

**STRESS AND DYSPEPSIA SYMPTOMS AMONG STUDENTS IN INDONESIA: A CROSS-SECTIONAL STUDY***Stres dan Gejala Dispepsia Pada Mahasiswa di Indonesia: Studi Cross-Sectional*Rahmi Susanti\*<sup>ID</sup>, Annisa Aulia Rahayu<sup>ID</sup>, Anisa Aulia Hasmi<sup>ID</sup>

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**ABSTRACT**

**Background:** Dyspepsia syndrome is a common health issue among adolescents, with a global prevalence estimated at 20-30%. In Indonesia, the 2018 Riskesdas data indicated that the prevalence among those aged 15-24 was 18.3%. Factors associated with dyspepsia syndrome in adolescents include gender, stress, eating frequency, and specific food consumption. **Purpose:** This study aims to analyze the relationship between respondent characteristics (gender, stress, eating frequency, food consumption, smoking habits, and exercise) and dyspepsia incidence among adolescents living in boarding houses. **Methods:** This study used a cross-sectional design, involving 52 respondents. Data was collected via questionnaires and analyzed with the chi-square test. **Result:** Most respondents were female (82.7%), had poor eating frequency (86.5%), poor stress conditions (84.6%), preferred spicy foods (75%), consumed caffeine (80.8%), and rarely exercised (84.6%). The analysis revealed a significant association between stress conditions and dyspepsia syndrome ( $p=0.022$ ), while gender, eating frequency, food consumption, smoking habits, and exercise showed no association. **Conclusion:** Poor stress conditions are a risk factor for dyspepsia syndrome in adolescents. Efforts are needed to reduce stress levels through education on stress management and healthy dietary practices to prevent dyspepsia syndrome.

**Keywords:** dyspepsia syndrome, adolescent stress, dietary habits**ABSTRAK**

**Latar Belakang:** Sindrom dispepsia adalah masalah kesehatan yang sering dialami remaja, dengan prevalensi global diperkirakan mencapai 20-30%. Di Indonesia, data Riskesdas 2018 menunjukkan prevalensi dispepsia pada kelompok usia 15-24 tahun adalah 18,3%. Faktor-faktor yang diduga berkaitan dengan sindrom dispepsia pada remaja meliputi jenis kelamin, stres, frekuensi makan, dan konsumsi makanan tertentu. **Tujuan:** Penelitian ini bertujuan untuk menganalisis hubungan antara karakteristik responden (jenis kelamin, stres, frekuensi makan, konsumsi makanan, kebiasaan merokok, dan olahraga) dengan kejadian sindrom dispepsia pada remaja yang tinggal di asrama. **Metode:** Penelitian ini menggunakan desain potong lintang dengan total 52 responden. Data dikumpulkan melalui kuesioner dan dianalisis menggunakan uji chi-square. **Hasil:** Mayoritas responden adalah perempuan (82,7%), memiliki frekuensi makan yang buruk (86,5%), kondisi stres yang buruk (84,6%), menyukai makanan pedas (75%), mengonsumsi kafein (80,8%), dan jarang berolahraga (84,6%). Analisis menunjukkan bahwa kondisi stres berhubungan signifikan dengan sindrom dispepsia ( $p=0,022$ ), sementara jenis kelamin, frekuensi makan, konsumsi makanan, kebiasaan merokok, dan olahraga tidak berhubungan. **Kesimpulan:** Kondisi stres yang buruk adalah faktor risiko sindrom dispepsia pada remaja. Upaya untuk mengurangi tingkat stres melalui pendidikan manajemen stres dan pola makan sehat sangat diperlukan untuk mencegah sindrom dispepsia.

