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Compliance of Fe Intake, Vitamin C, Folic Acid, and Protein in Breakfast to the Anemia Status among Elementary School 01 Children of Mandonga Kendari

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Abstract

Elementray school children is one of nutrition vulnerable groups. Lack of nutrients can interfere with the potential of school children such as Fe status, and its considering as anemia. Developing of Anemia in children occured by infrequently taking breakfast or not at all. This study aim to analyze association compliance of Fe intake, vitamin C, Folic Acid, and Protein in breakfast towards anemia status among elementary school children 01 of Mandonga Kendari. This study is observational analytic study with a cross sectional study design. This study has 100 subjects of elementary school children SDN 01 Mandonga Kendari by proportional random sampling and was done in April 2017. Fe intake, Vitamin C, Protein and Folic acid were obtained by 24 hours recall while anemia status through Hb measurement. 63 % subjects are accustomed with breakfast habbits. There is association between Fe intake and anemia status (p value = 0.031). While other variables intake such as Vitamin C (p value = 0.182), folid acid (0.430) and Protein (p value= 0.243) shows no association with anemia status. There is association between Fe intake and anemia status whereas other variables shows no association with anemia status. This study recomend children's parents to habituate breakfast in order to prevent anemia and concern in children dietary pattern.

Key words: Fe Intake; Vitamin C; Folid Acid and Anemia status.

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1. Introduction

Indonesia still faces malnutrition problems. This is closely related to the low level of public welfare. One of the nutrient-prone groups was school-age children aged 5-12 years 30.7% short (12.3% very short and 18.4 short), 11.2% lean (4.0% very thin and 7.2 % lean), 18.8% obese (10.8% obese and 8.8% very obese) and 26.4% 5-14 years of age with anemia. Malnutrition in schoolchildren affects the level of intelligence [1]. One of the deficiencies of nutrients that can interfere with the potential of schoolchildren is the lack of iron nutrients often referred to as iron deficiency anemia of 86.7% (ADB) [2]. Anemia is one of the most important nutritional problems especially if it is suffered by school-age children because it affects the decreased ability and concentration of learning, increases the risk of infectious diseases associated with decreased immune system and inhibits physical growth and brain development [3]. Iron deficiency affects child growth. One result is the lack of weight gain that will eventually worsen his nutritional status [4]. Anemia is caused by a lack of iron in the body so the need for iron for insufficient erythropoesis is characterized by a picture of red blood cells hypochromic microcytes, serum iron concentration and saturation of decreased transferrin, will play an important role of total iron (TIBC) iron in the bone marrow and elsewhere is lacking or absent altogether [5]. Anemia in children can occur when the child is rare or unusual breakfast. Breakfast habits are included in one of 13 basic messages of balanced nutrition. Breakfast is an activity of eating and drinking between waking up to 9 am to meet some of the daily nutritional needs (15-30% of nutritional needs) in order to realize a healthy, active, and productive life (Ministry of Health of the Republic of Indonesia, Balanced Nutrition Guidelines, [6]. The adequacy of balanced nutritional intake should be met by school-aged children and nutrients that need attention in school-aged children are energy, protein, Fe, vitamin A, vitamin C, Folic Acid and Ca [7]. Lack of energy and protein in school children causes the child to become weakened immune system. Vitamin A and zinc deficiency in children can interfere with growth. Vitamin B12 in children is necessary for the formation of red blood cells. Vitamin C as an antioxidant, strengthens immune cells in fighting and neutralizing free radicals. Basically breakfast will make an important contribution to some of the nutrients needed by the body, such as carbohydrates, proteins, fats, vitamins and minerals. Morning breakfast will contribute energy, macro nutrients and micronutrients about 25% of the total nutritional needs in this day needed by the body, such as carbohydrates, proteins, fats, vitamins and minerals [8]. The purpose of this study was to find out 'Fulfillment intake of Fe, Vitamin C, Folic Acid, Protein at Breakfast With Status Anemia student SDN 01 Mandonga Kendari City.

2. Materials and Methods

This type of research is analytical observational with Cross Sectional Study approach. This research was conducted at SDN 01 Mandonga Kendari City in April 2017. The population of this research is the students of class III, IV, and V SDN 01 Mandonga as many as 100 students. The technique used in sample selection is Proportional Random Sampling. Data were analyzed by statistical test using chi-square test.

3. Results and Discussion

A. Sample Description

1. Class

Table 1

Class	n	%
Class 3	30	30,0
Class 4	37	37,0
Class 5	33	33,0
Total	100	100,0

Based on the class distribution shows that most samples are in grade 4 of 37.0% (n = 37), and the sample is in grade 5 of 33.0% (n = 33), and the sample in grade 3 is 30, 0% (n = 30).

