

## Drug Therapy of GERD(Gastroesophageal Reflux Disease) in Adults

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### Abstract

Gastroesophageal reflux disease or acid reflux disease is defined as chronic symptoms or mucosal damage produced by the abnormal reflux of stomach acid to the esophagus. Patients exposed to the risk of complications from GERD are managed effectively by medication and also by dietary and postural interventions. Commonly prescribed drug include PPIs, however H-2 RA, antacids and promotility agents are often given in combination with PPIs and H-2RA. A study was conducted on a cohort of 30 patients appointed for their disease management by lifestyle changes and medication. The aim of the study was to check the effectiveness and rationale of treatment modalities being followed and monitoring done to prevent relapse of disease. The medication therapy when started, is, required to be maintained throughout life, but study has shown that inadequate knowledge about the disease management and no monitoring throughout the treatment casts a big burden on the society, as it increases health care cost and number of physician visits. Study analysis was conclusive of suggesting a fault in the health care management program and therefore need to be scrutinized and modulated step-by-step with more safe and cost-effective medicines and new treatment strategies and accent the need for counseling so that the patient's quality of life is improved.

**Keywords:** GERD management, PPIs, step-up & step-down approach, medical therapy.

### INTRODUCTION

Gastroesophageal reflux is the most common gastrointestinal disorder. Patients require daily acid suppression medication for relief of symptoms. Gastroesophageal reflux disease (GERD) occur when the lower esophageal sphincter (LES) does not close properly, and stomach contents splash back, or reflux, into the esophagus. Its normal function is to act as a physical barrier between the esophagus and the stomach, protecting the esophagus from harmful gastric acid, and preventing food from being regurgitated. During swallowing, the LES relaxes and allows passage of food and liquids into the stomach and therefore when the refluxed stomach acid touches the lining of esophagus, causes a burning sensation in the chest or throat called heartburn [1].

The main symptoms of GERD can be divided into typical and atypical symptoms. Typical symptoms include a burning sensation in the chest, and regurgitation of food. Atypical symptoms of GERD include: asthma, chronic sinusitis, difficulty swallowing (dysphagia), chronic hoarseness, and vomiting, choking sensation at night time, pneumonias, and excessive salivation. GERD and asthma often

co-exist [2]. Sometimes, cough in patients is may be due to the treatment with anti-reflux therapy itself (particularly PPI) [3]. These problems may affect the functional status, independence, and quality of life in the vulnerable population [4]. GERD sometime causes injury of the esophagus. These include: Reflux esophagitis, Esophageal strictures, Barrett's esophagus and Esophageal adenocarcinoma.

When a person swallows food, the esophagus moves it into the stomach through the action of peristalsis, wave-like muscle contractions. In the stomach, the starch, fat, and protein in food are broken down by acid and various enzymes, notably hydrochloric acid and pepsin. The lining of the stomach has a thin layer of mucus that protects it from these fluids. The esophagus is protected using specific muscles and other factors. The most important structure protecting the esophagus may be the *lower esophageal sphincter (LES)*. The LES is a band of muscle around the bottom of the esophagus where it meets the stomach. The LES maintains pressure barrier until food is swallowed again. Therefore, the basic problem in patients with reflux disease is a defective lower esophageal

sphincter. Hiatal hernias are sometimes contributing factors [5].

Certain medical conditions, foods and medications may also exacerbate GERD by their ability to lower the resting pressure of the LES. These include: Obesity, Pregnancy, Alcohol use, Smoking, Chocolate, and Caffeine (+, -), Spearmint, Peppermint, Fatty foods, Cola, Milk, Citrus juices. Medications which can decrease LES pressure include oral contraceptives, nitrates, theophylline, narcotics, calcium channel blockers,  $\beta$ -adrenergic agonists,  $\alpha$ -adrenergic agonists, diazepam, and dopamine. Medications which can directly injure esophageal lining are aspirin, NSAIDS (i.e.: ibuprofen), quinidine, tetracycline, potassium, iron.

