

## ORIGINAL ARTICLE

# Dyspepsia and Depression, Anxiety, Stress Scales (DASS) Score

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## ABSTRACT

**Background:** Dyspepsia is a constellation of symptoms referable to the gastroduodenal region of the upper gastrointestinal tract. Emotional disturbances are often associated with dyspepsia and have been proposed as one of the possible causes of dyspepsia. This study was aimed to evaluate the difference between the severity of dyspepsia using porto alegre dyspeptic symptoms questionnaire (PADYQ) and emotional disturbances using depression, anxiety, stress scales (DASS).

**Method:** This study was a cross-sectional analytical study. All the subjects were evaluated using PADYQ and DASS. PADYQ is classified into four categories (no, mild, moderate and severe dyspepsia symptoms). Data was analyzed using Independent t-test and Mann-Whitney test. A  $p < 0.05$  was considered as statistically significant.

**Results:** There were 90 subjects that enrolled in this study, consisted of 47 (52.2%) males and 43 (47.8%) females. Thirty three (36.7%) subjects had PADYQ score was  $< 6$ , while it was  $\geq 6$  in the other 57 (63.3%) subjects. DASS scores were significantly different in subjects without dyspepsia symptoms compared to subjects with dyspepsia symptoms. There is a difference in DASS scores between subjects with different categories of dyspepsia symptoms ( $p < 0.05$ ).

**Conclusion:** There was a difference in the severity of emotional disturbances among subjects with dyspepsia symptoms and without dyspepsia symptoms. The severity of emotional disturbances parallel with the severity of dyspepsia. Evaluation of emotional disturbances in case of dyspepsia will be helpful in the management of dyspepsia.

**Keywords:** dyspepsia, emotional disturbances, porto alegre dyspeptic symptoms questionnaire (PADYQ), depression, anxiety, stress scales (DASS)

## ABSTRAK

**Latar belakang:** Dispepsia adalah konstelasi gejala-gejala yang berasal dari daerah lambung pada saluran pencernaan bagian atas. Gangguan emosional sering berkaitan dengan dispepsia dan telah diajukan sebagai salah satu kemungkinan penyebab dispepsia. Penelitian ini bertujuan untuk mengetahui perbedaan antara tingkat keparahan dispepsia dengan menggunakan porto alegre dyspeptic symptoms questionnaire (PADYQ) dan gangguan emosional dengan menggunakan depression, anxiety, stress scales (DASS).

**Metode:** Penelitian ini merupakan penelitian analitik potong lintang. Semua subjek dievaluasi menggunakan PADYQ dan DASS. PADYQ diklasifikasikan menjadi empat kategori (tanpa gejala dispepsia, gejala dispepsia ringan, gejala dispepsia sedang, dan gejala dispepsia berat). Data dianalisis dengan menggunakan uji t tidak berpasangan dan uji Mann-Whitney serta  $p < 0,05$  dianggap sebagai signifikan secara statistik.

**Hasil:** Ada 90 subyek yang terdaftar untuk penelitian ini, terdiri dari 47 (52,2%) laki-laki dan 43 (47,8%) perempuan. Tiga puluh tiga (36,7%) subjek memiliki skor PADYQ  $< 6$ , sedangkan yang skornya  $\geq 6$  sebanyak 57 (63,3%) subyek. Skor DASS secara signifikan berbeda pada kelompok subyek tanpa gejala dispepsia dibandingkan dengan kelompok subyek dengan gejala dispepsia. Ada perbedaan skor DASS pada subyek dengan tingkat keparahan gejala dispepsia yang berbeda ( $p < 0,05$ ).

**Simpulan:** Ada perbedaan tingkat keparahan gangguan emosional antara subyek dengan gejala dispepsia dan tanpa gejala dispepsia. Tingkat keparahan gangguan emosional berbanding lurus dengan tingkat keparahan dispepsia. Evaluasi gangguan emosional dalam kasus dispepsia akan membantu dalam pengelolaan dispepsia.

