

Relationship between Degrees of Severity Gastroesophageal Reflux Disease (Gerd) with Quality of Life

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ABSTRACT

Background. Gastroesophageal reflux disease (GERD) is a pathological condition caused by the reflux of gastric contents into the esophagus, with symptoms that appear inside and outside the esophagus which can reduce the patient's quality of life. The aim study is to analyze the relationship between the severity of GERD and the quality of life of students Faculty of Medicine at Universitas Sumatera Utara (USU) in 2019 and 2020.

Method. Cross-sectional research with a sampling technique in the form of total sampling. Data collection was carried out using an online questionnaire in the form of a Google form with an assessment using the GERD Questionnaire (GerdQ), Frequency scale for the symptoms of GERD (FSSG), Gastroesophageal reflux disease-health related quality of life questionnaire (GERD-HRQL), and the 20-item self-reporting questionnaire (SRQ-20). After that, the data that has been collected will be tabulated. This study used bivariate analysis, with the Chi-square test and the Fisher Exact Test.

Results. The total number of samples that met the inclusion and exclusion criteria of the study was 225 people with 41 people with GERD (18.2%) suffering from GERD. Of the 41 Students of the Faculty of Medicine from USU in 2019 and 2020 with GERD, 29 people (70.7%) had a good quality of life, and the remaining 12 people (29.3%) had a bad quality of life. There is a relationship between GERD and gender and psychological stress. In addition, there is a relationship between quality of life and the severity of GERD, psychological stress, and drinking alcohol, but there is no relationship between quality of life and gender, smoking habits, and BMI.

Conclusion. Most Medical School Students have a good quality of life, and there is a significant relationship between the severity of GERD and the quality of life.

Keywords: GERD, Quality of life, Degree of severity, Student of Faculty Medicine

ABSTRAK

Latar belakang. Gastroesophageal reflux disease (GERD) adalah kondisi patologis yang disebabkan oleh refluks isi lambung ke kerongkongan, dengan gejala yang muncul di dalam dan di luar kerongkongan yang dapat menurunkan kualitas hidup pasien. Tujuan penelitian

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adalah untuk menganalisis hubungan antara tingkat keparahan GERD dengan kualitas hidup mahasiswa Fakultas Kedokteran USU tahun 2019 dan 2020.

Metode. Penelitian cross-sectional dengan teknik sampling berupa total sampling. Pengumpulan data dilakukan dengan menggunakan kuesioner online berupa Google form dengan penilaian menggunakan GERD Questionnaire (GerdQ), Frequency scale for the symptoms of GERD (FSSG), Gastroesophageal reflux disease-health related quality of life questionnaire (GERD-HRQL), dan 20-item self-reporting questionnaire (SRQ-20). Setelah itu, data yang telah dikumpulkan akan ditabulasi. Penelitian ini menggunakan analisis bivariat, dengan uji Chi-square dan Fisher Exact Test.

Hasil. Jumlah total sampel yang memenuhi kriteria inklusi dan eksklusi penelitian adalah 225 orang dengan 41 orang dengan GERD (18,2%) menderita GERD. Dari 41 Mahasiswa Fakultas Kedokteran USU tahun 2019 dan 2020 dengan GERD, 29 orang (70,7%) memiliki kualitas hidup yang baik, dan sisanya 12 orang (29,3%) memiliki kualitas hidup yang buruk. Ada hubungan antara GERD dengan gender dan stres psikologis. Selain itu, ada hubungan antara kualitas hidup dan tingkat keparahan GERD, stres psikologis, dan minum alkohol, tetapi tidak ada hubungan antara kualitas hidup dengan gender, kebiasaan merokok, dan BMI.

Kesimpulan. Sebagian besar Siswa Sekolah Kedokteran memiliki kualitas hidup yang baik, dan ada hubungan yang signifikan antara tingkat keparahan GERD dan kualitas hidup.

