

***Characteristic Body Mass Index and
Nutrition Knowledge of Snack Food School-Age Children
Among Elementary School Students at SD Ciawi Jatinangor***

Fifi Veronica*, Resti Gradia, Wulan Mayasari, Nandina Oktavia
Basic Sciences Department, Medical Faculty, Padjadjaran University

*Corresponding author : fifi@unpad.ac.id

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Abstrak

Kurangnya zat gizi pada anak usia sekolah dalam waktu yang lama dapat berimplikasi pada terganggunya penambahan berat badan dan tinggi badan seorang anak yang sedang bertumbuh. Salah satu pemenuhan zat gizi harian yang penting adalah lewat kontribusi zat gizi Pangan Jajanan Anak Sekolah (PJAS) antara 15-20%. Penelitian ini bertujuan untuk mengetahui gambaran karakteristik status gizi (body mass index) dan tingkat pengetahuan PJAS pada anak sekolah dasar di Jatinangor.. Penelitian ini merupakan penelitian potong lintang deskriptif dengan menggunakan data primer melalui kuesioner dan pengukuran berat badan dan tinggi badan. Jumlah total sampling yang diambil sekitar 33 orang siswa kelas 4 SD Ciawi Jatinangor. Hasil penelitian menunjukkan sebagian besar siswa berada pada status gizi kurang (*underweight*) baik pada laki-laki maupun perempuan. Alasan terbesar para siswa memilih jenis makanan PJAS adalah karena rasanya enak dan harganya murah. Besaran uang saku yang mereka bawa setiap harinya tidak berkorelasi dengan ketrampilan mereka dalam menentukan jenis PJAS. Perlu kerjasama yang baik antara pihak sekolah, orangtua murid dan pedagang makanan di lingkungan sekolah untuk membentuk perilaku jajan yang baik dan *self efficacy* yang baik pada siswa.

Kata kunci : *Body Mass Index*, karakteristik pengetahuan jajanan , pangan jajanan anak sekolah

Abstract

Lack of nutrient in school age children in several times had implication in abnormal increasing body weight and height related with their growth. Snack food school –age children had contribute 15-20% from total daily nutrient consumption. Aim of this study is to describe characteristic body mass index and nutrition knowledge about healthy snack food school age. Collecting primary data with cross sectional descriptive study comes from questionnaire, measurement of body weight and height. Number of total sampling 33 participants from grade 5 elementary school Ciawi Jatinangor. The questionnaire were asked about characteristics participants, nutritional knowledge and their reasoning and preference for variety of snack food school-age children. It also include question about their self efficacy about their knowledge. The result shows most of participants, male and female in underweight status. The mostly reasoning choice snacking school variety cause of their tasteful, cheaper and umami. Number they pocket money not correlated with their skill to choices variety of school snacking. The present study revealed that, 36% and 39% of boys and girls respectively were having underweight BMI with lack of healthy characteristic knowledge of snack food school aged. Participants tends to show good self efficacy about their snacking food. Changing student food behavior and their efficacy will require cooperation supports between school staff, parents and food vendors at school

Keywords : Body Mass Index, Nutrition knowledge, Snack food School-Age Children

1. Introduction

Growth and Development children in school-age runs very fast and complexes. Inadequate nutrition may lead malnutrition, growth retardation and reduced productivity. Data in Riskesdas 2015 stated nutrition protein index level decreasing in group 5-12 years old as 29,3%.^{1,2} Meanwhile, total consumption energy in the same level group were 1850-2000kcal/day.² It means, in level pre and elementary school, they had lack of nutrition and protein from breakfast to gain their energy during school activity. Previous study stated, packed lunch school meals in elementary school also had composition imbalance nutrient composition.^{3,4}

Another choice for student which have no brings their meals or no breakfast, their parents usually give them money to buy some food in school. They are purchasing their pocket money snacking at canteen or food stall nearby the school. Snacking during school time has contribute daily nutritional at least 15-20% from total calorie for a day.² Lacking nutrient for several times had implication decreasing in their nutritional anthropometry.⁵ Nutritional anthropometry is the measurement of human physical dimension at different age level and degrees of nutrition. One of parameters are height, weight, and BMI which classified by WHO guidelines. Aim of this study is to finding characteristic nutritional status and nutritional knowledge of snacking food school aged (*Panganan Jajanan Anak Sekolah* or PJAS) among children in public elementary school Ciawi Jatinangor.

