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### ASSOCIATION BETWEEN THE SEVERITY OF DEPRESSION AND TYPE OF DYSPEPSIA (FUNCTIONAL AND ORGANIC) IN HAJI ADAM MALIK GENERAL HOSPITAL, MEDAN

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#### Abstract

**Introduction:** Dyspepsia is syndrome of pain or discomfort in the upper abdomen. Specific discomfort includes feeling full quickly, feeling full, burning, bloating in the upper abdomen and nausea. These symptoms arise due to various factors such as smoking, alcohol, overweight and obesity, stress, anxiety, and depression.

**Aim:** This study was conducted to determine the severity of depression in patients with functional dyspepsia and organic dyspepsia at H. Adam Malik Hospital Medan.

**Method:** This study was an observational analytic study and was conducted with a cross sectional design. The study sample was selected with *simple random sampling* for patients who met the criteria, until the required number of samples was met and a sample of 52 people was obtained. Data were analyzed by *Fisher's Exact* tests.

**Results:** The study revealed a relationship between the severity of depression in patients with functional dyspepsia and organic dyspepsia in the Gastroenterology Department of the Adam Malik Hospital in Medan ( $p = 0,036$ ).

**Conclusion:** There is an association between the severity of dyspepsia and type of dyspepsia, where more severe depression is associated with functional dyspepsia compared to organic dyspepsia.

#### Introduction

Symptoms that arise due to various factors such as smoking, alcohol, overweight, stress, anxiety, and depression are relevant to the occurrence of dyspepsia.<sup>1</sup> Based on the causes and complaints of symptoms that arise, dyspepsia classified as organic dyspepsia and functional dyspepsia. Major depression syndrome is manifested by five or more of the following symptoms, feeling depressed, loss of interest or pleasure in most or all activities, insomnia or hypersomnia, changes in appetite or weight, psychomotor retardation or agitation, low energy, poor concentration, worthless thoughts or guilt, recurrent thoughts about death or suicide that currently the patient felt almost all day, almost every day for a minimum of two consecutive weeks.<sup>2</sup>

Although it is repeatedly mentioned in the literature that anxiety, depression and stress are often seen in dyspepsia patients and strongly correlates with non-organic gastrointestinal (GIT) symptoms with anxiety and depression, a review of the literature also correlate the strong association between upper GIT inflammation and psychiatric disorders. Local studies also show an association between dyspepsia symptoms and psychological disorders.<sup>3</sup>

A study was conducted on 38 patients with functional dyspepsia, 26 people (68%) experienced unwanted life events, 35 people (92%) experienced anxiety, and as many as 38 people (100%) experienced depression. Statistically undesirable life events and depression are not associated with functional dyspepsia. However cases of anxiety are statistically related to functional dyspepsia.<sup>4</sup> Previous research showed different results, which encouraged research to aim to determine the relationship between depression severity and dyspepsia type (functional and organic).



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### Method

This research is an observational analytic research with cross sectional design. The study was conducted in the Gastroenterology Division of the Department of Internal Medicine in the Endoscopic Unit of H. Adam Malik General Hospital Medan from December 2018 to January 2019. The subjects of this study were drawn from affordable populations that met inclusion criteria and did not meet the exclusion criteria, all written subjects were willing participated in this study by signing an informed consent form.

Inclusion criteria in this study are men and women aged  $\geq 18$  years, patients with dyspepsia complaints, and receive voluntary and written information and participation approval to undergo physical, laboratory, radiological examinations that are known and approved by the Health Ethics Research Committee. Exclusion criteria in this study are patients who have received H. pylori eradication in the past 6 months or are currently on antibiotic therapy commonly used in eradication therapy, patients are not cooperative, patients with malignancy, pregnant woman.

The independent variables in this study were type of dyspepsia (functional and organic). Organic dyspepsia is said if the cause of dyspepsia is clear, for example the presence of peptic ulcer, gastric carcinoma, and cholelithiasis which can be found easily through clinical, radiological, laboratory, or endoscopy.<sup>5</sup> Functional dyspepsia is a disease disorder in the stomach that clinically finds complaints in the form of epigastric pain, early satiation, post prandial fullness, and epigastric burning, besides in functional dyspepsia there are also psychological complaints that are more frequent and more severe than organic dyspepsia.<sup>6</sup> This type of dyspepsia is obtained from the results of endoscopic examination.

The dependent variable in this study was the severity of depression. Examination carried out on respondents using the DASS questionnaire (Depression Anxiety Stress Scale). The collected data was analyzed using univariate and bivariate analysis. Bivariate analysis using the Fisher's Exact test.

### Result

Data collection in this study was conducted from December 1<sup>st</sup> 2018 to January 31<sup>st</sup> 2019 in patients with dyspepsia (functional and organic) who came to the Gastroenterology Division of the Department of Internal Medicine H. Adam Malik General Hospital Medan with a total of 52 subjects.

