

## The Elementary School Nutrition Status in Silian Raya, District Southeast Minahasa, Indonesia

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### ABSTRACT

**Background:** Nutrition has a big impact on the development and quality of children's life. The socio-economic status of the family and the role of parents are important regarding children's nutrition.

**Purpose:** To describe the nutritional status of elementary school children in Silian Raya District, Minahasa Tenggara District, North Sulawesi Province.

**Methods:** This study was a descriptive study with a cross-sectional approach in all elementary schools in Silian Raya District, Southeast Minahasa Regency, North Sulawesi Province. Data was collected using questionnaires on body measurements. The collected data was then processed using Microsoft Excel 2016 software and SPSS 25.

**Results:** Of 217 children, 0.92% were very underweight, 3.23% were underweight, 79.26% were normal, 11.06% were overweight, and 5.53% were obese. The results were measured based on the indicators of nutritional status and body mass index according to age. Based on the indicator of height according to age, 3.69% children have a very short stature, 13.82% have a short stature, and 82.49% have a normal stature.

**Conclusion:** The nutritional status of elementary school children in Silian Raya District, Southeast Minahasa Regency, North Sulawesi Province is not influenced by the socio-economic status and occupation of their parents.

### Keywords

Body weight, Minahasa, Silian, nutritional status of children, height

### INTRODUCTION

The low nutritional status of children is one of the main health problems in developing countries, such as Indonesia. In 2017, the percentage of very underweight and underweight and very short and short body stature among school children and preteens aged 5–12 was 3.4% and 7.5% and 3% and 24.5%, respectively. The same has been found in North Sulawesi, where the percentage of very underweight and underweight and very short and short body statures among school children and preteens aged 5–12 was 4.6% and 4.4% and 11.5% and 24.2%, respectively. The Indonesian Central Statistics Bureau reported that Southeast Minahasa District has the second highest percentage of poverty in North Sulawesi after South BolaangMongondow Selatan.

Low nutritional status in children associated with poor nutritional intake, which can cause a decrease in the quality of life since it can affect the child's growth and development. For example, it leads to an inhibited immune system so that children are susceptible to various infectious diseases, diarrhea, malaria, measles, pneumonia, and even death. In addition, low nutritional status is also associated with other diseases, such as dyslipidemia, hypertension, and coronary heart disease.

Socio-economic status and the role of parents are important in maintaining the quality of a child's health<sup>9-10</sup>. Existing research shows that the role of socio-economic status on children's health begins even before birth<sup>11</sup>. Children from families with lower socio-economic status tend to have more growth retardation and neurobehavioral developmental disorders from inside the womb and

are more at risk of premature birth, low birth weight, birth defects, and disabilities. These health problems are often associated with poor health services during pregnancy, lack of nutritional intake during pregnancy, and poor family lifestyles and living environments that increase the risk of infection<sup>11,21-25</sup>. In addition, the role of parents, especially mothers, in breastfeeding, preparing food and water, and finding health services for children is important for their growth and development<sup>9-10</sup>. To date, anthropometric data on school-age children in North Sulawesi, especially in Southeast Minahasa, are still very minimal. Therefore, this study aims to describe the nutritional status of elementary school children in Silian Raya District, Southeast Minahasa Regency, North Sulawesi Province.

## RESEARCH METHODS

### Research design

This research is a descriptive study with a cross-sectional design. The sample population of this study was 660 elementary school children of Silian Raya District, Southeast Minahasa Regency. Based on basic and secondary education data from the Ministry of Education and Culture, there are five elementary schools in Silian Raya District: InpresSilian 01 Elementary school, InpresSilian 02 Elementary school, Silian Raya State Elementary school, Silian 01 Minahasa Evangelical Council Church (MECC) Elementary school, and Silian 02 MECC Elementary school. Data was collected in July 2018 using a simple random sampling technique. The inclusion criteria were children aged 8–13 years, whereas the exclusion criteria were the absent children during sampling and children below or above the age requirement. The number of children that suited the inclusion criteria was 217.

### Data collection

Data collection was carried out by filling out guided questionnaires, measuring body weight and height. Determination of nutritional status is based on the body mass index (BMI) indicator according to age Decree of the Minister of Health of the Republic of Indonesia Number 1995/MENKES/SK/XII/2010 dated December 30, 2010 and height according to age according to WHO 2007<sup>13</sup>.

### Data analysis

The collected data was then processed using Microsoft Excel 2016 software and SPSS 25.

## RESULTS

From the 217 children, 64 were InpresSilian 02 Elementary school students, constituting a large sample (29.49%), whereas the smallest sample was from InpresSilian 01 Elementary school, with 24 children (11.16%) (Table 1).