**Kata Kunci:** sindrom dispepsia, stres remaja, kebiasaan diet

## INTRODUCTION

Dyspepsia is one of the digestive tract disorders. Dyspepsia is often characterized by pain, discomfort in the epigastrium, nausea, vomiting, bloating, satiety, fullness, belching, regurgitation, and a burning sensation that spreads to the chest (Dewi, 2017). The prevalence of dyspepsia is quite high throughout the world. Based on data from the World Health Organization (WHO) in 2015, globally the problem of dyspepsia reaches 13-40% of the total population each year (World Health Organization, 2015). Based on data from the Indonesian Health Profile in 2021, dyspepsia is one of the five main diseases that result in special treatment in hospitals with an incidence of 18,807 cases (39.8%) by men and 60.2% by women in that year (Kementrian Kesehatan RI, 2021). The incidence of dyspepsia in 2023 is estimated to increase from 10 million to 28 million people, equivalent to 11.3% of the total population in Indonesia (Widya *et al.*, 2023). Based on data from the East Kalimantan Health Office in 2017, dyspepsia complaints reached 7% of the total patients at health centers and were ranked third as the disease with the most reports in the East Kalimantan region (Ashari *et al.*, 2022).

Dyspepsia can be suffered by all age groups, especially adolescents. Adolescents are more susceptible to dyspepsia because most of them have poor eating patterns due to busy activities (Ulhaq *et al.*, 2022). Dyspepsia disorders in adolescents affect their quality of life. Decreased productivity in daily activities can also reduce the quality of adolescent learning. The decline in the quality of learning will have an impact on student achievement which can affect the quality of adolescents as human resources and the next generation of the nation (Indarna & Suryadi, 2022).

Dyspepsia is caused by excessive production of stomach acid. One of the

factors that causes excessive production of stomach acid is eating habits. Bad eating habits can cause an imbalance in the body. Being too hungry or too full can cause stomach and digestive conditions to be disturbed. Eating habits are included eating frequency, consumption of acidic foods/drinks, consumption of foods/drinks containing caffeine and consumption of spicy foods (Hidayat *et al.*, 2023). In addition, dyspepsia can also be caused by lifestyle including smoking habits and exercise habits, as well as stress.

If dyspepsia can be treated early and get appropriate prevention, it can reduce the number of cases and the burden of disease. However, dyspepsia that is not treated immediately can result in more painful attacks. Dyspepsia will affect the patient's lifestyle by affecting the patient's physical, mental and social. Then, prolonged exposure to stomach acid can result in a number of issues with the upper digestive tract, including erosion of the digestive tract's lining and narrowing of the tract. In addition, the layer will gradually shrink until it breaks, which increases the risk of infection and peritonitis. The ensuing problems will lead to illness and a significant financial burden.

Based on this background, the study was conducted to examine the risk factors for dyspepsia syndrome in Universitas Mulawarman students. Knowing the risk factors for dyspepsia syndrome is expected to help students prevent dyspepsia from occurring. Although there are many studies discussing dyspepsia in general, there are still few that focus on specific risk factors that influence dyspepsia syndrome in students, especially in the Indonesian context. This study identifies that students as a vulnerable group may not only be influenced by dietary factors, but also by lifestyle and academic pressure. Thus, there is a need to better

understand the specific factors that contribute to dyspepsia in this age group.

This study is unique because it focuses on students because this study analyzed the prevalence of dyspepsia in a student body that differs from the overall population in terms of nutrition and lifestyle and used the information and settings pertinent to Universitas Mulawarman's and the East Kalimantan region's circumstances. Moreover, employing Google Forms, a digital platform that makes data collection easier and more accessible for respondents, is another option. A more focused approach to investigating risk factors for dyspepsia in students is provided by this study, which is innovative as it goes beyond what has been extensively explored in other studies. This makes this study different from broader research that does not break out risk factors according to age and educational attainment. This study not only considers eating habits, but also associates other factors such as stress, physical activity, and smoking habits, which provide a more comprehensive understanding of the risk of dyspepsia. By using an online-based questionnaire, this study can reach more respondents quickly, as well as increase student participation in the study. Thus, this study is expected to make a significant contribution to the understanding of dyspepsia among students and pave the way for further research on the prevention and management of dyspepsia in the young population.