2. Age

Table 2

Age	n	%
9 year	37	37,0
10 year	36	36,0
11 year	27	27,0
Total	100	100,0

Based on the age distribution showed that most of the sample age was 9 years 37.0% (n = 37), the sample was at the age of 10 years as much as 36.0% (n = 36), and the remaining sample was at the age of 11 years 27 , 0% (n = 27).

3. Sex

Table 3

Sex	n	%
Female	58	58,0
Male	42	42,0
Total	100	100,0

Based on the distribution of sex shows that most of the sample is female 58.0% (n = 58) and the rest are male gender as much as 42,0% (n = 42).

4. Parent occupation

Table 4

Parent occupation	**N**	**%**
Civil servant	23	23,0
Business	53	53,0
Private	17	17,0
Honorer	3	3,0
Police	1	1,0
Soldier	1	1,0
Female worker	2	2,0
Total	100	100,0
Mother occupation	**n**	**%**
Civil servant	11	11,0
House mother	76	76,0
Private	1	1,0
Business	10	10,0
Female worker	2	2,0

Based on the distribution of the parent's job, it shows that most of the sample daddy's job as self-employed is 53.0% (n = 53) and most of the sample mother's work as housewife is 76.0% (n = 76).

5. Parent education

Table 5

Father Education	**n**	**%**
Graduate Basic school	2	2,0
Graduate junior school	14	14,0
Graduate senior school	52	52,0
Bachelor	32	32,0
Total	100	100,0
Mother education	**n**	**%**
Graduate junior school	17	17,0
Graduate senior school	67	67,0
Bachelor	16	16,0
Total	100	100,0

Based on the education of parents shows that most of the sample of high school daddy as much as 52.0% (n = 52) while the mother sample of high school education as much as 67.0% (n = 67).

6. Breakfast habit

Table 6

Breakfast habit	n	%
Yes (≥ 4x/week)	63	63,0
Not usual (< 4x/week)	37	37,0
Total	100	100,0

Based on breakfast habits show that from most of the usual breakfast sample as much as 63.0% (n = 63) and 37.0% breakfast unusual samples (n = 37).

7. Fe intake

Table 7

Fe intake	n	%
Sufficient (≥2,25 mg)	4	4,0
Less (< 2,25 mg)	96	96,0
Total	100	100,0

Based on the distribution of iron intake (iron) showed that most 96.0% (n = 96) of the sample had less iron intake and the remaining 4.0% (n = 4) had adequate iron intake.

8. Vitamin C intake

Table 8

Vitamin C intake	n	%
Sufficient (≥ 10,12 mg)	2	2,0
Less ((< 10,12 mg)	98	98,0
Total	100	100,0

Based on the distribution of vitamin C intake showed that most of the samples had less than 98.0% (n = 98) Vitamin C intake and the rest of the samples had enough Vitamin C intake of 2% (n = 2).

9. Folat acid intake

Table 9

Folat acid intake	n	%
Sufficient (≥ 67, 5 mcg)	1	1,0
Less (< 67,5 mcg)	99	99,0
Total	100	100,0

Based on the distribution of folic acid intake showed that most of the samples had less than 99.0% (n = 99) folic acid intake and the rest of the samples had enough folic acid intake of 1% (n = 1).

10. Protein intake

Table 10

Protein intake	n	%
Sufficient (≥11,02 gr)	16	16,0
Less (< 11,02 gr)	84	84,0
Total	100	100,0

Based on the distribution of protein intake showed that most of the samples had less protein intake of 84.0% (n = 84) and the rest had adequate iron intake of 16.0% (n = 16).

11. Anemia Status

Table 11

Anemia Status	n	%
Not Anemia ≥ 11,5	43	43,0
Anemia < 11,5	57	57,0
Total	100	100,0

Based on the distribution of anemia status showed that most samples had anemia status of 57.0% (n = 57) and the remaining samples had no anemia status of 43.0% (n = 43).

B. Results and Discussion

1. The Relation Between Iron Intake with Anemia Status

Table 12

Fe intake	Anemia status						P-value
	Anemia		Not Anemia		Total		
	n	%	n	%	n	%	
Sufficient	0	0,0	4	4,0	4	4,0	
Less	57	57,0	39	39,0	96	96,0	0,031
Total	57	57,0	43	43,0	100	100,0	

Based on the table shows that of the 4 samples that have iron intake is not suffering from anemia, and of the 96 samples who have iron intake less than most of the anemia status as much as 57.0% (n = 57). Based on statistical analysis using chi-square test obtained p value = 0,031 so it can be concluded that there is correlation between iron intake with anemia status. This study is in line with research conducted by Arifin [9, 12] in Bolaang Mongondow Selatan District which states that iron intake has a significant relationship with the incidence of anemia. This is caused by adequate intake of iron consumed and as needed. If a child has iron deficiency it will be anemic. Iron intake is the amount of iron consumed so that it can meet the needs of iron in the body.