Kata kunci: GERD, Kualitas hidup, Tingkat keparahan, Mahasiswa Fakultas Kedokteran

Received 06 January 2023 | Revised 07 July 2023 | Accepted 25 July 2023

1 Introduction

Gastroesophageal Reflux Disease (GERD) is a pathological condition caused by the reflux of gastric contents into the esophagus, with symptoms appearing inside and outside the esophagus. Chronic reflux of gastric contents into the esophagus can lead to serious complications. GERD can be caused by lifestyle factors such as smoking, drinking alcohol, obesity, drinking too much coffee, stress, and eating spicy foods.[1] Based on the Montreal Consensus, GERD is defined as a pathological condition as a result of reflux of gastric contents into the esophagus which causes various disturbing symptoms and complications in the esophagus and extra-esophagus. Severe complications can cause Barrett's esophagus, esophageal stricture, and adenocarcinoma in the cardia and esophagus.[2] The prevalence of GERD continues to increase over time. The prevalence of GERD is relatively lower in Asia compared to Western countries. In the United States, almost 7% of the population with dyspepsia complaints, and about 20% -40% have GERD disease. However, other studies report that the prevalence of GERD in Asian countries such as Iran ranges from 6.3% -18.3%, Palestine shows a higher rate of 24%, and Japan and Taiwan around 13% -15%. Unlike in East Asia, where the prevalence of GERD is between 2% and 8%, in Indonesia there is no clear epidemiological data on the prevalence of GERD. However, at Cipto Mangunkusumo Hospital in Jakarta, 22.8% of patients who were endoscope had esophagitis. Differences in prevalence in each country are caused by differences in lifestyle and socio-economic,[3] The gastrointestinal system has very important motor functions, namely secretion, digestion, and absorption. Disturbances in the function of the gastrointestinal tract adversely affect patient survival. GERD sufferers will feel chest pain, pain in the epigastrium, nausea,

heartburn, and regurgitation so sufferers will experience sleep disturbances.[4] Several risk factors for GERD include obesity, age over 40 years, stress, pregnancy, smoking, diabetes, and *scleroderma*. Several types of drugs and dietary supplements can also affect GERD symptoms, such as drugs that can interfere with the lower esophageal sphincter muscle, such as antidepressants, *calcium channel blockers*, *nonsteroidal anti-inflammatory drugs* (NSAIDs), and antibiotics.[5] The typical symptom of GERD is pain/discomfort in the epigastrium which is characterized by a burning feeling (*heartburn*), sometimes mixed with symptoms of dysphagia, regurgitation, hypersalivation, nausea, and bitterness on the tongue. The endoscopic examination did not correlate with the severity or severity of *heartburn complaints*.[6]

This disease harms the quality of life of sufferers and is often associated with significant morbidity. GERD is a chronic disease that requires long-term treatment and can affect the quality of life by interfering with physical activity, quality of food and drink, rest time, concentration in studying, etc.[7],[8] Anxiety and depression in GERD patients are also significantly higher than the healthy population so GERD can interfere with mental and emotional aspects so that it can reduce the overall quality of life.[9] Improving the quality of life of GERD patients is important for GERD management.[10] Based on the above background, this prompted researchers to analyze the relationship between the degree of GERD severity and quality of life in USU Faculty of Medicine students in 2019 and 2020. The reason for choosing research on students in 2019 and 2020 was because the researchers themselves were USU Faculty of Medicine students in 2019 making it easier to collect research subjects.

2 Method

This study used a cross-sectional study design. Research data were obtained from a questionnaire, and this study obtained 225 respondents with the criteria student of the Faculty of Medicine, Universitas Sumatera Utara, class of 2019 and 2020, and willing to participate by signing the consent form after explanation (informed consent).

2.1 Statistical Analysis

The data that has been obtained will be processed using the SPSS application. Moreover, to measure the relationship between variables using the chi-square hypothesis test, fisher's exact test **would** be used to test the hypothesis if the data was not normally distributed. The value of $p < 0.05$ was considered the hypothesis was accepted.

3 Results

Based on Table 1, the research sample was male as many as 73 people (32.4%), and female. as many as 152 people (67.6%), where the majority of this study was female. For nutritional status, some subjects had normal BMI, namely 145 people (64.4%) followed by 56 people (24.9%) who were fat and 24 people (10.6%) who were thin. The majority of respondents did not smoke

(93.8%) and did not consume alcohol (92.9%). A total of 74 people (32.9%) experienced psychological stress. There were 41 subjects (18.2%) experiencing GERD.