## **METHOD**

### **Study Design**

This study was conducted with a quantitative analytical approach using a

cross-sectional approach. Data were collected in the period from April to May 2024.

### **Population and Sample**

This study involved all students of Universitas Mulawarman as research subjects. The inclusion criteria set include students who are still active (status seen in PDDIKTI), not in critical illness, and living around the Universitas Mulawarman campus, especially on Jalan Perjuangan and Jalan Pramuka. This study targets students aged 15-24 years.

### **Data Collection and Analysis**

Data collection was carried out using a purposive sampling technique, and the instrument used was a questionnaire in the form of Google Forms which was shared via WhatsApp. Data analysis included univariate analysis with descriptive statistics to see the distribution of frequency and percentage of respondent characteristics, as well as bivariate analysis using contingency coefficients to determine the relationship between variables with a nominal scale.

### **Ethical Clearance**

This study has obtained a permit from the academic department of Universitas Mulawarman with the number 297/UN17.11/DT/2024. Respondents are also required to fill out an informed consent which can be accessed through the link provided. The identity and information provided by the respondents will be kept confidential. Informed consent which can be filled out by respondents can be accessed at the [link https://forms.gle/fGyk6WSC6bFBQ3Wq6](https://forms.gle/fGyk6WSC6bFBQ3Wq6).

## RESULT

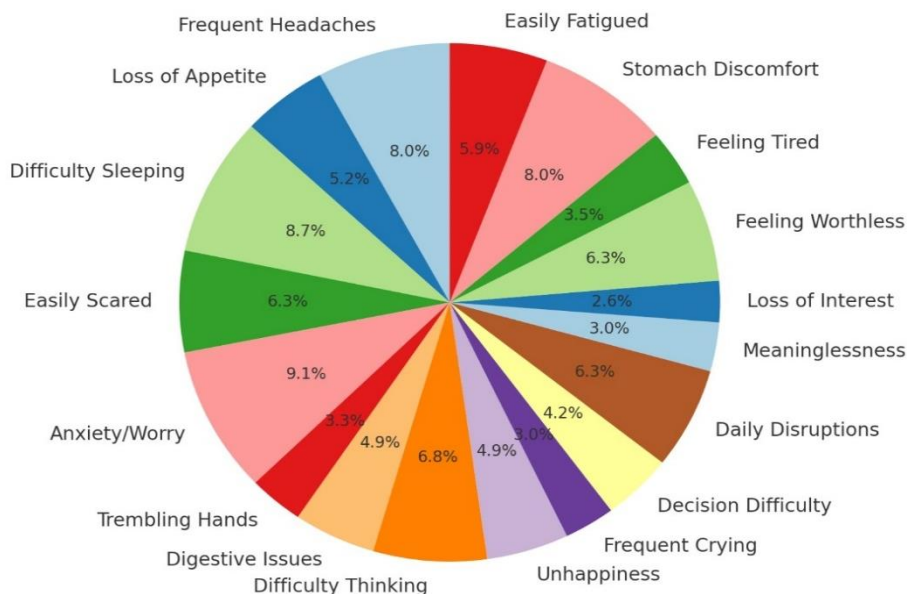
### Univariat Analysis

**Table 1.** Frequency Distribution of Risk Factors of Dyspepsia

Variable	Frequency (n=52)	Proportion (%)
<b>Dyspepsia Symptom</b>		
Yes	47	90,4
No	5	9,6
<b>Sex</b>		
Male	9	17,3
Female	43	82,7
<b>Intensity of Eating</b>		
Poor (< 3 times)	45	86,5
Good (≥ 3 times)	7	13,5
<b>Spicy Food</b>		
No	13	25
Yes	39	75
<b>Sour Food</b>		
No	43	82,7
Yes	9	17,3
<b>Food/Drink contained Caffeine</b>		
No	10	19,2
Yes	42	80,8
<b>Smoking Status</b>		
No	50	96,2
Yes	2	3,8
<b>Exercise Habits</b>		
No	44	84,6
Yes	8	15,4
<b>Stress Condition</b>		
No	8	15,4
Yes	44	84,6

Respondent characteristics which were shown in Table 1 was the proportion of respondents by gender was male as much as 17.3% while female as much as 82.7%. In general, respondents did not have a good eating frequency of 86.5. Most respondents, around 84.6%, experienced poor stress or depression. The majority of respondents consumed spicy foods (75%), consume foods/drinks containing caffeine (80.8%), and did not consume sour foods (82.7%). Most respondents did not exercise in a week as much as 84.6% and only 2 respondents have a smoking habit (3.8%).

