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SNACKING BEHAVIOR AMONG SCHOOL-AGED CHILDREN IN URBAN AREA

ABSTRAK

Latar Belakang: Mengonsumsi jajanan dalam sehari dapat memberikan kontribusi masukan energi selain mengonsumsi makanan utama. Namun perilaku jajanan pada anak sekolah di Indonesia menunjukkan beberapa kebiasaan yang tidak sehat seperti seringnya mengonsumsi jajanan berkalori tinggi dan minuman manis. Anak-anak di kota besar mempunyai risiko lebih tinggi mengalami obesitas karena tingginya konsumsi jajanan tidak sehat. **Tujuan:** Penelitian ini bertujuan untuk melihat perilaku jajanan anak usia sekolah yang tinggal di perkotaan. **Metode:** Jenis penelitian observasional dengan desain cross sectional study. Sampel penelitian merupakan anak usia sekolah dasar, berasal dari seluruh kelurahan di wilayah Bekasi sebagai salah satu kota megapolitan di Indonesia, meliputi kelurahan: Duren Jaya, Bekasi Jaya, Aren Jaya, dan Margahayu. Sebanyak 213 siswa mengikuti penelitian ini. Siswa diminta mengumpulkan data tentang karakteristik responden dan perilaku jajanan (menggunakan angket terstruktur dan angket frekuensi makanan). **Hasil:** Hasil penelitian menunjukkan 50,2% anak sering makan jajanan; 79,8% membeli makanan ringan dari kombinasi kantin sekolah, pedagang kaki lima, dan warung makan tetap; 70,4% membeli makanan ringan pada jam istirahat, setelah, dan sebelum sekolah; dan 75,5% menggunakan bahan kemasan plastik. Uji chi-square menunjukkan $p\text{-value} > 0,05$ antara hubungan jenis kelamin, kebiasaan sarapan pagi, uang jajan, pendidikan ibu, pendidikan ayah dengan frekuensi jajan ($p\text{-value}$: 0,175, 0,302, 0,269, 0,104, 0,247). **Kesimpulan:** Penelitian ini mengkonfirmasi bahwa di masyarakat perkotaan, separuh dari anak-anak sering makan jajanan, dua pertiganya membeli jajanan dari kombinasi kantin sekolah, pedagang kaki lima, dan warung makan tetap serta membeli jajanan pada saat libur sekolah, sesudah, dan sebelum sekolah. Tidak ada hubungan yang signifikan antara jenis kelamin, kebiasaan sarapan pagi, uang jajan, pendidikan ibu, pendidikan ayah dengan frekuensi ngemil.

KATA KUNCI: perilaku jajan; anak usia sekolah; faktor penentu; area perkotaan

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ABSTRACT

Background: Throughout the day, snacks can serve as an additional source of energy beyond regular meals. However, in Indonesia, the snacking habits of school children often involve unhealthy choices, such as frequently consuming high-calorie snacks and sugary drinks. Children living in larger cities are at a greater risk of becoming obese due to their higher intake of these unhealthy snacks. **Objectives:** The objective of this research is to examine the snacking habits of school-aged children residing in urban areas of Indonesia. **Methods:** This research is an observational study utilizing a cross-sectional design. The sample consists of school-aged children selected from various urban villages in the Bekasi area, a large metropolitan city in Indonesia. These areas include Duren Jaya, Bekasi Jaya, Aren Jaya, and Margahayu. A total of 213 students participated in the study. The students were asked to provide information on their personal characteristics and snacking habits, using both structured questionnaires and food frequency questionnaires to collect the data. **Results:** The findings reveal that 50.2% of the children frequently consume snacks. Additionally, 79.8% of them purchase snacks from a combination of sources, including school canteens, street vendors, and permanent food stalls. About 70.4% of the children buy snacks during break times, before, or after school, and 75.5% of the snacks were packaged in plastic. A Chi-square test showed no significant associations (p -value > 0.05) between snacking frequency and factors such as gender, breakfast habits, pocket money, mother's education, or father's education, with respective p -values of 0.175, 0.302, 0.269, 0.104, and 0.247. **Conclusions:** In summary, this research confirmed that in urban communities, half of the children frequently consume snacks, and two-thirds purchase them from a mix of sources including school canteens, street vendors, and permanent food stalls. These snacks are typically bought during school breaks, as well as before and after school hours. The study found no significant correlation between snacking frequency and variables such as gender, breakfast habits, pocket money, or the educational background of both parents.

