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The Effect of Stress Management Education (Emas) on Anxiety and Stress in Gastritis Patients at the Regional Hospital Eduardo Ximenes (Horex) Baucau, Timor-Leste

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ABSTRACT
Anxiety is an emotional disorder characterized by excessive worry, tension, and psychophysiological discomfort, often associated with the perception of threat to oneself. Anxiety has become the focus of study in the relationship between mental conditions and symptoms due to the bidirectional connection between the brain that influences the response of Gastritis to continuous stress stimuli. The research method used in this study is a quasi-experimental study, an experimental design conducted without randomization, but involving the placement of participants into groups. The quasi-experimental approach design used is a two-group pretest–posttest design. This research design is to determine the effect of Stress Management Education (EMAS) on anxiety and stress in gastritis patients. From the results of the Bivariate test using From the Mann-Whitney U Test results table to compare between groups (Intervention and Control) in the Anxiety and Stress post-test. The following is a detailed interpretation: U = 0.000 indicates that there is no overlap in scores between the intervention and control groups. All post-test scores of the intervention group are lower (anxiety and stress) than the control. Z ≈ -5.3 the magnitude of the difference between groups is very large, the negative direction indicates the intervention group is lower than the control. $p < 0.001$ the difference is very statistically significant. There is an effect of stress management education on anxiety and stress in gastritis respondents.

KEYWORDS: Stress Management Education, Anxiety and Stress, Gastritis

A. INTRODUCTION

Anxiety is an emotional disorder characterized by excessive worry, tension, and psychophysiological discomfort, often associated with a perceived threat to oneself. Anxiety has been the focus of studies on the relationship between mental states and symptoms due to the bidirectional connections between the brain and the body that influence the response to persistent stressful stimuli [(1)].

According to World Health Organization (WHO) data, the incidence of gastritis worldwide is 22.0% in the United Kingdom, 31.0% in China, 14.5% in Japan, 35.0% in Canada, and 29.5% in France. In Southeast Asia, approximately 583,635 people suffer from gastritis each year. Gastritis is among the ten most common diseases in hospitals in Indonesia. Among inpatients, gastritis ranks sixth with 33,580 cases, 60.86% of which occur in women. The incidence of gastritis in some regions is quite high, with a prevalence of 274,396 cases out of a population of 238,452,952. The percentage of gastritis cases in Indonesian cities is, Jakarta 50%, Palembang 35.5%, Bandung 32%, Denpasar 46%, Surabaya 31.2%, Aceh 31.7%, Pontianak 31.2%, while the incidence of gastritis in Medan reached 91.6% [(2)].

World Health Organization data shows that 0.1% of people aged 25 to 34 suffer from gastritis, 0.2% between the ages of 35 and 54, 1.4% between the ages of 55 and 74, and 12.2% over the age of 75. During productive age, people are susceptible to gastritis due to busy schedules, unhealthy lifestyles, and stress. (3) Gastritis is a condition of inflammation and irritation that causes erosion of the stomach lining due to excess stomach acid[(4)]. Gastritis is an inflammation of the stomach caused by Helicobacter pylori infection, stress, physical trauma, and irregular eating patterns. (5) Gastritis is inflammation of the stomach lining, particularly the lining of the stomach, or inflammation affecting the gastric mucosa[(6)]. The most common cause of gastritis is infection with the Helicobacter pylori bacteria. Causes of gastritis include: Stress, food poisoning (eating stale rice or rice with germs), chemicals (carbolic acid, lysol, alcoholic drinks, and bile spills[(7)]. Symptoms of gastritis generally include; nausea, vomiting, bloating, stomach ache, and loss of appetite, and a burning sensation in the stomach between meals or at night[(4)]. Complications that arise from gastritis include: ulcers and stomach bleeding (8). Gastritis can attack people of all ages and genders. Several surveys show that gastritis most often attacks people of productive age. People of productive age are susceptible to gastritis symptoms due to their busyness and lifestyle which does not pay attention to health and stress which easily occurs due to the influence of environmental factors[(9)].