#### Univariate Analysis

Demographic data in this study included gender, age, type of dyspepsia based on endoscopic results, dyspepsia complaints, duration of dyspepsia, and level of depression.

**Table 1. Characteristics of dyspepsia patients (functional dan organic) in H. Adam Malik General Hospital Medan**

Variable	Frequency(n)	Percentage (%)
Sex		
Male	29	55,8
Female	23	44,2
Age		
18 – 30	8	15,4
31 – 45	14	26,9
46 – 60	15	28,9
61 – 75	14	26,9
76 – 90	1	1,9

Based on Table 1, it is known that male respondents obtained more than female and age of respondents from 52 patients with dyspepsia was highest in the age range of 45-60 years.



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**Table 2. Characteristics of complaints and duration of complaints of dyspepsia patients (functional and organic) at H. Adam Malik General Hospital Medan**

Characteristics Data	Frequency (n)	Percentage (%)
Dyspepsia Complaints		
Pain		
Yes	40	76,9
No	12	23,1
Satiating		
Yes	28	53,8
No	24	46,2
Fullness		
Yes	29	55,8
No	23	44,2
Burning		
Yes	37	71,2
No	15	28,8
Dyspepsia duration (months)		
3 – 12	34	65,4
13 – 24	17	32,7
25 – 36	1	1,9

Respondents in this study mostly experience pain, easy satiety, fullness and burning sensation. Dyspepsia complaints felt by respondents ranging from 0-12 months had the highest percentage followed by 13-24 months.

**Table 3. Characteristics of duration of dyspepsia and the severity of depression in H. Adam Malik General Hospital Medan**

Depression Severity	Depression		
	Normal	Mild	Moderate
Dyspepsia 3 – 12	9 (17,3%)	20 (38,5%)	5 (9,6%)
Duration (months) 13 – 24		10 (19,2%)	7 (13,5%)
24 – 36		-	1 (1,9%)

More than half of respondents in this study with complaints of dyspepsia experienced mild depression, then followed by moderate and normal depression. Dyspepsia complaints for 3 - 12 months category experienced the most depression.

**Table 4. Characteristics the types of dyspepsia and the severity of depression in H. Adam Malik General Hospital Medan**

Variable	Frequency (n)	Percentage (%)
Dyspepsia		
Functional	24	46,2
Organic	28	53,8
Depression Severity		



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Normal	9	17,3
Mild	30	57,7
Moderate	13	25,0

From endoscopy, organic dyspepsia was found more than functional dyspepsia. Mild depression was the highest presentation of the level of depression felt by respondents followed by moderate and normal levels of depression.

### Bivariate Analysis

Bivariate analysis is conducted to determine the relationship of independent variables to the dependent variable. This research data analysed using the Fisher's Exact test. From the 52 respondents who became the study sample, 24 people (46.2%) included in the category of functional dyspepsia and the remaining 28 people (53.8%) were organic dyspepsia. Different test characterized of subjects in the functional dyspepsia group and organic dyspepsia can be seen in table 5

*Table 5. Association between types of dyspepsia and depression severity*

Depression Severity		Depression			p
		Normal	Mild	Moderate	
Dyspepsia	Functional	3 (12,5%)	11 (45,8%)	10 (41,7%)	0,036
	Organic	6 (21,4%)	19 (67,9%)	3 (10,7%)	

\*p<0,05

There was a relationship between the type of dyspepsia and the severity of depression ( $p = 0.036$ ). Of the 24 functional dyspepsia patients, 41.7% had moderate depression and 45.8% had mild depression. Meanwhile, from 28 organic dyspepsia patients, 10.7% had moderate depression and 67.9% had mild depression.

### Discussion

Descriptive data in this study can be illustrated from the data obtained including: 52 samples consecutively and obtained differences in prevalence rates between sex groups of patients with dyspepsia. In this study, the prevalence of male dyspepsia was higher at 55.8% and 44.2% for women. This is similar to the research conducted by Hemriyantton et al in Dr. RSUP M. Djamil Padang where the number of patients with male dyspepsia syndrome was 55.7% and women were 44.3%.<sup>7</sup>

Research conducted by Darwin et al. found that the prevalence of female functional diypepsia were 65% and male were 35%. Widya et al also obtained a comparison of female sex: male in functional dyspepsia were 2: 1, whereas in organic dyspepsia the comparison of female : male was 1: 2 and data obtained in 2009 in the endoscopic examination in Wahidin SudiroHusodo Hospital, more organic dyspepsia was found in male while functional dyspepsia was more often in female.<sup>8,9</sup> It was because female more susceptible to stress, their eating patterns often irregular and female often done the wrong diet program, using slimming drugs that actually disrupts stomach acid production. Strict diet by consuming only fruits or vegetables, will cause digestive disorders, or pregnant female in their first trimester pregnancy, often experiencing symptoms similar to dyspepsia.<sup>8</sup>

