

## Original Article



# The Relationship Between Diet and the Incidence of Dyspepsia in School-Age Children (6-18 years) at the Sukabumi Health Center, A Cross-Sectional Study

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### ARTICLE INFO

#### Article History

Submit : July 19, 2025  
Accepted : October 30, 2025  
Published : November 7, 2025

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#### Citation:

Anggraeni, R. (2025). The Relationship Between Diet and the Incidence of Dyspepsia in School-Age Children (6-18 years) at the Sukabumi Health Center, A Cross-Sectional Study. *Journal of Applied Nursing and Health*, 7(3), 405-417. <https://doi.org/10.55018/janh.v7i3.379>

### ABSTRACT

**Background:** Dyspepsia, a disorder of the upper gastrointestinal tract, is a worldwide health problem. In Indonesia, it ranks among the most frequent conditions in primary healthcare. Research on the relationship between dietary habits and dyspepsia in school-aged children, particularly in primary health centers in Sukabumi, is limited. This study aims to explore the association between irregular eating patterns and dyspepsia in this age group.

**Methods:** This study used quantitative research with a cross-sectional design, involving 51 purposively selected children aged 6-18 years visiting the Sukabumi Public Health Center between January and March 2025. Inclusion criteria were children aged 6-18 years, with a history of dyspepsia, and willingness to participate by completing questionnaires. Exclusion criteria included diagnosis of Helicobacter pylori infection, use of gastrointestinal-impacting medications, or presence of malignant or chronic upper gastrointestinal diseases. Data were collected using a validated questionnaire adapted from prior research, demonstrating good validity and reliability.

**Results:** From the results obtained, 12 children had a good diet was 12 people (23.5%), and 39 children had poor diets (76.5%). Meanwhile, 35 children with dyspepsia (68.6%) and children who did not experience dyspepsia were 16 people (31.4%). There was a relationship between diet and the incidence of dyspepsia in school-age children (6-18 years) at the Sukabumi Health Center, with a p-value = 0.003, which could be interpreted as (p < 0.05) or (0.003 < 0.05)

**Conclusion:** Irregular dietary habits are linked to dyspepsia in school-aged children at the Sukabumi Health Center, emphasizing the need for healthy eating promotion in local, resource-limited settings of middle- and low-income countries.

**Keywords:** Diet; Dyspepsia; Child; Cross-Sectional Studies.

#### Implications for Practice:

- Early healthy eating education may prevent dyspepsia in school-aged children, especially in resource-limited settings.
- Nurses and primary health centers can incorporate diet screening and promotive interventions into routine child care.
- Training health workers and promoting family- and school-based nutrition programs can enhance child health outcomes in middle- and low-income countries..

## Introduction

Dyspepsia is a set of symptoms related to problems in the upper gastrointestinal tract, especially the stomach. These symptoms include discomfort, abdominal pain, or pain, as well as excessive satiety despite eating little ([Faridah et al.](#), 2021; [Puspita](#), 2024; [Putri et al.](#), 2022).

The *World Health Organization* (WHO) states that the dyspepsia population in the world reaches 14-30% every year ([Prasetyo et al.](#), 2023). The prevalence of dyspepsia varies across countries, with high incidence rates. WHO stated that the highest prevalence of dyspepsia was recorded in New Zealand (23-45%), followed by the United States (23-45%), Asia Pacific (10-20%), Scandinavia (14.5%), and Southeast Asia (7-8%). In Indonesia, the incidence of dyspepsia reaches 40-50%, with an increase in cases estimated to reach 28 million people in 2020. Data from the Ministry of Health of the Republic of Indonesia (Kemenkes RI) shows that dyspepsia is one of the top 10 diseases often found in primary health services ([Saad et al.](#), 2024). Based on data on visits to various health services in West Java Province, around 35,422 people (5.49%) experienced dyspepsia in 2020, and in 2021 it increased to 71,034 people (11.01%) ([Suriadi et al.](#), 2024). Locally, in early 2025 at the Sukabumi Public Health Center, dyspepsia cases were also among the top ten most common diseases. Preliminary studies on school-aged children at that location showed that most children with dyspepsia had irregular eating patterns, such as eating less than three times a day, excessive consumption of spicy and sour foods, and irregular meal times.

The incidence of dyspepsia at the Sukabumi Health Center in 2025, precisely in January, February, and March, dyspepsia cases are among the 10 most diseases. Based on a preliminary study conducted by researchers on March 25, 2025 at the

Sukabumi Health Center, on 6 school-age children, the results were obtained that 5 children had a history of dyspepsia where the characteristics of the child's diet were not good, namely the frequency of eating less than 3 times a day, erratic meal times, frequent consumption of spicy and sour foods, and 1 child had a history of dyspepsia with good dietary characteristics.

