
**REVIEW ARTICLE: COMPARATIVE TREATMENT PATTERNS OF GERD PATIENTS
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ABSTRACT

Gastroesophageal reflux disease (GERD) is a chronic digestive disorder that occurs when stomach acid rises up the esophagus, causing symptoms such as heartburn and regurgitation, which can progress to serious complications that reduce patients' quality of life. This study assessed the pattern of therapy use in patients with GERD in Korea by comparing three types of therapy: continuous therapy, on-demand therapy, and intermittent therapy. The study conducted by Cheal Wung Huh et al. (2023) used an observational, cross-section, and multicenter design. Another study conducted in Bandung was a descriptive non-experimental study using purposive sampling method and carried out retrospectively obtained from 41 medical records of GERD patients. Based on the characteristics of respondents in the study of Susan Park et al. (2020), this study involved 86,936 patients in the PPI treatment group and 40 patients in the fundoplication surgery group. Patients who have GERD symptoms with a short period of time or even NERD (Non Erosive Reflux Disease) prefer continuous treatment over on-demand. Whereas patients who experience long-term GERD and ERD (Erosive Reflux Disease) symptoms prefer on-demand therapy. The combination of Pantoprazole and Sucralfate is more effective than monotherapy, but a three-drug combination is not recommended as effectiveness is not improved and costs are increased. Selection of therapy needs to be tailored to the patient's condition as well as awareness of long-term risks.

Keywords: *GERD, Hospital, Medication pattern*

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INTRODUCTION

Gastroesophageal Reflux Disease (GERD) is a chronic digestive disorder that occurs when stomach acid rises into the esophagus, causing symptoms such as heartburn and regurgitation, which can progress to serious complications that reduce the patient's quality of life (Suherman, 2021). This study was conducted due to the increasing prevalence of GERD in Indonesia, with prevalence reaching 27.4%. The use of drugs such as pantoprazole and sucralfate in the treatment of GERD is the focus of this study, which also promotes rational drug use to ensure therapeutic effectiveness and reduce the risk of side effects.

In Korea, the prevalence of GERD continues to rise, although it is lower in Asia compared to Western countries. In Korea,

long-term use of Proton Pump Inhibitors (PPIs) to treat GERD continues to increase, but anti-reflux surgery (ARS) remains very rare (Park, 2020). Long-term use of PPIs carries a significant risk of side effects, while the medical costs of GERD treatment constitute a significant economic burden. This study aimed to explore treatment patterns for refractory GERD and analyze the economic burden associated with long-term PPI treatment.

Appropriate therapy management is also crucial for reducing morbidity and improving patient quality of life. Existing therapies are divided into three types: continuous therapy, on-demand therapy, and intermittent therapy. Patient satisfaction with these three types of therapy was also measured and evaluated, as

was their level of awareness of the potential side effects of long-term PPI therapy (Huh et al., 2023).

METHOD

The study, designed to measure patient satisfaction and adherence, used an observational, cross-sectional, multicenter design, involving patients from 18 referral hospitals in South Korea. It surveyed patients who had been prescribed PPIs for GERD for at least 90 days, with a minimum follow-up period of 1 year (Huh et al., 2023). Data were collected through two separate questionnaires: 25 items for patients and 7 items for physicians. Data analysis used the Chi-square test or Fisher's exact test for categorical data and one-way ANOVA for continuous data. The Cochran-Armitage test was used to compare trends between groups. Cohen's Kappa test was used to measure the accuracy of physician intention classification and patient adherence. All analyses used SAS version 9.4 and R version 4.2.2 statistical software for graphing, with a significance level of 0.05.

The study by Suherman et al. (2021) is a non-experimental descriptive study using a purposive sampling method and conducted retrospectively. The study involved 41 medical records of GERD patients at a hospital in Bandung between January and December 2019. Inclusion criteria were patients aged 18 years and over diagnosed with GERD and receiving GERD medication during the study period. Exclusion criteria included patients who did not receive GERD medication despite a GERD diagnosis, as well as patients receiving GERD medication but with a non-GERD diagnosis. Data collection was conducted through a review of medical records documenting GERD patient treatment patterns and an assessment of medication rationality, including appropriate medication, appropriate dosage, appropriate interval, and appropriate route of administration. The study by Park et al. (2020) used a cross-sectional analysis of nationally representative sample data from the Health Insurance Review and Assessment Service (HIRA) from 2012 to 2016. This

study used two types of data from HIRA: the HIRA-National Patient Sample (NPS) for the analysis of medication therapy and the HIRA-National Inpatient Sample (NIS) for the analysis of surgical therapy. The HIRA-NPS comprises a 3% random sample of all patients treated at medical institutions, while the HIRA-NIS comprises a 13% random sample of inpatients annually. Based on the established inclusion criteria, the researchers identified 86,936 patients who used Proton Pump Inhibitors (PPIs) for more than 12 weeks as the medication group, and 40 patients who underwent fundoplication surgery as the surgical group.

RESULT

A study conducted by Cheal Wung Huh, et al., (2023) involving 197 respondents entitled "Real-World Prescription Patterns and Patient Satisfaction Regarding Maintenance Therapy for Gastroesophageal Reflux Disease" aims to evaluate patient satisfaction and real-world patterns of GERD maintenance therapy use in South Korea. Respondent characteristics based on type of therapy (continuous therapy = 133, on-demand therapy = 53, intermittent therapy = 11), average age 62.7 years, gender (male = 110, female = 87 people). Lifestyle behavior (smoking = 79, alcohol consumption = 69, coffee consumption = 122). For a history of comorbidities (hypertension = 78, diabetes mellitus = 37, heart/lung disease = 23, kidney disease = 7). The choice of therapy is largely based on patient preference (continuous = 84.2%, non-continuous = 68.7%). Patient satisfaction with therapy was mostly in the (satisfied to very satisfied = 148) range. Awareness of PPI side effects was high (non-continuous = 45.3%, continuous = 18.8%).