Table 1 Characteristics of Research Respondents

| Characteristics | Frequency | Percentage (%) |
|----------------------|------------|----------------|
| Gender | | |
| Man | 73 | 32.4 |
| Woman | 152 | 67.6 |
| BMI | | |
| Thin | 24 | 10.6 |
| Normal | 145 | 64.4 |
| Fat | 56 | 24.9 |
| Smoking habit | | |
| Yes | 14 | 6.2 |
| No | 211 | 93.8 |
| Alcohol consumption | | |
| Yes | 16 | 7.1 |
| No | 209 | 92.9 |
| Psychological stress | | |
| Yes | 74 | 32.9 |
| No | 151 | 67.1 |
| GERD | | |
| Yes | 41 | 18.2 |
| No | 184 | 81.8 |
| Total | 225 | 100 |

Table 2 shows the degree of GERD severity and quality of life in students with GERD. A total of 27 people (65.9%) had mild GERD and 14 people (34.1%) had moderate and severe GERD. There are 29 people (70.7%) with GERD who have a good quality of life and 12 people (29.3%) have a bad quality of life.

Table 2 Degree of Severity of GERD and Quality of Life in Students with GERD

| Characteristics | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| GERD severity | | |
| Light | 27 | 65.9 |
| Medium and heavy | 14 | 34.1 |
| Quality of life | | |
| Well | 29 | 70.7 |
| Bad | 12 | 29.3 |
| Total | 41 | 100 |

According to Table 3, there is a relationship between GERD and gender ($p=0.029$) and psychological stress ($p=0.002$).

Table 3 Relationship between Respondent Characteristics and GERD Events

| Characteristics | GERD | | | | Total | | p-value |
|----------------------|------|-------|-------|-------|-------|-----|---------|
| | Ya | | Tidak | | n | % | |
| | n | % | n | % | n | % | |
| Gender | | | | | | | |
| Man | 5 | 6.85 | 68 | 93.15 | 73 | 100 | 0.029* |
| Woman | 36 | 23.68 | 116 | 76.32 | 152 | 100 | |
| BMI | | | | | | | |
| Thin | 5 | 20.8 | 19 | 79.2 | 24 | 100 | 0.948 |
| Normal | 27 | 18.6 | 118 | 81.4 | 145 | 100 | |
| Fat | 9 | 16.1 | 47 | 83.9 | 56 | 100 | |
| Smoking habit | | | | | | | |
| Yes | 2 | 14.3 | 12 | 85.7 | 14 | 100 | 0.610 |
| No | 39 | 18.5 | 172 | 81.5 | 211 | 100 | |
| Alcohol consumption | | | | | | | |
| Yes | 3 | 18.75 | 13 | 81.25 | 16 | 100 | 0.988 |
| No | 38 | 18.2 | 171 | 81.8 | 209 | 100 | |
| Psychological stress | | | | | | | |
| Yes | 25 | 33.8 | 49 | 66.2 | 74 | 100 | 0.002* |
| No | 16 | 10.6 | 135 | 89.4 | 151 | 100 | |

In Table 4, there is a relationship between quality of life and GERD severity ($p=0.001$), alcohol consumption ($p=0.049$), and psychological stress ($p=0.010$).

Table 4 Relationship between Respondent Characteristics, Degree of Severity of GERD, and Quality of Life in Students with GERD

| Characteristics | Quality of Life | | | | Total | | p-value |
|----------------------|-----------------|------|-----|------|-------|-----|---------|
| | Good | | Bad | | n | % | |
| | n | % | n | % | n | % | |
| Gender | | | | | | | |
| Man | 3 | 60 | 2 | 40 | 5 | 100 | 0.620 |
| Woman | 26 | 72.2 | 10 | 27.8 | 36 | 100 | |
| GERD severity | | | | | | | |
| Light | 25 | 92.6 | 2 | 7.4 | 27 | 100 | 0.001* |
| Medium and Heavy | 4 | 28.6 | 10 | 71.4 | 14 | 100 | |
| BMI | | | | | | | |
| Thin | 4 | 80 | 1 | 20 | 5 | 100 | 0.727 |
| Normal | 18 | 66.7 | 9 | 33.3 | 27 | 100 | |
| Fat | 7 | 77.8 | 2 | 22.2 | 9 | 100 | |
| Smoking habit | | | | | | | |
| Yes | 1 | 50 | 1 | 50 | 2 | 100 | 0.505 |
| No | 28 | 71.8 | 11 | 28.2 | 39 | 100 | |
| Alcohol consumption | | | | | | | |
| Yes | 1 | 33.3 | 2 | 66.7 | 3 | 100 | 0.049* |
| No | 28 | 73.7 | 10 | 26.3 | 38 | 100 | |
| Psychological stress | | | | | | | |
| Yes | 14 | 56 | 11 | 44 | 25 | 100 | 0.010* |
| No | 15 | 93.8 | 1 | 6.2 | 16 | 100 | |

