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Contents

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The Relationship of Socio-Economic and Genetic Factors with Toddler Stunting at Kenjeran Public Health Center Surabaya

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ABSTRACT

Introduction: Stunting is a chronic nutritional problem arising from a malnourished condition that accumulates over a long period of time with a z-score of less than -2 SD. The incidence rate of stunting in Indonesia year to year has increased. The purpose of this study was to analyse the correlation of socioeconomic and genetic factors with the incidence rate of toddlers stunting.

Method: This research used a cross-sectional approach. The study population amounted to 568 toddlers. The sample technique using stratified random sampling and obtained 145 toddlers as the sample. The independent variables were socioeconomic and genetic factors via the questionnaire instrument. The dependent variable was the incidence rate of toddler stunting using the microtoise instrument. Data analysis was conducted using the Spearman rho test. The results of this study indicate that socioeconomic and genetic factors are related to the incidence rate of toddler stunting.

Results and Analysis: The results of the factors are; father's education analysis to stunting toddler $p = 0{,}002 < \alpha = 0{,}05$, mother's education to stunting toddler $p = 0{,}001 < \alpha = 0{,}05$, father's job to stunting toddler $p = 0{,}000 < \alpha = 0{,}05$, mother's activity to stunting toddler $p = 0{,}013 < \alpha = 0{,}05$, family income to stunting toddler $p = 0{,}002 < \alpha = 0{,}05$ and genetics to stunting toddler incidence $p = 0{,}000 < \alpha = 0{,}05$. The implication of this research is that the prevention of toddler stunting can be achieved by giving information about nutritious food with a low price and a method of processing food well that is affordable.

***Keywords**: Toddler with stunting, Genetic Factor, Social Economy.*

INTRODUCTION

Stunting is a chronic nutritional problem, arising from a malnourished condition that accumulates over a long period of time[1]. Stunting, according to the WHO Child Growth Standard, is based on the length-for-age (L/A) or height-for-age (H/A) index with a limit (z-score) less than -2 SD. Stunting is associated with an increased risk of morbidity and mortality, and stunted growth[2]. Nutritional deficiencies that have received a lot of attention lately include a chronic nutritional problem in the form of short children (stunting).

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Based on a preliminary study conducted by the researchers via an interview in February 2018, it showed that the residents around the Kenjeran Public Health Centre have been given counselling about the practice of providing nutritious food for children via an Integrated Service Post by the health workers. However, parents still do not apply the practice of giving healthy or nutritious food to their children correctly. Parents only provide side dishes in the form of tofu and tempeh. The incidence of stunting in toddlers in Indonesia is still very high, which was 35.6% (18.5% very short and 17.1% short) in 2010 and increased in 2013 to 37.2% (18.0% very short and 19.2% short) for those who experienced stunting. According to the results from Basic Health Research 2010, East Java was one of the provinces with a high stunting prevalence of 35.8% (20.9% very short and 14.9% short). The same thing was also shown in the results of the Basic Health Research in 2013, where the prevalence of stunted toddlers in the province of East

Java was included in the high group, which was between 30-39% [3]. The results of the preliminary study conducted at Kenjeran Public Health Centre Surabaya on February 15th, 2018 found that the results of stunting children in 2016 had a prevalence rate of 430 toddlers, or 14.78% (0.52% very short and 14.26% short).

One of the causes of stunting is socio-economic, where the family income influences the fulfilment of nutritional adequacy in toddlers which indirectly has an impact on their nutritional growth. Stunted children experience more disruption in carrying out their daily activities compared to children who are not stunted. Stunted children come from families with a low socio-economic status. Being of a low economic status is considered to have a significant impact on the possibility of children being thin and short[4]. Families with a good economic status can get access to better public services such as education, health services, and others so then they can affect the nutritional status of their children. In addition, the family's purchasing power is increased, so then the family access to food will be better[5].

A nurse acts as an educator to the parents about the risk factors that causes the incidence of stunting in children, so it can minimise the incidence rate.

METHOD

This study used a non-experimental research design with an analytic observational study type which aimed to determine the relationship between the variables and to explain the relationships found with the cross-sectional approach. This is a type of research that emphasises on the measurement or observation of the independent and dependent variables one at a time, with a follow-up. The instrument used a questionnaire for the socio-economic data and a data questionnaire for the genetic factors related to the incidence rate of toddler stunting. The sampling technique used in this study was probability sampling via the stratified random sampling approach. The study was conducted at Kenjeran Public Health Centre, Surabaya.

RESULTS

The relationship of the socio-economic and genetic factors with toddler stunting at Kenjeran Public Health Centre, Surabaya, as shown in the table 1 below.