A variety of risk factors causes dyspepsia. This includes age, gender, and diet, which are some of the causes of dyspepsia ([Anindia](#), 2024; [Erin Kurnia Sari et al.](#), 2021). Diet is the arrangement of the type and amount of food that a person consumes at a certain time. This includes the frequency of meals, the type of food, and the portion of food ([Noor et al.](#), 2024; [Saputra](#), 2022). Irregular diet is at risk of experiencing various complaints such as abdominal pain to heartburn, nausea, vomiting, and burping which results in the onset of dyspepsia. Irregular eating frequency, inappropriate number of meals, and too long meal breaks can trigger functional dyspepsia. If this process lasts for a long time, the production of stomach acid will increase which can irritate the gastric mucosa and cause nausea. Irregular diets cause the stomach to have difficulty adapting. Being late, for 2-3 hours the production of stomach acid will increase causing dyspepsia. This makes the stomach ache and nausea ([Thoriq & Ariati](#), 2023).

In line with research conducted by [Octaviana et al.](#) (2021) at SMP Negeri 2 Karang Intan there were 56 people (55.4%) who experienced dyspepsia, 69.6% of respondents had irregular diets. Likewise, research conducted by [Hassanah et al.](#) (2023) At the Gambesi Health Center, there were 45 people (45%) with dyspepsia, 77.8% of respondents had irregular diets.

Although several previous studies have shown a link between irregular diets and the incidence of dyspepsia in adolescents and the general public, studies that

specifically examine the relationship between diet and the incidence of dyspepsia in school-age children (6–18 years) in first-level health care facilities such as health centers, especially in the Sukabumi area, are still limited. In addition, actual local data on the prevalence of dyspepsia and the dietary characteristics of school-age children in the area have also not been widely published. In fact, school-age children are a vulnerable group that is in the phase of growth and the formation of long-term eating habits. Therefore, this research is important to fill the local data gap and provide a scientific basis for promotive and preventive interventions at the level of basic health services.

Based on the description, this study formulates the central question: Is there a significant relationship between dietary patterns and the occurrence of dyspepsia in school-aged children (6–18 years) at the Sukabumi Public Health Center, Sukabumi City? The hypothesis proposed is that irregular eating patterns, including inappropriate frequency, type, timing, and portion sizes of meals, contribute to an increased incidence of dyspepsia in this age group. This study aimed to determine the relationship between diet and the incidence of dyspepsia in school-age children (6–18 years) at the Sukabumi Health Center, Sukabumi City, in 2025. This study aims explicitly to describe children's diet, identify the incidence of dyspepsia experienced by school-age children, and analyze the extent to which diet contributes to the appearance of dyspepsia symptoms, so that the results of this study are expected to be the basis for efforts to prevent and improve digestive health in this age group.

## Methods

### Study Design

This study uses a quantitative approach with a cross-sectional design, an observational study where measurements

of independent and dependent variables are taken simultaneously at a specific time. This design aligns with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for observational studies aimed at evaluating the relationship between dietary patterns and the incidence of dyspepsia in school-aged children (6–18 years) at the Sukabumi Community Health Center ([Syapitri et al., 2021](#)). This study did not implement any interventions, so it was purely observational to determine the relationships between variables.

## Participants

**The Population and Sample** The study population consists of all school-aged children (6–18 years) experiencing dyspepsia who visited the Sukabumi Community Health Center, totaling 104 children (January–March 2025). A sample of 51 children was selected using Slovin's formula with a 10% margin of error, which was chosen as a compromise between limited resources and the need to obtain a representative estimate of the population. Sample selection was done purposively based on inclusion and exclusion criteria to ensure data relevance ([Tamaulina, B. et al., 2023](#)).

The inclusion criteria included: (1) children aged 6–18 years who come to the Sukabumi Health Center, (2) willing to be respondents and fill out questionnaires, and (3) have a history of dyspepsia.

Exclusion criteria included: (1) children who have been diagnosed with Helicobacter pylori infection, (2) children who are taking medications that have effects on the gastrointestinal tract, such as NCEs, and (3) children who have malignant diseases or chronic diseases of the upper gastrointestinal tract.

## Instruments

The instrument used in this study was a questionnaire adopted from the research by [Erin Kurnia Sari et al.](#) (2021). The questionnaire has undergone validity testing and was declared valid for measuring the two main variables: diet and the incidence of dyspepsia. Reliability testing showed a high level of consistency, with a Cronbach's Alpha coefficient of 0.85. The questionnaire comprises two sections. The first section assesses diet through 12 items covering meal type, quantity, and frequency, with scoring categorized as a good diet (score  $\geq 5$ ) or poor diet (score  $< 5$ ). The second section measures the occurrence of dyspepsia with seven items reflecting symptoms such as heartburn, early satiety, nausea, and belching, scored as dyspepsia (score  $\leq 3$ ) or not having dyspepsia (score  $> 3$ ). The instrument uses an ordinal scale and is completed directly by respondents, with researcher assistance to ensure accurate understanding.

