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Knowledge of Vitamin Use among Elementary School Students in Preventing Stunting

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ABSTRACT

Developing countries such as Indonesia face the dual problem of under- and over-nutrition. This occurs not only in urban areas but also in rural areas. Of the malnutrition problems, there is a very important problem, namely stunting. Based on the 2018 Basic Health Research, stunting in Indonesia is prevalent at the age of 0-23 months at 29.9%. The purpose of this activity is to compare the knowledge of children of State Elementary School 17 Baruga about the use of vitamins in preventing stunting. This type of research is a combination of descriptive and comparative with the method used, namely a cohort study observational study approach involving a group of 20 5th grade elementary school students. The sampling technique used was accidental sampling and the data were analysed by descriptive statistics and independent sample T-Test. The results showed a significant difference between the group of children who consumed vitamins and the group of children who did not consume vitamins where the average value of knowledge of children who consumed vitamins was 89.20 while the average group of children without consuming vitamins was 63.10 with the resulting t-statistic value of 10,224 (P-value 0.000). The conclusion of this activity is that there are differences in the knowledge of primary school children about the use of vitamins in preventing stunting.

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INTRODUCTION

Malnutrition is one of the most challenging and complex global problems affecting development, especially among the poor. School children are vulnerable to malnutrition due to low social status, poor diet, poor health and inappropriate care. Nearly 690 million people were undernourished globally in 2019, with 144 million children stunted and 47 million underweight. In 2018, 5.3 million children died before reaching the age of five, many due to malnutrition. Stunting is a condition of failure to achieve physical development as measured by height-for-age. The limit of stunting according to WHO is height for age based on Z-score equal to or < 2 SD below the average standard. Stunting occurs due to failure during the growth and development process of a child due to parenting factors, and non-optimal nutritional intake. Stunting is also often closely related to socioeconomic conditions, a history of disease, and nutritional intake that is lacking in quantity and quality (WHO, 2014).

Developing countries such as Indonesia face the dual problem of under- and over-nutrition. This occurs not only in urban areas but also in rural areas. Of the malnutrition problems, there is a very important problem, namely stunting. Based on the 2018 Basic Health Research, stunting in Indonesia is prevalent at the age of 0-23 months at 29.9%. (Kemenkes RI, 2018)

Among the factors that influence the incidence of stunting, parenting plays an important role in the occurrence of growth disorders in children. Poor parenting can cause nutritional problems in the community. The role of parents, especially mothers, is very important in fulfilling children's nutrition because children need parental attention and support in facing rapid growth and development. To get good nutrition requires good nutritional knowledge from parents in order to provide a balanced menu of choices. A person's

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level of nutritional knowledge affects attitudes and behaviour in food selection.

Evy Noorhasanah's research (2021) states that mothers who have good parenting will certainly always pay attention to the condition of their children, so that mothers can take early prevention of stunting problems. Vice versa, with poor parenting, it will also have a bad impact on children's growth and development, especially the nutritional status of children. Most children who are stunted have poor or poor parenting patterns so that mothers have the potential to ignore important things related to the causes of nutritional problems.

Vitamin and mineral supplementation is basically a supplementation. This means that vitamins and minerals are only given to infants and children whose micronutrient needs are not met from daily food intake. One way to detect vitamin and mineral deficiencies is by examining biochemical markers of these micronutrients. This examination is costly and uncomfortable due to the process of drawing blood. In addition, blood levels of vitamins/minerals are not always associated with patient complaints.

Therefore, guidelines issued by the World Health Organisation (WHO) on vitamin and mineral supplementation are used. These WHO recommendations include the provision of several types of vitamins and minerals tailored to the conditions of each country, and take into account the prevalence of the most common health problems in the area. Through this activity, it can become a model that can be used as an option in preventing malnutrition or stunting in primary school children. The purpose of this activity is to compare the knowledge of children of State Elementary School 17 Baruga about the use of vitamins in preventing stunting.

