


The Relationship of Anxiety Disorders and The Incident of Dyspepsia Syndrome In Pre-Clinical Students of The Faculty of Medicine, University of Alkhairaat

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ARTICLE INFO	ABSTRACT
<p>Article History: Received: 27 January 2025 Accepted: 09 February 2025 Published online: 10 February 2025</p>	<p>Student mental health is one of the most worrying problems worldwide. Medical students are more vulnerable to mental health issues. One of these is anxiety disorder, due to several factors such as academic stress, obstacles to achieving goals, environmental changes, and challenges such as the transition from school to university and the change of roles from student to student. The impact of anxiety disorders can affect the gastrointestinal system's motility and sensitivity to the stomach, such as dyspepsia syndrome, which will affect the quality of learning and academic processes in students. The aim of this study is to find out the influence of anxiety disorder on the occurrence of dyspepsia syndrome in students in the Pre-Clinic of the Medical Faculty of the University of Alkhairaat. The method of this research uses observational analytical research with a cross-sectional approach carried out in pre-clinics students of the medical faculty of Alkhairaat University by filling out the Hamilton Rating Scale for Anxiety (HARS) and Short Form Leeds Dyspepsy Questionnaires. (SFLD-Q). Sampling techniques used total sampling, with a total of 159 respondents from the 2020, 2021, and 2022 forces meeting the research criteria. The research was analyzed univariately and bivariately using the Spearman correlation test. The findings of a study of 159 respondents on anxiety disorder revealed that 57.9% had no anxiety, 25.2% had mild anxiety, 9.4% had moderate anxiety, 6.9% had severe anxiety, and 0.6% had very severe anxiety. 20.8% had no dyspepsia, 52.8% had mild, 20.1 had moderate, and 6.3% had severe. The results of the bi-variant analysis in this study resulted in $p = 0,001$ ($p < 0.05$) and $r = 0,491$. The conclusion of this study is that there is a sufficient and directed relationship between anxiety disorder caused by the occurrence of dyspepsia syndrome in students at the Pre-Clinic Medical Faculty of Alkhairaat University.</p>
<p>Keywords: Anxiety Disorders; Dyspepsia Syndrome; HARS; SFLD-Q</p> <p>This is an open access article under  the CC-BY-SA license.</p>	

INTRODUCTION

Anxiety disorders are mental disorders characterized by fear, constant feeling of being overwhelmed, unrealistic and excessive thinking and constant worry which are the main characteristics.¹ Another definition explains that anxiety is an emotion accompanied by a feeling of fear that is widespread and unpleasant, unclear and often accompanied by autonomic symptoms such as muscle tension, headaches, excessive sweating, chest tightness, heart palpitations and digestive tract disorders.²

In a study at the Faculty of Medicine, Tadulako University, it was shown that 53% experienced mild levels of anxiety, 25.9% experienced moderate levels of anxiety and 20.4% experienced severe levels of anxiety.³ The clinical manifestations of anxiety disorders include cognitive symptoms such as fear, physiological symptoms such as gastrointestinal disorders, behavioral symptoms such as restlessness and affective symptoms such as tension and nervousness.⁴

The syndrome is a collection of symptoms and dyspepsia is discomfort in the upper stomach or epigastrium with symptoms such as nausea, vomiting, bloating, feeling full quickly, a feeling of fullness in the stomach and belching.⁵

Another definition explains that there is a disturbing postprandial feeling of fullness, feeling full quickly, pain in the epigastrium or the appearance of a burning sensation in the epigastrium originating from the gastroduodenal area without any organic, systemic or metabolic disease.⁶

The prevalence of dyspepsia syndrome varies throughout the world, with a higher prevalence occurring in Western countries (10% to 40%), including the United States (US). In Asian countries, the prevalence is 5% to 30%. Dyspepsia syndrome is found to occur more frequently in women than men. These differences are said to be due to inherent sex-specific differences in gastrointestinal function. For example, there are sex-specific variations in hormonal mechanisms, pain signals, and health maintenance.⁷