KEYWORD: *snacking behavior; school age children; determinant factors; urban area*

INTRODUCTION

Throughout the day, snacking can contribute to overall energy intake in addition to regular meals. Traditionally, people consume three main meals: breakfast, lunch, and dinner. Between these meals, it is common for individuals to have snacks. A review article highlights the potential health impacts of snacking. While snacking can help maintain a feeling of fullness and sustain satiety between meals, it is also linked to various health concerns such as dental issues, obesity, and an increased risk of non-communicable diseases. In children, studies have shown a connection between excessive energy intake from snacks and unhealthy weight gain, as snacking often leads to consuming foods that are high in energy but low in essential nutrients (1). In Indonesia, school-aged children commonly snack on items such as fried foods, ice cream, and

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sweetened beverages. These snacks are generally considered to be unhealthy choices. (2).

A systematic review and meta-analysis have demonstrated that the consumption of sugar-sweetened beverages and fast food is a leading factor contributing to overweight and obesity in children (3). Another study highlights that the regular consumption of sugary and high-fat snacks among elementary school students is linked to an increased incidence of obesity in this age group (4,5). In Indonesia, the food environment surrounding primary schools plays a significant role in influencing children's snacking habits while at school. School-aged children have easy access to deep-fried snacks and sugar-sweetened beverages. Many public schools permit street vendors to operate near school premises, giving students the opportunity to purchase these foods and drinks(6).

Indonesia has long grappled with the issue of unhealthy snacking habits among school-aged children, yet little progress appears to have been made over time. In fact, the prevalence of overweight and obesity continues to be a significant concern within the population. The number of individuals affected by overnutrition has doubled between 2007 and 2018, rising from 10.5% to 21.8% (7,8). A similar trend can be observed in obesity rates among children aged 5 to 12 years. Although the prevalence of obesity declined between 2018 and 2023, dropping from 9.2% to 7.8%, the rate of overweight children increased over the same period, rising from 10.8% to 11.9% according to two national surveys (7,9). Children residing in large cities are frequently exposed to a sedentary lifestyle and a high intake of fatty foods and sugar-sweetened beverages. This unhealthy food environment leads to regular consumption of high-calorie foods, resulting in greater energy intake than the energy expended through their daily activities. (10).

In an initial study carried out by the research team, it was discovered that snack vendors within the school environment offer foods that are high in sugar and fat. Examples of snacks available at the school are *cireng*, *cilok*, *papeda*, *noodles*, *martabak*, *basreng*, and other elementary school snacks. These foods can be categorized as "empty-calorie" foods, meaning they provide a high amount of energy per 100 grams but are low in essential nutrients, particularly micronutrients (11). Most of these foods are carbohydrate-based and are prepared using deep frying. This cooking method leads to the food absorbing a significant amount of fat, which is the most calorie-dense nutrient, providing 9 kcal per gram. Additionally, deep frying poses a risk of reducing other important nutrients, such as vitamins and minerals, which are sensitive to heat and may

degrade during the cooking process (12). In addition to low-nutrient foods, there are also beverages high in sugar, such as excessively sweetened packaged drinks available in a variety of flavors.

This research seeks to examine the snacking habits of school-aged children living in urban areas of Indonesia. Unlike previous studies, this one includes representatives from multiple schools across various urban villages. In addition to analyzing snacking frequency, the study also explores where snacks are purchased, when they are bought, the types of packaging used, and how these factors relate to snacking frequency.