Table 1: Characteristic demography of respondents

Father's Education	**Stunting Toddler Category**				**Total**	
	Very Short		**Short**			
	f	**%**	**f**	**%**	**N**	**%**
Low (Junior High School and below)	34	45.3	41	54.6	75	100
Moderate (Senior High School)	15	25.4	44	74.6	59	100
High (Academy/College)	1	9	10	90	11	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.002 (p = 0.05)						
Mother's Education	**Stunting Toddler Category**				**Total**	
	Very Short		**Short**			
	f	**%**	**f**	**%**	**n**	**%**
Low (Junior High School and below)	37	45.6	44	54.3	81	100
Moderate (Senior High School)	12	22.2	42	77.7	54	100
High (Academy/College)	1	10	9	90	10	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.001 (p = 0.05)						

Conted…

Father's Occupation	Stunting Toddler Category				Total	
	Very Short		Short			
	f	%	f	%	n	%
Merchant/ Entrepreneur	22	52.3	20	47.6	42	100
Fisherman	25	78.1	7	21.8	32	100
Civil Servant/Soldier/Policeman	0	0	4	100	4	100
Private	3	4.8	59	95.1	62	100
Other	0	0	5	100	5	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.001 (p = 0.05)						
Mother's Occupation	**Stunting Toddler Category**				**Total**	
	Very Short		**Short**			
	f	**%**	**f**	**%**	**n**	**%**
Unemployed	47	32.1	73	60.8	120	100
Merchant/ Entrepreneur	0	0	11	100	11	100
Civil Servant/Soldier/Policeman	0	0	1	100	1	100
Private	3	25	9	75	12	100
Other	0	0	1	100	1	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.013 (p = 0.05)						
Family Income	**Stunting Toddler Category**				**Total**	
	Very Short		**Short**			
	f	**%**	**f**	**%**	**n**	**%**
Low < 2,500,000	43	42.6	58	57.4	101	100
Middle 2,500,000-3,500,000	5	14.3	30	85.7	35	100
High > 3.500.000	2	22.2	7	77.7	9	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.002 (p = 0.05)						
Genetic Factors	**Stunting Toddler Category**				**Total**	
	Very Short		**Short**			
	f	**%**	**f**	**%**	**n**	**%**
Normal Parents	22	68.8	10	31.3	32	100
Genetic history of stunting family	15	35.7	27	64.3	42	100
Genetic history of stunting mother	4	11.4	31	88.6	35	100
Genetic history of stunting father	9	25	27	75	36	100
Total	50	34.5	95	65.5	145	100
The value of Spearman's rho statistic test was 0.001 (p = 0.05)						

Based on the results of the Spearman rho test, there was a significance value of p = 0.002 with a significance level of 0.01 (p < 0.05). It can be concluded that there is a relationship between the father's education, mother's education, father's occupation, mother's occupation, family income and genetic factors and the incidence rate of stunted toddlers at Kenjeran Public Health Centre, Surabaya (Table 1).

DISCUSSION

Malnutrition can result in a failure to thrive and stunting in children. It also increases morbidity and mortality, especially in vulnerable to nutrition and disease age groups, which is children under five (toddler). This is the group that suffers the most from malnutrition and the number in the overall population is quite large. Various factors that influence the nutritional status of toddlers includes a lack of food supply, poor quality in the environment, socio-economic conditions (income, level of education, and employment) and family culture, such as family upbringing, as well as knowledge [6].

Socio-economy is sub-divided into three; namely education, employment, and family income which will be discussed as follows. The high education level of the parents can change a person's diet, which ultimately affects the nutritional status of the family, including the children[4]. The level of formal education is a factor that determines whether or not someone easily absorbs and pursues the acquired knowledge[7]. This study is in line with the study of Aramico, Sudargo and Susilo (2013), which states that there is a relationship between the father's education and stunting ($p<0.001$) and OR 3.37. The high education level of the parents can change a person's diet, which ultimately affects the nutritional status of the family. Researchers assume that a low level for the father's education, those who graduated from junior high school or below, can affect nutritional status.

Level of education will affect the knowledge that is possessed by someone. The low level of the mother's education will have an impact on her limited knowledge about a healthy lifestyle and the importance of nutrients for the health and nutritional status of their child[8]. The education of the parents will have a direct influence on childcare patterns, which will then affect the child's food intake. Parents with a better education tend to have the knowledge and ability to implement better knowledge than parents with a low level of education[2]. These results are supported by Medhin's study (2010 in, Ngaisyah and Septriana, 2016) which stated that the mother's education level affects the incidence rate of stunting, showing that there is a significant relationship ($p=0.000$) and OR 4.06. The level of education will make it easier for a person or society to absorb information and to implement it in their daily behaviour and lifestyle.

A job is work, namely a series of tasks, that generates money for someone[9]. The household's economic status can be determined by the work performed by the head of the household. The type of work done by the head of the household will determine how much of the household finances will be used to meet the needs of the family[10]. Researchers assume that those with jobs that generate less money can cause the household's children to experience a nutritional imbalance. The father's occupation status can also reduce the time spent together with the child, so the attention paid to the child's growth and development will decrease.

The quality of the mother's service in the family is determined by the mastery of information and the factor of adequate time availability. These two factors can be determined by the level of education, social interaction and occupation[7]. Changes in modernity can affect the family institution. The number of women who work outside home is increasing, both for self-actualisation and to meet the household's economic needs[11]. Researchers assume that mothers who are staying at home and not working can take care and pay attention to the health and needs of their toddlers, which can support their growth better. Meanwhile, mothers who work have less time to pay attention to the growth of their children, so they are at a risk of malnutrition. The lack of nutrition needed by these toddlers is due to the business of the parents and their focus on their work; the attention to their children is thus reduced. A good nutritional intake often cannot be fulfilled by the child because of the family's economic crisis factor[12].