The causes of dyspepsia syndrome vary, such as *Helicobacter pylori* infection, consuming foods and drinks that stimulate excessive HCL formation such as caffeine, spicy and sour foods,

alcoholic drinks and also irregular eating patterns.⁸

MATERIAL AND METHOD

This research was conducted at the Faculty of Medicine, Alkhairaat University, Palu, Jalan Diponegoro, Number 39, Palu City, Central Sulawesi, Indonesia. The type of research used is quantitative with an observational analytical research design using a cross sectional approach. The questionnaires used were the Hamilton Anxiety Rating Scale (HARS) and the Short Form Leeds Dyspepsia Questionnaire (SFLDQ)

The population is all pre-clinical students at the Faculty of Medicine, Alkhairaat University, Palu, with the number of samples that meet the research criteria, namely class of 2020 = 43 respondents, class of 2021 = 46 respondents, and class of 2022 = 70 respondents (total sampling).

The data collection method used by researchers is primary data. Primary data was obtained through questionnaires distributed to respondents

The statistical test used in this research used the Statistical Program For Social Science (SPSS) 26 software. with a normality analysis test to see the distribution of variables. Bivariate analysis was used to test the relationship between two variables, namely the anxiety disorder variable and the dyspepsia syndrome variable using the Spearman correlation test.

RESULTS

Table 1. Respondent Characteristic

Characteristic	N (159)	%
Gender		
Laki-laki	40	25,16%
Perempuan	119	74,84%
Students Batch		
2020	43	27,04%
2021	46	28,93%
2022	70	44,03%

Based on table 1, it was found that the majority of respondents were female, namely 119 people (74.84%) and 40 male respondents (25.16%). Characteristics of respondents based on class, namely class of 2020 as many as 43 people (27.04%), class of 2021 as many as 46 people (28.93%), and class of 2022 as many as 70 people (44.03%).

Table 2. Distribution of Levels of Anxiety Disorders in Pre-Clinical Students, Faculty of Medicine, Alkhairaat University

Variable	Batch			N	
	20	21	22	n	%
No Anxiety	27	28	37	92	57,9
Mild Anxiety	9	10	21	40	25,2
Moderate Anxiety	5	3	7	15	9,4
Severe Anxiety	2	4	5	11	6,9
Serious Anxiety	0	1	0	1	0,6
Total	43	46	70	159	100

Table 2 shows that of the 159 respondents from the Faculty of Medicine, Alkhairaat University, 92 (57.9%) respondents did not experience anxiety, 40 (25.2%) respondents had mild anxiety, 15 (9.4%) respondents experienced moderate anxiety, 11 (6.9%) respondents experienced severe anxiety and 1 (0.6%) respondent had very severe anxiety. Based on the class in Preclinic who experienced the most anxiety, the class of 2022 was 33 respondents, then the class of 2021 was 18 respondents and the class of 2020 was 16 respondents. This could be because the class of 2022 are first year students who are still adapting to the academic transition stage compared to the classes of 2020 and 2021 who have adapted earlier to the academic process at the medical faculty and experienced a lot of stressors during the academic process so that the class of 2020 and 2021 already have the techniques in stressor management, the level of anxiety in first year students is higher than second and third year students. Apart from that, as students get older, the level of emotional

maturity and maturity will increase because they have the ability to react wisely in accepting negative things from the environment around them without reacting negatively.⁹

Therefore, second and third year students who are more mature in age and emotional capacity have lower levels of anxiety disorders compared to first year students. This research is in line with research conducted by Theresia et al in 2022 on 160 students of the Nusa Cendana University Medical Education Study Program with data obtained that the level of anxiety experienced by many respondents in the study was not experiencing anxiety, namely 67 people (41.9%) . In the results of this study, the majority of pre-clinical students at the Faculty of Medicine, Alkhairaat University, did not experience anxiety, this could be because they already had the ability to overcome the anxiety they experienced so that it did not interfere with their activities. Techniques in an effort to solve problems become strategies or defense mechanisms to protect oneself to overcome changes or burdens in the body which are called coping mechanisms.² By looking at the sample, it is a student who has passed the first year of medical education.

