Original Research Article

The Relationship of Stress Level and The Incident of Functional Dyspepsias

ABSTRACT

Aims: This study aims to determine whether there is a relationship between stress levels and functional dyspepsia in students at the Faculty of Medicine, Indonesian Christian University class of 2020.
Study design: This research uses an observational analytical research design method with a cross-sectional approach. The main data source is primary data obtained through questionnaires taken online via Google Forms.
Place and Duration of Study: The research was conducted at the Indonesian Christian University located in Cawang, East Jakarta. Time of research in September 2022.
Methodology: The population in this study was 137 students from the Faculty of Medicine, Indonesian Christian University class of 2020. The sample was taken using a simple random sampling technique totaling 103 people determined using the Slovin formula with an uncertainty percentage of 5%
Results: From the results of data collection on 103 respondents who were FK UKI students Class of 2020, around 65% or 67 respondents were identified as having normal stress levels and as many as 64 students (62%) had symptoms of functional dyspepsia. Based on the results of the bivariate analysis, it was found that there was a relationship between the level of stress and the incidence of dyspepsia experienced by FK UKI students class of 2020 with the results of the chi-square test, namely $p = 0.003 < \text{sig } 0.05$
Conclusion: There is a significant relationship between stress levels and functional dyspepsia. This certainly cannot be taken lightly because the incidence of functional dyspepsia can have fatal consequences which can disrupt the sufferer's activities and productivity. Therefore, it is very necessary to manage emotions (stress levels) both by the sufferer himself and with professional help.

Keywords: functional dyspepsia, stress levels,

1. INTRODUCTION

Stress is a condition characterized by the appearance of physical or emotional symptoms as a reaction to a person's feelings towards an undesirable situation [1]. Low levels of stress can be beneficial and can even improve bodily health. Stress can positively improve a person's biopsychosocial health and help improve performance. In addition, stress can act as a stimulus for self-development. However, if stress levels become too high, it can cause biological, psychological and social problems, and even pose serious threats [2]. Stress can be triggered by stressors. Some examples of stressors include work, education, financial and family problems [3]. Stress has become a problem that exists at all levels of society. When someone experiences excessive stress, it can harm their physical condition, one of which is affecting the gastrointestinal system which can cause dyspepsia.Dyspepsia is a term that comes from Greek, where “dys” means bad and “pepsis” refers to digestion [4, It is a collection of symptoms that include a burning sensation in the upper part of the stomach, pain, bloating, and nausea, vomiting [5]. Dyspepsia is divided into two types based on what

the cause is. Functional Dyspepsia falls into the category of dyspepsia whose cause is unknown no abnormalities were found on conventional gastroenterological examination or no organic damage was found [5]. Globally, the prevalence of dyspepsia is between 10-30% of the world's total population. The prevalence rate of dyspepsia in Indonesia reaches 40-50% and has increased significantly from 10 million people in 2020 to 28 million people, or around 11.3% of Indonesia's total population [6]. Data from ProfileIndonesian Health in 2020 shows that dyspepsia has reached the 10th position as the digestive disease most frequently experienced by inpatients in hospitals in 2019, with the number of patients around34,039 or around 1.59% of the total patients [7]. Students as part of society also experience stress, especially currently during a pandemic which causes learning to be carried out online. The stress level for students in Indonesia during distance lectures reached 55.1% while for students outside Indonesia, it reached 66.3% [8]. The high level of stress also contributes to the large number of cases of gastritis in Indonesia. This is what motivated the author to further research the relationship between stress levels and the incidence of gastritis in FK UKI Class of 2020 students.

Research Problem

The research problem is whether there is a relationship between stress levels and functional dyspepsia in students from the Faculty of Medicine, Indonesian Christian University class of 2020.

Research Purpose

The research aims to find out whether there is a relationship between stress levels and functional dyspepsia in students at the Faculty of Medicine, Indonesian Christian University, class of 2020.

2. MATERIAL AND METHODS / EXPERIMENTAL DETAILS / METHODOLOGY

2.1. MATERIAL

2.1.1. Definition of Stress

Stress has many different definitions depending on the condition. One of the most common definitions of stress introduced by Hans Selye is that it is a non-specific response of the body to pressure received.9 He also wrote that stress is the perception of threat, which produces worry, discomfort, emotional tension, and difficulty in adjustment [10]. According to McGrath (2003) Stress is an imbalance between physical or psychological demands and the ability to respond in conditions where: failure to fulfill those demands. This means that stress can arise in individuals if there is an imbalance or failure to meet physical and mental needs [11]. However, not everyone who experiences an imbalance will experience stress. This imbalance stimulus will be responded to differently in each individual. This happens because there is a difference in the ability to reduce the stimulus. Apart from that, there are also life experiences, the level of sensitivity, and the individual's tolerance for stimuli which also have an influence. So this makes each person's stress threshold different.

