

Children Growth Analysis Reviewed from Nutrition Status of Children Age 0-5 Years

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ABSTRACT

Background: Deviation of growth and development may occur if there are obstacles or interruptions in the process from intrauterine to adulthood. Deviations are good at giving clinical manifestations of abnormalities in growth with or without developmental abnormalities. The purpose of the study to determine the effect of nutritional status on head growth in children 0-5 years.

Methods: The design study is observational analytic with cross sectional approach. Respondents were taken using simple random sampling technique. Population in this research all toddlers in Kelurahan Tosaren Kediri as many as 327 children. Sample as many as 77 children under five. Independent variable is nutritional status, dependent variable of head growth. Results of statistical analysis using simple linear regression test.

Results: The result of this research showed that almost all children under 5 years old in Tosaren Village with good nutrition status were 67 respondents (87.0%), almost all children under 5 years old in Tosaren Village with the appropriate head growth of 65 respondents (84, 4%) out of a total of 77 respondents. The results of data analysis showed that the level of significance p value = 0.000 thus H1 accepted which means there is influence between nutritional status and infant head growth tosaren 0-5 years in the village.

Conclusion: Nutritional status with 0-5 year toddler growth head in tosaren sub-district, where the better the nutritional status of the toddler the better the growth of head balita, this is because with good nutrition status of toddler eat body requirement of nutrition fulfilled, so growth of head of toddler good.

I. Introduction

The problem of nutrition is essentially a public health problem, but its handling cannot only be done with a medical approach and health services. The causes of nutritional problems are multifactorial, therefore serious countermeasures and treatment are needed to overcome nutritional problems ([Aguayo, 2016](#)).

Human growth is the process by which humans increase in size and develop maturity and function. Human growth is influenced by many factors, including age, gender, nutrition, genetic factors, environmental factors, hormones and biopsychosocial models that affect intrinsic and extrinsic strength. Head circumference, for example, is a function of genetic (biological) factors, eating habits (psychological) and the fulfillment of nutritious food (social) in children ([Soetjiningsih, 2018](#)).

Deviations in growth and development can occur if there are obstacles or disturbances in the process from intrauterine to adulthood ([Yakoob, 2017](#)). Deviations can give clinical manifestations of both abnormalities in growth with or without developmental abnormalities ([Rahmi, 2019](#)).

Nationally, the prevalence of malnutrition under five is still quite high, namely 19.6%. The magnitude of the problem of undernutrition in toddlers which is still a public health problem is if the

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prevalence of wasting is $> 5\%$. Public health problems are considered serious when the prevalence of wasting is between $10.1\% - 15.0\%$, and is considered critical when the prevalence of wasting is above 15.0% (UNHCR). Nationally, the prevalence of wasting in toddlers is 19.6% , the number of toddlers with malnutrition in East Java is 11.2% . This means that the problem of malnutrition in Indonesia is still a serious public health problem ([Hartanty, 2017](#)). Meanwhile, in the city of Kediri, the number of children under five with poor nutritional status was 13 people in 2014, and decreased to 13 people in 2021. (Profile of the Kediri City Health Office, 2022).

Based on the results of a preliminary study conducted by researchers in the Tosaren Village, Kediri City, there were 3 toddlers who were experiencing malnutrition. The results of interviews conducted with village officials said that the occurrence of malnutrition in toddlers was caused by a lack of nutritional intake, a lack of family ability to meet nutritional needs and there were toddlers suffering from infectious diseases. This is also supported by the lack of willingness of the family to take the toddler to the health center to get treatment, and after the toddler is malnourished, the family has the awareness to bring the toddler to the health center.

According to [Mayar \(2021\)](#) toddlerhood is an important period in the process of human development. Development and growth at that time determines the success of the growth and development of children in the next period ([Alderman, 2018](#)). The period of growth and development at this age is a period that takes place quickly and will never be repeated, because it is often called the golden age or the golden age. In the process of growth and development, toddlers have needs that must be met, these needs are the need for nutrition¹¹ (fostering), the need for emotion and affection (love) and the need for early stimulation (sharpening) ([Krisnansari, 2010](#)).

At every age stage, from infants, children, adolescents, adults and the elderly, there will always be changes in growth and development. Some are still in slow growth, some are in fast growth and some are in declining growth (Novella, 2011). Research purposes this is to determine the effect of nutritional status on head growth in children 0-5 years in Tosaren Village, Kediri City.

II. METHODS

The research design used was analytic observational with a cross sectional approach. Respondents were taken using simple random sampling technique. The population in this study were all toddlers in Tosaren Village, Kediri City, totaling 327 children. A sample of 77 toddlers. The independent variable is nutritional status, the dependent variable is head growth. The results of the analysis using a simple linear regression statistical test. As the ethical consideration, the researcher use the informed consent, anonymity principle and confidentiality principle.