METHODS

This type of study is a combination of descriptive and comparative, where descriptive studies aim to provide a clear

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picture of the subject or object being studied while comparative studies aim to compare certain groups with other groups. The sample in this study was a class 5 elementary school student(s) totalling 20 people with the sampling technique used was accidental sampling, namely anyone who was found and qualified as a sample. The study method used was a cohort study. A cohort study is an observational study involving a group of people with certain exposures (risk factors or protective factors) and a group of people without these exposures who are followed over time. Data collection is done by using a questionnaire in the form of test questions that will be given to students of State Elementary School 17 Baruga Kendari City on Sunday, 22 September 2024. The type of data is a combination of qualitative and quantitative with the data analysis method used is *Descriptive Statistic* and *Independent Sample T-Test* using SPSS Version 26 software.

Table 1. Activity Schedule

Agenda	Day I	Day II	Day III	Day IV	Day V
Preparation					
Socialisation & Education					
Test					
Data collection					
Data entry & coding					
Data analysis					
Interpretation of results					
Report					

RESULTS AND DISCUSSION

This community service activity was carried out at 17 Baruga State Elementary School, Kendari City, Southeast Sulawesi Province on Sunday, the twenty-second month of September, two thousand and twenty-four. The activity begins with planning and preparation until it reaches the stage of preparing the report, all of which takes up to 4 days. The implementation of this activity uses an observational concept by dividing two

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treatment groups where group I is a group of children who are accustomed to taking vitamins while group II is a group of children who have never taken vitamins.

At the beginning of the activity, students were given education about the benefits of vitamins in everyday life, especially as a nutritional intake or additional nutrition for the body. The next step was to divide the participants into two groups who were given written questions in the form of multiple choice questions as a test of students' understanding of the benefits of vitamins. The next step was to collect the test results and then statistically analyse them. The results of the descriptive statistical analysis are described as follows:

Table 2. Characteristics of respondents based on gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Laki-laki	9	45.0	45.0	45.0
	Perempuan	11	55.0	55.0	100.0
	Total	20	100.0	100.0	

Table 3. Descriptive of the test group

Group Statistics

	Kelompok Uji	N	Mean	Std. Deviation	Std. Error Mean
Pengetahuan	Konsumsi Vitamin	10	89.20	3.910	1.236
	Tanpa Vitamin	10	63.10	7.062	2.233

Based on table 2 shows the distribution of respondents or students of grade 5 SDN 17 Baruga Kendari City according to gender, it can be seen that the number of male respondents is 9 people with a percentage of 45% while female respondents are 11 people with a percentage of 55%. The following is a diagram of respondents based on gender:

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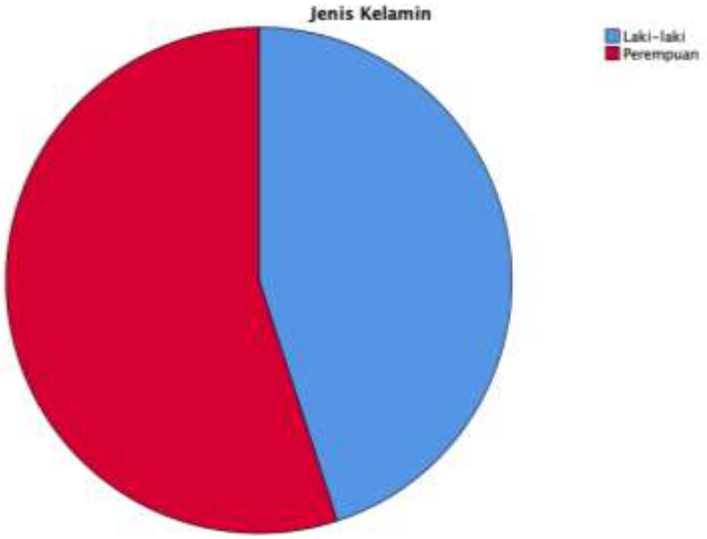