2.1.2. Stress Rating Scale

In this research, evaluation of stress levels was carried out through the use of an instrument in the form of a questionnaire. The measuring instrument used in this research is the Depression Anxiety Stress Scales (DASS). DASS or Depression Anxiety Stress Scales is a questionnaire to measure a person's symptoms of depression, anxiety and stress. This measuring instrument was developed by Lovibond in 1995 [17]. DASS has 3 measurement scales that support 13 items, which are divided into 2 to 5 subscales. The depression scale is used to evaluate mood which includes dysphoria, hopelessness, loss of interest in activities usually enjoyed, and helplessness. Meanwhile, the anxiety scale is used to evaluate physical arousal, panic attacks, and fear. The stress scale consists of items that can evaluate the level of tension, irritability, and excessive reactions to certain events [18]. InstrumentThe DASS consists of 42 questions, and each question has a score ranging from 0 to 3. A score of 0 is given if the respondent never experiences certain symptoms, a score of 1 is given if they sometimes experience it, a score of 2 is given if they often experience it,

and a score of 3 is givenif it closely matches the respondent's experience or almost always occurs. Evaluation is carried out based on the respondent's condition for one week

2.1.3. Dyspepsia

2.1.3.1. Definition of Dyspepsia

Dyspepsia is a condition characterized by discomfort or pain in the upper part of the stomach or solar plexus.20 Dyspepsia refers to a group of signs and symptoms located in the epigastrium, where patients can experience heartburn or discomfort, a burning sensation, andmay be accompanied by nausea, vomiting, bloating, early satiety, and belching. 21 This collection of symptoms can appear sporadically over several weeks or even months. Not all patients have complaints, some patients only complain about one or more, and the type of complaint and quality can also change.

2.1.3.2. Classification of Dyspepsia

Dyspepsia is categorized based on its cause and is divided into two parts, namely organic dyspepsia and functional dyspepsia.5,21

a. Organic dyspepsia
   Organic dyspepsia refers to dyspeptic conditions whose causes have been identified, such as peptic ulcer disease (PUD), gastric acid reflux disease (GERD), cancer, use of alcohol or drugs.
b. Non-organic dyspepsia
   Non-organic dyspepsia, also called functional dyspepsia, is a condition in which dyspepsia occurs without any known structural or organic abnormalities as the cause. Functional dyspepsia is divided into two groups, namely Postprandial Distress Syndrome, which is a condition where a person feels full after eating a normal portion or is easily full so it is difficult to finish his meal. The second is Epigastric Pain Syndrome which refers to the condition of the patient experiencing a burning sensation. These symptoms come and go and do not occur in other parts of the stomach.22

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Respondent Characteristics

The research respondents were students from the faculty of medicine, indonesianchristian university, class of 2020, with active status, namely 137 people from the population as respondents in this research.Of the 137 students from the class of 2019, 21 people fell into the exclusion criteria so they could not continue to the research stage.So the respondents who filled out the questionnaire completely were 115 students, of whom 103 people were then selected as samples according to the simple random sampling method and the slovin formula.

Based on univariate analysis, the frequency distribution of respondents based on age was obtained as presented in Table 1 below

Table 1. The Frequency Distribution of Respondents Based on Age

Age	Frequency	Percentage(%)
18 years	1	1.0
19 years	23	22.3
20 years	52	50.5
21 years	26	25,2
22 years	1	1.0
Total	**103**	**100**

The information contained in the table above shows that the majority of respondents, namely 52 people or around 50.3%, are 20 years old. Then followed by ages 21 years (25.2%), 19 years (22.3%), 18 years and22 years, namely 1% for 1 person each.