Suherman et al.'s (2021) study, "Medication Use Patterns in Gastroesophageal Reflux Disease (GERD) Patients at a Hospital in Bandung," was conducted on 41 GERD patients at a hospital in Bandung. Respondent characteristics based on gender (male = 19, female = 22), age (18–25 = 6, 26–35 = 12, 36–45 = 6, 46–55 = 5, 56–65 = 7, >65 = 5), divided medication

use (monotherapy = 7.32%, 2-drug combination = 75.6%, 3-drug combination = 17.03%, pantoprazole + sucralfate as the most dominant combination = 58.54%), and rationality of medication use showed results (correct drug = 100%, correct dose = 97.56%, correct interval = 97.56%, correct route = 100%).

Based on the characteristics of respondents in the study by Susan Park et al. (2020), this study involved 86,936 patients in the PPI treatment group and 40 patients in the fundoplication surgery group. The majority of treatment patients were female (54.69%) and aged ≥ 60 years (56,923 people), and had high comorbidities (CCI ≥ 4 , as many as 34,994 patients). In contrast, surgery patients were mostly aged 20–59 years and most had moderate CCI (2–3), as many as 23 people.

DISCUSSION

Based on a study conducted by Cheal Wung Huh et al. (2023), observations of medication use patterns for GERD were divided into three groups: those who used PPIs as a continuous treatment, those who used PPIs when symptoms appeared and stopped after symptoms resolved (on-demand), and those who used intermittent PPIs when symptoms appeared and continued therapy for 1 to 2 weeks regardless of whether symptoms persisted. Both the on-demand and intermittent groups were classified as non-continuous.

Guidelines for the management of GERD recommend PPI therapy be administered on-demand according to the onset of symptoms. This is done to prevent the side effects of long-term PPI therapy, such as pneumonia, *Clostridium difficile* infection, bone fractures, dementia, and kidney problems. Based on the results, patients with short-term GERD symptoms or even NERD (Non-Erosive Reflux Disease) preferred continuous treatment over on-demand. This occurs because most patients cannot adequately control their symptoms, requiring continuous PPI therapy. It was also found that patients on continuous therapy had little awareness of the side effects of long-term PPI therapy, making them unable to reduce the

dose according to guidelines. Meanwhile, patients with long-term GERD and Erosive Reflux Disease (ERD) symptoms preferred on-demand therapy, choosing this because they were aware of the side effects of long-term PPI therapy. However, some patients on on-demand therapy chose to switch to continuous therapy due to personal preference and failure to control symptoms. Therefore, monitoring GERD treatment is also an important aspect in monitoring and reducing the patient's dose to reduce morbidity.

Long-term PPI therapy also impacts patients' financial well-being, with patients on continuous therapy spending more than those on on-demand therapy. A study by Park et al. (2020) showed that the average monthly patient expenditure for PPI use reached USD 163.

Pantoprazole, a Proton Pump Inhibitor (PPI), was used as monotherapy in 7.32% of cases (Suherman, 2021). PPIs are an effective primary therapy for GERD due to their ability to inhibit H^+ ion secretion by parietal cells, thereby reducing gastric acid production. Despite their short half-life, PPIs can last up to 24 hours due to the re-establishment of the H^+/K^+ ATPase pump, which takes approximately 18 hours. Optimal effectiveness of PPI therapy is usually achieved after 3-5 days of use. Compared with H_2 receptor antagonists (H_2 RAs), PPIs are superior and are recommended for moderate to severe GERD.

The study also showed that a two-drug combination was the most commonly used method, accounting for 75.6% of cases. The most commonly used combination was pantoprazole and sucralfate, accounting for 58.54%. This combination has been shown to be more effective than monotherapy because it can accelerate recovery and reduce the risk of complications.

Furthermore, the use of a three-drug combination was found in 17.03% of cases, with pantoprazole, sucralfate, and ranitidine being the most commonly used combination (7.32%). However, the interaction between sucralfate and ranitidine can decrease the effectiveness of ranitidine when taken

together, so it is recommended to administer ranitidine 1-2 hours after sucralfate. Conversely, a triple drug combination such as a PPI, sucralfate, and an H2RA is not recommended as it does not significantly improve effectiveness and only increases treatment costs.

CONCLUSION

Based on a comparison of these journal reviews, it can be concluded that PPI use for GERD patients is divided into three patterns: continuous, on-demand, and intermittent, with the latter two being non-continuous. On-demand therapy is recommended in guidelines to avoid long-term side effects such as pneumonia, *C. difficile* infection, bone fractures, dementia, and kidney impairment. GERD patients tend to choose continuous therapy due to difficulty controlling symptoms and a lack of awareness of the risk of side effects.

In contrast, ERD patients prefer on-demand therapy due to greater awareness of long-term side effects. Some patients still choose continuous therapy due to poor symptom control, despite on-demand recommendations. Therapy monitoring is crucial for adjusting dosages and reducing the risk of morbidity. Continuous therapy also has economic implications, with monthly costs reaching \$163. Pantoprazole is an effective and commonly used PPI, both as monotherapy and in combination. The combination of pantoprazole and sucralfate is more effective than monotherapy, but triple drug combinations are not recommended due to lack of effectiveness and increased costs. The choice of therapy should be tailored to

the patient's condition and awareness of long-term risks.

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