**Kata kunci:** dispepsia, gangguan emosional, porto alegre dyspeptic symptoms questionnaire (PADYQ), depression, anxiety, stress scales (DASS)

## INTRODUCTION

Dyspepsia is a constellation of symptoms referable to the gastroduodenal region of the upper gastrointestinal tract.<sup>1</sup> The dyspeptic symptoms are epigastric pain, epigastric burning, postprandial fullness, early satiation, and others, including bloating in the upper abdomen, nausea, vomiting, and belching. Dyspepsia is one of the most common disorders in medicine, with dyspeptic patients seen on a daily basis not only by gastroenterologists but also by physicians in a variety of other fields.<sup>2,3</sup> In Indonesia, it is estimated that there are 30% cases diagnosed in general practice and 60% are found in specialist practice.<sup>4</sup> Based on Indonesian Health Profile 2007, dyspepsia had already ranked 10<sup>th</sup> in the category of the most common disease in hospitalized patients, with total hospitalized patients of 34,029 or about 1.59% in 2006.<sup>5</sup>

Emotional disturbances are often associated with dyspepsia and have been proposed as one of the possible causes of dyspepsia.<sup>2</sup> Emotional disturbances in the form of anxiety, depression and stress were frequently seen in patients suffering from dyspepsia.<sup>6</sup> Stressful life events in the patient's social environment are also thought to be associated with the onset or exacerbation of dyspeptic symptoms. Various studies show that depression and anxiety play a role in the occurrence of functional dyspepsia and the severity of emotional disturbances is in line with the severity of dyspepsia.<sup>2,3,7</sup>

This study aimed to evaluate the difference between the severity of dyspepsia using porto alegre dyspeptic symptoms questionnaire (PADYQ) and emotional disturbances using depression, anxiety, stress scales (DASS).

## METHOD

This study was an analytical cross-sectional study at University of North Sumatera, Medan, Indonesia from October-December 2015. A total of ninety consecutive medical students of the class of 2012 were enrolled in this study. Inclusion criteria are stated as followings: male or female aged  $\geq 18$  years old, willing to be recruited in the study and signed the informed consent. While the exclusion criteria defined as subjects with stomach malignancy, the presence of stomach surgery, and subjects in NSAIDs therapy. The study was approved by the local ethics committee. Each patient was giving and asked to sign informed consent paper. The baseline information from patients' demographics was recorded. Subsequently, all the subjects were evaluated using PADYQ and DASS.

PADYQ was used to evaluate dyspeptic symptoms. It consists of 11 questions of symptoms including epigastric pain, nausea, vomiting, abdominal bloating, and early satiation. Epigastric pain, nausea and abdominal bloating were evaluated by its intensity, duration, and frequency; while vomiting and early satiation were evaluated by its frequency. PADYQ's total scoring ranged from 0 (no symptoms) to 44 (severe symptoms).<sup>8</sup> Score of each symptom was summed and classified into no dyspepsia symptoms (0-5), mild dyspepsia symptoms (6-11), moderate dyspepsia symptoms (12-22) and severe dyspepsia symptoms (22-44). Depression, anxiety, stress scales (DASS) is a 21-item self-administered, questionnaire designed to measure the magnitude of three negative emotional disturbances: depression, anxiety, and stress. The final score of each item groups (depression, anxiety, and stress) needs to be summed

and multiplied by two.<sup>9</sup>For the purpose of the study, the authors translated the PADYQ and DASS into Indonesia language.

All data were analyzed with SPSS for Windows version 22. Categorical data were described as number and continuous data as mean ±SD. Statistical analysis was done by Independent t-test and Mann-Whitney test with 95% CI. Statistical significance was set at two-tailed  $p < 0.05$ .

**RESULTS**

There were 90 subjects that enrolled in this study, consisted of 47 (52.2%) males and 43 (47.8%) females. The mean age of these subjects was 20.88 ± 0.7 with range 19 to 24 years old. Among 90 subjects, 33 (36.7%) subjects had PADYQ score < 6, while it was ≥ 6 in the other 57 (63.3%) subjects. Table 1 showed that 32 (56.1%) female subjects had dyspepsia symptoms, meanwhile only 25 (43.9%) male subjects had dyspepsia symptoms.