People of productive age are susceptible to gastritis symptoms, stemming from busy schedules and lifestyles that neglect health, as

well as stress, which can easily occur due to environmental factors that can trigger gastritis symptoms. Stress is a non-specific response of the body to every need and stimulus, a concept that has a more biological nuance due to changes in mechanical temperature. Prolonged stress is a triggering factor because it causes increased stomach acid production. Gastritis is often linked to a person's psychological state. Stomach acid production increases in stressful situations, such as excessive workload, anxiety, fear, or rushing. Increased stomach acid levels can cause stomach discomfort[(9)].

Gastritis sufferers who are stressed have a 3,370 times higher risk of developing gastritis compared to those who are not stressed. Stress is a physiological and behavioral response that humans attempt to adapt to and regulate both internal and external pressures (stressors).

Stressors can affect all aspects of a person's life, causing mental stress, behavioral changes, problems interacting with others, and physical complaints, one of which affects food consumption. Under stress, the body produces the hormone cortisol, which depletes minerals and B vitamins. This means less protection for brain cells, weakening the immune system [(10)]. Therefore, gastritis sufferers must be able to manage stress and develop coping mechanisms[(11)].

If left untreated, gastritis can damage stomach function and increase the risk of stomach cancer and even death. Various studies have concluded that the most common complaint of gastritis is functional gastritis, accounting for 70-80% of all cases. Functional gastritis is a disease not caused by a disorder of the stomach but is more often triggered by an unhealthy diet, psychological factors, and anxiety[(12)].

Stress management is an action to find out the causes and techniques for managing stress so that people are better at controlling stress in life[(13)]. The main goal of stress management is not to eliminate stress completely but to manage and minimize stress so that it does not cause worse consequences[(14)].

There are several ways to manage stress: physical strategies, such as calming oneself and reducing physical stimulation; emotional strategies, such as focusing on the emotions that arise from the problem at hand; cognitive strategies, such as assessing a problem positively; and social strategies, such as seeking support from those around them (15). This series of strategies can help modify various behaviors that pose health risks, leading to anxiety and stress.

Anxiety is a state of fear that something bad will happen. It is important to pay attention to aspects of one's health, social interactions, activities, and the surrounding environment. Some things that may cause anxiety are normal and adaptive, but can become excessive if they are not commensurate with the threat. This issue currently affects many aspects of life. Educational obligations can cause tension or anxiety in students. Students are required to understand, research, and apply what they have learned in addition to receiving good grades. Another factor causing student anxiety is changes in the learning environment (16). A preliminary study was conducted at the Eduardo Ximenes Regional Hospital (HoREX) Baucau, Timor-Leste. In 2023, gastritis was found to be the top 10 most common diseases with a total of 250 cases, and the same trend occurred in 2024 with 260 cases. As of June 2025, the number of patients with gastritis continued to increase. In November 2025, gastritis accounted for 39.8% (51 cases) of hospitalizations out of 38 existing cases. Interviews with 38 hospitalized patients complaining of heartburn revealed that patients often neglect or forget mealtimes due to their busy schedules, including excessive work pressure, school/college assignments, economic factors, and the pressure of exams to enter top schools. As a solution, this stress management education is designed with a more holistic and adaptive approach than previous stress management education methods. While previous stress management education tended to focus on standard theories and techniques such as relaxation, meditation, or time management, this approach integrates individual understanding of specific stress triggers, personalized evidence-based strategies, and digital technology to support more interactive learning. Thus, this approach not only helps individuals recognize and manage stress but also creates long-term, sustainable behavioral changes. This aspect is a distinguishing element that reinforces the novelty of this educational solution.

B. RESEARCH METHOD

1. Type and Design of Research

Nursing research is divided into four, namely descriptive research, related factors (relationship), related factors (association), and influence (causal) (17). The research method used in this study is quasi-experimental research, which is an experimental design conducted without randomization, but involves placing participants into groups. The quasi-experimental approach design used is a two-group pretest–posttest design (17). This research design is to determine the effect of Stress Management Education (EMAS) on anxiety and stress in gastritis patients.

C. RESULTS AND DISCUSSION

1. RESEARCH RESULTS

1) Univariate

a. Client Characteristics

Data on the frequency characteristics of respondents in the intervention and control groups illustrate the gender, age, education, and occupation of gastritis patients. These data can be seen in Table 4.1 as follows:

Table 4.1: Respondent Characteristics: Age, Gender, Education, and Occupation of Gastritis Patients (n=38).

