

THE CORRELATION BETWEEN SNACKING HABITS AND DIGESTIVE PROBLEMS IN SCHOOL-AGED CHILDREN

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Abstract

Background: School-age children spend a significant portion of their day at school. Due to the high intensity of school activities, they often feel hungry more frequently, prompting them to purchase snacks. They are typically drawn to foods that are visually appealing in terms of color, taste, and packaging, often without considering the potential health effects. As a result, these children frequently suffer from digestive issues caused by harmful microorganisms such as those leading to diarrhea and typhoid fever or by toxic chemical substances that can pose serious health risks. **Purpose:** The aim of this study is to examine the relationship between snacking habits and the occurrence of digestive disorders among school-age children at an elementary school in Palembang. **Method:** This study employed an analytical survey with a cross-sectional design, using purposive sampling as the sampling technique, and involved a total of 72 respondents. **Discussion:** Data were collected using questionnaires. The results of the Chi-square test showed a p-value of 0.000, which is less than the significance level of $\alpha = 0.05$, indicating a significant relationship between snacking habits and the incidence of digestive disorders. Additionally, it was found that 34 children (47.2%) had unhealthy snacking habits, while 38 children (52.8%) demonstrated healthy snacking habits. Regarding digestive health, 38 children (52.8%) experienced digestive disorders, whereas 34 children (47.2%) did not.

Keywords: Habit, Snack, Disorder, Digestive.

Background

Children are unique individuals and are not the property or wealth of parents that can be assessed socio-economically, but rather the future of the nation who has the right to individual health services. Children are individuals who are still very dependent on adults and their environment, meaning they need an environment that can facilitate in meeting the basic needs for independent learning (Ribeiro & Paster, 2023).

School-age children have a wider social environment besides their family environment, namely the school environment where children learn to develop cognitive abilities, social interactions, moral and cultural values from the home environment. Children at school age spend one-third to one-half of their time doing activities outside the home, namely in the school environment, high activity causes them to get hungry quickly, thus encouraging them to buy snacks around them (Yuswandi et al., 2024).

Children, especially school children, are susceptible to digestive disorders caused by certain

microorganisms such as diarrhea and typhoid fever, as well as those caused by hazardous chemicals that can cause children to be poisoned to death. According to WHO data, diarrhea is the number one cause of child death worldwide. Meanwhile, UNICEF estimates that every 30 seconds a child dies from diarrhea (Motuma et al., 2025).

Meanwhile, the epidemiology of typhoid fever based on WHO research in 2022 estimated that there were around 17 million cases of typhoid fever worldwide with an incidence of 600,000 deaths each year, children are the most susceptible to typhoid. In addition, WHO estimates that the ratio between poisoning incidents in the community is 1:10 for developed countries and 1:25 for developing countries (Albano et al., 2022).

Based on the Profile of the Indonesian Ministry of Health (2022), it shows that the 10 most common diseases in hospitalized patients in all hospitals are: In Indonesia in 2021, diarrhea and gastroenteritis caused by certain infectious diseases ranked first with a total of 200,412 patients with the highest incidence in children, followed by typhoid

fever in third place after dengue fever with a total of 85,431 patients, while the number of extraordinary cases in 2022, food poisoning ranked third after DBD and Chikungunya, followed by diarrhea in sixth place as the cause of outbreaks throughout Indonesia (Ahyanti & Rosita, 2022).

According to BPOM RI (2022), it was reported that during 2021 there were 152 food poisoning outbreaks, 7295 people experienced food poisoning, 45 of whom died. Based on the results of a preliminary study conducted by researchers at a public elementary school in Ario Kemuning Village, Palembang, the first preliminary study, researchers only found and interviewed 15 fifth grade students. The results of the interview, 5 students said they had experienced diarrhea in the last three months, 2 students said they had experienced typhoid fever or typhus based on a doctor's statement in the last three months, 1 student said he had experienced signs of food poisoning such as nausea, cold sweats, and headaches after eating snacks bought in the school environment, and 7 other students said they had never experienced digestive problems such as diarrhea, typhoid fever and food poisoning after buying snacks sold at school.

In the follow-up preliminary study, the researcher conducted observations on all students through observations obtained almost all students buy snacks during break time, they buy snacks sold by vendors around the school that have not guaranteed the cleanliness of the food sold such as there are still many foods they buy on the side of the road around the school that are directly exposed to dust, vehicle fumes, and insects such as flies, while from the school health service (UKS) data of Elementary school in Ario Kemuning Village, data on the incidence of digestive disorders in students has not been obtained. Based on the description above, the researcher is interested in knowing whether there is a relationship between snacking habits and the incidence of digestive disorders in school-age children at public elementary schools in Ario Kemuning Village Palembang.