2. The relationship between vitamin C intake with anemia status

Table 13

Vitamin C intake	Anemia Status						P-value
	Anemia		Not Anemia		Total		
	n	%	n	%	n	%	
Sufficient	0	0,0	2	2,0	2	2,0	
Less	57	57,0	41	41,0	98	98,0	0,182
Total	57	57,0	43	43,0	100	100,0	

Based on the above table shows that of 2 samples who have intake of vitamin C is not suffering from anemia, and from 98 samples who have intake of vitamin C is less anemia status as much as 57.0% (n = 57). Based on

statistical analysis using chi-square test obtained p value = 0.182 so it can be concluded that there is no relationship between vitamin C intake with anemia status. This is due to all the nutrient intake of every daily sample under the AKG. Low nutrient intake is because the food provided in homogeneous homes and do not vary, so they prefer to buy food snacks. In addition, due to lack of consumption of fruits so that the needs of Vitamin C is less fulfilled. This is in line with the research conducted said there is no relationship between vitamin C consumption with nutritional status (p = 0,916) and Physal [13] stated there is no correlation of vitamin C to nutritional status (p = 0,412). This study is also in line with research conducted by Arifin [9] that vitamin C intake did not have a significant relationship with the incidence of anemia.

3. Relationship Between Folic Acid Intake with Anemia Status

Table 14

Folat acid intake	Anemia Status						P-value
	Anemia		Not Anemia		Total		
	n	%	n	%	n	%	
Sufficient	0	0,0	1	1,0	1	1,0	
Less	57	57,0	42	42,0	99	99,0	0,430
Total	57	57,0	43	43,0	100	100,0	

Based on the above table shows that from 1 sample having enough folic acid intake did not have anemia, and from 99 samples who have folic acid intake less than 57,0% (n = 57) anemia status. Based on statistical analysis using chi-square test, p = 0,430 so it can be concluded that there is no relationship between contribution of folic acid intake with anemia status. The study is shed by the Wahyuningsi study [14] which states that there is no relationship between folic acid intake and anemia status. This is caused by the intake of folic acid from food consumed is still low and the variation of food consumed less varied and the amount is not appropriate AKG. However, the intakes of proteins ($p < 0.05$), calcium ($p < 0.05$), and vitamin C ($p < 0.01$) were increased significantly. Table 4 indicates the protein intake and the anemia status.

4. Relationship Between Protein Intake with Anemia Status

Table 15

Protein intake	Anemia Status						P-value
	Anemia		Not Anemia		Total		
	n	%	n	%	n	%	
Sufficient	7	7,0	9	9,0	16	16,0	
Less	50	50,0	34	34,0	84	84,0	0,243
Total	57	57,0	43	43,0	100	100,0	

Based on the above table shows that from 9 samples that have adequate protein intake did not have anemia, while 7 samples that have adequate protein intake but anemia, and of 84 samples who have iron intake less most of the status of anemia as much as 50.0% (n = 50). Based on statistical analysis using chi-square test obtained p value = 0.243 so it can be concluded that there is no relationship between protein intake with anemia status. The study is line with Wahyuningsi [14-17] study which states that there is no relationship between protein intake with anemia status. This is caused by the intake of protein from food consumed is still low and the variation of food consumed less varied and the amount is not appropriate AKG. This is due to favorite factors, costs and eating habits. In addition, the understanding of sample and family of samples on nutrition is still lacking with proven child feeding habits that are not in accordance with the rules of nutrition science [18-19].

12. Conclusion

1. The prevalence of anemia in students of SDN 01 Mandonga is 57.0%.
2. Most of the 63.0% of SDN 01 Mandonga students are used to breakfast.
3. Most of the 96.0% iron intake (Fe) of SDN 01 Mandonga less category students.
4. Most 98.0% of vitamin C intake of pupils SDN 01 Mandonga less category.
5. Most of the 99.0% folic acid intake of pupils SDN 01 Mandonga less category.
6. Most 84.0% of students' protein intake SDN 01 Mandonga less category.
7. There is a relationship between Fe intake with anemia status.
8. There is no association between vitamin C intake with anemia status.
9. There is no association between folic acid intake with anemia status.
10. There is no association between protein intake with anemia status.

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