

## SPICY FOOD: ITS EFFECT ON DYSPEPSIA COMPLAINTS AMONG UIN SUMATERA UTARA STUDENTS

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### Abstract

**Background:** Dyspepsia is a common complaint of pain or discomfort in the upper abdomen. In Indonesia, the prevalence of dyspepsia is very high, reaching 40-50% of the population. This study aims to determine the effect of spicy food consumption on the incidence of dyspeptic complaints in students of the State Islamic University of North Sumatra (UINSU). **Methods:** This study's type of research is descriptive-analytic with a Cross-Sectional design. The respondents amounted to 89 people selected using the Accidental Sampling technique. The research instrument was a closed questionnaire distributed online using Google Forms. The data source is primary data. Data analysis includes univariate and bivariate analysis with the Chi-square test. **Results:** From a total of 89 respondents, the majority of respondents' spicy food consumption level fell into the frequent category, namely 57 people (64.0%), and the majority of positive respondents experienced dyspepsia complaints, namely 52 people (58.4%). This study shows there is a significant relationship between spicy eating habits ( $p=0.000$ ) with the incidence of dyspepsia in UINSU students. This study found that OR 6.306 means that students who often eat spicy food have a six times greater risk of experiencing dyspepsia than those who rarely consume it. **Conclusion:** This study conducted at UINSU revealed a strong association between spicy food consumption and increased incidence of dyspeptic complaints among university students, and those who frequently eat spicy food have a six times greater risk of developing dyspepsia than those who rarely consume it.

**Keywords:** Dyspepsia, Gender, Student, Eating Spicy, Age

### Introduction

In the modern era, lifestyle changes, including diet, have undergone a significant shift. Consumption of these high-fat, spicy, and low-fiber foods, when consumed continuously, has the potential to increase the risk of digestive disorders, including dyspepsia. Dyspepsia is a common complaint of pain or discomfort in the upper abdomen. Some of the risk factors that contribute to this condition include diet, abnormal gastric acid secretion, gastric motility disorders, psychological factors, and *Helicobacter pylori* infection. (1) In addition to being one of the most common non-communicable diseases causing hospital admissions, dyspepsia is also more common in women than in men.

The prevalence of dyspepsia in the world is very high and varies between countries and regions. Based on data from the World Health Organization (WHO), the global prevalence of dyspepsia ranges from 13-40% of the total population each year, with higher rates found in some countries such as the United States (23-25.8%), India (30.4%), and China (23.3%) In the Asian region, the prevalence of dyspepsia is reported to range from 8-30%, while in Europe, the Americas, and Oceania the figures

vary widely, ranging from 5-43% These differences are influenced by the definitions used, diagnostic criteria, as well as population characteristics such as age, gender, and cultural factors. (2)

In Indonesia alone, the prevalence of dyspepsia is very high, reaching 40-50% of the population, and even in some big cities such as Jakarta and Denpasar, the figures can reach 50% and 46%. (3)

Dyspepsia is a collection of symptoms associated with disorders of the upper gastrointestinal tract, particularly the stomach and duodenum. The main symptoms of dyspepsia include pain or burning sensation in the upper abdomen (epigastrium), a feeling of fullness when eating, a full or distended stomach, bloating, nausea, vomiting, and frequent burping. (2,4,5) In addition, some sufferers may also feel a burning sensation, heartburn, and discomfort after meals. (4,6,7) These symptoms can be episodic or persistent, and are often triggered by the consumption of certain foods, stress, or an unhealthy diet. (6,7) Pathophysiologically, dyspepsia is divided into two main categories, namely functional dyspepsia and organic dyspepsia. Functional dyspepsia occurs in about 80% of cases, where no obvious structural abnormalities are found in the gastrointestinal tract, so it is thought to be related to impaired gastric motility function, visceral hypersensitivity, or psychological factors such as stress and anxiety. (2,8) In organic dyspepsia, complaints arise due to anatomical abnormalities or certain diseases, such as gastritis, peptic ulcers, *Helicobacter pylori* infection, gastroesophageal reflux, bile duct disease, pancreatitis, or metabolic diseases such as diabetes mellitus and thyroid disorders. (7) Some of the mechanisms underlying dyspepsia include impaired gastric motility (eg, slow gastric emptying), increased sensitivity of nerves in the stomach to stretching or gastric acid, and changes in gastric acid secretion. (8) In addition, external factors such as consumption of non-steroidal anti-inflammatory drugs (NSAIDs), fatty or spicy foods, alcohol, caffeine, and psychological stress can also trigger or aggravate dyspeptic symptoms. (7,8)