In research conducted by Nurrahmansia in 2021, a coping mechanism is an effort to complete and defense mechanism in protecting oneself and dealing with changes and burdens that can cause a response within oneself. If individuals use their coping mechanisms then individuals can adapt to these changes or burdens. Coping mechanisms such as problem solving strategies, emotional expression and adaptation to problems can reduce anxiety which can affect students. 10 This is what students at the Pre-Clinic Faculty of Medicine at Alkhairaat University can do, with the many pressures and demands in academics and other factors. has no effect on implementing negative coping mechanisms so that students do not experience anxiety, if there is a risk of experiencing mild anxiety but using negative coping mechanisms then there is a possibility of an increase in the anxiety they experience.¹¹

Table 3. Distribution of Levels of Dyspepsia Syndrome in Pre-Clinical Students, Faculty of Medicine, Alkhairaat University

Variable	Batch			N	
	20	21	22	N	%
No Dyspepsia Syndrome	8	8	17	33	20,8
Mild Dyspepsia Syndrome	24	29	31	84	52,8
Moderate Dyspepsia Syndrome	9	7	16	32	20,1
Severe Dyspepsia Syndrome	2	2	6	10	6,3
Total	43	46	70	159	100

Based on table 3 above, it shows that of the 159 respondents from the Faculty of Medicine, Alkhairaat University, 33 (20.8%) respondents did not experience dyspepsia syndrome, 84 (52.8%) respondents had mild dyspepsia syndrome, 32 (20.1%) respondents experienced moderate dyspepsia and 10 (6.3%) respondents experienced severe dyspepsia syndrome.

This research is in line with research conducted by Rahmadiyah which showed that the majority of students experienced dyspepsia syndrome, 95 students (63.3%) were known to have dyspepsia syndrome, while the remaining 55 students (36.7%) were known not to have dyspepsia syndrome.¹¹

In this study, many students experienced dyspepsia syndrome, namely 126 (79.1%) respondents who indicated that there were variations in the incidence of dyspepsia syndrome. The variations in this study indicate that there may be other factors that trigger it besides anxiety, including *Helicobacter pylori* infection, consuming food and drink. which stimulate excessive HCL formation such as caffeine, spicy and sour foods, alcoholic drinks and also irregular eating patterns.⁸

In this study, students who experienced dyspepsia syndrome were 126 (79.1%) respondents and if we look at the characteristics

of the sample, 119 (74.84%) of the respondents were more female. This is in accordance with the theory which states that women are more likely to experience dyspepsia syndrome because women take better care of their body shape so they follow a strict diet and have irregular eating habits. Women are also more emotional when facing something and problems tend to drag on, affecting the work of the gastrin hormone which causes an increase in HCL production.¹²

In this study, if we look at the characteristics of the group at the pre-clinic, the group that experienced the most dyspepsia syndrome was 53 respondents in the class of 2022, then the class of 2021 with 38 respondents and the class of 2020 with 35 respondents. This can be caused by several factors such as anxiety, *Helicobacter pylori* infection, consuming foods and drinks that stimulate excessive HCL formation such as caffeine, spicy and sour foods, alcoholic drinks and also irregular eating patterns.⁸

The class of 2022, who are first-year students, have lower academic readiness than second- and third-year students because first-year students are still used to a one-way, teacher-centered academic system. This can be a trigger for dyspepsia syndrome, such as irregular eating patterns, because students are more focused on studying so their time management is relatively poor.

When they have entered their second year of study, they will be accustomed to a student-centred academic system so that they can manage their time better and have greater readiness for learning, while second and third year students have undergone academics for a period of two to three years so that they After adapting, their time management becomes relatively better compared to first year students

Table 4. The Relationship between Anxiety Disorders and the Incidence of Dyspepsia Syndrome in Pre-Clinical Students at the Faculty of Medicine, Alkhairaat University

Var	TSD	SDR	SDS	SDB	n	p	r
TAK	30	50	12	0	92	0,0	0,4
KR	2	26	10	2	40	01	91
KS	1	5	6	3	15		
KB	0	3	4	4	11		
KBS	0	0	0	1	1		
Total	33	84	32	10	159		