## Data Collection

Data collection was carried out in April 2025 by a team of trained researchers at the Sukabumi Health Center, using a direct questionnaire completion mechanism by respondents accompanied by data collectors to ensure clarity and completeness. Quality control procedures include re-examining daily questionnaires by the field coordinator to avoid incomplete or ambiguous data.

## Data Analysis

Data was analyzed using the latest version of SPSS software. Univariate analysis was performed to describe the frequency distribution of the variables. Bivariate analysis used the Chi-Square test to determine the relationship between dietary patterns and the occurrence of dyspepsia. Before the test, Chi-Square assumptions were examined, including

testing the suitability of expected frequencies ( $>5$ ) and using Fisher's Exact Test if necessary. The significance level is at  $\alpha = 0.05$  with a 95% confidence interval.

## Ethical Considerations

This research had received ethical approval from the Health Research Ethics Committee of the YAPKESBI Sukabumi Polytechnic. Each respondent was explained the objectives and procedures of the research and was asked to sign an informed consent. The principles of beneficence, non-maleficence, respect for persons, and justice are carried out in this research process [Syapitri et al.](#) (2021).

## Results

Based on **table 1** the study findings, the distribution of respondents by gender shows that the majority were female, totaling 42 individuals (82.4%), while male respondents accounted for 9 individuals (17.6%). This finding indicates a predominance of female participation in this study, which may reflect the composition of the school-age population in the working area of the Sukabumi Community Health Center or a specific tendency in respondent involvement. The age distribution of respondents ranged from 8 to 17 years. The age group with the highest proportion was 14 years, comprising 11 individuals (21.6%), followed by 15 years with 8 individuals (15.7%), and both 16 and 17 years with 7 individuals each (13.7%). In contrast, the most minor proportion was observed in the 8 year old and 11 year old groups, each with only 1 individual (2.0%). This distribution indicates that most respondents were in early to mid-adolescence, a developmental stage characterized by increased nutritional needs, physical activity, and the formation of dietary habits that may influence health status. In total, there were 51 respondents (100%). These demographic characteristics

provide a general profile of the study participants and serve as a basis for further interpretation of other research variables, such as dietary patterns and dyspepsia incidence. Understanding the distribution of respondents by gender and age is essential for considering the biological and social factors that may influence the study outcomes.

**Table 1.** Demographic Characteristics of Respondents

Characteristic	Category	n (%)
Gender	Male	9 (17.6)
	Female	42 (82.4)
Age (years)	8	1 (2.0)
	9	3 (5.9)
	10	3 (5.9)
	11	1 (2.0)
	12	6 (11.8)
	13	4 (7.8)
	14	11 (21.6)
	15	8 (15.7)
	16	7 (13.7)
	17	7 (13.7)
Total		51 (100.0)

**Table 2** illustrates that this study's findings show that most respondents had poor dietary patterns, totaling 39 individuals (76.5%), while those with good dietary patterns accounted for 12 individuals (23.5%). This indicates a high prevalence of eating behaviors that do not align with the principles of balanced

nutrition among school-age children in the study area. Regarding dyspepsia incidence, most respondents experienced dyspepsia, with 35 individuals (68.6%), whereas 16 individuals (31.4%) reported no dyspepsia. The high proportion of dyspepsia cases may be associated with irregular eating patterns, low-nutrient diets, or environmental and psychosocial factors affecting children's digestive health. Bivariate analysis using the Chi-square test revealed a statistically significant association between dietary patterns and dyspepsia incidence ( $p = 0.003$ ;  $p < 0.05$ ). Specifically, among the 12 respondents with good dietary patterns, 4 individuals (7.8%) experienced dyspepsia, while 8 individuals (15.7%) did not. In contrast, among the 39 respondents with poor dietary patterns, 31 individuals (60.8%) experienced dyspepsia, and 8 individuals (15.7%) did not. These results indicate that poor dietary patterns may be a potential risk factor for dyspepsia in school-age children. This finding is consistent with previous literature suggesting that unhealthy eating habits, such as irregular meal schedules, consumption of high-fat foods, or low dietary fiber intake, can trigger digestive disorders. Therefore, nutrition education interventions and the promotion of healthy eating habits should be prioritized to prevent digestive health problems in children.

**Table 2.** Knowledge, Attitude, and Behavior of Participants (n (%), Mean  $\pm$  SD) and Statistical Tests

Variable (format)	Category / Cut-off	n (%) or Mean $\pm$ SD	Statistic (test)	p-value
Dietary Pattern (categorical)	Good	12 (23.5)	Chi-square	$p = 0.003$
	Poor	39 (76.5)		
Dyspepsia (categorical)	Yes	35 (68.6)	Chi-square	$p = 0.003$
	No	16 (31.4)		
Dietary Pattern vs Dyspepsia	See cross-tabulation		Chi-square	$p = 0.003$

**Table 3** illustrates that the data indicate that the majority of school-age

children at the Sukabumi Health Center exhibited poor dietary patterns, with 76.5%

of respondents falling into this category, while only 23.5% had good dietary habits. Correspondingly, 68.6% of children reported experiencing dyspepsia, suggesting that digestive complaints are common in this population. Cross-tabulation analysis revealed a significant association between diet and dyspepsia incidence ( $p = 0.003$ ), with children who had poor dietary habits being more likely to

experience dyspepsia. These findings highlight the importance of promoting balanced nutrition and healthy eating behaviors through interventions such as nutrition education, parental guidance, and school-based programs, particularly in local and resource-limited settings, to improve gastrointestinal health and prevent digestive disorders among school-age children.