**Table 1. PADYQ category between male and female subjects**

Gender	PADYQ Category			
	No dyspepsia symptoms n (%)	Mild dyspepsia symptoms n (%)	Moderate dyspepsia symptoms n (%)	Severe dyspepsia symptoms n (%)
Male	22 (66.7%)	15 (50%)	9 (40.9%)	1 (20%)
Female	11 (33.3%)	15 (50%)	13 (59.1%)	4 (80%)

PADYQ: porto alegre dyspeptic symptoms questionnaire

**Table 2. DASS scores between male and female subjects**

Gender	n (%)	DASS Score	
		Mean	Standard Deviation
Male	47 (52.2)	11.45	8.08
Female	43 (47.8)	14.19	11.01

DASS: depression, anxiety, stress scales

The DASS Scores were higher in female subjects (14.19 ± 11.01) than male subjects (11.45 ± 8.08). DASS scores in cases with positive dyspepsia symptoms were higher than those with negative dyspepsia symptoms. The more severe the dyspepsia symptoms, the higher the DASS scores (Table 3).

**Table 3. Relationship between PADYQ category and DASS scores**

PADYQ Category (symptoms)	n (%)	DASS Score	
		Mean	Standard Deviation
No dyspepsia symptoms	33 (36.7)	7.64	5.56
Mild dyspepsia symptoms	30 (33.3)	11.53	5.89
Moderate dyspepsia symptoms	22 (24.4)	15.63	6.86
Severe dyspepsia symptoms	5 (5.6)	41.2	6.10

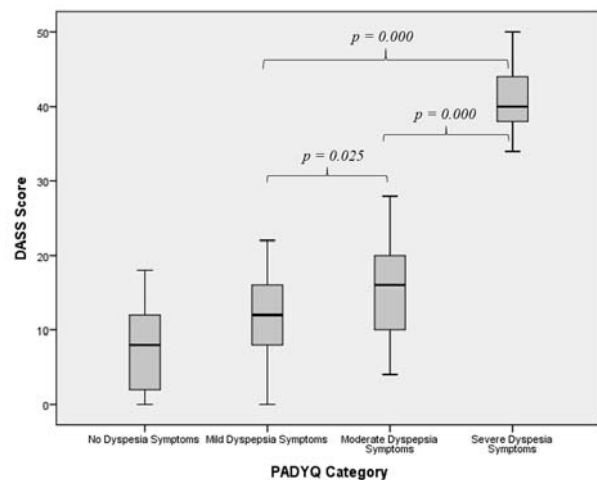
DASS: depression, anxiety, stress scales; PADYQ: porto alegre dyspeptic symptoms questionnaire

**Table 4. DASS scores in subjects without and with dyspepsia symptoms**

DASS score	PADYQ Score		p
	Without dyspepsia symptoms	With dyspepsia symptoms	
	7.64 ± 5.56	15.72 ± 10.28	0,000*

\*p value < 0.05; DASS: depression, anxiety, stress scales; PADYQ: porto alegre dyspeptic symptoms questionnaire

Table 4 showed that DASS scores were significantly different ( $p < 0.05$ ) in subjects without dyspepsia symptoms (PADYQ < 6) compared to subjects with dyspepsia symptoms (PADYQ ≥ 6). Subjects with dyspepsia symptoms had higher mean DASS scores than those without dyspepsia symptoms, so we can conclude that subjects with dyspepsia symptoms had higher DASS scores than those without dyspepsia symptoms.



**Figure 1. Comparison of PADYQ category with DASS scores**

Using independent t-test, the result showed that DASS scores were also significantly different between subjects with different categories of dyspepsia symptoms (mild, moderate and severe dyspepsia symptoms). From the mean value between those categories, it showed that the more severe dyspepsia symptoms, the higher DASS scores (Figure 1).

**DISCUSSION**

The prevalence of dyspepsia in this study (63.3%) was higher than those of previous studies. Shah et al reported the prevalence of dyspepsia was 30.4% in India.<sup>10</sup> In Taiwan, Lu et al reported that the prevalence of dyspepsia was 27.8%.<sup>11</sup> Mahadewa et al reported that the prevalence of dyspepsia was 14.6% in Malaysia.<sup>12</sup> This difference might be because this study was not population based study and using different criteria in diagnosis dyspepsia. The high prevalence of dyspepsia

in medical students at University of North Sumatera needs more study to find risk factors that caused it.

