is among the third countries with the highest prevalence in the Southeast Asia/South-East Asia Regional (SEAR) region. The average prevalence of stunting toddlers in Indonesia in 2005-2017 was 36.4%.

Stunting (stunting) is a condition where toddlers have less length or height when compared to age. This condition is measured by a length or height that is more than minus two standard deviations of the median child growth standard from WHO. Stunting toddlers include chronic nutritional problems caused by multi-factors such as socioeconomic conditions, maternal nutrition during pregnancy, pain in babies, and lack of nutritional intake in babies.

Toddlerhood is a period that is very sensitive to the environment so that more attention is needed, especially the adequacy of nutrition (Kurniasih et al., 2010). Nutritional problems, especially *stunting* in toddlers, can hinder the development of children, with negative impacts that will last in later life such as intellectual decline, susceptibility to non-communicable diseases, decreased productivity to cause poverty and the risk of giving birth to babies with low birth weight (Organization, 2019).

The results of research by Annisa et al, (2016) showed that the proportion of toddlers who had a greater level of inadekuat energy adequacy in the *stunting* group (54.5%) and toddlers who had an adequate energy adequacy level had a 9.5 times greater risk of stunting compared to toddlers who had an adequate energy adequacy level. Another factor related to *stunting* is exclusive breastfeeding intake in toddlers. Research in Southern Ethiopia proves that toddlers who do not get exclusive breastfeeding for 6 months are at high risk of *stunting* (Fikadu, et al., 2014). In line with the research of Al Rahmad et al (2013) which states that the incidence of *stunting* in toddlers is caused by non-exclusive breastfeeding, poor breastfeeding and incomplete immunization. However, it contradicts the research conducted by Chandra et al (2011) which states that exclusive breastfeeding has no effect in *preventing stunting*. Mothers' knowledge about nutrition also affects the incidence of *stunting*. The results of research by Ni'mah K & Rahayu N (2015) stated that there is a relationship between maternal education and the level of maternal knowledge about nutrition with the incidence of *stunting*.

According to the WHO (World Health Organization) There are an estimated 162 million short toddlers in 2012, if the trend continues without any attempted decline, it is projected to be 127 million by 2025. As many as 56% of short children live in Asia and 36% in Africa, the prevalence of short toddlers becomes a public health problem if the prevalence is 20% or more. Therefore, the percentage of short toddlers in Indonesia is still high and is a health problem that must be addressed. Compared to several neighboring countries, the prevalence of short toddlers in Indonesia is also highest compared to Myanmar (35%), Vietnam (23%), Malaysia (17%), Thailand (16%) and Singapore (4%)(UNSD, 2014). The Global Nutrition Report in 2014 showed that Indonesia is included in 17 countries, among 117 countries, which have three nutritional problems, namely *stunting*, wasting and overweight in toddlers. Basic Health Research Results (Riskesdas, 2018, 2013, 2010, 2007) the nutritional status of short (short and very short) toddlers in Indonesia in 2018 as much as 30.8% when compared to 2013 was 37.2%, in 2010 (35.6%) and in 2007 (36.8%) did not show a significant decrease / improvement. The highest percentage in 2013 was in the provinces of East Nusa Tenggara (51.7%), West Sulawesi (48.0%) and West Nusa Tenggara (45.3%) while the lowest percentages were riau islands province (26.3%), DI Yogyakarta (27.2%) and DKI Jakarta (27.5%).

South Sulawesi data on the nutrition of children under five shows that generally south Sulawesi children have a middle rank compared to other provinces in Indonesia. Almost all indicators of nutritional status resemble the data of the national average. For malnourished children by 12.0% and malnutrition by 5.1% (National averages of 13.0% and 5.4%, respectively). For the number of short children 29.1% (national 35.6%) and thin children 13.7% (national 13.6%). In some districts this data was seen to be higher, such as high malnutrition in Takalar (18.7%) and Bone (17.8%) as well as high malnutrition in Bantaeng (8.8%) andTakalar (8.4%). Short children were found tall in Barru (38.5%) and Bantaeng (37.6%) districts while thin children were found tall in Wajo (24.7%) and Takalar (18.3%) districts. Bulukumba has cases of malnutrition (6.32%), malnutrition (4.78%) and short and very short children (29.32%) (South Sulawesi Provincial Health Office, 2015).