III. RESULTS

Characteristics of Respondents

Table 1. The characteristics of the respondents in this study include age toddler, parents age, education, occupation, nutritional status children and growth head child

	Characteristics	ΣN	Σ%
1	Age child		
	1 year	20	26
	2 years	27	35
	3 years	21	27
	4 years	9	12
2	Parental age _		
	<25 years	19	25
	25-30	24	31
	31-35	22	28
	>35	12	16
3	Education		
	JUNIOR HIGH SCHOOL	23	30
	SENIOR HIGH SCHOOL	45	58
	University	9	12
4	Profession		
	Housewife	15	19

	Private	38	49
	Self-employed	19	25
	civil servant	5	7
5	Nutritional status		
	Nutrition not enough	7	9,1
	Nutrition good	67	87
	Nutrition more	3	3,9
6	Growth head		
	Not enough	7	9,1
	Corresponding	65	84.4
	More	5	6,5
	Total	77	100

Based on table 1 above from a total of 77 respondents toddlers aged 2 years, namely as many as 27 respondents (35 %), parents of toddlers aged 20 -35 years, namely as many as 24 respondents (31 %), high school educated as many as 45 respondents (58 %), working as private employees, namely as many as 38 respondents (49 %), almost all toddlers aged 0-5 years in Tosaren Village with good nutritional status, namely 67 respondents (87%) and appropriate head growth, namely 65 respondents (84.4%).

Table 2. The effect of nutritional status on head growth in children 0-5 years in Tosaren Village, Kediri City

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		Adjusted R Square
Model		B	std. Error	Betas	Q	
1	(Constant)	-1,005	.153		-6,575	.000
	nutritional status	1011	051	.915	19,628	.000

a. Dependent Variable: head growth

The results of data analysis carried out on 77 respondents showed a p value = 0.000, thus H1 was accepted, which means that there is an influence between nutritional status and the growth of the heads of toddlers 0-5 years in the Tosaren village with an Adjusted R Square value of 83.5, which means the growth of the heads of toddlers 0- 5 years in Kelurahan Tosaren 83.5% is influenced by nutritional status and 16.5% is influenced by other factors.

IV. DISCUSSION

Nutritional status of children 0-5 years in Tosaren Village, Kediri City.

The results showed that 3 (3.9%) toddlers with excess nutrition, 67 (87%) toddlers with good nutrition, and 9 (9.1%) toddlers with less nutrition out of a total of 77 toddlers aged 0-5 years in Tosaren Village, Kediri City.

The toddler period is a decisive period in the growth and development that will form the basis for the formation of a complete human being. Because of that the government deems it necessary to provide a form of service that supports the overall growth and development of toddlers, especially in the mental and social aspects. Growth and development mutually support each other. A child's development cannot be maximized without support or optimal growth. For example, a child who is malnourished will affect his mental and social development, therefore both of them must receive attention from both the government, society and parents (Nurliyana, 2016).

According to Corkins, et al., (2016) nutritional status is a state of health as a result of a balance between consumption, absorption of nutrients and their use in the body. In determining the nutritional status of children under five there must be a standard measure which is often called a reference. The standard anthropometric measurement currently used in Indonesia is the WHO-NCHS.

According to Harvard in Luby (2018), the classification of nutritional status can be divided into four, namely excess nutrition, good nutrition, less nutrition and the last is malnutrition. According to Odung (2020) the factors that can affect the nutritional status of toddlers are the state of infection, level

of food consumption, cultural influences, food supply, affordability of health services, hygiene and environmental sanitation, number of members in the family, level of mother's knowledge and education.

The results of the study showed that almost all toddlers aged 0-5 years in the Tosaren Village were well nourished. Tosaren village is inseparable from the ability of parents to provide sufficient nutrition needed by toddlers both in terms of knowledge about how to fulfill toddler nutrition and financially to meet children's nutritional needs. The results of the study also showed that there were 9 (9.1%) toddlers with malnutrition, this was due to the lack of knowledge of parents in preparing food ingredients needed by toddlers and the lack of ability of parents to meet children's nutritional needs, this was proven based on the results of interviews conducted researchers with parents whose children are malnourished say that they do not know the nutritional needs of children and in everyday life children only consume sober foods such as rice and vegetables, and rarely consume eggs and meat, this is a toddler who consumes less food nutrition needed by toddlers for further growth and development. In toddlers with malnutrition, if not treated immediately, it will disrupt the growth and development of children ([Zulaekah, 2014](#)). The results of the study also showed that there were 3 (3.9%) toddlers with excess nutrition, this was due to a lack of parental supervision in maintaining the child's diet, as evidenced by the 3 toddlers who had more nutrition consuming food more often, where parents only giving pocket money and children buying snacks they like and when researchers conducted a study 3 of these children were consuming snacks where children consumed a lot of uncontrolled snack foods, causing children to be overweight, and in children with excess nutrition they would be at risk of developing several diseases that caused by excess nutrition ([Alderman, 2018](#)).

Head growth of children 0-5 years in Tosaren Village, Kediri City.

The results showed that 5 (6.5%) toddlers with more head growth, 65 (84.4%) toddlers with appropriate head growth, and 7 (9.1%) with less head growth than a total of 77 toddlers aged 0-5 years in Tosaren Village City of Kediri.