MATERIALS AND METHODS

This research is an observational study employing a cross-sectional design. It is funded by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) through the "Penelitian Dosen Pemula (PDP) 2024" program. The proposal preparation began in April 2024, followed by data collection conducted in August and September 2024. The study was carried out in the urban population of the Bekasi region, specifically in East Bekasi. This area was selected because it has one of the highest concentrations of primary schools and students within Bekasi. (13). The samples were drawn from several urban villages in East Bekasi, including Duren Jaya, Bekasi Jaya, Aren Jaya, and Margahayu. A total of 213 students participated in the study. They were asked to provide information on their personal characteristics and snacking habits through the use of structured questionnaires and food frequency questionnaires.

Characteristic of the respondents

The variables related to respondents' characteristics include name, date of birth, parents' occupations, parents' education levels, and the amount of pocket money they receive. A structured questionnaire was utilized for data collection, with students completing the form under the guidance of an enumerator.

Snacking Behavior

Children were asked to complete a questionnaire covering topics such as the timing of their snacking, where they purchase snacks, the type of snack packaging, and the frequency of their snack consumption over the past month using a food frequency questionnaire (FFQ). Snack timing was categorized as: during school breaks, before school, after school, or a combination of two or three of these times. The locations for purchasing snacks were classified as: street vendors, school canteens, food stalls near

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the school, or a combination of two or three locations. Snack packaging was categorized into plastic, styrofoam, paper, or other materials. To evaluate the type of packaging, children were asked to list the snacks they consumed the previous day and indicate the packaging materials used. Snacking frequency over the past month was categorized as frequent (FFQ score \geq median) or infrequent (FFQ score $<$ median).

⁵ The protocol for this study was reviewed and evaluated by the health ethics committee of "Komisi Etik Penelitian Kesehatan STIKes Bani Saleh" No: EC. 143/KEPK/STKBS/VII/2024. Analysis of the data are ran using statistical analysis software, SPSS. Univariate data are shown using descriptive analysis, and bivariate data are shown using *chi-square test*.

RESULTS AND DISCUSSIONS

The results presented in Table 1 indicate that half of the respondents are 11 years old. The selection of participating children was not made directly by the research team; instead, teachers randomly chose the participants. Two-thirds of the respondents are girls, and most carry pocket money ranging from 10,000 to 19,999 rupiah. The majority of both mothers and fathers have a secondary education background. In terms of nutritional status, over thirty percent of the students fall into the overnutrition category.

The snacking habits of the respondents are detailed in Table 2. This study revealed that half of the school-aged children frequently consume snacks, a result consistent with previous research conducted in Indonesia (14,15). Both studies indicated that the proportion of children who frequently consume snacks is relatively similar, though it remains somewhat higher in the reference group (frequent/poor snacking habits). Another research conducted by Nuryani & Rahmawati (2018) also demonstrated a higher percentage within that group. Observations made during data collection further reinforce these findings, as many children were seen purchasing snacks, particularly during school recess. Our research revealed that children purchase snacks not only during school breaks but also before and after class. The increased frequency of snacking can lead to a greater intake of energy. A related study conducted in Indonesia, comparable to our findings, showed that snacks account for approximately $21.7 \pm 10.1\%$ of total energy intake, with an average of $26.7 \pm 12.8\%$ across both urban and rural populations (17). Similarly, a study conducted in the United States reported comparable results, revealing that approximately 28% of children's total energy intake comes from snacks (18). Increased snack consumption is linked to a higher risk of obesity (4).

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Nevertheless, some studies do not establish a connection between snack consumption and obesity. The study by Njike et al., (2016) suggested the need for further research to specifically examine how healthy snacks influence satiety and aid in regulating appetite, which may contribute to reducing obesity.

In this research, a bivariate analysis was conducted (Table 3) to examine the relationship between specific factors and the snacking habits of school children. However, no significant correlation was found between variables such as gender, breakfast habits, pocket money, and parental education. This suggests that while snacking is a common behavior, it is not directly influenced by these particular factors. These findings align with a study conducted in Palembang, which also reported no association between gender, breakfast habits, and pocket money with children's snack consumption patterns. (20). Snacks available in the school environment are sold at relatively low prices, starting at 1,000 IDR per item, making them easily accessible to students. The lack of a relationship between gender indicates that both boys and girls are equally inclined to snack. This contrasts with findings from studies in Western countries, where girls tend to consume more snacks than boys. (21). The lack of an association between breakfast habits and snacking behavior suggests that children, regardless of whether they eat breakfast or skip it, are just as likely to snack frequently or infrequently. The presence of numerous snack vendors near the school likely draws the attention of children, encouraging them to purchase snacks.