State Islamic University of North Sumatra (UINSU), as one of the universities with a large number of students, is not free from this phenomenon. Unhealthy consumption patterns of spicy food may contribute to the high incidence of dyspeptic complaints among UINSU students. Spicy food habits are quite common among UINSU students, along with dynamic lifestyles and convenient food choices. Several studies have shown that spicy food consumption is associated with an increased risk of dyspepsia, although these findings have not been entirely consistent. Previous studies have also shown a significant association between spicy food habits and an increased risk of functional dyspepsia syndrome, especially in young adult populations. (9)

Students as a group who have a diet that tends to be irregular and often consume spicy foods, especially when undergoing busy academic activities, are at risk of experiencing dyspeptic complaints. (10) Therefore, this study aims to determine the effect of spicy food consumption on the incidence of dyspeptic complaints in students of the State Islamic University of North Sumatra (UINSU), so as to provide a clearer picture of the relationship between spicy diet and gastrointestinal health in this population.

## Method

This study uses a quantitative method with a cross-sectional design. The sampling technique used is accidental sampling, where the data collection technique uses a questionnaire from Putri Kirani's research, which has been modified and then distributed online using Google Forms. The population in this study was students on the UINSU campus. The number of samples taken was 89 respondents, This study is expected to provide a clear picture of the relationship between spicy food consumption habits and dyspeptic complaints. Inclusion Criteria, UINSU students aged 18 to 22 years who consume spicy food regularly (at least twice a week), students who report dyspeptic complaints, such as pain, bloating, or nausea in the upper abdomen in the last three months, students who are willing to participate in the study after getting an explanation of the objectives and procedures of the study. As for the exclusion

criteria, students with a history of serious digestive diseases, such as gastric ulcers, GERD (gastroesophageal reflux disease), or other digestive disorders that require special treatment, students who are undergoing medical treatment that can affect the digestive system, such as the use of stomach acid inhibitors or antibiotics, students who experience severe psychological disorders such as depression or severe anxiety that has not been controlled, because it can affect dyspeptic symptoms.

The data collected from the respondents were analyzed using SPSS software using the Chi-Square test to determine if there was a significant association between the frequency of spicy food consumption and the incidence of dyspeptic complaints. The chi-squared test was chosen because it can measure the relationship between two categorical variables, namely the level of spicy food consumption and the frequency of dyspeptic complaints.

## Results

**Table 1. Frequency Distribution of Respondents Based on Age**

Age	Frequency	(%)
17	1	1.1
18	2	2.2
19	9	10.1
20	49	55.1
21	24	27.0
22	3	3.4
23	1	1.1
Total	89	100.0

Table 1 presents the frequency distribution of respondents' ages. The data shows that out of 89 respondents, the majority of respondents are 20 years old, with a frequency of 49 people, or 55.1% of the total respondents.

**Table 2. Frequency Distribution of Respondents Based on Gender**

Gender	Frekuensi	(%)
Male	17	19.1
Female	72	80.9
Total	89	100.0

Table 2 presents the frequency distribution of respondents based on gender. The data shows that out of 89 respondents, the majority of respondents were female, with a frequency of 72 people, or covering 80.9% of the total respondents.

**Table 3. Frequency Distribution on Spicy Eating Habits**

Spicy Eating Habit	Frequency	(%)
Rare	32	36.0
Often	57	64.0
Total	89	100.0

Table 3 presents the frequency distribution of respondents based on spicy eating habits. The data shows that out of 89 respondents, the majority of respondents have the habit of eating spicy food often, with a frequency of 57 people, or covering 64.0% of the total respondents.

**Table 4. Distribution Based on Dyspeptic Complaints**

Dyspeptic Complaints	Frequency	(%)
Positive	52	58.4
Negative	37	41.6
Total	89	100.0

Table 4 presents the frequency distribution of respondents based on dyspeptic complaints. The data shows that out of 89 respondents, the majority of respondents experienced positive dyspeptic complaints, with a frequency of 52 people, or covering 58.4% of the total respondents.

**Table 5. Relationship between Respondents' Characteristics Based on Age and the Incidence of Dyspepsia Complaints**

Age	Incidence of Dyspeptic Complaints		Total	<i>P Value</i>
	(+)	(-)		
17-23	52	37	89	<i>Chi Square</i>
Total	52	37	89	

Table 5 shows the relationship between characteristics based on age and the incidence of dyspepsia complaints, It can be seen that the significant value of 0.350, which is  $> 0.05$ , means that there is no significant relationship between the age variable and the incidence of dyspepsia complaints.