An adequate family income will support the child's growth and development because the parents can provide for their children's needs, both primary and secondary[7]. This study is also in line with the study of Aramico, Sudargo and Susilo (2013) which showed the significant relationship between family income and nutritional status ($p<0.05$). The value of OR=3.5 95% indicates that families with a low economic status have a 3.5 times greater chance of their child suffering from malnutrition than families with a high economic status. Other studies that are in line with this result explained that the low socio-economic status (household assets) of the respondents has a 21 times greater risk of causing stunting compared to those with a high socio-economic status. Researchers assume that a family income that is below the District/City Minimum Wage has an impact on the growth of the toddler. This leads to the inability of the head of the family to meet the nutritional adequacy of their toddler.

The parents' height is associated with the physical growth of the children. A mother with a short body is one of the factors associated with the incidence rate of stunting. In toddlers, height is influenced by genetic and environmental factors during the growth period[13]. This result is in line with the study conducted by Hanum et al (2014, in Aulia, 2016) which showed that more stunted children have mothers of a short height compared to mothers of a normal height. Researchers assume that the parents' height is related to the incidence rate of stunting.

However, there are still many environmental factors that affect a child's height. In addition, several other studies have shown that the factors of education and work are related to the characteristics of parents, which is a cause of the high number of problems encountered by short toddlers. This study was supported by Mulvani (in Miko and Al-Rahmad, 2017), in that people with a high level of education generally pay more attention to their health problems.

CONCLUSION

Based on the findings in this study and testing the results, it can be concluded that socio-economic and genetic factors have a relationship with the incidence of stunting at Kenjeran Public Health Centre, Surabaya. This research is expected to provide information on the minimum family income required without reducing the supply of balanced nutrition in children. Cheap nutritious food and a good method of food processing is important. In addition, people can understand the incidence rate of stunting experienced by their children and become able to apply good nutrition to their children in an effort to minimise the number of stunting incidences.

Ethical Clearance: This study had passed ethical clearance issued by Ethical Committee of the Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya, Indonesia.

Source of Funding: This study is self-funded research project.

Conflict of Interest: None.

REFERENCES

1. Rahmayana R. Relationship of Mother's Care Pattern with Stunting Events Children Aged 24-59 Months in Asoka II Posyandu Coastal Area Kelurahan Barombong, Tamalate District, Makassar City, 2014. Universitas Islam Negeri Alauddin Makassar; 2014.
2. Kusuma KE, Nuryanto N. Risk factors for the incidence of stunting in children aged 2-3 years (Study in East Semarang District). Diponegoro University; 2013.
3. Ministry of Health/Indonesia. Situasi balita pendek. [Short toddler situation]. Info Datin. 2016;2442–7659.
4. Aramico B, Sudargo T, Susilo J. Socioeconomic relations, parenting, eating patterns with stunting in elementary school students in the district of Lut Bawar, Central Aceh district. J Gizi dan Diet Indones (Indonesian J Nutr Diet. 2016;1(3):121–30.
5. Ni'mah K, Nadhiroh SR. Factors Related to Stunting Events in Toddlers. Media Gizi Indones. 2016;10(1):13–9.
6. Linda O, Hamal DK. Relationship between Education and Parent Work and Parenting with Toddler Nutritional Status in Kota and Kabupaten Tangerang, Banten. Pros Penelit Bid Ilmu Eksakta. 2011;
7. Pahlevi AE. Determinants of nutritional status in elementary school students. J Kesehat Masy. 2012;7(2):122–6.
8. Aulia D. Determinan Stunting pada Anak Usia 24-59 Bulan di Kelurahan Cimahpar, Kecamatan Bogor Utara. [Determinants of Stunting in Children Aged 24-59 Months in Cimahpar Village, North Bogor District].
9. Amaanina Df. Exclusive Asian Relations, Characteristics of Parents and Babies Against Growth and Development 6-Month-Old Babies at Mojolaban Health Center Sukoharjo District, Central Java. Universitas Airlangga; 2016.
10. Merryana Adriani SKM, Kes M, Wirjatmadi B, Gk S. Toddler Nutrition and Health: the role of micro-zinc in the growth of infants. KENCANA Prenada Media Group; 2014.
11. Latifah E, Hastuti D, Latifah M. Effect of breastfeeding and psychosocial stimulation on socio-emotional development of children under five in the mother's family work and not work. J Ilmu Kel Konsum. 2010;3(1):35–45.
12. Devi M. Analysis of factors that influence the nutritional status of children in rural areas. Teknol dan Kejuru. 2012;33(2).
13. Ngaisyah RD. Socio-economic relations with the incidence of stunting in infants in Kanigoro village, Saptosari, Gunung Kidul. Med Respati. 2015;10(4).

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