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The Relationship of Stunting Events with Intelligence Level in Elementary School Children at Air Beliti Health Center

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Abstract

Stunting is a failure of growth and development experienced by children for a long time which can indicate a disturbance in the organs of the body, where one of the organs that is most rapidly damaged in nutritional disorders is the brain. Stunting is still a health problem in the world, especially in developing countries. The magnitude of the problem is due to the high prevalence of stunting, above the world standard of 20%. The incidence of stunting is caused by lack of nutritional intake during pregnancy and during growth. The purpose of the study was to determine the relationship between the incidence of stunting and the level of intelligence in elementary school children. This study used a cross-sectional design. The research population was elementary school children in grades 4, 5 and 6 of 5 elementary schools in the working area of the Air Beliti Health Center, as many as 156 children using a simple random sampling technique. The sample in this study was 85 with random sampling technique. Data were analyzed by univariate, bivariate using chi square test, and multivariate using linear regression test. The results obtained from the level of intellectual intelligence above the average of 67.1%, and children who did not experience stunting were 72.9%, the results of the hypothesis test showed a significant relationship between the incidence of stunting (p = 0.011) and the level of intelligence in elementary school children. The results of the study indicate that there is a relationship between the incidence of stunting and the level of intelligence of elementary school children. The results of the study indicate that there is a relationship between the incidence of stunting and the level of intelligence of elementary school children, parents pay more attention to nutritional intake in accordance with the needs of elementary school children because stunting events can affect the growth and level of intelligence in children, health center health workers in order to create innovations in stunting prevention, especially in elementary school age children by involving the school through UKS activities (School health).

Keywords
school children; stunting; intelligence

I. Introduction

Stunting is a condition of failure to grow and develop in children due to inadequate nutritional intake for a long time, repeated infections and inadequate psychosocial stimulation (Achadi, 2016). In the case of stunting, the short-term impact is the disruption of brain development, impaired physical growth and metabolic disorders in the body which have an impact on the low level of intelligence in children, while the long-term impact is decreased immunity so that they are easily tired, weak and susceptible to various diseases. Indonesian Ministry of Health, 2018). Based on basic health research, the prevalence of

stunting in Indonesia in 2018 was 30.8%. The prevalence of stunting is still high when compared to the WHO standard of 20% (Kemenkes RI, 2019).

According to data from the South Sumatra Provincial Health Office in 2018, the incidence of stunting was 31.7%. Musi Rawas Regency, an area that has experienced food scarcity and low economic status has a stunting incidence rate of 34.6% spread across 14 sub-districts which are the working areas of 19 health centers, one of which is recorded with the highest stunting incidence in Tuah Negeri District which has the highest incidence of stunting. became the working area of the Air Beliti Health Center, with a stunting incidence of 16.1%. Shinta et al (2020) stated that stunting illustrates the condition of failure to thrive in children due to malnutrition or chronic malnutrition during the period of growth and development that appears after children are 2 years old.

Children at primary school age really need nutrients not only for life processes but more than that, for growth and cognitive development. so that school-age children really need micronutrients and macronutrients (Hardinsyah, 2016). Stunting can occur when the child is still in the womb or before the child is two years old, as an indication of a decline in cognitive abilities at a later age if it is not followed by adequate psychosocial stimuli, it will have an impact on academic or educational abilities in the future (Achadi, 2020). Adinda et al (2019) stated that most students bring food to school, but the provisions do not meet the balanced nutrition of students, there are still many students who do not add vegetables and fruit in them lunch. Besides carrying supplies, they also buy a snack in cafetaria. Researchers looked snacks in schools does not meet the nutritional balance, due to the low in vitamins and minerals in these snacks, only high in carbohydrates and fats such as meatball skewers, pop noodles, fried noodles, light snacks, and milk cans.

Based on the description above, this study aims to analyze the relationship between the incidence of stunting and the level of intelligence in elementary school-aged children in Tuah Negeri District, Musi Rawas Regency and no similar research has been conducted in Tuah Negeri District.

II. Research Methods

The method of the present study was a cross-sectional study design. This research was conducted in five elementary schools in the working area of Air Biliti Public Health Center, Musi Rawas Regency. The population in this study was elementary school children. As many as 156 respondents from 5 elementary schools were selected from simple random results. The research sample was 85 with a random sampling technique. The inclusion criteria consist of elementary school students in grades 4, 5, and 6; willing to take an IQ test; willing to take anthropometric measurements; and their parents willing to fill out a questionnaire form. Each selected student received parental consent by filling in informed consent as a sign that the subject agreed to participate in the study. Data analysis using statistical programs such as univariate analysis and bivariate analysis using the Chi-Square test

III. Results and Discussion

3.1 Results

The subjects in this study came from five (5) elementary schools in the working area of the Air Beliti Health Center, Musi Rawas Regency. The results of the frequency distribution were as follows:

Tabel 1. Frequency Distribution of Fathers' Education

Father's educations	N	%
Unschooled	3	3,5
Elementary School	11	12,9
Junior High School and the Equivalent	31	36,5
Senior High School and the Equivalent	26	30,6
Collage	14	16,5
Total	85	100.0

Based on table 1, it showed that the most frequent father's education was junior high schooland the equivalent with 31 (36.5%).

Table 2. Frequency Distribution of Fathers' Occupation

Father's occupation	N	%
Unemployed	2	2,4
Farmer	17	20
Civil Servant	3	3,5
Honorary Worker	14	16,5
Trader	13	15,3
Others	36	42,4
Total	85	100.0

Table 2 showed that other occupations was the most common father's occupation, with 36 respondents (42.4%).