Respondent Characteristics	Group				P-Value
	Intervention		Control		
Age (years) Mean±SD	36.00±13.61		41.37±9.92		
Gender	N	%	N	%	
Woman	9	47.4	10	52.6	0.746
Man	10	52.6	9	47.4	
Total	19	100	19	100	
Education					
Doesn't school	0	0	0	0	0.067
Elementary School	0	0	0	0	
Junior High School	0	0	3	15.8	
Senior High School	13	68.4	7	36.8	
Higher Education	6	31.6	9	47.4	
Total	19	100	19	100	
Job					
Doesn't work	9	47.4	10	52.6	0.746
Work	10	52.6	9	47.4	
Total	19	100	19	100	

Table 4.1. Based on the statistical characteristics of the Man-Whitney test results for respondents in the intervention and control groups, the average age of respondents in the intervention group was 36.00 ± 13.61 years, while in the control group it was 41.37 ± 9.92 years. The statistical test results showed a p-value of 0.115 ($p > 0.05$), indicating no significant difference in age between the two groups.

Based on the statistical characteristics of the chi-square homogeneity test results for gender, in the intervention group, there were 9 respondents (47.4%) female and 10 respondents (52.6%) male. In the control group, there were 10 respondents (52.6%) female and 9 respondents (47.4%) male. The test results showed a p-value of 0.746 ($p > 0.05$), indicating no significant difference in gender distribution between the two groups.

Regarding education, the intervention group consisted of 13 respondents (68.4%) with a high school education and 6 respondents (31.6%) with a college degree, with no respondents at the uneducated, elementary, or junior high school levels. Meanwhile, in the control group, there were 3 respondents (15.8%) with a junior high school education, 7 respondents (36.8%) with a high school education, and 9 respondents (47.4%) with a college education. The statistical test results showed a p-value of 0.067 ($p>0.05$), indicating no significant difference in education level between the intervention and control groups. Based on occupation, in the intervention group, 9 respondents (47.4%) were unemployed and 10 respondents (52.6%) were employed. In the control group, there were 10 respondents (52.6%) unemployed and 9 respondents (47.4%) were employed. The test results showed a p-value of 0.746 ($p>0.05$), indicating no significant difference in employment status between the two groups. Overall, based on the variables of age, gender, education, and occupation, there were no significant differences between the intervention and control groups ($p > 0.05$). This indicates that both groups have homogeneous characteristics and are worthy of comparison in analyzing the effectiveness of the intervention.

Descriptive analysis of anxiety in gastritis patients before and after treatment in the intervention and control groups can be seen in the following table:

Table 4.2 Distribution of anxiety before and after stress management education (EMAS) was provided to gastritis patients.

Anxiety	Minimum		Maximum		Mean±SD		Delta	Sig.
	Before	After	Before	After	Before	After		
Intervention Group	13	7	20	11	16.58±1.774	9.11±0.994	7.47	0.000
Control Group	19	14	23	21	20.84±0.898	18.42±2.47	11.73	0.001

Descriptive statistical test

Based on Table 4.2, the results of the descriptive statistical analysis of anxiety levels before and after the intervention, as shown in the table above, yielded the following results:

In the intervention group, the mean anxiety score before treatment was 16.58 ± 1.774, with a minimum score of 13 and a maximum score of 20. After the intervention, the mean anxiety score decreased to 9.11 ± 0.994, with a minimum score of 7 and a maximum score of 11. The average decrease was 7.47. The results of the statistical test using the Wilcoxon Signed-Rank Test showed a p-value <0.001, indicating a significant difference between anxiety levels before and after the intervention in the intervention group.
In the control group, the mean anxiety before the observation was 20.84 ± 0.898, with a minimum score of 19 and a maximum score of 23. After the observation period, the mean anxiety decreased to 18.42 ± 2.47, with a minimum score of 14 and a maximum score of 21. The average decrease was 2.42 (or according to your original data if different). The Wilcoxon test showed a p-value of 0.002, indicating a significant difference between the pre- and post-anxiety levels in the control group.
Although both groups showed a statistically significant decrease in anxiety, the magnitude of the decrease was greater in the intervention group than in the control group. This indicates that the intervention had a stronger effect on reducing respondents' anxiety levels.
Although both groups showed a statistically significant decrease in anxiety levels ($p < 0.05$), the magnitude of the decrease in the intervention group was significantly greater than in the control group. This indicates that the intervention was effective in reducing respondents' stress levels more optimally than without the intervention. Table 4.3 Distribution of stress before and after stress management education (EMAS) was given to gastritis patients.