Method

The research method used is an analytical survey research method with a cross-sectional design to identify the relationship between snacking habits and the incidence of digestive disorders in school-age children in public elementary schools in Ario Kemuning Village, Palembang.

The population in this study were all students in grades IV and V of public elementary schools in Ario Kemuning Village, Palembang, totaling 102 students in grade IV and 83 students in grade V, so the total population was 185 students. In this study, the data

collection technique used purposive sampling and the number of samples in this study was 72 respondents. With the division of grade IV as many as 40 students and grade V as many as 32 students.

The data collection technique used is primary data obtained by using a questionnaire consisting of a digestive disorder questionnaire in the form of a questionnaire and filled out by parents, then a snacking habit questionnaire filled out based on student information through interviews. This questionnaire has been tested for validity and reliability at the public elementary school in Ario Kemuning Village, Palembang.

Results and Discussion

Snacking habits

The characteristics of healthy and unhealthy snacking habits are obtained from the data in the following table:

Table 3.1 Snacking habits

No	Snacking habits	Amount	Percentage
1	Unhealthy Snacks	34	47.2%
2	Healthy Snacks	38	52.8%
Amount Total		72	100%

Based on Table 3.1, After conducting an analysis based on the results of statistical calculations, the distribution of snacking habits based on categories in table 5.1 showed that the results of the study showed that 34 respondents (47.2%) had unhealthy snacking habits for children, and 38 respondents (52.8%) had healthy snacking habits for children.

The characteristics of digestive disorders can be seen in the following table:

Table 3.2 Indigestion Disorders Occurrence

No	Indigestion Disorders Occurrence	Amount	Percentage
1	Indigestion	38	52.8%
2	not indigestion	34	47.2%
Total number		72	100%

From table 3.2 After conducting an analysis based on the results of statistical calculations, the distribution of incidence of digestive disorders in elementary school children in Palembang in the table above shows that there were 38 respondents (52.8%) of children experiencing digestive disorders, while there were 34 respondents (47.2%) of children not experiencing digestive disorders.

The Relationship Between Snacking Habits and the Incidence of Digestive Disorders

Table 3.3 the relationship between snacking habits and the incidence of digestive disorders

Snack habits	Indigestion Disorders Occurrence		Total	P Value	CI	OR
	yes n(%)	no n(%)	n(%)			
not healthy	28 (38.9%)	6 (8.3%)	34 (47.2%)	0.000	40-4	13
healthy	10 (13.9%)	28 (38.9%)	38 (52.8%)			
AMOUNT	38 (52.8%)	34 (47.2%)	72 (100%)			

From Table 3.3 Based on the table above, it is found that unhealthy snacking habits of children who experience digestive disorders are 28 respondents (38.9%) out of 38 respondents who experience digestive disorders, this is higher when compared to healthy snacking habits of children who experience digestive disorders, 10 respondents (13.9%) out of 38 respondents who experience digestive disorders.

The results of the statistical test obtained a P value (p value) = 0.000 meaning less than $\alpha = 0.05$, it can be concluded that there is a significant relationship between snacking habits and the incidence of digestive disorders in school-age children in public elementary schools in Palembang. Analysis of the closeness of the relationship between the two variables obtained OR = 13 (95% CI = 40 - 4) meaning that children with unhealthy snacking habits have a 13 times greater chance of experiencing digestive disorders compared to children who snack healthily.

Discussion

Based on the results of the research conducted on 72 respondents, namely school-age children in grades IV and V of public elementary schools in Ario Kemuning Village, Palembang, and the previous discussion, the following conclusions were obtained:

1. Children's snacking habits were in the healthy category as many as 38 respondents (52.8%), while unhealthy snacking habits were as many as 34 respondents (47.2%).
2. The incidence of digestive disorders including diarrhea, typhoid fever, and food poisoning in children during the last three months was 38 respondents (52.8%), while 34 respondents (47.2%) did not experience digestive disorders.

3. There is a significant relationship between snacking habits and the incidence of digestive disorders in school-age children with p Value = 0.000.

The results of this study, conducted on 72 respondents who were students in grades IV and V at a public elementary school in Ario Kemuning Village, Palembang, provide meaningful insights into the relationship between snacking habits and digestive health in school-age children. Firstly, the data shows that 38 respondents (52.8%) demonstrated healthy snacking habits, while 34 respondents (47.2%) had unhealthy snacking habits.