Tabel 3. Frequency Distribution of Mothers' Educations

Mother's educations	n	%
Unschooled	3	3,5
Elementary School	8	9,4
Junior High School/Equivalent	32	37,6
Senior High School/Equivalent	26	30,6
Collage	16	18,8
Total	85	100.0

Based on table 3, the most frequent mother's education was junior high school and theequivalent, with 32 (37.6%).

Tabel 4. Frequency Distribution of Mothers' Occupations

Mother's occupations	N	%
Farmer	1	1,2
Civil Servant	2	2,4
Honorary Worker	28	32,9
Trader	5	5,9
Others	49	57,6
Total	85	100.0

Based on table 4, the most frequent mother's occupation was other occupation with 49(57.6%).

Tabel 5. Frequency Distribution of Parents' Incomes

Parent's Income	N	%
< 1.500,000	50	58,8
1.500,001-2.500.000	35	41,2
2.500.001-3.500.000	0	0
Total	85	100.0

Based on table 5, the most frequent parents' income was less than Rp.1.500.000 with 50(58.8%).

Table 6. Frequency Distribution of the Respondents' Sexes

Sex	N	%
Male	42	49,4
Female	43	50,6
Total	85	100.0

Based on table 6, the most frequent respondent's sex was female sex, with 43 (50.6%).

Table 7. Frequency Distribution of Respondents' Ages

Ages (years)	n	%
9	5	5,9
10	27	31,8
11	30	35,3
12	20	23,5
13	2	2,4
14	1	1,2
Total	85	100.0

Based on table 7 the most frequent respondent's age was 11 years old, with 30 (35.3%).

Table 8. Frequency Distribution of the Incidence of Stunting

Stunting	N	%
Yes	23	27,1
No	62	72,9
Total	85	100.0

Based on table 8, the frequency distribution of non-stunting was 62 (72, 9%).

Table 9. The Respondent Intelligent Level

Intelligent Level	N	%
Below average	28	32,9
Above average	57	67,1
Total	85	100.0

Based on table 9, the frequency distribution of intelligent level below average was 57(67.1%).

Table 10. The Relationship between Stunting and the Level of Intelligence of School-Children

Stunting	Intelligence level				*P*
	Below average		Above Average		
	N	%	n	%	0,011
Yes	13	7.6	10	15.4	
No	15	20.4	47	41.6	

Based on table 10, the number of respondents that experienced stunting with level of intelligence was below the average was 13 (7.6%) from 23 respondents. The results of the analysis showed a relationship between the incidence of stunting with the level of intelligence of elementary school children with (p=0,011).

Table 11. Multivariate Analysis

Variable	B	*P*	OR	95% CI	
Sex	0.437	0.429	1.548	0.524	4.572
Age	-.595	.123	0.551	0.259	1.174
Class	.799	.111	2.224	0.832	5.948
Father's Education	-.085	.778	0.919	0.509	1.658
Mother's Education	0.330	.259	1.392	0.784	2.471
Intelligence level	0.823	.466	2.277	0.249	20.793
	-1.737				

As shown in table 11, the multivariate analysis revealed that there were no significant variables that had the greatest influence on the prevalence of stunting in elementary schoolstudents.

3.2 Discussion

The results showed that 62 (72.9%) did not experience stunting and the level of intelligence was above the average of 57 (67.1%). This result is in line with research conducted by (Gunawan, 2018) that found 129 children who were not stunted (56%) with an average intelligence of 68.53 children. This is due to adequate nutritional intake according to the nutritional needs needed and high parental education (Rahmidini, 2020).

The results of the study also found that 23 (27.1%) experienced stunting with an intelligence level below the average of 28 (32.9%). This could be influenced by the mother's low level of education, namely junior high school and the equivalent of 32 (37.6%), where most of the children in the area are carried out by mothers.

This is in line with research (Aramico et al., 2016) that showed there is a relationship between the incidence of stunting with low parental education (junior high school and the equivalent) and poor parenting patterns from parents.

Based on the results of the study, it showed that there was a relationship between the incidence of stunting and the level of intelligence of the respondents. This is the same as research (Atikah, Rahayu, 2018) proving that there is a relationship between the incidence of stunting with intelligence and children's growth which is influenced by the heredity factor as a great contributor so that the perceived impact of nutritional decline causes disruption of brain development, intelligence and growth disorders.

According to research (Rahmawati et al., 2020), the factors that influence the incidence of stunting are parenting patterns, parental education, and parental income, and this is in line with research (Lestari et al., 2018). Likewise, the explanation (Kemenkes RI, 2018) that stunting will have an impact and is related to the disturbed brain development process which in the short term affects cognitive abilities.

In this study, it was found that elementary school children who were indicated to be stunted in the work area of the Air Beliti Public Health Center were caused by the lack of nutritional intake according to the needs of their age, resulting in their level of intelligence and cognitive development below the average as seen from their IQ test scores. This is in accordance with previous research that shows the level of intellectual intelligence and cognitive development of children is influenced by several factors, one of which is poor nutritional status, which results in fewer brain neuron cells being formed so that children's thinking capacity decreases, which can be seen from low IQ scores. At his age (Ginting et al., 2019).

IV. Conclusion

It can be concluded that there is a significant relationship between the incidence of stunting (0.011) and the level of intelligence in elementary school-aged children in the working area of the Air Beliti Public Health Center, Musi Rawas Regency in 2021. It can be suggested that efforts are needed to increase knowledge and awareness of parents about the importance of nutrition, so that the growth and development of children according to their age, for public health center workers to create innovations in stunting prevention, especially for elementary school-aged children, by involving them in school activities through UKS (School Health Efforts).

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