Based on table 4 above, it shows that of the 159 respondents studied, there were 92 (57.9%) respondents who did not experience anxiety with no dyspepsia syndrome, 30 (32.6%) respondents, 50 (54.3%) respondents had mild dyspepsia syndrome, 12 (13.0%) respondents had moderate dyspepsia syndrome and no respondents experienced severe dyspepsia syndrome. Regarding anxiety, 40 (25.2%) respondents experienced mild anxiety with 2 (5.0%) respondents without dyspepsia syndrome, 26 (65.0%) respondents had mild dyspepsia syndrome, 10 (25.0%) respondents had moderate dyspepsia syndrome, 2 (5.0%) respondents had severe dyspepsia syndrome.

DISCUSSION

Respondents who had a moderate level of anxiety were 15 (9.4%) respondents with no dyspepsia syndrome as many as 1 (6.7%) respondents, mild dyspepsia syndrome 5 (33.3%) respondents, moderate dyspepsia syndrome 6 (40.0%) respondents, and 3 (20.0%) respondents had severe dyspepsia syndrome. Furthermore, 11 (6.9%) respondents experienced severe anxiety, with no respondents not experiencing dyspepsia syndrome, 3 (27.3%) respondents with mild dyspepsia syndrome, 4 (36.4%) respondents with moderate dyspepsia syndrome and 4 (36.4%) respondents with moderate dyspepsia syndrome. 36.4%) respondents had severe

dyspepsia syndrome. Meanwhile, for respondents who had very severe levels of anxiety, only 1 (0.6%) respondent had severe dyspepsia syndrome.

Based on the Spearman correlation statistical test analysis, between the variable anxiety disorders and the incidence of dyspepsia syndrome, the significant level (p) value was 0.001 (p value <0.05). This means that there is a unidirectional relationship between anxiety disorders and the incidence of dyspepsia syndrome in pre-clinical students at the Faculty of Medicine, Alkhairaat University. So from these results the hypothesis H0 is rejected and H1 is accepted, namely that there is a relationship between anxiety disorders and the incidence of dyspepsia syndrome in Pre-Clinic students at the Faculty of Medicine, Alkhairaat University.

This research is also in line with research by Josephine et al, namely that there is a relationship between anxiety disorders and the incidence of dyspepsia syndrome in students at the Faculty of Medicine, Cendana University. In accordance with theory, anxiety can activate the emotional motor system in the cerebral cortex, then this stimulation will be transmitted to the anterior hypothalamus and forwarded to the vagus nerve which will affect the motility and sensitivity of the stomach, stimulation of the emotional motor system can be transmitted to the anterior hypothalamus, and then to anterior pituitary which will secrete CRH.¹³

CRH will activate cells in the adrenal cortex to produce the hormone cortisol which will stimulate the production of HCL and inhibit the production of prostaglandin E which is protective in the gastric mucosa, so that it will cause the gastric mucosa to be injured more easily and complaints of dyspepsia syndrome occur.

This research has a correlation value of $r = 0.491$, meaning it shows sufficient strength of the relationship. This can be caused by other factors that can influence the incidence of dyspepsia syndrome besides anxiety disorders. Other possible factors include Helicobacter pylori infection, consuming foods and drinks that stimulate excessive HCL formation such as caffeine, spicy foods and alcoholic acids and also irregular eating patterns.⁸

CONCLUSION AND RECOMMENDATION

Based on the results of this study, it was found that 92 (57.9%) people did not experience anxiety disorders, 67 (42.1%) people experienced anxiety disorders, 33 (20.8%) people did not experience dyspepsia syndrome and 126 (79%) 2%) people experience dyspepsia syndrome. The results of statistical tests showed that there was a sufficient and unidirectional relationship between anxiety disorders and the incidence of dyspepsia syndrome in pre-clinical students at the Faculty of Medicine, Alkhiraat University.

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AUTHOR CONTRIBUTIONS

Conceptualization, A. A. M., S. S., A. H.; Methodology, A. A. M.; validation, S. S. and A. H.; formal analysis, A. A. M.; investigation, A. A. M., resources, A. A. M.; data curation, A. A. M.; writing-original draft preparation, A. A. M., S.S., and A. H.; writing-review and editing, S. S., A. H.; visualization, A. A. M. All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The authors declares that there is no conflict of interest.