**Table 3.** Dietary Patterns, Dyspepsia Incidence, and Their Relationship in School-Age Children at Sukabumi Health Center

Diet	Dyspepsia	Not Experiencing Dyspepsia	Total
Good	4 (7.8%)	8 (15.7%)	12 (23.5%)
Poor	31 (60.8%)	8 (15.7%)	39 (76.5%)
Total	35 (68.6%)	16 (31.4%)	51 (100%)

## Discussion

### Diet

The analysis of dietary patterns revealed that the majority of respondents (39 individuals, 76.5%) exhibited poor dietary habits, while only 12 individuals (23.5%) reported good dietary habits. This high prevalence of poor dietary behavior among school-age children in the Sukabumi Health Center's coverage area reflects a deviation from the principles of balanced and nutritious eating.

Poor dietary practices in this population may involve skipping breakfast, irregular meal timing, frequent consumption of processed or fast foods, excessive intake of sugary snacks and beverages, and inadequate consumption of fruits, vegetables, and dietary fiber. Such behaviors can compromise nutrient intake, increase the risk of micronutrient deficiencies, impair growth, reduce immunity, and predispose children to functional gastrointestinal disorders, including dyspepsia. Poor dietary habits among children may include skipping breakfast, consuming meals at irregular times, high dependence on processed or fast foods, excessive intake of sugary snacks and

beverages, and low consumption of fresh fruits, vegetables, and high-fiber foods. Such behaviors not only compromise nutrient intake but can also lead to micronutrient deficiencies, impaired growth, reduced immunity, and an increased risk of developing functional gastrointestinal disorders, including dyspepsia.

The results of this study are supported by a journal that states that women tend to pay attention to their body shape, so they go on a strict diet, which then causes their diet to be irregular ([Octaviana et al.](#), 2021). Meanwhile, based on the age of 11 people (21.6%) in the age range of 14 years, this shows that children aged 14 years or adolescents tend to have a poor diet. This is supported by a journal that states that the daily activities of adolescents or school children, such as the number of tasks at school, can affect their diet. This affects their eating habits, which makes teenagers or school children delay their meal times or even forget their meal times ([Hidayat et al.](#), 2023).

This research is in line with research conducted by [Octaviana et al.](#) (2021). In the study conducted at SMP Karang Intan 2, most of the respondents had irregular diets, namely 39 people (69.6%) out of the total

respondents amounting to 56 people (100%). Likewise, research conducted by Miftahul Hassanah, et al. (2023), who conducted their research at the Gambesi Health Center, found that most of the respondents had an irregular diet, namely 35 people (77.8%) out of a total of 45 respondents (100%).

The persistence of these patterns is likely influenced by multiple factors, including socioeconomic constraints, parental knowledge gaps, food marketing targeted toward children, and the easy availability of unhealthy food options in school environments. These findings underscore the urgent need for targeted nutrition education and structured interventions to promote healthy eating habits from an early age.

Moreover, these patterns may be influenced by a combination of socioeconomic and environmental factors. Limited access to affordable, nutrient-rich foods, parental knowledge gaps regarding nutrition, and the marketing of unhealthy food products targeted at children may contribute to the persistence of unhealthy eating habits. The role of school environments is also significant, as the availability and type of food sold in or around schools can strongly affect children's dietary choices. From a public health perspective, the predominance of poor dietary patterns in this population highlights the urgent need for targeted nutrition education and structured intervention programs. Addressing these dietary issues at an early stage could yield long-term benefits, including improved growth outcomes, better academic performance, and reduced prevalence of digestive health problems.

### *Dyspepsia*

The present study found that a high proportion of respondents, 35 individuals (68.6%), reported experiencing dyspepsia,

while only 16 individuals (31.4%) did not. This prevalence is notably high when compared to some existing epidemiological studies on school-age children, suggesting that dyspepsia may be an under-recognized but significant public health issue in this population.

Dyspepsia in children may be associated with several contributing factors, including poor dietary habits, irregular eating schedules, consumption of foods high in fat, sugar, or spices, and psychosocial stressors such as academic pressure. Chronic dyspepsia in childhood has the potential to interfere with nutrient absorption, reduce appetite, and affect school performance, thus requiring preventive attention. Dyspepsia is a set of symptoms related to problems in the upper gastrointestinal tract, especially the stomach. These symptoms include discomfort or pain in the abdomen, as well as excessive satiety despite eating little ([Puspita, 2024](#)).