The demographic pattern of this study showed the majority of the dyspepsia subjects were female. This result in line with Mahadewa et al study. Females seem to be had higher DASS score than males. This indicated that females more susceptible to develop emotional disturbances, this result was same with Haider et al and Oei et al study.<sup>6,9</sup>

The mean DASS scores in subjects without dyspepsia symptoms was 7.64, whereas in subjects with dyspepsia symptoms the DASS scores were higher than those of without dyspepsia symptoms. The difference of DASS scores between subjects with and without dyspepsia symptoms was statistically significant ( $p < 0.05$ ). It seems that emotional disturbances have correlation with dyspepsia. This results in accordance with Xiaoping et al and Mahadewa et al.<sup>13,14</sup>

All of data shows that there was a difference of DASS score between different severity of dyspepsia symptoms. Moreover, the more severe the dyspepsia symptoms, the higher the DASS scores. This result was statistically significant ( $p < 0.05$ ). It was shown that the severity of dyspepsia parallel with the severity of emotional disturbances. This result in line with Li et al and Mujakovic et al study.<sup>15,16</sup>

## CONCLUSION

There is a difference in the severity of emotional disturbances among subjects with dyspepsia symptoms and without dyspepsia symptoms. The severity of emotional disturbances parallel with the severity of dyspepsia. Evaluation of emotional disturbances in case of dyspepsia will be helpful in the management of dyspepsia.

## REFERENCES

1. Talley NJ, Ford AC. Functional Dyspepsia. *N Engl J Med* 2015;373:1853-63.
2. Miwa H, Ghoshal UC, Fock KM. Asian consensus report on functional dyspepsia. *J Gastroenterol Hepatol* 2012;27:626-41.
3. Perkumpulan Gastroenterologi Indonesia. Konsensus Nasional: Penatalaksanaan Dispepsia dan infeksi *Helicobacter pylori* 2014.
4. Djojoningrat D. Dispepsia Fungsional. In: AWS, ed. Buku ajar ilmu penyakit dalam. Vol 1. 4<sup>th</sup> ed. Jakarta: Interna Publ 2006.
5. Depkes RI. Profil Kesehatan Indonesia. Jakarta: Departemen Kesehatan Republik Indonesia; 2008.
6. Haider SI, Rasool I, Ahmed S, Hussein S, Hussein J, Hamirani M. Frequency of depression, anxiety, and stress in patients referred for endoscopy with symptoms of dyspepsia. *Journal of Liaquat University of Medical & Health Sciences* 2013;12:140-4.
7. Vishnar A, Ghulam R, Mittal R. Non-ulcer dyspepsia and its correlation with life stress, anxiety, and depression. *Indian J Psychiatry* 1999;41:88-93.
8. Sander GB, Mazzoleni LE, Francesconi CF. Development and validation of a cross-cultural questionnaire to evaluate non-ulcer dyspepsia: the porto alegre dyspeptic symptoms questionnaire (PADYQ). *Dig Dis Sci* 2004;49:1822-9.
9. Oei T, Sawang S, Goh YW, Mukhtar F. Using the depression anxiety stress scale 21 (DASS-21) across cultures. *Int J Psychol* 2013;48:1018-29.
10. Shah S, Bhatia S, Mistry F. Epidemiology of dyspepsia in the general population in Mumbai. *Indian J Gastroenterol* 2001;20:103-6.
11. Lu C, Lang H, Chang F. Prevalence and health/social impacts of functional dyspepsia in Taiwan: a study based on the Rome criteria questionnaire survey assisted by endoscopic exclusion among a physical check-up population. *Scand J Gastroenterol* 2005;40:402-11.
12. Mahadewa S, Yadav H, Rampal S, Goh K. Risk factors associated with dyspepsia in a rural Asian population and its impact on quality of life. *Am J Gastroenterol* 2010;105:904-5.
13. Xiaoping P, Yuyuan L, Weihong S, Yang F. Psychological factors in functional dyspepsia and its treatment. *Chin J Dig Dis* 2000;1:17-20.
14. Mahadewa S, Goh K. Anxiety, depression, and quality of life differences functional and organic dyspepsia. *J Gastroenterol Hepatol* 2011;26:49-52.
15. Li Y, Nie Y, Sha W, Su H. The link between psychosocial factors and functional dyspepsia: an epidemiology study. *Chin Med J* 2002;115:1082-4.
16. Mujakovic S, Dewit N, Marrewijk C. Psychopathology is associated with dyspeptic symptom severity in primary care patients with a new episode of dyspepsia. *Aliment Pharmacol Ther* 2009;29:580-8.