**Table 1. Sample distribution based on research location**

Elementary schools	n	%
Silian 01 MECC Elementary school	38	17.51%
Silian 02 MECC Elementary school	43	19.82%
InpresSilian 01 Elementary school	24	11,16%
InpresSilian 02 Elementary school	64	29.49%
Silian Raya State Elementary school	48	22.12%

The children who took part in this study were aged 8–10 years old (n = 125, 57.60%), and the rest of them were aged 11–13 years old (n = 92, 42.40%). Most of them were girls (n = 114, 52.53%), and the rest were boys (47.47%) (Table 2).

**Table 2. Sample distribution based on characteristics**

Characteristics	n	%
Age		
8–10 years old	125	57.60%
11–13 years old	92	42.40%
Sex		
Male	103	47.47%
Female	114	52.53%

**Table 3. Sample distribution based on parents' occupation**

Parents' Occupation	n	%
Father		
Labor	37	17.05%
Fisherman	3	1.38%
Employee	10	4.61%
Farmer	152	70.05%
Enterprise	15	6.91%
Mother		
Housewife	176	81.11%
Employee	23	10.60%
Farmer	11	5.07%
Enterprise	7	3.23%

Based on Table 3, most of the fathers were farmers (n = 152, 70.05%), and only three were fishermen (n = 3, 1.38%). Most of the mothers were housewives (n = 176, 81.11%), whereas the seven (3.23%) were self-employed.

**Table 4. Sample distribution based on BMI/age nutritional status**

BMI/AGE nutritional status	n	%
Very underweight	2	0.92%
Underweight	7	3.23%
Normal	172	79.26%
Overweight	24	11.06%
Obese	12	5.53%

Based on BMI/AGE Nutritional Status<sup>12</sup>, most were normal (n = 172, 79.26%), and very underweight children were the least in number (n = 2, 0.92%)

**Table 5. Sample distribution based on BMI/age nutritional status HEIGHT/AGE**

Status Gizi HEIGHT/AGE	n	%
Very short	8	3.69%
Short	30	13.82%

Normal	179	82.49%
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In Table 5, there are 30 children that have a short stature (13.82%), and 8 children that have a very short stature (3.69%).

**Table 6. Distribution of nutritional status of BMI/age based on age groups**

Age (years old)	Very underweight		Underweight		Normal		Overweight		Obese	
	n	%	n	%	n	%	N	%	N	%
8–10	1	0.46%	4	1.84%	96	44.24%	15	6.91%	9	4.15%
11–13	1	0.46%	3	1.38%	76	35.02%	9	4.15%	3	1.38%

Based on Table 6, the distribution of the nutritional status of very underweight children in both ages has the same number (0.46%), whereas underweight, normal, overweight, and obese children are more prevalent in ages 8–10 (1.84%, 44.24%, 6.91%, and 4.15%, respectively).

**Table 7. Distribution of nutritional status of BMI/age based on sex**

Sex	Very underweight		Underweight		Normal		Overweight		Obese	
	n	%	N	%	n	%	n	%	n	%
Male	1	0.46%	2	0.92%	85	39.17%	11	5.07%	4	1.84%
Female	1	0.46%	5	2.30%	87	40.09%	13	5.99%	8	3.69%

In this study, the distribution of the nutritional status of very underweight children was found to be the same number for both boys and girls (0.46%), whereas underweight, normal, overweight, and obese children were found more in girls (2.30%, 40.09%, 5.99%, and 3.69%, respectively).

**Table 8. Distribution of BMI/age nutritional status based on father's occupation**

Father occupation	Very underweight		Underweight		Normal		Overweight		Obese	
	N	%	n	%	n	%	N	%	N	%
Labor	0	0.00%	1	0.46%	30	13.82%	5	2.30%	1	0.46%
Fisherman	0	0.00%	0	0.00%	3	1.38%	0	0.00%	0	0.00%
Employee	0	0.00%	0	0.00%	7	3.23%	1	0.46%	2	0.92%
Farmer	1	0.46%	6	2.76%	123	56.68%	15	6.91%	7	3.23%
Enterprise	1	0.46%	0	0.00%	9	4.15%	3	1.38%	2	0.92%

In this study, the distribution of the nutritional status of underweight, normal, overweight, and obese children were mostly found in those whose fathers work as farmers (2.76%, 56.68%, 6.91%, and 3.23%, respectively).

**Table 9. Distribution of nutritional status of BMI/age based on maternal occupation**

Mother occupation	Very underweight		Underweight		Normal		Overweight		Obese	
	n	%	n	%	n	%	n	%	n	%
Housewife	1	0.46%	6	2.76%	142	65.44%	19	8.76%	8	3.69%
Employee	0	0.00%	1	0.46%	14	6.45%	5	2.30%	3	1.38%

Farmer	0	0.00%	0	0.00%	11	5.07%	0	0.00%	0	0.00%
Enterprise	1	0.46%	0	0.00%	5	2.30%	0	0.00%	1	0.46%

The distribution of the nutritional status of underweight, normal, overweight, and obese children was mostly found in children whose mothers are housewives (2.76%, 65.44%, 8.76%, and 3.69%, respectively).