Treatment for GERD may involve one or more of the following lifestyle changes, medications, or surgery. The medical therapy is considered safer as compared to surgery. Although, surgery is found to be as effective as medication therapy, but practically, is frequently done in cases uncontrolled by medications or patient requiring long-term maintenance therapy [6]. The goals of therapy for GERD include: a) Symptomatic relief; b) Resolution of esophagitis (inflammatory changes of the esophagus as a result of abnormal acid exposure); and c) Prevention of complications.

#### Objective:

1. To study the effectiveness and rationale of GERD treatment modalities being used in our country.
2. To ascertain number of patients and family members being effected by GERD.
3. To study the management of disease with medications and lifestyle modifications.
4. To emphasize the need for monitoring throughout the treatment.
5. To study patient compliance with the treatment regimens and its importance in the prevention of relapse of a disease.

#### MATERIALS AND METHODS

Anti-reflux therapy in GERD is started mostly by PPIs and any antacid and cyto-protective agent used in combination. H-2RA is also

prescribed at night to relieve nocturnal symptoms of GERD.

Treatment strategy is chosen on the basis of severity of symptoms and also on the grade of GERD present. Step-Up approach, Step-Down approach and On-Demand or Continuous PPI therapy are the treatment modalities present. Step-up approach is more practiced in patients with less severe GERD symptoms; however, On-Demand PPI therapy was given in most obvious GERD symptoms.

The goal of the therapy was to relieve the symptoms and preventing the complications arising from the disease progression.

The medical therapy started must be maintained throughout the life, as the disease worsens when relapse occurs, thus increasing the cost of management.

#### RESULTS

The data of 30 patients conservatively managed by physicians through medications in three hospitals (Jinnah Hospital, Fatima Memorial Hospital and Mayo Hospital) were analyzed by using a well-defined Performa and is illustrated as follows.

Figure. 1: shows gender distribution of data population. Male were 46.6% and female was 53.3% of population taken for study.

**FIGURE 1**

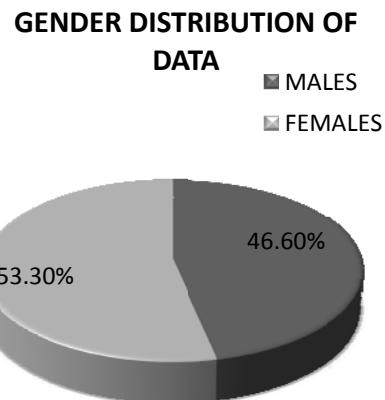


Figure. 2: shows socio-economic status. 56.6% of population belongs to lower class while 36.6% are mediocre and 6.6% belongs to high class. Figure .3: shows factors contributing to GERD include Hiatus Hernia 10%, Obesity

23%, Prednisolone 3%, Hypercalcemia 10% and Unknown Factors as 53%.

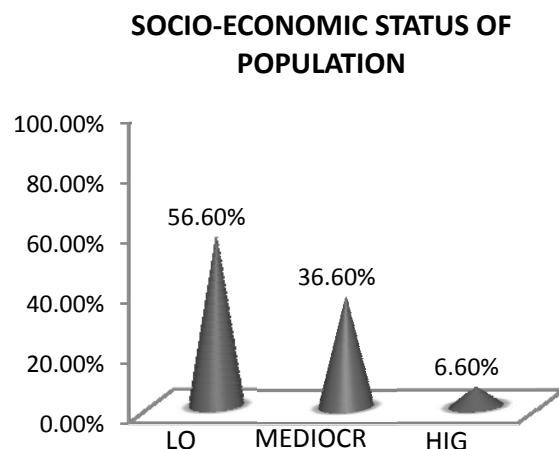
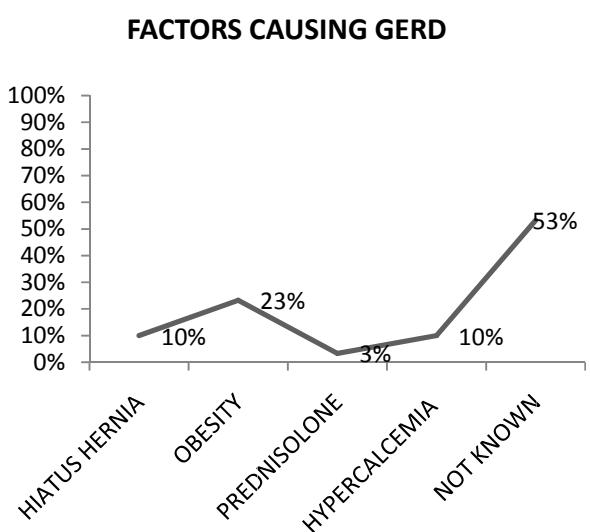
**FIGURE 2****FIGURE 3**