2. Methods

This research use cross sectional descriptive study. The data were collected from questionnaires and measurement.

Participants, settings and recruitment.

Participants were 33 children (11 males and 22 females) ages 10-11 years old enrolled collecting data on 9-10 am in Public

Elementary School Ciawi Jatinangor. Informed consent has done before data were collected. Grade 5 were chosen because they are not in national final exam, has familiar with the school facility including the canteen and food stall surrounding school and had their own pocket money.

Body mass index (BMI) : measurement of body weight and height. Body weight participants were taken by portable weighing balance with 0,1 kg nearest calibrate. Height was measured using vertical rod, which 0,1 cm nearest accurately. BMI was classified by WHO guidelines.

Measurements of nutritional knowledge.

There are 9 item questionnaires which had to fill by their own self. The questionnaires has validity and reliability tes before.

Characteristical Nutritional knowledge : Preferency, variety ,ingridients,frequency and reasoning of snack food school age children.

Children were asked their preferences of snack food school age, selected from 2 respons, "Yes" or "NO". If they asked yes, the question continue with variety of snack food school age. Variety of food choosed from tipe of snacking food which commonly eaten by participants and always served in school canteen and food stall. There are 14 varieties snack food school age : " pancake, Fried sago flour with egg, roasted corn, fried tofu, milk, candy, noodle in cup, kebab, buerger, Steam sago flour, yellow rice, fried meatball and tofu, cakwe and instan noodles. They choose 1 of that items which most likely purchasing. For prior nutritional knowledge, they had question " are you know about the ingridient of that 's snacking food ?". Two options for that, "Yes " or "No". For frequency of snacking, they had 3 item options : " everyday", "2-4 times a week", "once a month", "never". There 7 items for reasoning questions of snacking food : " its taste", " cheaper", " its appearence", " colourfull", " favourable ", " friends accompany " and " healthy ". Participants had to choose one of the

item which most likely appropriate with their reason to purchase the snack food.

Self Efficacy. Self efficacy was using 2 items. The first one related with the prior knowledge of “ingridients” food snack. If participants answer “Yes”, the question continue with “ if you know there is no healty, will you still purchase the snack ?” the options “ Yes “ or “ No”. The second items is the question : “ if you know the bad information about the ingridients, will you still continue that information to your friends ?”, and the options also same with the question before.

Preference to bring lunch box . Preference to bring packed meal to school was one of the item questionairre. At least 2 weeks before the collecting data.

Total number of pocket money. The range for total number pocket money for a day is : 1-5 IDR, 5-10 IDR, more than 10 IDR, and none.

Data Analysis Analysis by SPSS 2010. Tables were prepared with means , standard deviation and percentage (%) values.

3. Results

Table 1. Characteristics surveyed data of participant 5 grade Public Elementary School in Ciawi (n=33)

Age (year old)	n (%)
9	5 (15%)
10	22 (67%)
11	7 (18%)
Sex	
Boy	16 (48%)
Girl	17(52%)
Preference bringing lunch box	
always	18(54%)
never	15(45%)

Approximately half of the surveyed data of participants were girl (52%) and mostly at 10 years old (67%) in data collected. At least 2 weeks before data collected, 54% participants had already bringing their lunch box, but not yet with 45% participants.