Exercise habits were measured from questions related to exercise frequency, duration of exercise and additional questions related to whether or not to exercise on an empty stomach. Analysis of exercise habits becomes more in-depth, allowing for a better assessment of individual habits and awareness of their health and fitness. Stress measurement was carried out using emotional mental health indicators at the following link <https://repository.badankebijakan.kemkes.go.id/id/eprint/4616/>. With the choice of yes and no options, here is a response graph from the results of the study.



**Figure 1.** Distribution of “Yes” Responses for Mental and Emotional Health Questions

This graph showed the various symptoms that respondents frequently experience related to stress or emotional problems. Each symptom had two categories, "Yes" and "No", which indicated how often the respondent experiences the symptom. Some symptoms such as "Frequent headaches" and "Feeling tense, anxious, or worried" had a high percentage in the "Yes" category. This showed that many respondents experience these symptoms, indicating significant levels of stress in the population studied. "Loss of appetite" and "Loss of interest in things," showed lower percentages in the "Yes" category. This indicated that

even though stress is present, not all respondents experience the same emotional impact.

The high percentage of respondents experiencing symptoms such as "Feeling tense, anxious, or worried" indicated the need for more attention in mental health problems, such as counseling or psychological support programs. Furthermore, there were several common symptoms experienced by respondents, with some symptoms showing a higher prevalence. This indicated the need for greater action in addressing mental health issues among respondents.

**Bivariate Analysis**

**Table 2.** Bivariate Analysis of Risk Factors for Dyspepsia Disorders by Universitas Mulawarman Students

Variable	Dyspepsia Disorders Status				Total		P Value	POR (95% CI)
	Yes		No		n	%		
	n	%	n	%				
<b>Sex</b>								
Male	8	88.9	1	11.1	9	100	0.630	1.219 (0.12-12.397)
Female	39	90.7	4	9.3	43	100		
<b>Eating Intensity</b>								
Poor (<3 times)	41	91.1	4	8.9	45	100	0.530	1.708 (0.162-17.963)
Good (≥ 3 times)	6	85.7	1	14.3	7	100		
<b>Spicy Food</b>								
No	12	92.3	1	7.7	13	100	0.633	0.729 (0.074-7.181)
Yes	35	89.7	4	10.3	39	100		

**Continuation of Table 2.** Bivariate Analysis of Risk Factors for Dyspepsia Disorders by Universitas Mulawarman Students

Variable	Dyspepsia Disorders Status				Total		P Value	POR (95% CI)
	Yes		No		n	%		
	n	%	n	%				
<b>Sour Food</b>								
No	39	90.7	4	9.3	43	100	0.630	0.821 (0.081-8.346)
Yes	8	88.9	1	11.1	9	100		
<b>Caffeinated Foods/Drinks</b>								
No	9	90	1	10	10	100	0.673	1.056 (0.105-10.619)
Yes	38	90.5	4	9.5	42	100		
<b>Smoking Status</b>								
No	45	90	5	10	50	100	0.815	0.9 (0.821-0.987)
Yes	2	100	0	0	2	100		
<b>Exercise Habit</b>								
Poor	41	93.2	3	6.8	44	100	0.164	4.556 (0.627-33.118)
Good	6	75	2	25	8	100		
<b>Stress Conditions</b>								
No	5	62.5	3	37.5	8	100	0.022	12.6 (1.68-94.527)
Yes	42	95.5	2	4.5	44	100		