Stress	Minimum		Maximum		Mean±SD		Delta	Sig.
	Before	After	Before	After	Before	After		
Intervention Group	24	7	38	11	31.37±3.499	9.00±0.943	22.37	0.000
Control Group	20	15	23	23	21.58±1.071	19.95±2.592	1.63	0.032

Descriptive statistical test

Based on the results of the statistical descriptive test of stress levels before and after treatment, the following results were obtained: In the intervention group, the stress level before the intervention had an average value of 31.37 ± 3.499, with a minimum value of 24 and a maximum of 38. After the intervention, the average stress level decreased significantly to 9.00 ± 0.943, with a minimum value of 7 and a maximum of 11. The average decrease was 22.37. The results of the Wilcoxon Signed-Rank Test showed a p value <0.001, which means there was a significant difference between stress levels before and after the intervention in the intervention group. In the control group, the mean stress level before the observation was 21.58 ± 1.071, with a minimum score of 20 and a maximum score of 23. After the observation period, the mean stress decreased to 19.95 ± 2.592, with a minimum score of 15 and a maximum score of 23. The average decrease (Δ) was 1.63. The Wilcoxon test showed a p-value of 0.032, indicating a significant difference between pre- and post-treatment stress levels in the control group.
Although both groups showed a statistically significant decrease in stress levels ($p < 0.05$), the magnitude of the decrease in the intervention group was significantly greater than in the control group. This indicates that the intervention was effective in reducing respondents' stress levels more optimally than without the intervention.

2) Bivariate

a. The Effect of Stress Management Education (Emas) on
Anxiety and Stress in Gastritis Patients.

Table 4.4 In the Control Group, Both Anxiety and Stress Experienced a Significant Decrease from Before (Pre) to After (Post) the Intervention Period.

	Mean	Std. Deviation	Std. Error Mean	Diference		t	DF	Significance (2 tailed)
				Lower	Upper			
Pre-Anxiety Intervention Post-Anxiety Intervention Intervensi	7.747	1.577	.362	6.714	8.2 43	20.164	18	0.000
Pre-Stress Intervention Post-Anxiety Intervention	22.368	2.608	598	21.111	23.625	37.387	18	.000

Based on Table 4.3, the results of the Paired Samples t-Test for the intervention group (pre- vs. post-test) are presented for two variables: Anxiety and Stress. Let's break them down one by one:

a. Anxiety (Pre-Intervention Anxiety - Post-Intervention Anxiety)
Mean = 7.474 → The average decrease in anxiety from pre-test to post-test was 7.474 points. Standard Deviation = 1.577, indicating variation in anxiety reduction scores among respondents. Standard Error of the Mean = 0.362, estimated standard error of the mean. 95% CI = 6.714 – 8.234 → We are 95% confident that the actual average decrease in anxiety is between 6.714 and 8.234. t = 20.664, df = 18, p = 0.000 → p < 0.001 → the decrease in anxiety is statistically significant. Interpretation: The intervention caused a highly significant decrease in anxiety in the intervention group.
b. Stress (Pre-Stress Intervention - Post-Stress Intervention)
Mean = 22.368 → the average decrease in stress was 22.368 points, significantly greater than the decrease in anxiety. Std. Deviation = 2.608, Std. Error Mean = 0.598 - 95% CI = 21.111 - 23.625 t = 37.387, df = 18, p = 0.000 - p < 0.001 the decrease in stress is statistically significant. Interpretation: The intervention was highly effective in reducing stress levels in the intervention group of gastritis patients at the Eduardo Ximenes Regional Hospital (HoREX) Baucau in 2026.
The bivariate test results used the Mann-Whitney U-test to compare the groups (intervention and control) on post-test anxiety and stress. The following is a detailed interpretation: U = 0.000 indicates no overlap in scores between the intervention and control groups. All post-test scores for the intervention group were lower (anxiety and stress) than those for the control group. Z ≈ -5.3 indicates a very large difference between the groups. The negative trend indicates a lower score for the intervention group than the control group; p < 0.001 indicates a statistically significant difference.