Body Mass Index Characteristic Related with Sex

Table 2. Means and standart deviation for body weight and height related with sex

Variables	boys	girls
	Means ± sd	Means ±sd
Body weight (kg)	32,3± 9,7	32,1± 9,6
Height (cm)	1,37± 0,06	1,36±0,08

Body mass index from 33 participants data : boys (36%) and girls (39%) mostly in underweight condition. In normal BMI: boys (9%) and girls (6%). In overweight BMI : boys (6%) and girls (3%).(Fig.1)

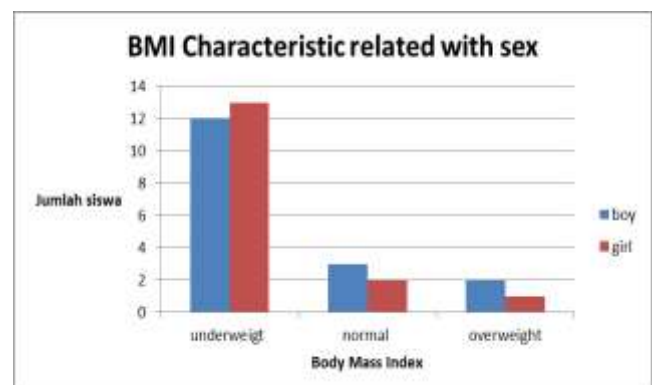


Fig.1 BMI characteristic related with sex. Underweight in male and female mostly higher than normal and overweight.

Characteristical Nutritional Knowledge

Characteristic data nutritional knowledge about preferency, variety ,prior knowledge of ingridients,frequency and reasoning to

purchase snack food school-age children shown in table 2 below:

Table2. Characteristic data of Nutritional knowledge.

Preferency	n (%)
Like snacking	33 (100%)
Never snacking	0
Variety	
fried sago flour with egg “cilor”	10 (30%)
milk	6 (19%)
noodle in cup “mie gelas”	4 (12%)
kebab	2 (6%)
buerger	3 (9%)
fried meatball and tofu “batagor”	3 (9%)
cakwe	3 (9%)
instan noodles	2 (6%)
Prior knowledge of ingridients	
Yes i know	12 (36%)
Do not know	21 (64%)
Frequency of snacking during school time	
Everyday	24 (72%)
2-4 times a week	6 (19%)
once a month	3 (9%)
Reasoning to purchase	
its taste	22 (67%)
cheaper	4 (12%)
its appearence	0
colourfull	1 (3%)
favourable	0
friends accompany	3 (9%)
healthy	3 (9%)

In table 2. all the participants (33 persons) like to snacking at school. Type varieties of snack food school age are combination within traditional food (yellow rice, fried sago flour with egg, etc) and western food (buerger),

eastern food (noodles, kebab, etc.). Mostly they choose fried sago flour with egg (30%), one of popular traditional snacking food, also called “cilor”. Another varieties like : pancake “martabak”, roasted corn “jagung bakar”, fried tofu “tahu goreng”, candy, steam sago flour “cimol”, and yellow rice no chosed by the participants. 21 (64%) participants had no prior knowledge of ingredients of their snack. Almost participant(72%) like to snack during school time everyday. Mostly participants choose their snacking because of its good taste (67%), and only a little participants assumed cheaper (12%), attractive colour (3%), appearance, texture, and taste, accompany their friends (9%) and healty categorized (9%).

Self Efficacy.

Data self efficacy participants shows that 33 participants which like snacking during school time, almost participants (90%) will not continue purchasing the snack food if they know its ingridients not healty and only 10% choose to continue. Almost all participants will transfer the information about “bad ingridients food snack “ to their freinds (72%), and rest of the number (28%) participants not have any idea.

Snacking School Frequency Related with Number of Pocket Money

At least 33% participants which have range pocket money less than 5 IDR, purchase food snack shool-age everyday. The same condition (33%) with the participants which have 5-10 IDR pocket money. But not in the participants with the pocket money more than 10 IDR.

