The relationship between diet and physical activity with nutritional status in children aged 9-12 years in Primary School 1 of Batannyuh Tabanan

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Abstract. Nutritional status is the state of the body's end result of the balance between the nutrients intake and its utilization. Nutritional problems that usually occur are lack of nutrition and excess nutrition. Various factors can affect nutritional status including diet and physical activities. The purpose of this research is to know the relationship between diet and physical activities with nutritional status in children aged 9-12 years. The research used the design of analytical cross sectional with 60 children from Primary School 1 in Batannyuh, Tabanan. The instrument used in this research is a questionnaire that has been tested for validity. Data was analyzed by using a Somers'd correlation test. The results showed that most of the respondents had a good diet (51.7%), poor physical activity (53.3%), and normal nutritional status (51.7%). There is a significant relationship with the mild positive correlation between diet and nutritional status (P = 0,025) and between physical activity and nutritional status (P = 0,026). Result of this study are expected to be useful both theoretically and practically in order to perform promotive or preventive actions related to nutritional status in children.
Keyword : Relationship, Nutritional Status, Primary School.

1 Introduction

Child nutrition Status is very important to support children's growth. Growth and development in children related to weight and height and determine the nutritional status of children. Nutritional status is the state of the body's end result of the balance between the nutrients intake and its utilization [1]. Based on the decree of the Minister of Health in Indonesia, the nutritional status of children aged 5-18 years can be grouped into 5 categories: very thin, thin, normal, obese, and obesity [2]. According to the Ministry of Health, the nutritional problems faced in Indonesia are double burden, which is less nutritional problems (thin and very thin) and excess nutrition (fat and obesity) [3]. According to RISKESDAS year 2013, the prevalence of obesity in children aged 5-12 years in Indonesia by 18.8%, consisting of 10.8% fat and 8.0% very fat (obesity), while the lean prevalence is 11.2%, consisting of 7.2% lean and 4.0% very thin. In the year 2013, Bali Province is one of 15 provinces in Indonesia, which has a very fat prevalence in children aged 5-12 years above the national average, which is 20% [4].

Nutritional deficiencies can increase the risk of infection, while more nutrients with excess body fat accumulation (obesity) may increase the risk of degenerative diseases [3]. Obesity can be a risk factor for diseases due to metabolic disorders, such as coronary heart disease, stroke ischemia, and diabetes mellitus (DM) type 2. Obese children tend to remain obese when

adults and are likely to develop into untransmitted diseases such as diabetes and cardiovascular disease at a younger age [5].

Determination of nutritional status in children is not the same at all ages. Determination of nutritional status aged 5-18 years can be done with the measurement of the Body Mass Index (BMI) by age [2]. Age-based BMI (BMI/A) is an indicator obtained by comparing the BMI with age, where the BMI value is obtained by measuring the body weight in kilograms divided by the height in the squared meter [6].

Nutritional status is influenced by many factors (multifactors) such as genetic factors, environment, psychology, age, gender, and socio-economic status [7,8,9,10,11]. Other risk factors that can affect nutritional status are physical activity and diet. Physical activity can balance the calories contained in the food with the calories used during physical activity, so that it can control body weight. Lack of physical activity causes a lack of energy burning by the body so that excess energy will be stored in the form of fat. Excessive fat storage results in obesity [12]. The Center for Disease Control and Prevention states that an unbalanced diet is an excessive calorie consumption of calorie use for physical activity resulting in an energy imbalance that can increase the risk of obesity [13]. Based on issues of nutritional status in children as outlined above, this study was conducted to determine the relationship between diet and physical activity with nutritional status in children aged 9-12 years at Primary School 1 at Batannyuh Tabanan.

2 Method

This study was conducted at elementary School 1 in Tabanan Batannyuh in September until December 2017. The design used in this study is analytic cross sectional to determine diet relationship and physical activity with nutritional status in children aged 9-12 years, amounting to 60 children.

Nutritional Status is a body-related state of nutrients measured with BMI based on age. BMI is obtained by measuring body weight and height which is classified as three, i.e. underweight, normal, overweight. Diet is a habit of eating daily children in relation to the number and type of daily food, such as variations in food, frequency of meals, consumption of snacks and fastfood. The diet is classified into two, namely good ($\geq$ 66.7%) and less good ($<$ 66.7%). Physical activity is a week-long activity such as activities done during school breaks, after home school, in the afternoon, and by the end of the week. Physical activity is classified into two, i.e. good ($\geq$ 60%) and less good ($<$ 60%).