**Table 6. Relationship between Respondents' Characteristics Based on Gender and the Incidence of Dyspeptic Complaints**

Spicy Eating Habit	Incidence of Dyspeptic Complaints		Total	<i>P Value</i>
	(+)	(-)		
Male	10	7	17	<i>Chi Square</i>
Female	42	10	52	
Total	52	17	89	1.000

Table 6 shows the relationship between characteristics based on gender and the incidence of dyspepsia complaints, it can be seen that the significant value of 1.000, which is  $> 0.05$ , means that there is no significant relationship between gender variables and the incidence of dyspepsia complaints.

**Table 7. Relationship between Respondents' Characteristics Based on Spicy Eating Habits and the Incidence of Dyspepsia Complaints**

Spicy Eating Habit	Incidence of Dyspeptic Complaints		Total	<i>P Value</i>
	(+)	(-)		
Rare	9	23	32	<i>Chi Square</i>
Often	42	15	57	
Total	51	38	89	0,000

Table 7 shows the relationship between characteristics based on spicy eating habits and the incidence of dyspeptic complaints. It can be seen that the significant value of 0.000, which is  $<0.05$ , means that there is a significant relationship between the variable of spicy eating habits and the incidence of dyspeptic complaints.

## Discussion

Based on data analysis from the study among UINSU students, spicy food consumption showed a significant influence on the incidence of dyspeptic complaints. Chi-Square test results showed a p-value of 0.000 ( $<0.05$ ), confirming a significant relationship between the two variables. More strikingly, the Odds Ratio (OR) value of 6.306 indicates that students who frequently consume spicy food have a 6 times higher risk of experiencing dyspepsia than those who rarely consume it. This finding is consistent with previous studies that reported an OR of 2.252-4.577 for a similar association in other student populations. (11).

The significant difference in strength of association (OR 6.306 vs 2.252-4.577) may be influenced by specific characteristics of the UINSU population. A total of 64% of respondents fell into the intensive spicy food consumer category, with 57 out of 89 samples consuming spicy food 23 times/week. This pattern is exacerbated by the dominance of female respondents (80.9%) who are physiologically more susceptible to dyspepsia due to hormonal and psychosomatic factors (11). Although statistical analysis did not show a significant association between gender and dyspepsia in this study, the high proportion of women may have contributed to the high prevalence of the complaint.

Spicy and pungent foods can stimulate excess gastric acid secretion, resulting in symptoms of dyspepsia. (12). The underlying pathophysiological mechanism involves irritation of the gastric mucosa by the capsaicin compound in chili peppers, which triggers increased gastric acid secretion and impaired gastrointestinal motility. Symptoms of dyspepsia are generally characterized by discomfort or pain in the solar plexus area (epigastrium), often accompanied by a burning sensation, a feeling of fullness during meals, and a feeling of fullness or fullness after eating. In addition, patients also often experience nausea, vomiting, bloating, and frequent burping (13). These symptoms are usually intermittent with periods of remission, and can appear in the absence of an obvious organic disorder, so it is called functional dyspepsia. About 60-70% of patients report burning pain in the solar plexus, 80% feel full after eating, and 40-60% experience nausea and vomiting (14). These findings reinforce recommendations for students to adopt a healthy lifestyle, maintain a good diet, reduce consumption of irritant foods such as spicy foods and foods that are high in fat and are advised to eat regularly according to their schedule. (15).

## Conclusion

Research conducted at the State Islamic University of North Sumatra (UINSU) revealed a strong link between the consumption of spicy food and the increased incidence of dyspeptic complaints among university students. The study found that students who frequently eat spicy food have a six times greater risk of developing dyspepsia than those who rarely consume it. This result was reinforced by data showing that most students (64%) were fans of spicy food, and the majority of respondents were female (80.99%), who are naturally more susceptible to digestive disorders. The study also revealed a strong association between spicy food consumption and increased incidence of dyspeptic complaints among university students, with a p-value of 0.000. From a scientific point of view, capsaicin compounds in spicy foods can cause irritation to the inner lining of the stomach, trigger excessive gastric acid production, and disrupt the normal movement of the digestive tract, which ultimately leads to dyspeptic symptoms. Excessive consumption of spicy foods has been shown to be closely related to increased

dyspeptic complaints among UINSU students. Education on healthy eating patterns is important to prevent digestive disorders, especially among students with busy academic activities and a tendency to eat irregularly.

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