RELATIONSHIP BETWEEN SNACKS AND BEVERAGES WITH THE NUTRITIONAL STATUS AMONG 'SAD' CHILDREN IN NYOGAN VILLAGE, MUARO JAMBI, JAMBI PROVINCE

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ABSTRACT

Background: Malnutrition among children is still a public health problem in Jambi Province, especially in the Suku Anak Dalam (SAD) community. Most of the nutritional problems among SAD children are underweight and stunting. Malnutrition in SAD children could be related to their consumption patterns of snack and beverage. This study aimed to examine the relationship between consumption patterns of snack and beverage with the nutritional status among SAD children.
Subejects and Method: A cross sectional was conducted in Nyogan Village, Jambi. A total of 78 SAD children aged 5-14 years was enrolled in this study using total sampling. Sample were selected using the criteria of attending Elementary School located in Transocial Village or school-age children living in the Nyogan Village. The dependent variable was nutritional status and independent variable was consumption patterns of snack and beverage. The co-variables were the pocket money, physical activity, breakfast habit, parental income, cultural factor, parental knowledge, and consumption of vegetables and fruit. Data were collected by height and weight measurements and interviews. Data were analyzed by multiple logistic regression.
Results: Most of the children were underweight children (15.4%), overweight (10.3%), and normal (74.4%). The average pocket money was Rp. 5,000. 31% children rarely have breakfast, and 58% children came from low-income parents. Consumption patterns of snack and beverage was associate with nutritional status after controlling by physical activity, breakfast habit, income, parental knowledge, and fruit consumption habit (OR=1.48; 95% CI= 0.26 to 8.57; p= 0.659), but they were not statistically significant. The dominant factor was parental knowledge (OR= 12.37; 95% CI = 0.55 to 276.18; p= 0.112), but it was not statistically significant.
Conclusion: A poor consumption patterns of snack and beverage increased the risk of 1.48 times of underweight among SAD children. Parental knowledge is the dominant factor.

Keywords: consumption pattern, snacks, beverage, nutritional status, suku anak dalam

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BACKGROUND

Malnutrition is a public health issue that must be addressed. Indonesia is currently dealing with a number of nutritional issues, including persistent malnutrition as well as an increase in excess nutrition. According to the World Health Organization (WHO), child hood obesity has increased two-fold between the ages of 2 and 5 years and 12 to 19 years. Since 1970, the increase in children aged 6 to 11 years has been up to threefold (Koplan et al., 2007).

The double burden phenomenon also occurs in Jambi Province. Based on Monitoring of Nutritional Status in 2017, the proportion of underweight children underweight is 13.5%, stunting 2 is5.2% and obese children under five are 5% (Ministry of Health RI, 2018). Basic Health Research in 2018 reported that the prevalence of stunting in children under five in Jambi is 20.68%, while the

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prevalence of underweight is 15.74%. The prevalence of overweight/ obesity in children under five is 10.8%. This condition is similar to the school age group (children 5-12 years), where the proportion of stunting in children is 26.44%, underweight 9.06%, overweight / obese 23.58 (Ministry of Health RI, 2013).

The pattern of food consumption, particularly street food, which this age group has a habit of eating, is one of the factors affecting children's nutritional status (Susilowati and Kuspriyanto, 2016). Unbalanced consumption patterns or food intake that is more or less, will have an impact on being over or underweight (Hariyani, 2011). The results showed that there was a relationship between the pattern of consumption of snack foods including biscuits, fruit syrup, chocolate, sweetened thick cream, brains and sausages, fried foods, snack bars, and sugar with the nutritional status of school children. In this study, the nutritional status was assessed. overweight or obese (Nisak and Mahmudiono, 2017).

Nutritional problems are also experienced by the *Suku Anak Dalam* (SAD) community or often called "Orang Rimba", which is one of the tribes in Jambi Province. Number of SAD in Jambi province as 6773 or 28883 families in habitants (in 2010). So far, nutritional problems in children with SAD have revolved around malnutrition and stunting. Kalsum et al., in 2018, found that there were 21.7% short toddlers and 24% stunting (Kalsum et al., 2018). Haris et al. study in 2019 also found that from 42 toddler, there are 2% stunting and 17.8% underweight children under five in the village of Nyogan Muaro Jambi (Harris et al., 2019).

The *Suku Anak Dalam* (SAD) has a nomadic life concept and relies on the forest as a source of life (Kalsum et al., 2018). Some of the SAD groups have been coached and given a place to live by the government, one of which is in Nyogan Village, Muaro Jambi Regency (Haris et al., 2019). However, when he was sent home, there were changes in his lifestyle, livelihoods, lifestyle, and his daily diet, including the pattern of eating street food. This condition can have an impact on nutritional intake and nutritional status, including the age group of children (Haris et al., 2019). This study aims to determine the relationship between consumption of food and drinks with the nutritional status among children of SAD (6-12 years) in the village of Nyogan, Muaro Jambi, Indonesia in 2020.