The frequency distribution of respondents based on gender is presented in Table 2 below:

Table 2. Frequency Distribution Based on Gender

Gender	Frequency	Percentage(%)
Male	24	23.3
Female	79	76.7
Total	**103**	**100**

The gender distribution obtained from the 2020 FK UKI students based on the table above is that female students numbered 79 respondents with a percentage of 76.7% while male students totaled 24 respondents with a percentage of 23.2% so it can be concluded that the number of female students dominates more than men in FK UKI class of 2020.Meanwhile, the frequency distribution of respondents who experienced functional dyspepsia is presented in Table 3 below:

Table 3. Frequency Distribution of Respondents Who Experienced Functional Dyspepsia

Functional Dyspepsia	Frequency	Percentage(%)
Experiencing Dyspepsia	64	62.1
Not Experiencing Dyspepsia	39	37.9
Total	**103**	**100**

Based on the table above, it was found that most of the 2020 FK UKI students had functional dyspepsia where 64 respondents with a percentage of 63.1% had functional dyspepsia while 38 respondents with a percentage of 37.9% did not have functional dyspepsia

1.1.2. Characteristics of respondents based on stress level

The frequency distribution of respondents based on stress level is presented in table 4 below:

Table 4. Frequency Distribution of Respondents Based on Stress Level

Stress Level	Frequency	Percentage(%)
Normal(0-14)	67	65.0
Mild Stress (15-18)	12	11.7
Moderate Stress (19-25)	16	15.5
Severe Stress (26-33)	4	3.9
Very Severe Stress (>34)	4	3.9
Total	103	100

The distribution of stress levels among FK UKI students class of 2020 is as follows: The number of students with normal stress levels, namely with a score of 0-14, is 67 respondents with a percentage of 65%. The number of respondents for mild stress levels was 12 people

with a percentage of 11.7% followed by moderate stress levels with 16 people with a percentage of 15.5%. The lowest number of respondents was at the severe stress level and the very severe stress level, with 4 respondents each with a percentage of 3.9%. From the data obtained, it was concluded that the 2020 FK UKI students did not experience significant stress.

The distribution of stress levels based on gender is presented in table 5 below:

Table 5.Frequency Distribution of Respondents Regarding Stress Levels Based on Gender

Stress Level	Amount		Total	Percentage (%)
	Male	Female		
Normal	20	47	67	65
Mild Stress	2	10	12	11.7
Moderate Stress	1	15	16	15.5
Severe Stress	1	3	4	3.9
Very Severe Stress	0	4	4	3,9
Total	**25**	**78**	**103**	**100**

The results of the study show that there are differences in the distribution of stress between genders, where women have a higher rate of experiencing stress. This is also supported by the fact that the population of FK UKI students class of 2020 is dominated by women. Based on the table above, the difference in stress levels between men and women is not very significant. Normal stress levels occupy the highest position, followed by moderate stress levels and light stress levels.

The frequency distribution of stress levels based on age is presented in table 6 below:

Table 6. Frequency Distribution Of Stress Levels Based On Age

Level Stress	Age					Total	Persentase (%)
	18	19	20	21	22		
Normal	1	16	29	21	0	67	65
Mild Stress	0	3	5	3	1	12	11,6
Moderate Stress	0	1	13	2	0	16	15,5
Severe Stress	0	2	2	0	0	4	3,8
Very Severe Stress	0	1	3	0	0	4	3,8
Total	1	23	52	26	1	103	100

Based on the table above, it can be concluded that the 20-year age group has the highest level of stress. Where the most is at the normal stress level, namely 29 out of 103 respondents in the 20-year age group.

The age frequency distribution based on functional dyspepsia is presented in table 7 below:

Age	Functional Dyspepsia	Total

	Ya	Tidak	
18years	0	1	1
19years	17	6	23
20years	31	21	52
21 years	15	11	26
22 years	1	0	1
Total	64	39	103

The distribution of functional dyspepsia based on age, namely in students aged 18 years, no dyspepsia was found. Then for 19-year-old students, of the 23 respondents,17 respondents had dyspepsia, and 6 did not have dyspepsia. Continuing with students aged 20 years, 31 respondents had dyspepsia while 21 other respondents did not have dyspepsia. For students aged 21 years, 15 respondents had functional dyspepsia and 11 other respondents did not have dyspepsia. There was 1 respondent aged 22 years in students who had dyspepsia.