4 Discussion

Gastroesophageal reflux is primarily a disorder of the lower esophageal sphincter (LES) but several factors may contribute to its development. The factors influencing GERD are both physiologic and pathologic. The most common cause is transient lower esophageal sphincter relaxations (TLESRs). TLESRs are brief moments of lower esophageal sphincter tone inhibition that are independent of a swallow.[11] While these are physiologic, there is an increase in frequency in the postprandial phase and they contribute greatly to acid reflux in patients with GERD. Other factors include reduced lower esophageal sphincter (LES) pressure, hiatal hernias, impaired esophageal clearance, and delayed gastric emptying. [12,13]

GERD is related to gender, especially in women, because women have the hormones estrogen and progesterone where these hormones have an important role in the occurrence of LES where LES is the main factor and leads to GERD. [6] Then, GERD is also related to psychological stress, because stress will negatively affect the digestive system, when the stress is severe the salivary glands can stop the flow of saliva, or flow excessively. The stomach will increase its acid, causing acid, nausea, and sores. Under stressful conditions, the body produces the hormone cortisol which depletes minerals and B vitamins in the body. [14]

Quality of life is related to GERD severity, based on previous studies, in patients with high GERD-Q scores, GERD-HRQL scores were also high, indicating a decrease in quality of life. GERD events can also reduce sleep quality which has an impact on decreasing quality of life.[15] Quality of life is also related to alcohol consumption, because several studies reported in hospitals or primary care settings found a significant decrease in the quality of life in individuals who use alcohol, especially concerning mental health and social functioning.[16] Then, quality of life is also related to psychological stress because stressful conditions will have an impact on both intrapersonal and interpersonal. Stress can change one's views and perceptions of the meaning of life, life goals, life satisfaction, and the impact on quality of life. [17]

GERD is thought to occur secondary to transient relaxation of the lower esophageal sphincter. [18]. In cases of GERD in which there is a large drop in pH, the extent of proximal refluxate is high, or acid clearance is delayed, typical symptoms of reflux esophagitis present.[19] However, the correlation between reflux esophagitis and conscious perception of GERD symptoms is very complicated. In some patients, esophagitis causes symptoms to such an extent as to lower the patient's quality of life (QoL). In other patients, however, no symptoms are present despite the presence of reflux esophagitis. [20] The symptomatic presentation of GERD is associated with various psychological and psychosocial factors, including chronic stress, [21] anxiety or emotional instability, and the abnormal reflux of gastric acid.[22] Psychological factors affect how patients perceive

5 Conclusion

In this study, there is a relationship between gender and psychological stress with the incidence of GERD and there is a relationship between psychological stress and alcohol consumption with the quality of life.