According to data from the Bulukumba Regency Health Office in 2014 monitoring the growth of toddlers recorded the number of toddlers as many as 42,482 people and the number of toddlers weighed was 30,414 people (71.6%). Meanwhile, the percentage of toddlers with a body weight below the red line (BGM) was 342 people (1.1%). 2 malnourished toddlers were reported,

consisting of 1 male and 1 female. Meanwhile, BBLR data at the Bulukumba District Health Office provides an illustration that the percentage of babies born alive with BBLR in 2014 was 3.3% where there were 218 BBLR babies out of 6,677 babies born who were weighed (Bulukumba District Health Office, 2015). The survey study conducted by the researcher previously obtained data on pre-school children in Ujung Bulu sub-district in 6 (six) kindergarten schools with a total sample of 269 people and those aged 36-72 months as many as 34 people who were *stunted* (1 2.6%). The seriousness of the impact caused by *the incidence of stunting* and the differences in the results of the study, thus indicating the need for further research on the determinants of *stunting* events in toddlers. Because by knowing the factors *causing stunting* events, it is hoped that there will be follow-up in determining stunting events in Bulukumba Regency.

METHOD

The population in this study was all *stunted* and *non-stunted* toddlers in PAUD and TK schools in Ujung Bulu Subdistrict. The sample of this study was children in PAUD schools and kindergartens in Ujung Bulu District, a total of 43 people consisting of 23 *stunted* children as cases and 20 children who were not *stunted* as controls. The research was conducted at paud and kindergarten schools in Ujung Bulu sub-district. This type of research is *observational analytics* with *a case-control* design. The subjects of the study studied were toddlers who experienced and did not experience *stunting*. The object of the study studied was factors related to the incidence of *stunting* in toddlers, including ANC services, breastfeeding, a history of immunization, and fe consumption in pregnant women. The data collection technique used in this study was to use observation sheets to determine ANC services, breastfeeding, history of immunization, and fe consumption in mothers during pregnancy. Data analysis techniques using the *Mc Nemar* test and *the Wilcoxon u n t UK Marginal Homogenity* test found out the relationship of each variable to the incidence of *stunting*.

RESULTS AND DISCUSSION

Table 1
Distribution of Characteristics of Respondents' Parents Based on *Stunting* Incidence

Characteristics	Stunting		Not Stunting		Total	
	f	%	f	%	f	%
Mother's age						
< 20 Years	0	0,0	0	0,0	0	0,0
20-35 Years	15	34,9	13	30,2	28	65,1
>35 Years	8	18,6	7	16,3	15	34,9
Sub Total	23	53,5	20	46,5	43	100
Mother's education						
Tall	6	14,0	11	25,6	17	39,5
Low	17	39,5	9	20,9	26	60,5
Sub Total	23	53,5	20	46,5	43	100
Mom's job						
Work	4	9,3	8	18,6	12	27,9
Doesn't work	19	44,2	12	27,9	31	72,1
Sub Total	23	53,5	20	46,5	43	100
Family income						
Tall	12	27,9	14	32,6	26	60,5
Low	11	25,6	6	14,0	17	39,5

Based on table 1 above, it was found that in mothers who have *stunted* children , most of them are aged in the range of 20-35 years (30.2%), most of the mother's education is in the high category (25.6%), most are not working (44.2%) and most of the family income is in the high category (27.9%). Whereas in mothers who have *non-stunted* children , most of the age is in the range of 20-35 years (34.9%), most of the mother's education is in the low category (39.5%), most are not working (27.9%) and most of the family income is in the high category (32.6%).

Table 2.
Distribution of Incidence and Determinants of *Stunting*

Variable	Total	
	f	%
Stunting incident		
Stunting	23	53,5
Not stunting	20	46,5
ANC Service		
Enough (≥ 4 times)	34	79,1
Less than (< 4 times)	9	20,9
Breastfeeding		
Exclusive	19	44,2
Non exclusive	24	55,8
Sub Total	43	100
Child immunization history		
Complete	36	83,7
Incompelete	17	16,3
Consumption of fe tablets		
Enough (≥ 90 pieces)	15	34,9
Less than (< 90pieces)	28	65,1

Based on table 2 above, it was found that most children suffer from *stunting* (53.5%), most respondents perform ANC services in the sufficient category (79.1%), most do not give exclusive breastfeeding (55.8%), most have a history of immunization of children in the complete category (83.7%) and most consume Fe tablets in the category of less (65.1%).