SUBJECTS AND METHOD

1. Study Design

This was a cross-sectional study conducted in Nyogan Village, Muaro Jambi, Indonesia. This village is one of the transocial villages for remote indigenous communities in Jambi Province in the past of 15 years ago.

2. Population and Sample

Population studied SAD study were all children aged 6-14 years old in the Nyogan village. A total of 78 children under five was selected for this study. The sample selection was carried out by total sampling.

3. Study Variables

The dependent variable in this study was nutritional status and the independent variable was the pattern of snack and drink consumption. Confounding variables studied were the amount of pocket money, physical activity, breakfast habits, parents' income, cultural factors, parental knowledge, and consumption of vegetables and fruit.

4. Study Instruments

The data were obtained by measuring height and weight of the SAD children. The structured interview using a questionnaire was developed by the research team.

5. Data Analysis Data

The data obtained were analyzed using Chi-square test and multiple logistic regression at

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α = 5%.

RESULTS

SAD children with under nutrition status was 15.4%, over nutritional status was 10.3%, and normal was 74.4%. The average pocket money at school were Rp. 5,000, 28.2% SAD children had less than Rp. 5,000, 31% SAD children never or rarely have breakfast, 58% SAD children came from low-income parents.

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Table 1. Characteristics of SAD children in Nyogan Village, Muaro Jambi, 2020 (n = 78)

Characteristics	Min-Max	Mean (95% CI)	SD	Median
Child Age (years)	6.00-14.00	9.32 (8.78-9.85)	2.38	9.00
Class	1.00-7.00	4.10 (2.67-4.52)	1.87	4.00
Allowance				
(Rp)	2000-25000	6038.46	3370.77	5000.00
Consumption Pattern				
Snacks in one week	2.00-19.00	7.03 (6.20-7.87)	3.70	7.00
Score Snack Food Consumption	20.00-390.00	147.5 (132.14-162)	8568.09	157.50
Score Snack Drink Consumption	0.00-325.00	105.00	58.92	87.50
Nutritional Status				
Head Circumference (cm)	38.00-60.10 50.47	(49.68-51.25)	3.49	50.25
Upper Arm Length (cm)	14.00-36.00	24. 38 (23.54-25.22)	3.71	24.00
Upper Arm Circumference (cm)	14.80-32.00	19.80 (19.01-20.59)	3.50	19.50
Height (cm)	102.00-157.70	127.30 (124.61-129.99)	11.93	125.00
Body weight (KG)	13.10-51.60	25.87 (24.13-27.61)	59.64	23.05

The average age among SAD children was 9.3 years old. The average pocket money earned by children was Rp. 6,038.46. The frequency of snacks in one week for SAD children was on average 7.03 times with SD = 3.7 days. The average head circumference of children was 50.47 cm with an SD value = 3.49 cm. The average length of the child's upper arm was 2.4.38 cm with SD = 3.71 cm. The average height of the children was 127.30 cm with an SD value of 11.93 cm and the average weight of the children was 25.87 kg with an SD value of 59.64 kg.

Table 2. Frequency of Characteristics Distribution and Risk Factors on Nutritional Status (n = 78)

Characteristics	Total	Percentage of
Nutritional Status		
Poor	12	15.4
Normal	58	74.4
More	8	10.3
Food Consumption Patterns of Snacks		
Good	39	50.0
No Good	39	50.0
Consumption Pattern of Drinks		
Good	39	50
Not Good	39	
Gender		
Male	38	48.7

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Female	40	51.3
Amount of pocket money		
Low	22	28.2
High	56	71.8
Physical Activity		
Active	39	50.0
Not Active	39	50.0
Breakfast Habits		
Never / Rarely	24	30.8
Often	54	69.2
Consumption Habits of Soft Drink		
Yes	21	26.9
No	57	73.1
Parents' Income		
Low	45	57.7
High	33	42.3
Cultural Factors		
Yes	18	23.1
No	60	76.9
Parents Knowledge		
Low	5	6.4
High	73	93.6
Habit of Eating Vegetables		
Never	1	1.3
Sometimes	36	46.2
Often	41	52.6
Eating Habits of Fruits		
Never	7	9.0
Sometimes	50	64.1
Often	21	26.9

Based on Table 2, it was known that the proportion of children with malnutrition status was the same as 15.4% and over nutritional status of 10.3%. Based on gender, it was known that there were almost the same number of men and women, namely 48.7% and 51.3%. Based on the amount of pocket money, most children had a high allowance, namely 71.8%. It was also known that most of the children had a habit of breakfast, which was 69.2 eating while for the consumption of soft drinks were less, 73.1%.