Table 2 showed the statistical results regarding sex, that female respondents have dyspepsia disorders of 90.7% with a p-value of 0.630, showing that there was no correlation between sex and dyspepsia syndrome in Universitas Mulawarman students. The results of statistical analysis on the frequency of eating in the category of less good and having dyspepsia disorders were dominated by 91.1% with a p-value of 0.530, showing that there was no relationship with eating intensity and the incidence of dyspepsia disorders in adolescents. The results of statistical analysis on the consumption of spicy, sour, and caffeinated foods/drinks and having dyspepsia syndrome were respectively 89.7%, 88.9%, & 90.5%. The p-value of >0.05 showed that the consumption of spicy, sour, and caffeinated foods had no relationship with dyspepsia disorders in adolescents.

The results of statistical analysis between smoking status and those who have dyspepsia syndrome were only 2 out of 52 respondents (100%). The p-value obtained was 0.815, showing there was no correlation between the smoking status of respondents and the incidence of dyspepsia disorders. The statistical results of poor exercise habits and

having dyspepsia disorders were 93.2%. The p-value obtained was 0.164, showing that there was no relationship between exercise habits and the incidence of dyspepsia syndrome in adolescents. The results of statistical analysis between respondents who experienced stress and have dyspepsia syndrome were 95.5% with a p-value of 0.022, showing that stress conditions correlated to the incidence of dyspepsia syndrome in adolescents.

## DISCUSSION

### Sex Risk

There is no relationship between sex and dyspepsia disorders. These results were in line with Amelia's (2022) study, showing that there was no correlation between gender and the incidence of dyspepsia syndrome in students of the Faculty of Health Sciences, UIN Syarif Hidayatullah Jakarta, class of 2018, which obtained a p-value of 0.102 (Amelia, 2022). Although this study did not discover any relationship, most cases of dyspepsia syndrome were suffered by women compared to men. Based on research by Li *et al.* (2020) men and women have different references in the types of food that are at risk for digestive disorders, then differences in

psychological factors also affect metabolism, the digestive system, and food sensitivity to gender (Li *et al.*, 2020).

The results of the study stated that gender was not correlated with dyspepsia syndrome in students living in boarding houses. This was since the possibility of dyspepsia syndrome is influenced by other risk factors. Although the proportion of female respondents who experience dyspepsia is considerably high (90.7%), this figure alone was insufficient to conclude a causal relationship between gender and the incidence of dyspepsia. The p-value obtained was 0.630, far above the statistical significance limit commonly used ( $p < 0.05$ ). This showed that the difference in the prevalence of dyspepsia between men and women is not statistically significant. Thus, sex cannot be considered a determining factor or cause of dyspepsia syndrome among Universitas Mulawarman students based on the results of this analysis. There were other factors that influence the incidence of dyspepsia, apart from just sex differences.

### **Risks of Eating Frequency**

There was no correlation between eating frequency and dyspepsia disorders (p-value = 0.530). This was in line with Karyanah's (2018) research which indicated that there was no correlation between eating frequency and dyspepsia disorders (Karyanah, 2018). Eating frequency did not appear to be a determining factor in the development of dyspepsia based on the evidence available from these analyses. The implication was factors other than just meal frequency may be more important in influencing the development of dyspepsia or digestive disorders. This was also in accordance with the results obtained from this study. Although as many as 91.1% of individuals with poor meal frequency experienced dyspepsia, this figure was not enough to conclude a correlation or cause-

and-effect relationship between the two variables.

The p-value obtained was 0.530, which was far above the standard significance value (usually  $p < 0.05$ ). This indicated that the observed relationship between eating frequency and dyspepsia was likely to occur by chance, and did not exhibit a true causal relationship. In other words, poor eating intensity or frequency cannot be considered as a determining factor or cause of dyspepsia disorders in adolescents based on the results of this analysis. Other factors that had not been included in this study might contributed a greater role in influencing the occurrence of dyspepsia.