REFERENCES

1. Munir S, Takov V. Generalized Anxiety Disorder. In: *StatPearls*. StatPearls Publishing; 2023. Accessed August 28, 2023. <http://www.ncbi.nlm.nih.gov/books/NBK441870/>
2. Lenga TL, Koamesah SMJ, Wungouw HPL, Riwu M. Hubungan Tingkat Kecemasan Dengan Kejadian Dispepsia Pada Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Nusa Cendana. *Cendana Med J CMJ*. 2022;10(1):113-119. doi:10.35508/cmj.v10i1.6814
3. Demak IPK, Muharam DN, Salman M. Hubungan Tingkat Kecemasan Dalam Menghadapi Ujian Blok Dengan Nilai Ujian Mahasiswa Kedokteran Tahun Kedua Universitas Tadulako. *Molucca Medica*. Published online June 19, 2019:11-17. doi:10.30598/molmed.2019.v12.i1.11
4. Chand SP, Marwaha R. Anxiety. In: *StatPearls*. StatPearls Publishing; 2022. Accessed August 14, 2022. <http://www.ncbi.nlm.nih.gov/books/NBK470361/>
5. Silvia M, Wilson, Armyanti I. Hubungan antara Tingkat Kecemasan dan Dispepsia Pasien Rawat Jalan di Rumah Sakit Universitas Tanjungpura Pontianak, Indonesia. *Cermin Dunia Kedokt*. 2023;50(2):66-69. doi:10.55175/cdk.v50i2.517
6. Alam L, Naqvi M, Saeed F. Relation Of Functional Dyspepsia With Anxiety And Depression And Its Impact On The Quality Of Life Of Patients. 2019.
7. Francis P, Zavala SR. *Functional Dyspepsia*. StatPearls Publishing; 2022. Accessed August 13, 2022. <https://www.ncbi.nlm.nih.gov/books/NBK554563/>
8. Fithriyana R. Faktor-Faktor Yang Berhubungan Dengan Kejadian Dispepsia Pada Pasien Di Wilayah Kerja Puskesmas Bangkinang Kota. *Prepotif J Kesehat Masy*. 2018;2(2):43-53. doi:10.31004/prepotif.v2i2.79
9. Yasmin M. Perbedaan Tingkat Kecemasan Mahasiswa Kedokteran Preklinik dan Dokter Muda di Fakultas Kedokteran UNS Semasa Pandemi COVID-19. Published online 2022. Accessed March 5, 2024. <https://digilib.uns.ac.id/dokumen/85382/P-erbedaan-Tingkat-Kecemasan-Mahasiswa-Kedokteran-Preklinik-dan-Dokter-Muda-di-Fakultas-Kedokteran-UNS-Semasa-Pandemi-COVID-19>
10. Nurrahmasia N, Amalia E, Sari DP. Hubungan Mekanisme Koping Dengan Skor Kecemasan Dalam Menghadapi Ujian

Keterampilan Medik Pada Mahasiswa Prodi Pendidikan Dokter Universitas Mataram. *Smart Med J*. 2021;4(1):18-28.

11. Rahmadyah I. Hubungan Kecemasan Dengan Kejadian Sindrom Dispepsia Pada Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Tanjungpura. *J Mhs PSPD FK Univ Tanjungpura*. 2019;5(1). Accessed September 10, 2023. <https://jurnal.untan.ac.id/index.php/jfk/article/view/31210>
12. Evalina Ayu Wibawani, Yuldan Faturahman, Anto Purwanto. Faktor-Faktor Yang Berhubungan Dengan Kejadian Dispepsia Pada Pasien Rawat Jalan Poli Penyakit Dalam Di RSUD Koja. 2021;17.
13. Josephine Angelia S, , Hari Sutanto. Hubungan kecemasan dengan derajat keparahan dispepsia pada mahasiswa Fakultas Kedokteran Universitas Tarumanagara angkatan 2014. *Fak Kedokt Univ Tarumanagara Jkt Indones*.