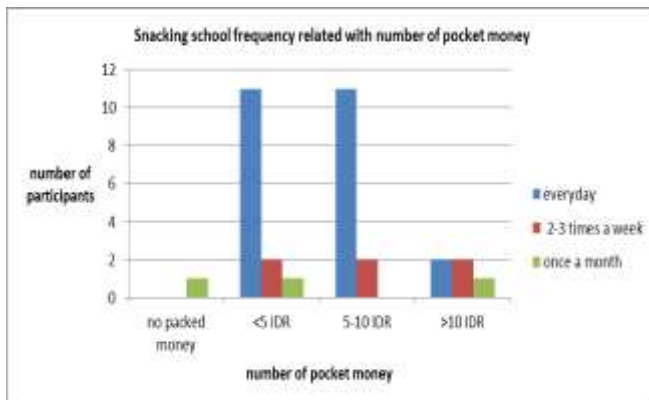


Fig.2 Snacking school frequency related with number of pocket money

The fig.2 shows highly frequency snacking during school time in group participants with range pocket money 1-5 IDR and 5-10 IDR.

4. Discussion

Children with 9-11 age years old is elementary school period with the optimal maturity in terms of preferences food to consumed. In this period, their parents usually gave them some money pocket to buy snacking food. Interaction between school aged children with their family has important to contribute building students food behavior, in terms of preferences variety food consumption.⁶ Healthy choices menu food consumption in their family behavior usually influenced the patterns choices kind of snacking food especially snacking food at school. School also has important contribute building student food behavior.⁷ Several topic about unhealthy snacking food ingredients could be include in their curriculum in elementary level as trigger point to enhance their level nutritional knowledge. In this result, shows 36% male participants and 39% female participants with the BMI underweight (below 18,5%), and all the participants has snacking food. Tipe of snacking food mostly from processed wheat flour with the rich synthetic flavor enhancer and low nutrient index which needed in their growth and maturity level. BMI underweight

participants suspected related with their food behavior. Calori index level in food snack assumed not enough to supply optimal calori which required in snack food school aged, 15-20% from total calori for a day.² Another study in Makasar from several public elementary school also stated level nutrient index snack food school aged below the nutrient index requirement.^{8,9} Almost participants choose the type of varian snacking food because its flavor. Several nutritional study stated that synthetic food flavoring dominant in snack food school aged, especially additional monosodium glutamat (MSG) in its ingredient.⁸ Traditional snack food school aged like “cilok, cimol, cireng”, usually use carbohidrat as single basic material component and minimal variant with another component (protein or lipid).

Lack of nutrient for several times cause imbalance intake nutrition and metabolism, influence in weight and height especially in child growth and development period. Parents have contribution building children eating behavior. Wrong eating environment can caused disorder of eating behavior.¹⁰ Effect synthetic food flavor in longterm used in brain has significantly proved either in animal research or in human. Nuerotoxic effect of MSG influenced brain function in addiction and memory process. MSG also change taste receptor as savory taste in tongue. Index Snack Food School Aged data from The National Agency of Drug and Food Control of Republic Of Indonesia (NADFC) 2009-2014 only 76,18%, lesser than target scale 90%.^{4,11} Several factors contribute that condition, like microbe investation such as Salmonella Sp., excessive additional food synthetic flavor , harmful ingredients, etc. Selection type variety of food involving several factors as biological mechanism, appetite control, eating behaviour and also social culture value.^{11,12} In this study, range number of pocket money in group snacking food aged in SDN Ciawi Jatininggor between 1-10 IDR. Almost participants tend to spend their money to buy

some food at stall outside of school canteen. Similar results from previous study stated that children with lowest money pocket tends to choose healthy snacking food at school canteen (72%) and vice versa (18%) outside school canteen.^{12,13,14} Traditional food like “cireng, cimol, etc” which lack of nutrition usually finding outside of school canteen. Several studies stated, there is no significancy between number of pocket money with preferences of Snack Food School Aged. Otherwise role of friend, parents and number of pocket money has involved its perception significantly.¹⁵ Previous study stated, there is significancy between energy intake school aged with lunch box. In this study, the result show , 54 % participants has lunch box also has snacking food. This condition might be related with the type and variant of lunch box, monotonous and lack of variety. Previous study stated parents are effective building child eating behavior and preferences, especially mother is role model for their children eating behavior. Some factors contribute to mother’s eating behavior, such as socioeconomic status, educational level, working status, and level of nutritional knowledge. Contribution parents especially mother significantly higher to improve menu their children lunch box.⁶ In this study, self efficacy participants for new information about ingredients healthy snack food are good. They are not continue eating snack food with the unhealthy ingredients. Needs more study to prove their self efficacy.