This relatively even distribution suggests that while awareness and access to healthier food may be improving among schoolchildren, a significant proportion still engage in risky snacking behaviors. Children are often drawn to snacks that are visually appealing and inexpensive, such as brightly colored drinks, deep-fried foods, and candies with artificial flavoring and coloring. These foods are frequently sold around school premises by street vendors, whose food preparation methods may not meet hygiene standards. In terms of health outcomes, 38 children (52.8%) reported experiencing digestive disorders including diarrhea, typhoid fever, or symptoms of food poisoning within the past three months, while 34 children (47.2%) reported no such issues.

This nearly 1:1 ratio indicates that digestive disorders are quite prevalent among school-aged children in the area, which aligns with national and global public health concerns about child nutrition and sanitation. Digestive health issues in this age group not only cause discomfort and missed school days but may also affect children's growth, immune function, and academic performance. Most notably, the statistical analysis revealed a significant relationship between snacking habits and the incidence of digestive disorders, with a p-value of 0.000, which is well below the significance threshold of $\alpha = 0.05$.

This strong statistical correlation is further supported by the Odds Ratio (OR) of 13, suggesting that children with unhealthy snacking habits are 13 times more likely to experience digestive disorders than their counterparts with healthier habits. This finding aligns with previous studies. For instance,

Motuma et al. (2025) concluded that the prevalence of diarrhea among children in developing regions is often linked to foodborne pathogens and low standards of hygiene in snack preparation. Similarly, (Kliemann et al., 2022) the dangers of chemical contaminants in processed snacks, many of which are widely consumed by children due to their affordability and palatability.

Another factor worth considering is children's limited understanding of food safety and nutrition. In this study, interviews revealed that children chose snacks based largely on flavor, color, and packaging appeal, rather than health considerations. This underscores the importance of implementing nutrition education within the school curriculum to equip children with the knowledge they need to make safer dietary choices. Environmental factors also play a key role. Observations conducted by the researchers indicated that many snacks sold around the school were not covered or protected from external contaminants such as dust, vehicle emissions, or insects (Gangrade et al., 2022).

These unsanitary conditions heighten the risk of microbial contamination, including exposure to *Salmonella*, *Shigella*, and *E. coli*, all of which can cause severe gastrointestinal symptoms. The school environment itself can influence snacking behavior. A lack of proper school canteen facilities often forces students to rely on external vendors. Furthermore, socioeconomic status may limit children's access to healthy food alternatives. Families from lower-income brackets might prioritize cost over nutritional value, leading children to choose cheaper but less safe snacks (Vos et al., 2022).

This factor, though not the focus of this study, is important for future investigation. From a public health perspective, the findings of this research call for multi-level interventions. At the micro level, parents and teachers should collaborate to instill healthy eating habits and raise awareness about the risks of consuming unsafe snacks. At the meso level, schools should provide clean, healthy food options and work with local authorities to regulate food vendors near school areas. At the macro level, policy intervention is essential (Rose et al., 2022).

Government health and education agencies must enforce food safety regulations and run sustained campaigns to promote child nutrition and food hygiene. Moreover, the link between unhealthy snacking and digestive disorders has broader implications beyond physical health.

Frequent illness may lead to school absenteeism, which can negatively impact academic achievement. It also places an economic burden on families, who may incur additional medical expenses to treat preventable conditions (Parker et al., 2024).

There is also a behavioral component that merits deeper exploration. Children's snacking choices may be influenced by peer pressure, exposure to digital advertising, and parental habits. Behavioral theories such as Bandura's Social Learning Theory suggest that children emulate behaviors they observe, particularly from peers and adults. If family members or teachers consistently model healthy eating, children are more likely to adopt these behaviors (Xu, 2022).

This research contributes valuable data to the growing body of evidence on child nutrition and public health in Indonesia. It emphasizes the urgent need for evidence-based interventions and policy measures tailored to the local context. For example, the creation of "Healthy School Zones" where only approved food vendors can operate, or the provision of free healthy snacks at school, could drastically reduce children's reliance on unhealthy food sources. Despite the study's strengths, such as a focused population and clearly defined variables, there are some limitations that should be acknowledged. The study relies on self-reported data and parent-assisted questionnaires, which may introduce recall bias or underreporting.

Additionally, the cross-sectional design means that causation cannot be firmly established—only association. Future studies could employ a longitudinal approach to observe how changes in snacking behavior affect digestive health over time. In conclusion, the discussion of this study reaffirms the critical link between daily snacking habits and child health outcomes. Unhealthy snack consumption significantly increases the risk of digestive disorders among school-age children. Addressing this issue requires an integrated approach involving education, community engagement, and strong policy enforcement to ensure that the next generation grows up healthy, aware, and resilient.

Suggestion

It is hoped that further researchers will be able to conduct research with other variables such as the influence of hand washing habits on the incidence of digestive disorders or the relationship between clean and healthy living behavior (PHBS) and the incidence of digestive disorders so as to find other, more varied relationships.

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