This research is in line with research conducted by [Octaviana et al. \(2021\)](#). In the study conducted at SMP Karang Intan 2, most of the respondents experienced dyspepsia, namely 31 people (55.4%) out of the total respondents, totaling 56 people (100%). Likewise, the research conducted by Ghulam Muharam Suriadi, et al. (2023), who conducted their research at Madrasah Aliyah Ashabul Yamin Cikembar Sukabumi, found that most of the respondents experienced dyspepsia, namely 46 people (65.7%) out of a total of 70 respondents (100%). The results of this study are supported by a theory that states that female sex is significantly related to the incidence of dyspepsia, because there are differences in sex hormones that affect the work of gastric motility and visceral sensitivity. Female hormones are thought to change gastric emptying time to be longer, and changes in female hormone cycles may

affect the perception of visceral pain ([Ashari et al., 2021](#)).

Dyspepsia in children encompasses a range of upper gastrointestinal symptoms, including abdominal discomfort, bloating, nausea, early satiety, and epigastric pain. The multifactorial etiology of dyspepsia involves dietary factors, physiological mechanisms, and psychosocial influences. In the context of this study, the high prevalence is likely influenced by the predominance of poor dietary patterns, characterized by irregular eating schedules, high intake of fatty or spicy foods, and insufficient consumption of fiber-rich meals. Dyspepsia encompasses a spectrum of upper gastrointestinal symptoms, such as abdominal discomfort, bloating, nausea, early satiety, and epigastric pain. Its etiology is multifactorial, involving dietary influences, physiological mechanisms, and psychosocial factors. In this study, the high prevalence is likely linked to the predominance of poor dietary habits characterized by irregular eating schedules, high consumption of fatty or spicy foods, and inadequate fiber intake.

From a physiological perspective, poor dietary practices can disrupt normal gastric motility and acid regulation. Diets low in fiber and high in refined carbohydrates may lead to delayed gastric emptying, while excessive intake of fatty or spicy foods can increase gastric acid secretion and mucosal irritation. Additionally, skipping meals or consuming large portions at irregular intervals can create fluctuations in gastric activity that exacerbate dyspepsia symptoms. Physiologically, poor diet quality can disturb gastric motility and acid balance. Low fiber, high refined carbohydrate diets may slow gastric emptying, while excessive intake of fatty or spicy foods can increase gastric acid secretion and irritate the gastric mucosa. Skipping meals or consuming large portions at irregular intervals may further

destabilize gastric function and intensify symptoms.

Beyond diet, psychosocial stressors may also play a critical role in the development or exacerbation of dyspepsia in children. Academic demands, peer relationships, and family-related stress have been linked to increased gastric sensitivity and altered gut-brain axis function, which can heighten symptom perception. Furthermore, in resource-limited settings, infections such as *Helicobacter pylori* may contribute to the symptom burden.

The high prevalence observed in this study signals the need for early detection and management strategies. Unmanaged dyspepsia during childhood can have cascading effects, including reduced nutrient intake, impaired growth, decreased school performance, and diminished quality of life. Interventions should therefore be multidisciplinary, combining dietary counseling, lifestyle modification, stress management, and, where necessary, clinical evaluation and treatment. The high prevalence observed underscores the importance of early screening and comprehensive management. Unaddressed dyspepsia can impair nutrient intake, hinder growth, reduce school attendance, and lower quality of life. Interventions should therefore integrate dietary counseling, lifestyle modification, stress management, and, where indicated, clinical evaluation and treatment.

#### *Bivariate Analysis*

The bivariate analysis identified a statistically significant relationship between dietary patterns and dyspepsia incidence among school-age children ( $p = 0.003$ ;  $p < 0.05$ ). This result confirms that dietary habits are not only associated with but may also be a key determinant of gastrointestinal health in this population. Among respondents with good dietary

patterns, only 4 individuals (7.8%) experienced dyspepsia, while the majority (8 individuals, 15.7%) remained asymptomatic. In contrast, respondents with poor dietary patterns showed a markedly higher dyspepsia prevalence, with 31 individuals (60.8%) affected and only 8 individuals (15.7%) without symptoms.

The magnitude of the observed difference between the two dietary groups provides strong empirical evidence that poor dietary habits significantly increase the likelihood of dyspepsia. From a pathophysiological standpoint, diets low in fiber and high in fats, spices, and processed foods can lead to increased gastric acid secretion, delayed gastric emptying, and irritation of the gastric mucosa, creating an environment conducive to dyspepsia symptoms. Furthermore, irregular meal timing and meal skipping may disrupt normal gastric motility and acid balance, exacerbating symptom onset.