5. Conclusion

Nutritional status 5th grade public elementary school Ciawi Jatinangor, almost half in underweight with lacking characteristical knowledge of healthy snack food school aged. Interestingly, mostly underweight exist on girls group. As describe in previous studies, malnourished status in girls young age will continue and develop through out their life phase (puberty and maternity).¹⁵ Changing student food behavior will require cooperation

supports between school staff, parents and food vendors at school .

Human Subjects Approval Statement

This study was approved by Ethical Committee for the protection of human subject at Padjadjaran University.

References

1. Kementrian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia tahun 2015. 2015.
2. Yunita TV, Widodo S. Dukungan Sarana Dan Fasilitas Kantin Dengan Praktik Keamanan Pangan Jajanan Anak Sekolah Di Sdn Cipayung 05 Tahun 2018. *JUKMAS J Untuk Masy Sehat*. 2019;3(1):90-95.
3. Infodatin. *Pusat Data Dan Informasi Kementrian Kesehatan RI: Situasi Pangan Anak Sekolah*. 2014.; 2018.
4. Nurul Islami Dini, Siti Fatimah P S. Hubungan konsumsi makanan jajanan terhadap status gizi (kadar lemak tubuh dan imt/u) pada siswa sekolah dasar (Studi di Sekolah Dasar Negeri 01 Sumurboto Kota Semarang). *J Kesehat Masy*. 2017;5(1):301-306. <https://ejournal3.undip.ac.id/index.php/jkm/article/view/15568/15060>.
5. Hardcastle SJ, Blake N. Influences underlying family food choices in mothers from an economically disadvantaged community. *Eat Behav*. 2016;20:1-8.
6. Buscemi J, Odoms-Young A, Yaroch AL, et al. Society of Behavioral Medicine position statement: retain school meal standards and healthy school lunches. *Transl Behav Med*. 2019;9(2):389-390.
7. Santos-Ramos AJ, Córdova-Hernández JA, Guzmán-Priego CG, Muñoz-Cano

- JM. School breakfast and healthy nutritional education in elementary school. *Horiz Sanit.* 2017;16(2):75-84.
8. Anggiruling DO, Ekayanti I, Khomsan A. Analisis Faktor Pemilihan Jajanan, Kontribusi Gizi dan Status Gizi Siswa Sekolah Dasar. *Media Kesehat Masy Indones.* 2019;15(1):81-90.
 9. Syahidah ZA, Wijayanti HS. Perbedaan aktivitas fisik, screen time, dan persepsi ibu terhadap kegemukan antara balita gemuk dan non-gemuk di Kota Semarang. 2017.
 10. Kazmi Z, Fatima I, Perveen S, Malik SS. Monosodium glutamate: Review on clinical reports. *Int J food Prop.* 2017;20(sup2):1807-1815.
 11. Iswaranti., Widjajarta M. FJ. Jajanan di Indonesia Berkualitas Buruk. 2019.
 12. Widyoningsih W, Subakti E, Kusnaeni A. Hubungan besaran uang saku dengan pemilihan jajanan sehat. *J Kesehat Al-Irsyad.* 2016:31-36.
 13. Susanna D, Purwanisari E, Ratih SP. Salmonella Infection Among Foodhandlers at Campus Canteen in Indonesia. *Available SSRN 3363802.* 2019.
 14. Saha S, Zahid MK, Rasheed S. The study of the level of knowledge, attitude, practices (KAP) as well as the effects of school environment on the nutritional status of children (7-12) coming from affluent families in the Dhaka City in Bangladesh. *Bangladesh J Nutr.* 2011:31-48.
 15. Sari RI, Sartika RAD. Factors Associated with Nutritional Status of Adolescents Age 12-15 Years in Indonesia (Secondary Data Analysis of RISKESDAS 2007). *KnE Life Sci.* 2018:359-366.