Figure 1. Pie chart of the distribution of respondents according to their gender

In the test conducted to each test group consisting of 10 children. This test group will then be given a test related to the participants' knowledge about the use of vitamins in everyday life as one of the solutions in preventing stunting. The following are the results of descriptive statistical data analysis:

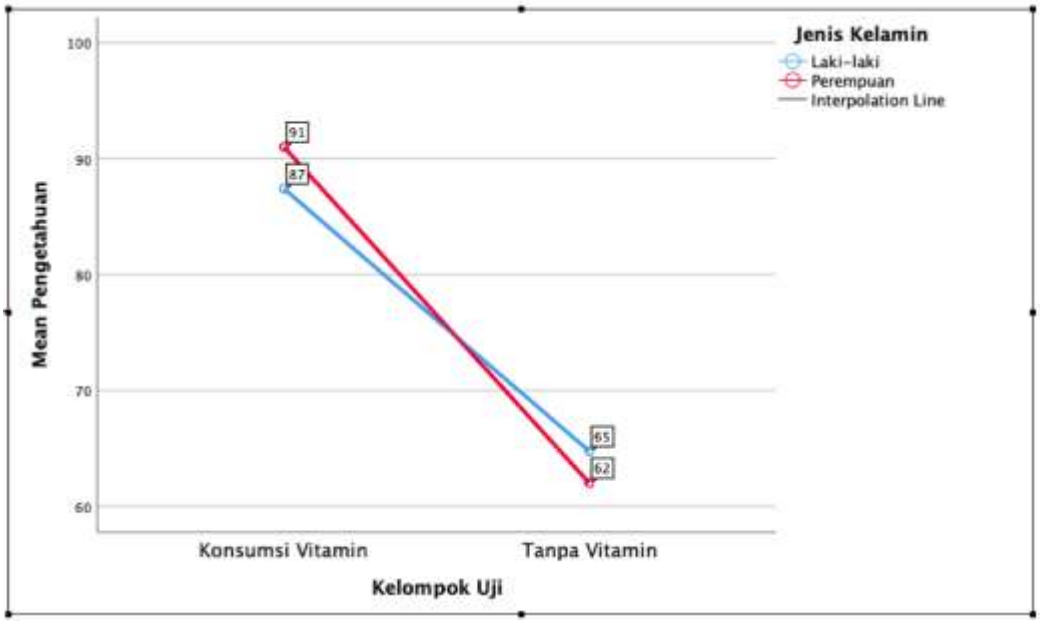

Figure 2. Score range graph of students' knowledge about the use of vitamins

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The graph above explains the range of knowledge values between test groups about the use of vitamins in everyday life where in group I (vitamin consumption) the maximum knowledge value obtained is 91 with a minimum value of 87 while in group II (without vitamins) obtained a maximum value of 65 with a minimum value of 62.

A total of 89.2% of the average knowledge of students of State Elementary School 17 Kendari City has good knowledge in understanding the use of vitamins in everyday life to prevent stunting while 63.1% of students are still in the category of sufficient knowledge in understanding the use of vitamins. This is inseparable from the role of parents in the family environment as well as the role of health workers such as health centre health workers and posyandu officers. The role of teachers at school is also very important in preventing stunting in the school environment.

In providing the material (Figure 3) the preceptor distributed pamphlets to support the activities in delivering the material that had been summarised in the leaflet. The children were very enthusiastic in listening to and understanding the material presented. In the question and answer session, the children were very active and enthusiastic in answering the questions given. This was addressed by some of the things that the preceptor had mentioned earlier related to the health counselling on the importance of vitamin consumption in daily life in preventing stunting, especially for children of State Elementary School 17 Baruga Kendari City. Not to forget we gave vitamin-containing fruits such as oranges, snacks, and small gifts for students (grade 5) SDN 17 Baruga Kota Kendari in the form of door prizes for those who can answer questions correctly.