**Table 10. Distribution of nutritional status of height/age and body stature**

Age (years old)	Very short		Short		Normal	
	N	%	n	%	n	%
8–10	4	1.84%	10	4.61%	111	51.15%
11–13	4	1.84%	20	9.22%	68	31.34%

In this study, both age groups have very short body statures (1.84%), and more children in the 11–13 age group had a short stature (9.22%), whereas the nutritional status of children with a normal height was more common in those aged 8–10 years old with a proportion of (51.15%) (Table 10).

**Table 11. Distribution of nutritional status of height/age based on sex**

Sex	Very short		Short		Normal	
	N	%	n	%	n	%
Male	6	2.76%	11	5.07%	86	39.63%
Female	2	0.92%	19	8.76%	93	42.86%

Based on gender, a very short nutritional status was mostly found in males (2.76%), while female children were more found in short nutritional status (8.76%) and normal height nutritional status (42.86%) (Table 11).

**Table 12. Distribution of nutritional status of height/age based on father's occupation**

Father occupation	Very short		Short		Normal	
	N	%	n	%	n	%
Labor	1	0.46%	3	1.38%	33	15.21%
Fisherman	0	0.00%	1	0.46%	2	0.92%
Farmer	7	3.23%	25	11.52%	120	55.30%
Employee	0	0.00%	0	0.00%	10	4.61%
Enterprise	0	0.00%	1	0.46%	14	6.45%

In this study, the distribution of the nutritional status of very short, short, and normal height children was mostly found in children whose father was a farmer (3.23%, 11.52%, and 55.30% respectively) (Table 12).

**Table 13. Distribution of nutritional status of height/age based on maternal occupation**

Mother occupation	Very short		Short		Normal	
	N	%	n	%	n	%
Housewife	8	3.69%	22	10.14%	146	67.28%
Employee	0	0.00%	3	1.38%	20	9.20%
Farmer	0	0.00%	5	2.30%	6	2.76%

Enterprise	0	0.00%	0	0.00%	7	3.20%
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Based on Table 13, the most children with mothers as housewives were found to have nutritional status of very short (3.69%), short (10.14%), and normal (67.28%).

## DISCUSSION

Based on the nutritional status indicators of BMI/age and height/age, most of the samples were classified as normal. This shows that nutritional status is not influenced by age and sex. In addition, parents' occupation does not affect the nutritional status of a child. In the study sample, the majority of parents' occupations are farmers (fathers) and housewives (mothers). The father's occupation does not affect children's nutritional status based on the indicators of BMI/age and height/age; however, in this study, most children with nutritional status problems come from families whose fathers are farmers. The mother's occupation also does not affect the nutritional status of children based on BMI/age and height/age. However, it should be noted that this finding contradicts the theory of parenting: the housewives should have more time to provide their children so that they should have normal nutritional status<sup>14</sup>. However, the majority of nutritional status problems based on height/age and BMI/age in Silian Raya sub-district were found in children with mothers as housewives.

The socio-economic status of the family is not a direct cause of health problems in children, but the occupation of parents is related to parental education and parents' income that will affect the quality of children's health<sup>15</sup>. There are various factors that can affect the nutritional status of children, including birth weight, demographics, environment, nutritional intake, history of children's diseases, knowledge of parents about children's nutritional adequacy, parenting styles, and family lifestyle.

## CONCLUSION

The nutritional status of elementary school children in Silian Raya District, Southeast Minahasa Regency, North Sulawesi Province is not influenced by the socio-economic status and occupation of their parents. Based on the BMI/age indicator, 0.92% of children are very underweight, 3.23% of children are underweight, 79.26% are normal weight, 11.06% of children are overweight, and 5.53% of children are obese, while based on the indicator of height/age, 3.69 % of children have a very short stature, 13.82% of children have a short stature, and 82.49% have a normal stature. Future research, will look at the benefits of fruit for nutritional status<sup>24-25</sup>.

## SUGGESTION

Based on the results and discussion of this research, it is necessary to carry out further research on the factors that influence the nutritional status of children in Silian Raya District, Southeast Minahasa Regency, and a more in-depth study is needed to answer why children with nutritional status problems in Silian Raya District, Minahasa Regency Southeast Minahasa Regency mostly come from mothers who are housewives. Education on children's nutritional status is necessary for parents to increase their knowledge of the importance and improve the quality of children's nutritional status in Silian Raya District, Southeast Minahasa Regency.

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## CONFLICT INTEREST DECLARATION

The authors declare no conflict of interest

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