Table 3.
Relationship of Determinants with *Stunting* Events

Variabel	*Stunting*		Not *Stunting*		Total		p
	f	%	f	%	f	%	
ANC Service							
Enough (≥ 4 times)	20	46.5	14	32.6	34	79.1	0.001
Less than (< 4 times)	3	7.0	6	14.0	9	20.9	
Breastfeeding							
Exclusive	7	16.3	12	27.9	19	44.2	0.000
Non exclusive	16	37.2	8	18.6	24	55.8	

Variabel	*Stunting*		Not *Stunting*		Total		p
	f	%	f	%	f	%	
Child immunization history							0.091
Complete	20	46.5	16	37.2	36	83.7	
Incompelete	3	7.0	4	9.3	7	16.3	
Consumption of fe tablets							0.012
Enough (≥ 90 pieces)	6	14.0	9	20.9	15	34.9	
Less than (< 90pieces)	17	39.5	11	25.6	28	65.1	

Based on table 2 above, it was found that out of 43 respondents there were 23 people (53.5%) children with *stunting* incidence with mothers getting sufficient ANC services of 20 people (46.5%) and less 3 people (7%), giving exclusive breastfeeding 7 people (16.3%) and non-exclusive 16 people (37.2%), having a complete child immunization history of 20 people (46.5%) and incomplete 3 people (7%), the consumption of Fe tablets was enough 6 people (14%) and less 17 people (39.5%). Meanwhile, 20 children who were not *stunted* (46.5%) with mothers received sufficient ANC services of 14 people (32.6%) and less than 6 people (14%), gave exclusive breastfeeding 12 people (27.9%) and non-exclusive 8 people (18.6%), had a complete child immunization history of 16 people (37.2%) and incomplete 4 people (9.3%), consumed Fe tablets enough 9 people (20.9%) and less 11 people (25.6%). Based on the results of the ANC service statistics factor test (p= 0.001), breastfeeding (p = 0.000) and consumption of Fe tablets (p = 0.012) were related to *stunting* events. Meanwhile, the factor of the child's immunization history (p = 0.091) is not related to the incidence of *stunting*.

Based on the results of the study above, it shows that there is no determinant factor relationship including ANC services, exclusive breastfeeding, a history of child immunization and consumption of maternal Fe tablets during pregnancy to the incidence of *stunting* in pre-school age children in the feather tip district in 2019. Ante Natal Care (ANC) examination in pregnant women is very important to optimize the mental, physical health of both mothers and their babies. The benefit of ANC, especially for mothers, is so that mothers are able to face childbirth, puerperium, preparation for breastfeeding and the return of reproductive health reasonably (Manuaba et al., 2009). ANC services are preventive services in the development of maternal health and to prevent complications for the mother and fetus. The effort that must be made is to strive for pregnant women to be healthy until delivery, if there is a physical or psychological eligibility can be known immediately, and pregnant women can give birth without difficulties (Bartini, 2012). The frequency of ANC examinations is at least 4 times during the period of pregnancy. The examination consists of anamnesis, monitoring of the mother and fetus, early detection of high-risk pregnancy, immunization, advice and counseling, as well as recording the right data for each visit (Jannah, 2012).

The results showed that there was a relationship between Ante Natal Care and *stunting* events with a p value of 0.001 (p value < 0.05). This research is in line with research in Probolinggo by Nurmasari & Sumarni in 2018 showing that pregnant women who do not routinely do Ante Natal Care will be at 4x the risk of developing anemia. Mothers who do not regularly take feud tablets are at risk of 3.46x at risk for anemia. While mothers with anemia have the potential to give birth

to babies with low weight and subsequently have the potential to *be stunted* (Hutasoit et al., 2020). Ante Natal Care examination is expected four times. In the first trimester I and II both 1 time, and 2 times in the last trimester (III trimester). Antenatal examination is very important, not only the quantity but rather the quality of the visits.