2. DISCUSSION

a. Characteristics of Gastritis Respondents: Gender, Age, Education, and Occupation in Gastritis Patients.

1) Gender
The results of this study align with research conducted by Harigustian et al. (18) who found that the majority of gastritis respondents were female, with 9 (47.4%) in the intervention group and 10 (52.6%) in the control group. This study differs from research conducted by Akhmad An et al. (19) who found that 10 (52.6%) of the intervention group and 9 (47.4%) of the control group were male. The chi-square test for homogeneity between gender in the intervention and control groups yielded a p-value of 0.746, indicating no effect of gender on gastritis among respondents in the intervention and control groups.
2) Age
The results of this study are supported by research conducted by Priandani et al. (20) who found that the majority of respondents in the intervention group were 36.00±13.61 in the control group and 41.37±9 in the control group, with a p-value greater than 0.05. The Man-Whitney test showed a p-value of 0.115 between the ages of the intervention and control groups, indicating no significant effect of gender on the intervention and control groups, with a positive effect. According to Utami F & Pratiwi A (21), gastritis is a primary disease in people over 61 years of age, affecting 6% to 10%. The older a person is, the greater the risk of gastritis, caused by the aging process and atherosclerosis. Because age is a risk factor for gastritis, the older a person is, the greater the risk of developing gastritis.
3) Education
The results of this study align with research conducted by Khasanah Na et al. (21), who showed that the majority of gastritis respondents in the intervention group had a high school education (13 respondents (68.4%) and in the control group, 8 respondents (42.1%). This contrasts with research conducted by (20), who stated that the majority of gastritis respondents had a college education: 6 respondents (31.6%) in the intervention group and 8 respondents (42.1%) in the control group. The chi-square test for gender homogeneity in the intervention and control groups yielded a p-value of 0.107, indicating that the influence of education on thinking was not significant in the intervention and control groups. According to (19), the higher a person's education, the better their anxiety and stress levels are expected to be.
4) Employment
The results of this study are supported by research conducted by (21), who showed that the majority of gastritis respondents were unemployed (13 respondents (68.4%) in the intervention group and 11 respondents (57.9%) in the control group. This researcher differs from the research conducted by Harigustian et al (20) which stated that the majority of respondents who suffered from Gastritis with the employment status of Civil Servants/Retirees in the Intervention group were 6 respondents (31.6%) and the control group were 8 respondents (42.1%). The results of the chi-square homogeneity test between jobs in the intervention and control groups obtained a p-value = 0.501 which showed that there was no influence or no significance between jobs in the intervention and control groups with the direction of the influence of thoughts. Work has a very important role, if someone experiences anxiety and stress. Heavy, continuous work and lack of rest can increase Gastritis [(19)].

b. Anxiety and Stress in Gastritis Patients Before and After Treatment

The results of this study showed that anxiety and stress levels in respondents with gastritis in both the intervention and control groups decreased before receiving Stress Management Education (EMAS) in the intervention group and according to the program in the control group. However, after receiving anxiety intervention in the intervention group and according to the program in the control group, there was an increase in anxiety and stress scores in respondents. Gastritis is a condition where

the patient's needs are not fully met. It is common knowledge that people with gastritis are less likely to die than those without the condition (20). This is consistent with the worsening anxiety and stress levels in gastritis patients as they age (20). Anxiety and stress are a person's perception of their position in life and culture, as well as their value system, where anxiety and stress relate to their goals, expectations, standards, and concerns. One study found that anxiety and stress in gastritis patients are related to role limitations, physical health, physical ability, general health, treatment satisfaction, symptom frequency, and psychological health (21).

Researchers provided one intervention to improve anxiety and stress in patients with gastritis, namely a combination of stress management education. The anxiety and stress assessed in the study were anxiety and stress ability, I am anxious about bad feelings, I am anxious when sitting alone, I feel anxious and sad when I have stomach pain, I am anxious when drinking coffee, I am anxious when it's dark, I feel anxious when eating something, I feel stressed when I have heartburn, I am stressed when I feel weak and bloated, I feel stressed about irregular eating patterns, I feel stressed about stomach ulcers, I feel stressed when drinking alcohol and smoking can affect the stomach, I, who tend to have high stress levels, can cause ulcers.