Most children had parents with high incomes, which is 93.6%. Based on the habit of eating vegetables, most of the children were in the "frequent" category,

Table 3. Distribution of Respondents by Sociodemographic Characteristics Category in Nyogan Village, Muaro Jambi, Indonesia, 2020 (n = 78)

Characteristics	n	%
Age		
17-25	7	9
26-35	36	46.2
36-45	26	33.3
46-55	5	6.4
56-65	4	5.1
Gender		
Male	10	12.8
Female	68	87.2

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Religion		
Muslim	78	100
Respondent Education		
High	2	2.6
Middle	51	65.4
Low	25	32.1
Education		
Middle School	53	67.9
Low	25	32.1
Occupation of Respondent		
Permanent	2	2.6
Not Permanent	23	29.5
Not Working	53	67.9
Family Occupation		
Permanent	1	1.3
Not Permanent	74	94.9
Not Working	3	3.8
Income		
High	7	9
Low	71	91

Most of the respondents were aged 26-35 years (46.2%) and most of them were women (87.2%). The education level of most respondents and the head of family in the middle group, namely 65.4% and 67.9%. Most of the respondents did not work (67.9%) while most of the family heads (KK) had temporary jobs (94.9%). The income of most respondents is low (91%).

Table 4. Risk Factors analysis

Variable	Nutritional status				Total		POR (95% CI)	p
	Less		Normal					
	n	%	n	%	n	%		
Consumption Pattern of Snack Food								
Not Good	8	24.2	25	75.8	33	100	2.64 (0.71-9.76)	0.242
Good	4	10.8	33	89.2	37	100		
Consumption of Food								
Not Good	6	16.7	30	83.3	36	100	0.93 (0.26-3.26)	1.000
Good	6	17.6	28	82.4	34	100		
Gender								
Male	8	25	24	75	32	100	2.83 (0.76-10.49)	0.200
Female	4	10.5	34	89.5	38	100		
Amount of pocket money								
Low	5	25	15	75	20	100	2.04 (0.56-7.43)	0.304
High	7	14	43	86	50	100		

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Physical Activity								
Inactive	3	8.6	32	91.4	35	100	0.27 (0.06-1.10)	0.113
Active	9	25.7	26	74.3	35	100		
Breakfast Habits								
Never / Rarely	2	8.7	21	91.3	23	100	0.35 (0.07-1.76)	0.313
Often	10	21.3	37	78.7	47	100		
Soft Drink Consumption Habits								
Yes	3	14.3	18	85.7	21	100	0.74 (0.17-2.06)	1.000
No	9	18.4	40	81.6	49	100		
Parents' Income								
Low	9	21.4	33	78.6	42	100	2.27 (0.55-9.27)	0.330
High	3	10.7	25	89.3	28	100		
Cultural Factors								
Yes	2	11.8	15	88.2	17	100	0.57 (0.11-2.92)	0.717
No	10	18.9	43	81.1	53	100		
Knowledge								
Low	2	40	3	60	5	100	3.66 (0.54-24.80)	0.2
High	10	15.4	55	84.6	65	10 0		
Vegetable Eating Habits								
Occasionally	5	15.6	27	84.4	32	100	0.82 (0.23-2.88)	1.000
Often	7	18.4	31	81.6	38	100		
Fruit Eating Habits								
Never	1	25	3	75	4	100	2.80 (0.24-32.31)	0.133
Sometimes	5	10.6	42	89.4	47	100	0.72 (0.06-8.46)	
Often	6	31.6	13	68.4	19	100	Ref	

Table 5. The final model of multivariate analysis of nutritional status of SAF children in Nyogan Village, Muaro Jambi, 2020 (n = 70)

Variables	B	POR (95 % CI)	P-Value	P-Value Model	Overal Percen t age
Snack consumption pattern	0.40	1.48 (0.26-8.57)	0.659		
Drink consumption pattern	-0.06	0.94 (0.17-5.14)	0.948		
Physical Activity	-1.30	0.27 (0.05-1.66)	0.158		
Breakfast behavior	-1.22	0.29 (0.03-3.08)	0.308	0.094	81.4
Income	1.29	3.62 (0.68-19.21)	0.131		
Parental Knowledge	2.52	12.37 (0.55-276.18)	0.112		
Fruit consumption behavior	Ref	Ref			
Fruit consumption behavior (1)	0.78	2.19 (0.12-40.58)	0.476		
Fruit consumption behavior (2)	-0.24	0.78 (0.04-15.40)			

After evaluating the confounder variables, the final model is obtained as in Table 5.