The table above illustrates that the test group that consumed vitamins totalled 10 children with a mean knowledge score of 89.20 while the test group without vitamins, which also totalled 10 children, had a mean knowledge score of 63.10. This shows a difference in terms of the average value of knowledge possessed by each test group. The following graph shows the range of knowledge scores of the test groups:

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Figure 3. The process of educating students

Furthermore, preceptors distributed questionnaires containing test questions to elementary school students to answer in order to measure participants' knowledge about the use of vitamins in everyday life in the hope of preventing stunting in early childhood. Submission of material related to the dose or vitamin needs of each person is different, depending on the age and health conditions of each. Reporting from Baby Centre, the vitamin requirement for children aged 1-3 years is 15 milligrams per day. While children aged 4-8 years the recommended dose of vitamin C is 25 milligrams per day. Although important for the body, vitamin C consumption should not be excessive. According to Medical News Today, too much vitamin C intake can cause diarrhoea, nausea, bloating, and abdominal pain. The safe limit of vitamin C consumption for children aged 4-8 years is 650 milligrams per day. For the record, the recommended dose and safe limit of vitamin C for children applies to children in good health. The activity was conducted with enthusiasm from the participants.

Vitamin deficiency can interfere with a child's optimal health and development. To diagnose vitamin C deficiency in children, doctors usually recommend a blood test. A common sign of vitamin C deficiency in children is scurvy. Some of the symptoms include small brown spots on the skin, rough skin, bleeding gums, weakness, hard-to-heal wounds, and bone pain. Acute vitamin C deficiency can also cause neurological disorders and seizures.

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Figure 4. Documentation with students of SDN 17 Baruga, Kendari City

The data was analysed statistically to see if there was a real difference from the selected test groups. Data were analysed using the independent sample T-Test analysis method where the results of the analysis of these data are shown in the following table:

Table 4. Independent sample T-test analysis results

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pengetahuan	Equal variances assumed	5.738	.028	10.224	18	.000	26.100	2.553
	Equal variances not assumed			10.224	14.044	.000	26.100	2.553

Based on the table above, the statistical analysis results show that the t-statistic value is 10,224 with a probability value of P-value 0.000 (Sig. <0.05), which means that there is a significant difference in the knowledge of students about the use of vitamins in preventing stunting between the test groups who regularly consume vitamins and students who never consume vitamins. This illustrates that the main role of vitamin C in the immune system is to protect immune cells against oxidative stress generated during infection. As an effective antioxidant, vitamin C must be maintained in the body at relatively high levels (Mitmesser et al., 2016).

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Vitamin C has been shown to maintain the body's resistance to various diseases (flu, heart disease, cancer and can increase nitric oxide production from the endothelium, increase vasodilation, lower blood pressure, prevent apoptosis of smooth muscle cells in blood vessels and help keep plaque more stable) (Moser and Chun, 2016).

Benefits of Vitamin C Vitamin C functions to protect white blood cells from enzymes released when digesting bacteria that have been swallowed, synthesise steroid hormones from cholesterol, assist in the formation of collagen, cure canker sores, wound healing process as well as the body's resistance against infection and stress and as an antioxidant (Sibagariang, 2010). Signs of vitamin C deficiency can result in scurvy. scurvy usually develops over weeks and even months. Consumption of less than 10 mg/day of vitamin C for at least 4 weeks will cause the early symptoms of scurvy to develop. Early symptoms due to decreased carnitine synthesis result in fatigue and malaise. If scurvy is left untreated, collagen synthesis decreases resulting in gum inflammation, loose teeth, bleeding gums, joint pain, decreased wound healing, and dry and split hair. Iron deficiency and anaemia are also common late findings. After a period of months without vitamin C, scurvy can be fatal. Vitamin C status can be assessed by measuring plasma vitamin C levels. Plasma vitamin C concentrations of less than 11 umol/L are considered deficient. Levels of 11-28 umol/L are considered borderline deficient, 28 to 40 umol/L are defined as adequate, and greater than 40 umol/L is optimal (Duerbeck et al., 2016).

CONCLUSION

This activity concluded that there is a difference between groups of children who regularly consume vitamins and children who never consume vitamins in preventing stunting.

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