Diet is the arrangement of the type and amount of food a person consumes at any given time. This includes the frequency of meals, the type of food, and the portion of food (Hermawan et al., 2023). Dyspepsia is one of the diseases of the digestive tract, one of the causes of which is diet, a health problem that is not uncommon in health services and in communities with low levels of health awareness (Tin, 2021). This is supported by a journal that states that a bad diet consists of taking too long breaks in meals, consuming irritating foods or drinks such as fatty foods, spicy foods, soft drinks, and high-carbohydrate foods, which can cause disorders in the digestive system, which then irritate the stomach and trigger symptoms of dyspepsia (Prasetyo et al., 2023). This research is in line with research conducted by Octaviana et al. (2021) at SMP Karang Intan 2, with the results of the study showing the results of the *p-value*. The results were  $0.001 < 0.05$ , which means that

there is a significant relationship between diet and dyspepsia. Likewise, research conducted by Miftahul Hassanah, et al. (2023), who conducted their research at the Gambesi Health Center with the results of the study showing the results of the *p-value*. The results were  $0.000 < 0.05$  which means that there is a significant relationship between diet and the incidence of dyspepsia. A small percentage of the respondents, namely 4 people (7.8%) have a good diet by experiencing dyspepsia, because it is caused by several other factors that can affect the incidence of dyspepsia such as stress, consumption patterns of irritating drinks such as coffee and tea, experiencing bacterial or parasitic infections, and improper use of drugs.

This finding aligns with existing literature demonstrating that unhealthy dietary habits are a major contributor to functional gastrointestinal disorders in pediatric populations. Studies have also highlighted the role of early life eating patterns in shaping long-term digestive health, suggesting that interventions targeting dietary improvements during childhood could have sustained benefits. From a scientific standpoint, the results contribute to the growing body of literature emphasizing the role of nutrition in pediatric gastrointestinal health. The study reinforces existing theories within nutritional epidemiology that diet quality and eating behaviors are critical determinants of digestive system function. By focusing specifically on school-age children, the research fills a gap in understanding how dietary factors influence functional gastrointestinal disorders in early life stages, an area that has been less extensively studied compared to adult populations.

In terms of impact, the findings have clear implications for public health practice and education policy. They provide a foundation for designing school- and

community-based interventions aimed at promoting healthy eating behaviors as a means of reducing dyspepsia prevalence. Furthermore, the evidence supports the inclusion of gastrointestinal health education in nutrition curricula for both children and parents, ensuring a consistent and supportive approach across home, school, and healthcare settings.

The statistical significance observed in this study further reinforces the need for proactive intervention. Health education programs should not only emphasize what foods to consume but also address how, when, and in what combinations meals are eaten. Involving parents, teachers, and healthcare providers is essential to ensuring consistent dietary guidance across multiple environments where children make food choices.

Additionally, while the relationship between diet and dyspepsia is clearly established here, it is important to recognize that diet may interact with other risk factors such as stress, infection, and genetic predisposition. Future studies should consider multivariate analyses to better understand the relative contribution of dietary patterns compared to other determinants of dyspepsia in school-age children. Based on the discussion above, the conclusion that can be drawn is that there is a significant relationship between diet and the incidence of dyspepsia in school-age children (6-18 years) at the Sukabumi Health Center in 2025.

By answering the research question and offering evidence based recommendations, this study not only contributes to academic discourse but also offers tangible pathways for intervention. The integration of these findings into local health programs could lead to measurable improvements in child health outcomes, thereby enhancing the quality of life and reducing the healthcare burden associated with pediatric dyspepsia.

## Implications and limitations

The findings of this study underscore the importance of promoting healthy dietary habits among school-age children, particularly in local and resource-limited settings of middle- and low-income countries, where poor nutrition and irregular eating patterns are prevalent. Health education programs, diet screening in primary health centers, and family- and school-based nutrition interventions can reduce the risk of dyspepsia and improve overall child health outcomes. Moreover, training health workers to recognize and address diet-related gastrointestinal issues can enhance the quality of pediatric care. However, this study has limitations, including its cross-sectional design, which precludes causal inference, a relatively small sample size, and data collection confined to a single health center, limiting generalizability. Future research with larger, multicenter samples and multivariate analyses is warranted to confirm these findings and explore interactions with other factors such as stress, infections, and genetic predispositions.

## Relevance to For Practice

The study found that irregular eating patterns are significantly associated with the incidence of dyspepsia in school-age children. These findings can be utilized by health workers, particularly nurses and nutrition staff at health centers, to provide more targeted education on healthy eating habits as part of efforts to prevent gastrointestinal diseases. Understanding the relationship between diet and dyspepsia can serve as a foundation for nursing assessments and decision-making processes, while also supporting the development of promotive and preventive intervention plans tailored to the characteristics of children in primary

healthcare settings. The results further support the integration of nutrition education programs and healthy eating behaviors into routine child screening protocols in primary healthcare facilities, enabling early detection of dyspepsia symptoms and enhancing promotive efforts through family counseling. Implementing such interventions can reduce the risk of complications from dyspepsia in children, thereby improving patient safety, decreasing the need for pharmacological treatments that may cause side effects, and minimizing unnecessary healthcare costs. Moreover, this research can encourage policymakers in public health to develop school and family-based intervention programs aimed at fostering healthy eating habits from an early age. It can also serve as valuable educational material for future health workers, emphasizing the importance of early detection of risk factors for digestive disorders in children.