### **Risk of Spicy Food**

Consumption of spicy food had no correlation with the incidence of dyspepsia disorders among Universitas Mulawarman students (p-value = 0.633). This was contrary to the results of the analysis of Wijaya *et al.* (2020) which stated that there was a relationship between the consumption of spicy food and sufferers of dyspepsia disorders (Wijaya *et al.*, 2020), where spicy food stimulated the digestive system, including the stomach and intestines, as they contracted and caused heartburn, pain, and vomiting.

### **Risk of Sour Food**

Consumption of sour foods had no association with dyspepsia disorders by Universitas Mulawarman students, which produced a p-value of 0.630. This was not in line with the results of the analysis by Wijaya *et al.* (2020) which stated that there was a correlation between sour foods and dyspepsia disorders, where sour foods had the greater effect on non-ulcer dyspepsia (Wijaya *et al.*, 2020).

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## Risks of Consuming Foods/Beverages Containing Caffeine

Consumption of foods/beverages containing caffeine was not correlated with dyspeptic syndrome by Universitas Mulawarman students with a p-value of 0.674. This is in line with the results of the analysis of Yusuf *et al.*, (2024) which suggested there was no association between coffee drinking habits and the incidence of dyspepsia (Yusuf *et al.*, 2024). Caffeine is a bitter alkaloid that can naturally be found in coffee, chocolate, and tea leaves. Caffeine can cause stimulation of the central nervous structure, then can increase gastric performance and secretion of gastric hormones gastrin and pepsin and can trigger dyspepsia (Sari *et al.*, 2021)

## Risk of Exercise Habit

Exercise habits had no correlation with dyspeptic disorders in Universitas Mulawarman students with a p-value of 0.815. This is in line with the results of the analysis of Sari *et al.* (2021) which suggested a relationship between exercise habits and the incidence of dyspepsia. The habit of exercising or physical activity can also effectively increase the body's ability to create an immune system and help reduce stimulation of gastric acid secretion (Sari *et al.*, 2021).

In theory, the habit of exercising or regular physical activity can have an effective effect in increasing the body's ability to create an immune system. In addition, physical activity can also help reduce the stimulation of gastric acid secretion, which is one of the factors that trigger dyspepsia. However, the results of the statistical analysis in this study showed that of the respondents who had poor exercise habits, 93.2% of them also experienced dyspeptic disorders. The p-value obtained was 0.164, which means that there is no significant relationship between

exercise habits and the incidence of dyspeptic syndrome in university students.

This finding indicates that exercise habit is not a major determinant of the onset of dyspeptic syndrome in the Universitas Mulawarman student population. There may be other variables that are more dominant in influencing the incidence of dyspepsia in this group of students. Further research is needed to explore other determinants that may play a role in the prevalence of dyspepsia syndrome among university students.

## Risk of Smoking Status

Smoking status was not associated with dyspeptic disorders in Universitas Mulawarman students with a p-value of 0.164. This is not in line with the results of the analysis of Widya *et al.* (2020) who argued the existence of smoking habits with the incidence of dyspepsia. Smoking can increase the risk of dyspeptic symptoms because cigarette smoke provides a very acidic atmosphere in the stomach so that it can kill pathogenic organisms that enter with cigarette smoke (Widya *et al.*, 2023).

Theoretically, smoking can increase the risk of developing dyspeptic symptoms. This is because cigarette smoke can create a highly acidic atmosphere in the stomach, which can kill pathogenic organisms that enter with the smoke. However, the results of statistical analysis in this study showed that only 2 out of 52 respondents (3.8%) smoked and had dyspeptic syndrome. The p-value obtained was 0.815, which means that there was no significant correlation between the respondents' smoking status and the incidence of dyspeptic disorders.

This finding indicates that smoking is not a major determinant of the onset of dyspeptic syndrome in the Universitas Mulawarman student population. There may be other variables that are more dominant in influencing the incidence of dyspepsia in this



group of students. Further research is needed to explore other determinants that may play a role in the prevalence of dyspepsia syndrome among university students.