Data is obtained directly (primary data) by conducting height measurements with microtoise, weight with scales, and questionnaires on diet and physical activity. Data analysis is done with the univariate analysis process for the sample characteristics and analysis of bivariate using the Somers'd test ($\alpha = 0.05$) to find out the relationship between diet and physical activity with nutritional status

3 Results And Discussion

The results showed that the diet of respondents were mostly good eating patterns that were as many as 31 children (51.7%) and the rest has a poor diet that is as many as 29 children (48.3%). The results of this study showed that most of the respondents had less good activity,

which was 32 children (53.3%) and the rest had good physical activity of 28 children (46.7%). Most of the respondents had a normal nutritional status of 31 children (51.7%).

Based on the analysis between diet and nutritional status is known that most of the respondents have a good diet and normal nutritional status, which is as much as 26 children (83.3%). The results of the analysis show there is a mild and significant positive correlation between diet and nutritional status (P = 0,025). A mild positive correlation means that when a child's diet increases, it further increases the category of child nutrition status (Table 1, Figure 1).

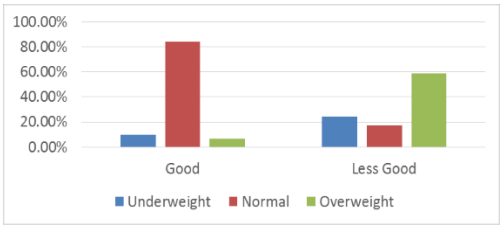

Figure 1. Nutritional status (underweight, normal and overweigth) based on diet (good and less good)

Previous studies have shown that there is a relationship between diet and nutritional status. The research conducted by [14] on the relationship between breakfast patterns with student Nutrition in Muhammadiyah Bendo Srandakan Bantul Elementary School suggests that a good breakfast pattern can affect the nutritional status of elementary school students. Good nutrition is very important for children, if the child's nutritional status is good then the growth and development of children will be optimal and can increase the concentration of learning children in school [14]. The results were also shown in the research conducted by [15] on the children's diet with nutritional status of children aged 6-8 years in Elementary School area Cempaka which shows that there is a link between the diet and the status of child nutrition.

Table 1. The result of a correlation test between diet and nutritional status (Somers'd).

Variable	Correlation coefficient (r)	Nilai p
Diet	0.277	0.025
Nutritional status	0.336	0.025

A feeding pattern is a person's behavior that can affect nutritional status [16]. The pattern of fulfillment of nutritional status in children is one of the efforts to fulfill basic needs in children [17]. A healthy feeding pattern will have a good impact on the child's future health [18]. According to Karp et al. explained that the diet and behavior of parents such as monitoring nutrient intake, limiting the amount of food, response to diet, and attention to the nutritional status of children has a meaningful impact on the nutritional status of children [19].

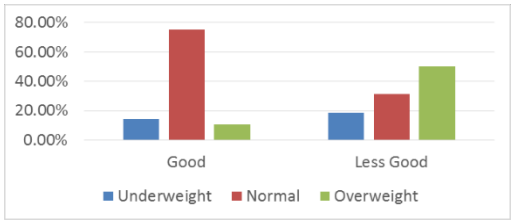

Figure 2. Nutritional status (underweight, normal and overweigth) based on physical activity (good and less good).

Based on the analysis between physical activity and nutritional status it is known that most of the respondents have good physical activity and normal nutritional status of 21 children (75.0%). The results of the analysis showed that there was a mild and significant positive relationship between physical activity and nutritional status (P = 0,026). The correlation of mild positive means that the child's physical activity increases as well as the category of child nutrition status (Table 2, Figure 2).

Table 2.The result of a correlation test between physical activities and nutritional status (Somers'd)

Variable	Correlation coefficient (r)	Nilai p
Physical activities	0.244	0.026
Nutritional status	0.297	0.026

The results of this research are in line with the research conducted by Wulandari et al. on energy intake and physical activity associated with Z-Score BMI/A in elementary school children in the subdistrict of Penebel, which indicates that there is a significant relationship between physical activity and excess nutrition [20]. This research is also in line with previous research on the relationship between gender, nutritional intake and physical activity with excess nutrition in elementary school students in Pondok Cina 1 Depok, that there is a meaningful relationship between physical activity and excess nutrition. Respondents with less good physical activity are largely in excess nutrition [21]. Another study stated that the lack of activity or energy incurred by a person, increased the likelihood of excessive nutrition due to the absence of a balance between energy gained with energy issued [22], [23].

Low physical activity is a factor that increases overweight [24], [25]. Low physical activity causes a lack of energy burning by the body so that excess energy in the body will be stored in the form of fat in the body. Excessive storage will result in obesity [12].

4 Conclusions

There is a significant relationship with the mild positive correlation between diet and nutritional status. This is because the feeding pattern affects the nutritional status of children. Besides, there is a significant relationship with the mild positive correlation between physical activities and nutritional status, it is in due to low physical activity is a factor that increases excess weight.

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