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The final model shows that physical activity, breakfast habits, income, parental knowledge and fruit eating habits are confounder variables in the relationship between food and drink consumption patterns with children's nutritional status. There was a relationship between street food consumption patterns and nutritional status after controlling for physical activity, breakfast habits, income, knowledge of parents and the eating habits of fruit (POR = 1.48; 95% CI = 0.26 to 85.70; p= 0.659). The dominant factor was the knowledge of parent.

DISCUSSION

In the study, there was no statistically significant relationship between the pattern of consumption of street food (p= 0.659) and the pattern of consumption of snack drinks (p= 0.948) with the nutritional status of children with SAD. Although the POR value on snack food consumption patterns by 1.48, but this study did not prove significant as a risk factor. This is also found in the other main independent variable, namely the consumption pattern of street drinks.

The World Health Organization (WHO) and the Ministry of Health Republic of Indonesia in 2014 have compiled or modified the causes of malnutrition as direct causes, indirect causes, and root causes (Supariasa et al., 2016). The consumption pattern, includeing consumption of snack foods and drinks, is one of the causes that can directly affect the nutritional status of children. This is related to the intake of nutrients contained in the consumed snacks / drinks. The pattern of consumption of snack foods and drinks is one of the things that is important to note, this is because the school age group has a habit of snacking.

Several studies have also shown a relationship between the consumption pattern of snacks and the nutritional status of elementary school aged children. Study by Luwih (2011) shows a correlation between the consumption pattern of street food and the nutritional status of school age children in Magelang City (Luwih, 2011). The results of the study by Nisak and Mahmudiono (2017) also show the same thing, namely that there is a relationship between the pattern of consumption of street food with the nutritional status of school children (Nisak and Mahmudiono, 2017).

Based on the results of the study, it is known that the pattern of consumption of snacks and food for SAD children who live in the transocial area of Nyogan Village has changed. This is known from the types of food and beverages consumed by the children with SAD. The types of snacks include cilok, skewered meatballs, grilled meatballs, cup noodles, fried noodles, egg rolls, dumplings, nasi lemak, tekwan, and sausages. As for the types of snacks, they are glass tea, okky jelly drink, soft drint, juice jacket, sisri tea, and nutrient juice. Of course, children with SAD will never or rarely encounter these types of food and drink if they have not been moved or sent to a transocial area.

The results also showed that the frequency of the child's pocket in a week SAD is high, i.e., 7:03 times a week with the smallest pocket frequency ofttimes 2 and the greatest frequency in 19 times a week. Although there was no significant relationnship found in the study, the frequency of snacks for school-age children in *Suku Anak Dalam* (SAD) needs to be considered. This is because consumption patterns can affect the nutritional status of children.

The systematic review research

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conducted by Blaine also states that the habit of consuming snack foods is universal or common in children and has been shown to signifycantly contribute to energy or other nutritional intake (Blaine et al., 2017). One of the factors that influence the habit of buying snacks or the attitude of choosing snacks is the excessive provision of pocket money, where the average allowance for students is around Rp. 5,000, Rp. 10.000, and some are> Rp. 10.000 (Laenggeng and Lumalang, 2015). This is in line with the results of this study which show that the average pocket money earned by children is Rp. 6,038.46, ranging from Rp. 2.000 to Rp. 25,000.

In this study also showed that 15.4% were under nutritional status and 10.3% with over nutritional status. This shows that there are still nutritional problems at school age in SAD communities. Therefore, attention to the pattern of consumption of food and snack snacks for children with SAD, both from parents and schools.

The nutritional status of children is an important thing to pay attention to, this is because the age group of children, especially school age children, is a nutritionally vulnerable group and the most prone to suffer from nutritional disorders. In general, this phenomenon is related to a relatively rapid growth process, where at this school age children need relatively large amounts of nutrients. Fulfilling nutritional intake in children is useful for physical and mental fulfillment needs. Nutrient-rich foods will greatly affect the growth and development of the brain and other organs needed to achieve maximum education (Susilowati & Kuspriyanto, 2016).

The multivariate results also show that the most dominant confounder variable is parental knowledge. The results are consistent with the results Ulpa et al. (2018), which indicates that there is a relationship between knowledge of mothers with a child's nutriational status 02 Labuhan Haji elementary school (p= 0.002) (Ulpa et al., 2018). Study by Olsa et al. (2018) also shows that maternal knowledge is related to the nutritional status of new children entering elementary school in Nanggalo District, Padang City (Olsa et al., 2018). Therefore, the knowledge of mothers or parents is also an aspect that needs attention. The nutritional status of children can be influenced by parental knowledge because knowledge can shape food consumption patterns in children, including in terms of consumption patterns of snack foods and drinks (Merisya et al., 2015). Education needs to be done to parents about the effect of snack foods on children's nutriational status and supervision of snack food available at schools for children with SAD.

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