### **Risks of Stress**

Stress was associated with dyspeptic syndrome in students living in boarding houses with a p-value of 0.022. This is in line with the results of research by Putri (2018) which stated that there was a relationship between stress conditions and the incidence of dyspepsia (Putri et al., 2018). Stress can alter gastric acid secretion, motility, and blood vessel formation in the digestive tract. Stress experienced by a person can cause various physiological responses such as digestive disorders and cause discomfort such as dyspepsia syndrome (Sari *et al.*, 2021).

Stress can have a physiological impact that affects the function of the digestive tract. Stressful conditions can alter gastric acid secretion, intestinal motility, and blood vessel formation along the digestive tract. These changes can lead to uncomfortable symptoms such as those found in dyspepsia syndrome. Further analysis showed that of the respondents who experienced stress, 95.5% also experienced dyspepsia syndrome. This figure is much higher than the non-stressed respondents. Thus, it can be concluded that stressful conditions have a strong association with the incidence of dyspeptic syndrome in students living in boarding houses.

This finding emphasizes the importance of good stress management among students living in boarding houses to prevent the onset of digestive problems such as dyspepsia syndrome. Interventions and support programs related to academic stress management should be considered as a preventive measure.

### **Limitations/Weaknesses of Research**

This study has several weaknesses and limitations. First, it is observational, so it cannot determine the cause-and-effect relationship between the variables studied; results that show no relationship cannot be interpreted to mean that there is no relationship at all. Second, the reliability of the data depends on the honesty and accuracy of the respondents in filling out the questionnaire, which may be affected by misinterpretation or inaccuracies. In addition, although some factors have been analyzed, many other factors such as genetics, environment, or sleep patterns that could potentially affect dyspeptic disorders were not investigated. The gender proportion of respondents was also unbalanced, with 82.7% female and 17.3% male, which may affect the generalizability of the results. Lastly, the measurement of stress using emotional mental health indicators may not cover all aspects of stressful conditions, so there is a possibility that other influential variables may not be measured.

### **Strengths/advantages of the research**

This study used comprehensive statistical analysis by utilizing p-values to measure the association between variables such as gender, dietary habits, and smoking status with dyspeptic syndrome, thus providing a systematic and objective approach to data evaluation. In addition, this study also focused on mental health by linking stressful conditions as a contributing factor to dyspepsia syndrome, making it relevant in the context of adolescent mental health. By evaluating a wide range of habits, including diet, exercise habits and smoking status, this study provides a comprehensive overview of the factors that may influence dyspeptic disorders, adding to the understanding of the relationship between lifestyle and gastrointestinal health.

## CONCLUSION & SUGGESTIONS

This study showed that the most dominant factor associated with dyspeptic syndrome in Universitas Mulawarman students was stress. Data indicated a significant relationship between the level of stress experienced by students and the incidence of dyspeptic syndrome. On the other hand, other variables such as gender, meal frequency, consumption of spicy, acidic, caffeine-containing foods, exercise habits, and smoking status did not show a statistically significant association with the incidence of dyspepsia in the student population.

The suggestion from the results of this study is that efforts should be made to reduce stress levels among adolescents, because stress has an association with the incidence of dyspepsia syndrome. Education on a good diet is needed to prevent dyspeptic syndrome, although meal frequency was not significantly associated. Although the consumption of spicy, acidic, and caffeine foods as well as smoking and exercise are not associated with dyspepsia syndrome, it is still necessary to pay attention to maintaining digestive health.

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This research was carried out independently without involving funding from any party.

## AUTHOR CONTRIBUTION

The first author, Rahmi Susanti, has duties and responsibilities in determining the topic, location, and sample of the research; providing directions on how technical research should be carried out and overcoming obstacles that occur in the field. Then, the second and third authors, Anisa Aulia Rahayu and Anisa Aulia Hasmi, have the duties and responsibilities of collecting data, both primary and secondary data; as well as analyzing data and compiling research results. Writing scientific articles is done by all authors together.

## CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest in this research.

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