While the research conducted by Farejo et al. said that female have different expectations of feeling uncomfortable when experiencing symptoms such as flatulence or abdominal pain, that was because this disease is considered a sensitive subject and embarrassing conditions that may be more difficult for female to overcome than male, so female come more often to health services to check these complaints.<sup>10</sup>



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In this study, there were more male respondents than female. This might be related to the lifestyle of male who tend to be more unhealthy life compared to female such as: smoking, drinking coffee, alcohol, or drinks that have been carbonated (soft drinks), foods that produce gas (tape, jackfruit, durian), or consumption of certain drugs.<sup>11</sup>

In this study, respondents with age group 46-60 years were more likely to experience dyspepsia. This is also the same with the research conducted by Cahyanto et al in the Department of Internal Medicine Dr. Sardjito Yogyakarta, which has a prevalence in the age group <45 years of 46.6% and age group  $\geq 45$  years of 53.4%.<sup>3</sup> But in a study conducted by Braig et al in Germany comparing studies in 1996 and 2015 showed differences. In a study conducted in 1996 there was a difference in the prevalence of the age group of patients with dyspepsia. The highest prevalence in the age group of 20-29 years is 50.8%, then the age group of 30-44 years is 29.4%, and the age group  $\geq 45$  years is 19.8%. While the research conducted in 2015 found the same thing as the research conducted. The highest prevalence in the age group 30-44 years is 46.6%, then in the age group  $\geq 45$  of 42.3%, and the age group of 20-29 years is 11.1%.<sup>12</sup>

From the number of respondents obtained during the study, patients with functional dyspepsia was 46.2% and organic dyspepsia was 53.8%. This is similar to the research conducted by Westa at the Internal Medicine Polyclinic at Sanglah Hospital, Denpasar, which got 43.5% in functional dyspepsia and 56.5% in organic dyspepsia.<sup>13</sup> In a study conducted by Kumar Ddk in Mumbai, India also found similar data where the prevalence of functional dyspepsia was lower than organic dyspepsia.<sup>14</sup> The higher prevalence of organic dyspepsia compared to functional dyspepsia in this study may be due to the high rate of referral to H. Adam Malik Hospital, which is a tertiary hospital in North Sumatra.

The depression severity found in this study was 57.7% for mild depression, 25.0% for moderate depression, and 17.3% for normal. In the research conducted by Cahyanto et al. Depressive symptoms are found in patients with functional dyspepsia. The prevalence of mood disorders was 26.7%, clinical symptoms of depression were 16.3%, depression was 33.3%, and major depression was 10%.<sup>3</sup>

### **Association between Depression Severity in Patients with Functional Dyspepsia Compared to Organic Dyspepsia**

Data analysis showed that there was a relationship between depression severity and type of dyspepsia, where more severe depression was associated with functional dyspepsia than organic dyspepsia ( $p = 0.036$ ). Of the 13 moderate depressed patients, 76.9% had functional dyspepsia. This is consistent with the research conducted by Lee et al which stated stress and depression are associated with various types of digestive diseases, and can be a predisposition factor for functional dyspepsia and irritable bowel syndrome. From this study it was also stated that psychological evaluation of patients with gastroenterology is needed (Lee et al. 2015).

The increasing prevalence of functional dyspepsia in some of these studies may be related to stress factors. This is also evident from several studies such as the research conducted by Braig et al which compared trends in 1996 and 2015 which concluded that work-related stress is one of the causes of dyspepsia.<sup>12</sup> The research of Nam et al also stated the same thing. Job demands and work atmosphere have a relationship with functional dyspepsia in the female work environment.<sup>15</sup>

Research conducted by Darwin et al also stated that stress levels are associated with the release of pro-inflammatory cytokines (IL-6) in patients with functional dyspepsia. This increased production of peripheral cytokines and proinflammatory markers is associated with psychiatric disorders such as major depressive disorders and posttraumatic stress disorders.<sup>16</sup>

The study conducted by Sari et al stated that depression is expected to exacerbate symptoms of functional dyspepsia, and in some cases can be etiologically related to dyspepsia syndrome, although this is still debated. The relationship of depression to functional dyspepsia can be explained through the brain-gut axis theory, in which the central nervous system, autonomic nervous system, and enteric nervous system can communicate in



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two directions and influence each other, and this allows psychological disorders such as depression to affect motor activity, sensory, and secretory in the gastrointestinal tract and cause symptoms in functional dyspepsia.<sup>17</sup> Mak et al. also stated that there was a significant relationship between dyspepsia with anxiety and depression, and even a greater relationship to depression. Although this is not the same as the research conducted by Kalixanda which stated that there was a relationship between dyspepsia and anxiety disorders but not against depression.<sup>18</sup>

### Conclusion

There is an association between the severity of dyspepsia and type of dyspepsia, where more severe depression is associated with functional dyspepsia compared to organic dyspepsia ( $p = 0.036$ ).

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