## Conclusion

The results of the study showed that most school-age children had poor diets and experienced symptoms of dyspepsia. Statistical analysis using the Chi-Square test showed a significant association between diet and the incidence of dyspepsia ( $p = 0.003$ ;  $p < 0.05$ ). Thus, irregular or unbalanced diets have been shown to contribute to an increased risk of dyspepsia in school-age children. These findings reinforce the importance of nutrition education and the formation of a healthy diet from an early age to prevent indigestion. Based on the results of this study, it is recommended that parents and caregivers pay more attention to their children's diet, such as maintaining a frequency of eating at least three times a day, avoiding excessive spicy and acidic foods, and maintaining regular meal times. The Health Center is expected to hold regular health education about the

importance of a healthy diet to prevent dyspepsia, especially among school-age children. Further research can consider other variables such as stress levels, caffeinated beverage consumption, and history of gastrointestinal diseases, and use longitudinal designs to determine the long-term effects of diet on children's gastrointestinal health.

The research results show that irregular or unbalanced eating patterns are significantly associated with an increased risk of dyspepsia in school-aged children. These findings underscore the importance of nutrition education and the establishment of healthy eating habits from an early age as a preventive measure against digestive disorders. The implication is that health centers and policymakers in the health sector need to integrate school and family-based nutrition education programs into primary health services, including routine dietary screenings during children's check-ups. Additionally, further research is recommended to explore other factors such as stress, physical activity, and sleep quality, using a longitudinal design to understand the long-term impact of diet on children's digestive health.

## Funding

This research received no external funding.

## Credit Authorship Contributions Statement

**Reni Anggraeni:** Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Visualization, Project Administration.

## Conflicts Of Interest

There is no conflict of interest.

## Acknowledgments

The authors would like to thank all those who have provided support in the implementation of this research, both in the form of technical assistance, moral support, and the provision of relevant data and information. Gratitude is also extended to those who have become partners in the data collection process and to the leaders who have provided general support during the research.

## References

Amelia, K. (2022). *Faktor-Faktor yang Berhubungan dengan Dispepsia pada Mahasiswa Tingkat Akhir*. UIN Syarif Hidayatullah Jakarta-FIKES. <https://repository.uinjkt.ac.id/dspace/handle/123456789/67282>

Anindia, F. P. (2024). Hubungan Pola Makan Dengan Kejadian Dispepsia Pada Pasien Dewasa di Ruang Rawat Inap Alamanda Rumah Sakit Bhakti Medicare Kabupaten Sukabumi. *Journal Health Society*, 13(1), 38–46. <https://jsk.ff.unmul.ac.id/index.php/JSK/article/view/355>

Ashari, A. N., Yuniati, Y., & Murti, I. S. (2021). Hubungan Tingkat Stres Dengan Kejadian Dispepsia Fungsional Pada Mahasiswa Fakultas Kedokteran Universitas Mulawarman. *Jurnal Kesehatan Tambusai*, 2(2), 98–102. <https://doi.org/10.31004/jkt.v2i2.1826>

Erin Kurnia Sari, Fathinah R. Hardy, Ulya Q. Karima, & Terry Y.R. Pristya. (2021). Faktor Risiko Sindrom Dispepsia Pada Remaja Wilayah Kerja Puskesmas Kecamatan Palmerah. *Jurnal Ilmiah Ilmu Kesehatan*, 9(3), 431–446. <https://jurnal.unitri.ac.id/index.php/care/article/view/2296>

Faridah, U., Hartinah, D., & Farida, N. (2021). Relationship of diet with frequency of recurrence of dyspepsia in Puskesmas Pamotan Rembang Regency. *The 14th University Research Colloquium*, 495. <http://download.garuda.kemdikbud.go.id/article.php?article=3030655&val=27441&title=Relationship%20Of%20Diet%20With%20Frequency%20Of%20Recurrence%20Of%20Dyspepsia%20In%20Puskesmas%20Pamotan%20Rembang%20Regency>

Hassanah, M., Abdullah, A., & Do Toka, W. (2023). Hubungan Antara Pola Makan Terhadap Kejadian Dispepsia Di Puskesmas Gambesi. *Cerdika: Jurnal Ilmiah Indonesia*, 3(08), 769–774. <https://doi.org/10.59141/cerdika.v3i08.657>

Hermawan, S., Amrullah, J. F., & Lilis Hadiyati, A. S. (2023). Hubungan Pola Makan dengan Kejadian Gastritis Pada Mahasiswa Diploma Tiga Keperawatan di Stikes Dharma Husada The. *Jurnal Keperawatan*, 1–24. <https://siakad.stikesdhb.ac.id/repositories/400320/4003200030/ARTIKEL%20PDF.pdf>