The study conducted stress management education (EMAS) on anxiety and stress through a counseling program unit and standard operating procedures (SOP) for anxiety and stress in gastritis respondents, involving patients independently, which resulted in improved anxiety and stress in gastritis respondents.

The Effect of Stress Management Education (EMAS) on Anxiety and Stress in Gastritis Patients. The results of this study indicate a significant effect before and after treatment in both the intervention and control groups. Gastritis is a progressive syndrome that can reduce anxiety and stress in gastritis patients.

It encompasses various aspects of a person's life, which are highly individual, subjective, and multidimensional. Anxiety and stress are related to what is considered important in life. Perceptions of importance vary from person to person and are closely related to a person's success, which is generally associated with physical and general health.

This aligns with research findings that group or community support can help reduce anxiety and stress in patients with gastritis. Individuals who actively participate in groups are more open in sharing information and opinions about the problems they face, as they are also gastritis patients, making it easier to interact. This improves anxiety and stress levels in clients who regularly engage in these activities, and the group also provides emotional support for other clients, such as empathy when a client is ill and motivation to foster a speedy recovery. Patients can develop a sense of identity. Patients share similar interests, attitudes, or beliefs and feel interdependent in achieving physical and mental health.

Family support can also help improve respondents' anxiety and stress, as it influences the attitudes and learning needs of Gastritis respondents, influencing their acceptance or rejection of physical, psychological, emotional, and social support (53). Gastritis respondents are more positive about learning about Gastritis when their families provide support and participate in health education [(21)].

The intervention in this study was stress management education for Gastritis respondents. One of the therapies that is starting to be used to increase anxiety and stress focuses on a combination of psychological therapy and lifestyle changes, to reduce anxiety, as well as diet management (avoid caffeine, spicy, sour and alcohol) to reduce stomach irritation), namely physical exercise which is important in the management of gastritis[(21)].

D. RESEARCH LIMITATIONS

Overall, the results of the study indicate that:

1. There was a significant reduction in anxiety levels in both the intervention and control groups.
2. There was a significant reduction in stress levels in both the intervention and control groups.
3. The magnitude of the reduction (delta) in the intervention group was higher than in the control group, for both anxiety and stress variables.

Therefore, it can be concluded that Stress Management Education (EMAS) is effective in reducing anxiety and stress levels in gastritis patients.

E. CONCLUSIONS AND SUGGESTIONS

1. CONCLUSIONS

Based on the results of the study on the Effect of Stress Management Education (Gold) on Anxiety and Stress in Gastritis, the following conclusions can be drawn:

a. The characteristics of Gastritis respondents were predominantly female in the intervention group and male in the control group. Furthermore, the age of respondents in the intervention group was 36.00±13.61 in the control group and 41.37±9 in the control group, with a college education, and some working in the intervention group.

b. Before receiving stress management education according to the program, there was an anxiety score, while after receiving the Gold intervention and therapy according to the program, there was a change in anxiety and stress scores in Gastritis respondents.

c. Before receiving stress management education according to the program, there was a stress score, while after receiving the Gold intervention and therapy according to the program, there was a change in anxiety and stress scores in Gastritis respondents.
d. There is an effect of stress management education on anxiety in Gastritis respondents.
e. There is an effect of stress management education on stress in Gastritis respondents.

2. SUGGESTIONS

a. For the Nursing Profession

It is hoped that nurses can use Stress Management Education (EMAS) as an independent nursing intervention to address anxiety and stress in gastritis patients.

b. Eduardo Ximenes Regional Hospital (HoREX) Baucau, Timor-Leste.

It is hoped that this Stress Management Education (EMAS) intervention will become an alternative activity to meet the needs of maintaining and managing anxiety and stress in gastritis respondents.

c. Muhammadiyah University of Semarang

The results of this study are expected to increase insight and knowledge regarding the complementary therapy of a combination of Stress Management Education (EMAS) to improve and maintain anxiety and stress in gastritis.

d. Gastritis Patients

The results of this study can be used as consideration and input for gastritis patients, to improve anxiety and stress with complementary therapy in combination with Stress Management Education (EMAS).

e. Future Research

The results of this study may inspire future researchers to conduct research on the importance of improving anxiety and stress in gastritis patients.

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