1.1.3. Bivariate Analysis

The results of bivariate analysis to see the relationship between stress levels and functional dyspepsia are presented in Table 8 below:

Table 8. The Relationship Between Stress Levels and Functional Dyspepsia

	Dyspepsia		
Stress Level	**Dyspepsia**	**Not Dyspepsia**	**Total**
Normal	33	34	67
Mild Stress	10	2	12
Moderate Stress	14	2	16
Severe Stress	3	1	4
Very Severe Stress	4	0	4
Total	**64**	**39**	**103**
PValue		**0.003**	

Based on the table above, 33 respondents had normal stress levels and dyspepsia, and 31 respondents who did not have dyspepsia. There were 10 respondents with mild levels of stress and dyspepsia and 2 respondents who did not have dyspepsia. The moderate level of stress with dyspepsia was 14 respondents and those without dyspepsia were 2 respondents. For the level of severe stress, 3 respondents had dyspepsia and 1 respondent did not have dyspepsia. All respondents with very severe stress levels had dyspepsia.

1.2. Discussion

Univariate Analysis

Based on the results of univariate analysis research, it was found that 63% or 64 student respondents had functional dyspepsia. The emergence of functional dyspepsia cannot be viewed in isolation, because other factors in each individual also influence it. In theory, there are several factors such as diet (spicy food, drinks such as coffee, tea, and alcohol) and lifestyle such as smoking which are believed to contribute to the emergence of dyspepsia symptoms. 6,23 This theory is by research conducted by Clarensius Geovani and colleagues. in medical students at Nusa Cendana University, where there was a relationship between consuming spicy food, drinking tea or coffee, and carbonated drinks with the

incidence of dyspepsia, namely with a p-value = 0.001. Other results were found in research on smoking habits and the incidence of dyspepsia syndrome conducted by Ivan Wijaya and colleagues, where the results found were a p-value = 0.190, indicating that there was no relationship between smoking habits and the incidence of dyspepsia. However, in the same study, it was found that there was a relationship between consuming alcoholic drinks and the incidence of dyspepsia with a value of p = 0.040.

The research results that were also obtained were that some students had normal stress levels, namely 65% with a total of 67 out of 103 respondents. This can be caused by differences in each individual's ability to tolerate stress. The causes of stress in students can occur due to several wrong aspectsthe other is an academic problem. During the Covid-19 pandemic, students were required to carry out all lecture activities online, although online media had many shortcomings in its implementation. 6 According to research conducted by Alahan Durbas and his colleagues at 119 universities in Turkey, they found that there was a relationship between stress and anxiety with the Covid-19 pandemic. This research also found the causes of stress during the pandemic, namely due to socio-economic restrictions, online learning, and also concerns about the health of oneself and those closest to them.

Bivariate Analysis

Based on the results of bivariate tests, there is a relationship between stress levels and the incidence of functional dyspepsia experienced by FK UKI Class of 2020 students. It was found that 31 students experienced mild to very severe levels of stress with functional dyspepsia while 31 students with mild to very severe levels of stress did not. dyspepsia as many as 33 people. Meanwhile, after analyzing the data using SPSS with the Chi-Square test, it was found that stress levels were related to functional dyspepsia. This can be seen from the results of the P value, namely p=0.003, which means p<0.05 or the p value is smaller than the standard value. This value shows that the research results have a meaningful relationship. This research also proves that the results obtained by sisters Lady Maria and Salmah among students at Hasanuddin University in 2018 where the results of their research found a value of p = 0.019 which means p < 0.05 so the results of their research showed that there is a significant relationship. 44 Research also conducted by Prem Shankar and colleagues, it was found that students who experience stress have a risk of developing functional dyspepsia. The results of data analysis show a p-value = 0.001, where the p-value<0.005 shows that the relationship between stress and dyspepsia has a significant correlation.The similarity in results in the incidence of functional dyspepsia can be influenced by various factors, such as the high level of stress experienced by many students, especially female students, the same age, and the same faculty is the medical faculty. Therefore, it cannot be concluded that the similarity of results is caused by one factor alone.

4. CONCLUSION

There is a significant relationship between stress levels and functional dyspepsia. This certainly cannot be taken lightly because the incidence of functional dyspepsia can have fatal consequences which can disrupt the sufferer's activities and productivity. Therefore, it is very necessary to manage emotions (stress levels) both by the sufferer himself and with professional help

Research Limitations

After conducting research, there were several limitations found by researchers. It is hoped that these findings can provide insight for future researchers to conduct better research. The following are some limitations found in this research:

1. Research questionnaires were not distributed actively (out in the field) because we were still in the COVID-19 pandemic, therefore, researchers could not directly observe the process of filling out the questionnaire.
2. Some respondents often answered with answers that were not in line with the previous statement. This can be caused by hasty and dishonest filling

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