Hidayat, R., Susanto, A., & Lestari, A. (2023). Literature Review: The Relationship between Eating Habits and Dyspepsia in Adolescents. *Amerta Nutrition*, 7(4), 626–637. <https://doi.org/10.20473/amnt.v7i4.2023.626-637>

Noor, M. K., Muthmainah, N., Heriyani, F., Asnawati, A., & Nursantari, W. (2024). Hubungan Keteraturan Pola Makan Dengan Sindrom Dispepsia Pada Mahasiswa PSKPS FKIK ULM. *Homeostasis*, 7(1), 119–126. <https://doi.org/10.20527/ht.v7i1.12392>

Octaviana, E. S. L., Noorhidayah, & Rachman, A. (2021). Hubungan Pola Makan dan Stress dengan Kejadian Dispepsia pada Siswa di SMP Negeri Karang Intan. *Jurnal Kesehatan Indoensia*, 11(2), 76–81.



Prasetyo, A. V., Yuliana, Y., & Karmaya, I. N. M. (2023). Hubungan Antara Pola Makan dan Tingkat Stres terhadap Kejadian Dispepsia pada Mahasiswa Fakultas Kedokteran Universitas Udayana Angkatan 2019. *E-Jurnal Medika Udayana*, 12(7), 25. <https://doi.org/10.24843/mu.2023.v12.i07.p04>

Puspita, K. (2024). *Dispepsia Dan Solusi Alami Pengobatannya*. Victory Pustaka Media.

Putri, A. N., Maria, I., & Mulyadi, D. (2022). Hubungan karakteristik individu, pola makan, dan stres dengan kejadian dispepsia pada mahasiswa Program Studi Kedokteran Universitas Jambi angkatan 2018. *Journal of Medical Studies*, 2(1), 36–47. <https://doi.org/10.22437/joms.v2i1.18091>

Saad, N. M., Irwan, I., & Ahmad, Z. F. (2024). Faktor-Faktor Yang Berhubungan Dengan Kejadian Dispepsia Di Wilayah Kerja Puskesmas Kota Timur Kota Gorontalo. *Journal Health & Science: Gorontalo Journal Health and Science Community*, 8(4), 238–243. <https://doi.org/10.35971/gojhes.v8i4.26412>

Saputra, A. (2022). *Faktor-Faktor Yang Berhubungan Dengan Dispepsia Di Desa Koto Perambahan Wilayah Kerja Puskesmas Kampa Tahun 2022*. Universitas Pahlawan Tuanku Tambusai. <http://repository.universitaspahlawan.ac.id/id/eprint/1681>

Suriadi, G. M., Ladyani, F., & Anggraeni, S. (2024). Hubungan Pola Makan Dan Stres Dengan Kejadian Dispepsia Pada Siswa-Siswi Madrasah Aliyah Ashabul Yamin Cikembar Sukabumi. *Jurnal Ilmu Kedokteran Dan Kesehatan*, 11(1), 185–195. <https://doi.org/10.33024/jikk.v11i1.11350>

Susan, A., Lanhan-New, A., Helen, M., & Ian, A. M. (2015). *Nutrition and Metabolism*. Wiley-Blackwell.

Syapitri, H., Amila, N., Kep, M., Kep, S., & Aritonang, J. (2021). *Buku ajar metodologi penelitian kesehatan*. Ahlimedia Book. [https://books.google.com/books?hl=id&lr=&id=7\\_5LEAAAQBAJ&oi=fnd&pg=PP1&dq=related:DafcajiMifkJ:scholar.google.com/&ots=EuQJgpv97n&sig=birLYfMUUgr2Ils72CbwW05PH1](https://books.google.com/books?hl=id&lr=&id=7_5LEAAAQBAJ&oi=fnd&pg=PP1&dq=related:DafcajiMifkJ:scholar.google.com/&ots=EuQJgpv97n&sig=birLYfMUUgr2Ils72CbwW05PH1)

Tamaulina, B., S., Irmawati, Muhammad, S., & Indra, T. (2023). *Buku Ajar Metodologi Penelitian (Teori dan Praktik)*. Saba Jaya Publisher.

Thoriq, M. A., & Ariati, A. (2023). Hubungan Pola Makan Dengan Kejadian Dispepsia Fungsional Pada Mahasiswa Fakultas Kedokteran Uisu Angkatan 2018. *Ibnu Sina: Jurnal Kedokteran Dan Kesehatan - Fakultas Kedokteran Universitas Islam Sumatera Utara*, 22(1), 38–42. <https://doi.org/10.30743/ibnusina.v22i1.363>

Timah, S. (2021). Hubungan pola makan pada pasien dispepsia. *Jurnal Ilmiah Kesehatan Diagnosis*, 16(1), 47–53.