Head growth is very complex. Before the baby is born, the growth centers in the head are already working actively. At birth, the head makes up about a quarter of the total body height. In adults, the head makes up one-eighth of the total body height. Therefore, between birth and maturity, the body certainly grows more rapidly, both in proportion and size compared to the head. In most individuals, the general speed of body growth follows a pattern, although there are variations at different stages of the pattern (Netty H, 2011).

Head growth is strongly influenced by genetic factors in addition to other factors, namely the environment, nutrition, degree of physical activity and health and disease (FKUI, 2008). Recent research states that the diversity in craniofacial morphology results from a complex interaction of environmental variables which include, namely muscle function, genetic factors, hormonal factors in the endocrine system, environmental factors and nutritional status (FKUI, 2008).

The results showed that almost all toddlers aged 0-5 years in the Tosaren Village had appropriate head growth. The results of the study also showed that there were 7 (9.1%) toddlers with poor head growth, this was due to a lack of fulfillment of nutrition in children as evidenced by the 7 respondents who experienced poor head growth had poor nutritional status, thus causing the child's head growth to be less than optimal and the results of the study also showed that there were 5 (6.5%) toddlers with more head growth. In toddlers with less and more head growth according to theory it can be caused by several factors such as muscle function, genetic factors, hormonal factors in the endocrine system, environmental factors and nutritional status.

Effect of nutritional status on head growth in children 0-5 years in the Tosaren Village, Kediri City.

The results of data analysis carried out on 77 respondents showed a p value = 0.000, thus H1 was accepted, which means that there is an influence between nutritional status and the growth of the head of a toddler 0-5 years in Tosaren village with an Adjusted R Square value of 83.5, which means that the growth of a toddler's head is 0 -5 years in Kelurahan Tosaren 83.5% is influenced by nutritional status and 16.5% is influenced by other factors.

Nutritional status is the nutritional status of health status which is produced by a balance between nutrient requirements and inputs ([Salam, 2015](#)). In determining the nutritional status of children under five there must be a standard measure which is often called a reference. Anthropometric standard measurements currently used in Indonesia is WHO-NCHS. According to Harvard in [Nurliyana \(2016\)](#),

The classification of nutritional status can be divided into four, namely excess nutrition, good nutrition, less nutrition and poor nutrition.

According to [Yakoob \(2017\)](#) toddlerhood is an important period in the process of human development. Development and growth at that time determines the success of the growth and development of children in the next period. The period of growth and development at this age is a period that takes place quickly and will never be repeated, because it is often called the golden age or the golden age. In the process of growth and development, toddlers have needs that must be met, these needs are the need for nutrition¹¹ (fostering), the need for emotion and affection (love) and the need for early stimulation (sharpening) ([Hartaty, 2017](#)).

[Krisnansari \(2010\)](#) stated that providing good and correct nutrition such as consuming foods rich in protein, folic acid, minerals, and nutrients from the beginning of pregnancy until the age of 5 years, then the size of the head, to be precise, an increase in brain volume greatly supports the development and intelligence of children. Meanwhile, according to Ariesta's research results (2008) the Faculty of Medicine, Sebelas Maret University, Surakarta analyzes differences in nutritional status and child development. Nutritional status is very influential on the growth of children and in the process of the child's development. The same thing is also found in Pramusinta's research (2008) that the health status and stimulation of child development given to each parent of teenage age greatly influences children's development, especially in gross motor skills.

Based on the research results, it is known that there is an influence between nutritional status and the growth of the heads of toddlers 0-5 years. Nutritional status plays an important role in the growth and development of toddlers, where in toddlers with poor nutritional status it will cause slow growth and development of toddlers because the body does not have enough nutrients that the body needs. The state of malnutrition status will have a broad impact, including the ease with which children experience infections as well as impaired growth and development and impaired organ function. Likewise, toddlers with more nutritional status will have a risk of developing blood vessel disease, the risk of developing DM if this condition continues until the toddler grows into an adult ([Zulaekah, 2014](#)). Therefore it is necessary to maintain the nutritional status of toddlers so that they are maintained in good nutritional status, so that the growth and development of children can take place properly. The results of this study also show that almost all toddlers aged 0-5 years in Tosaren Village with good nutritional status have appropriate head growth. This shows that the better the nutritional status of toddlers, the child's head will grow according to its stages. However, the results of the study also showed that there were 2 toddlers with good nutritional status who had more head growth. on the endocrine system, environmental factors.

V. CONCLUSIONS

Almost all toddlers aged 0-5 years in Tosaren Village with good nutritional status, namely 67 respondents (87%) out of a total of 77 respondents. Almost all toddlers aged 0-5 years in Tosaren Village with appropriate head growth, namely 65 respondents (84.4%) of a total of 77 respondents. There is an influence between nutritional status and head growth of toddlers 0-5 years in the Tosaren Village, Kediri City with a p value = 0.000

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