Table 2 also highlights the locations where students purchase snacks. They typically buy snacks not only from the school canteen but also from street vendors and permanent food stalls near the school, known as "warung." Children often purchase snacks from a variety of sellers, not just a single source. In Indonesian public schools, it is common to have both an internal school canteen and street vendors stationed outside the school building. Since the selection of snacks in the canteen is limited, students are inclined to buy additional snacks from street vendors or nearby food stalls. These street vendors are not officially registered with the school management. Most of them are small sellers selling fried foods such as *cireng*, *cimol*, *cilor*, *martabak telur*, *telur gulung*, and some sweets such as various type of sugar sweeten beverages, ice cream. Most of policy guidance on healthy canteen at school available In Indonesia do not mainly focus on nutrition aspects (22).

In this research, a bivariate analysis (Table 3) was performed to examine the relationship between various factors and children's snacking habits. However, no

significant correlation was identified between variables such as gender, breakfast habits, pocket money, and parental education. This indicates that frequent snacking is not specifically driven by these factors. These findings are consistent with a study conducted in Palembang, which also found no association between gender, breakfast habits, pocket money, and children's snacking behaviors (20). Snacks around schools are priced affordably, starting at just 1,000 IDR per item, making them easily accessible for students. No significant difference was found between genders, indicating that both boys and girls share a similar interest in snacking. This contrasts with findings from studies in Western countries, where girls are reported to snack more frequently than boys. (21). The lack of a connection between breakfast habits and snacking behavior suggests that children, whether they eat breakfast or not, are equally likely to snack frequently or infrequently. The abundance of snack vendors in the vicinity of the school can easily catch children's attention, encouraging them to purchase snacks.

A qualitative study conducted at an elementary school in Jakarta, Indonesia, revealed that students tend to consume unhealthy snacks without being fully aware of their nutritional value or possible risks. The easy availability of snacks from vendors near the school gates offers a wide selection of tasty and visually appealing options for students to buy. However, students lack adequate knowledge about the ingredients in these snacks, which are commonly sold by local vendors. They are unaware of the potential dangers, such as the presence of harmful chemicals like borax, formaldehyde, or rhodamine B, which are often found in these snacks. (23). Additionally, several behavioral factors contribute to students' perceptions and decisions to consume unhealthy snacks. These factors include predisposing, enabling, and reinforcing elements. The predisposing factor is the informants' lack of awareness about the differences between healthy and unhealthy snacks. An enabling factor, as described by Martondang & Yuliaty, is the habit of snacking driven by the informants' receipt of pocket money from their parents. The reinforcing factor comes from peer influence, which also encourages informants to engage in snacking. (23).

One factor influencing elementary school children's snacking habits is peer pressure or the desire to follow popular snack trends. This aligns with research by Hateriah & Kusumawati (2021), which examined the factors affecting snacking behavior in elementary school students in Banjar Regency. The study found that peer preferences significantly impacted snacking habits (p-value 0.03). Additionally, the research revealed

that parental knowledge ⁶ plays a role, as parents with higher levels of education are more likely to teach their children about selecting healthy snacks. (24). However, this study did not find any correlation between parental education and children's snacking behavior.

CONCLUSIONS AND RECOMMENDATIONS

In summary, this study found that in urban areas, half of the children frequently consume snacks, with two-thirds purchasing them from a mix of school canteens, street vendors, and permanent food stalls, often during school breaks, before, and after school. There was no significant relationship between gender, breakfast habits, pocket money, or parental education and the frequency of snacking. The findings highlight the close proximity of school-age children to food vendors offering a wide variety of snacks, which can elevate the risk of obesity. Efforts to promote healthy snacking habits among urban schoolchildren should be reinforced, supported by robust policies from both schools and the government.

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