Based on the results of this research, it was shown that most mothers during pregnancy (65.1 %) who did not consume fe were in the category of less (≤90 seeds). While the standard for all pregnant women in overcoming anemia during pregnancy, blood-boosting tablets or Fe of at least 90 eggs are given during pregnancy. This is based on the Regulation of the Minister of Health of the Republic of Indonesia Number 88 of 2014. Each blood-added tablet contains iron equivalent to 60 mg of elemental iron in the form of Ferrous Sulfate, Ferrous Fumaric or Ferro Gluconate and Folic Acid of 0.400 mg3. Research conducted in East Java said that 80% of mothers who were irregular in visiting an ANC had anemia. The irregularity of pregnant women in conducting antenatal care examinations is due to insufficient maternal awareness about the importance of antenatal care. Most mothers make ANC visits after pregnancy enters the second and third trimester periods. In pregnant women who are regularly ANC and obediently consume Fe tablets, 73.33% do not have anemia (Titik Istiningsih1, 2022).

Knowledge and information factors also influence the success of a mother in providing exclusive breastfeeding. Some factors are social norms, the mother's work and the mother's breastfeeding experience beforea (Jatmika, 2015). The consequences of the mother's success in exclusive breastfeeding can have an impact on children experiencing malnutrition, *causing stunting*. In addition, the long-term impact of children can experience less intelligence than their peers of their age (Gerungan et al., 2013) (Desa et al., 2017).

The threat of *stunting* can have an impact on reducing intelligence in children by 5-11 points. Decreased ability to think san learning achievement, decreased immunity so that it is easily attacked by various types of diseases are the impact of *stunting* on toddlers. Stunting events do not just happen, but go through a long process. Malnutrition that already occurs since in the womb and at the beginning of birth. However, *stunting* can be detected after the child is 2 years old. In response to this, the Ministry of Villages, development of disadvantaged areas and transmigration (Kemendesa PDTT) is committed to reducing the incidence of *stunting*, especially in villages by improving the nutrition of toddlers, the health of pregnant women, checking pregnant women at least 4 times during pregnancy, getting iron supplements and monitoring growth and development at posyandu (Desa et al., 2017).

Interventions to reduce *stunting* aimed at children in the first 1000 days of life (HPK) contributed to a 30% reduction in *stunting* . These interventions include pregnant women, namely providing additional food to pregnant women, to prevent chronic energy and protein deficiencies, reduce iron and folic acid deficiencies, overcome iodine deficiency, overcome helminthiasis in pregnant women. Intervention for nursing mothers and children 0-6 months is to encourage IMD (early initiation of breastfeeding) to be carried out 1 hour after delivery to give colostrum to the baby, encouraging each mother to give exclusive breastfeeding (Desa et al., 2017).

The mother's behavior in fulfilling nutrition in the first thousand days of life or the Golden Period can be seen from the start of treatment during pregnancy then when the baby is born, namely by

doing early breastfeeding initiation (IMD) directly after the baby is born, giving exclusive breastfeeding starting from babies aged 0-6 months followed by complementary feeding (MP-ASI) after the child is 6 months old and continuing to breastfeed until the age of 2 years, weighing babies every month at posyandu to monitor their growth and development, providing vitamin A capsules and complete immunizations as scheduled (Erna, 2017).

As in the results of Bwalya's research, et al showed that toddlers who do not get breast milk are more at risk of *stunting* compared to toddlers who get exclusive breastfeeding (AL-Rahmad et al., 2013), (et al., 2015). Low access to health services is also considered as one of the factors that can influence the incidence of *stunting* (Beal et al., 2018). The status of breastfeeding can also be related to the incidence of infectious diseases in children. Breast milk has advantages compared to formula milk, especially in terms of nutritional content, immunity, economy and psychology. By giving breast milk to children can increase the child's immunity to common infections that often occur in children (Marmi, 2013).

CONCLUSION

There is a meaningful relationship between antenatal care (ANC) service factors, breastfeeding and fe tablet consumption and the incidence of stunting in pre-school age children in Ujung Bulu sub-district. Factors History of child immunization does not show a significant relationship with the incidence of stunting.

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