REFERENCES

- [1] R. Patala, J. Tandi, N. Ulzmi, and F. Fahrudin, "Rasionalitas Penggunaan Obat Pada Pasien GERD Di Instalasi Rawat Inap Rumah Sakit Umum Anutapura Palu," *JPSCR J. Pharm. Sci. Clin. Res.*, 2021;6:62, Mar., doi: 10.20961/jpscr.v6i1.43170.
- [2] V. Bhatia and R. K. Tandon, "Stress and the gastrointestinal tract," *J. Gastroenterol. Hepatol*, 2005 20;3:332–339, doi: 10.1111/j.1440-1746.2004.03508.x.
- [3] B. F. F. Ajjah, T. Mamfaluti, and T. R. I. Putra, "Hubungan Pola Makan Dengan Terjadinya Gastroesophageal Reflux Disease (Gerd)," *J. Nutr. Coll.* 2020;9(3):169–179, doi: 10.14710/jnc.v9i3.27465.
- [4] D. Makmun, *Penyakit Refluks Gastroesofageal*. Dalam : Sudoyo A, Setiyohadi B, Alwi I, 4th ed. Jakarta: Balai Penerbit FK UI., 2007.
- [5] R. Tarigan and B. Pratomo, "Analisis Faktor Risiko Gastroesophageal Refluks di RSUD Saiful Anwar Malang," *J. Penyakit Dalam Indones.* 2019;6(2):78–81, doi: 10.7454/jpdi.v6i2.306.
- [6] S. Ndraha, D. Oktavius, J. L. Sumampouw, N. N. Juli, and R. Marcel, "Artikel Penelitian Faktor-Faktor yang Berhubungan dengan Keberhasilan Terapi GERD Factors Associated with The Success of GERD Therapy," *J. Kedokt. Meditek*, 2016;22(60):8
- [7] C. J. V. Rensburg, K. R. Kulich, J. Carlsson, and I. K. Wiklund, "What is the burden of illness in patients with reflux disease in South Africa?" *South African Gastroenterol. Rev.* 2005;6(2):16–21, doi 10.4314/sage.v6i2.30721.
- [8] S. Bruley des Varannes et al., "Gastroesophageal reflux disease: Impact on work productivity and daily-life activities of daytime workers. A French cross-sectional study," *Dig. Liver Dis.* Mar. 2013;45(3):200–206, , doi: 10.1016/j.dld.2012.11.005.
- [9] SJ Masoumi, F Khademolhosseini, D Mehrabani, F Moradi, AA Mostaghni, N Zare, et al., "Correlation of quality of life with gastroesophageal reflux disease amongst Qashqai nomads in Iran," *Arch. Iran. Med.*, 15;12:747–750, 2012.
- [10] T. Tomita, T Yasuda, H Oka, S Terao, E Arai, T Oshima, et al., "Atypical symptoms and health-related quality et al., "Atypical symptoms and health-related quality of life of patients with asymptomatic reflux esophagitis," *J. Gastroenterol. Hepatol.*, 30(S1):19–24, 2015, doi: 10.1111/jgh.12745.
- [11] Herregods TV, Bredenoord AJ, Smout AJ. Pathophysiology of gastroesophageal reflux disease: new understanding in a new era. *Neurogastroenterol Motil* 2015;27:1202-1213.
- [12] (Ferriolli E, Oliveira RB, Matsuda NM, Braga FJ, Dantas RO. Aging, esophageal motility, and gastroesophageal reflux. *J Am Geriatr Soc* 1998;46:1534-1537
- [13] Richter JE. Gastroesophageal reflux disease in the older patient: presentation, treatment, and complications. *Am J Gastroenterol* 2000;95:368-373;
- [14] J. Widiyanto and M. Khaironi, "Hubungan Antara Tingkat Stres Dengan Kejadian Gastritis," *Phot. J. Sain dan Kesehat.*, 5(1):29–32, 2014, doi: 10.37859/jp.v5i1.191.
- [15] K. Tandarto, R. Tenggara, F. Christya, and M. Steffanus, "Correlation between Quality of Life and Gastroesophageal Reflux Disease Korelasi antara Kualitas Hidup dan Penyakit Refluks Gastroesofagus," *Maj. Kedokt. Bandung*, 52(2):2–7, 2020.
- [16] A. Goel, S. L. Jat, A. Sasi, V. K. Paliwal, and R. Aggarwal, "Prevalence, severity, and impact on quality of life of restless leg syndrome in patients with liver cirrhosis in India," *Indian J. Gastroenterol.*, 35(3):216–221, May 2016, doi: 10.1007/s12664-016-0668-6.
- [17] B. Kozier, G. Erb, A. Berman, and S. J. Snyder, *Buku Ajar Fundamental Keperawatan 1*, 1st ed. Padang: EGC, 2010.

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- [18] Dent J, Holloway RH, Toouli J, Dodds WJ. Mechanisms of lower oesophageal sphincter incompetence in patients with symptomatic gastroesophageal reflux. *Gut* 1988;29:1020- 1028.
 - [19] Bredenoord AJ, Weusten BL, Curvers WL, Timmer R, Smout AJ. Determinants of perception of heartburn and regurgitation. *Gut* 2006;55:313-318.
 - [20] Howard PJ, Maher L, Pryde A, Heading RC. Symptomatic gastro-oesophageal reflux, abnormal oesophageal acid exposure, and mucosal acid sensitivity are three separate, though related, aspects of gastro-oesophageal reflux disease. *Gut* 1991;32:128-132.
 - [21] Naliboff BD, Mayer M, Fass R, et al. The effect of life stress on symptoms of heartburn. *Psychosom Med* 2004; 66:426-434.
 - [22] Johnston BT, Gunning J, Lewis SA. Health care seeking by Oh JH, et al: Relationship between Psychological Factors and QoL in GERD 265 heartburn sufferers is associated with psychosocial factors. *Am J Gastroenterol* 1996;91:2500-2504.