Figure 4: shows treatments given to patient were lifestyle modifications as 73.3%, medication 100%, surgery 3.3% and combination of any two 73.3%. Figure 5: shows treatment strategy mostly applied was Step-up approach 50%, Step-down approach 20% and On-demand Therapy as 30%. Figure 6: explains type of medication class used as anti-reflux therapy was PPIs 73.3%, Antacids 66.6%, H-2RA 26.6%, Prokinetics and Sucralfate as 33.3%.

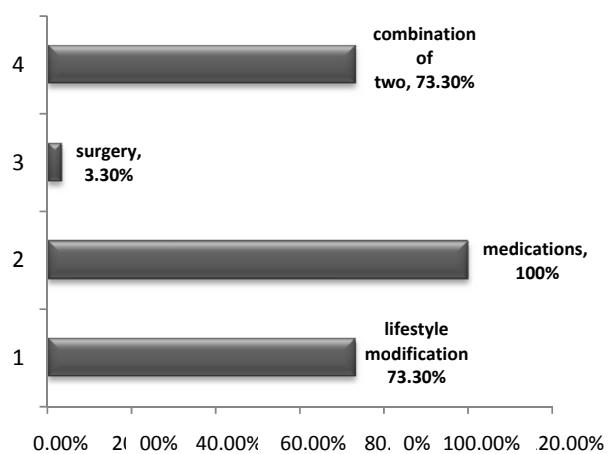
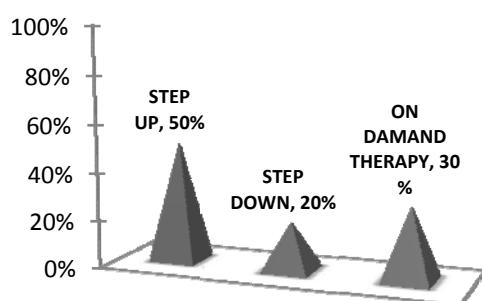
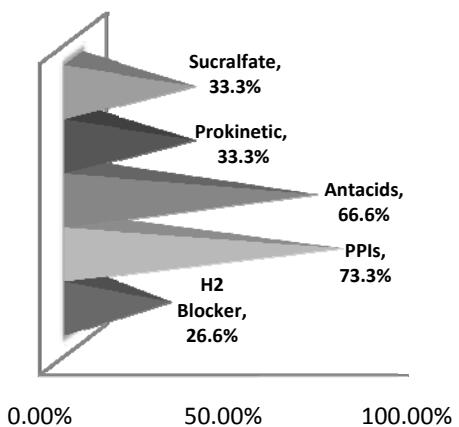
**FIGURE 4****TREATMENT GIVEN****FIGURE 5****TREATMENT STRATEGY APPLIED****FIGURE 6****MEDICATIONS COMMONLY PRESCRIBED**

Figure 7: shows PPIs which is most commonly used were Omega® 33.3%, Essomega® 23.33%, RISEK® 16.6%, Nexum® 20% and Laprazole® as 6.66%. Figure 8: describes most commonly prescribed antacids were Mucaine® 63.33%, Digex® 20%, Citrosoda® 10% and Mylanta® 6.66%.

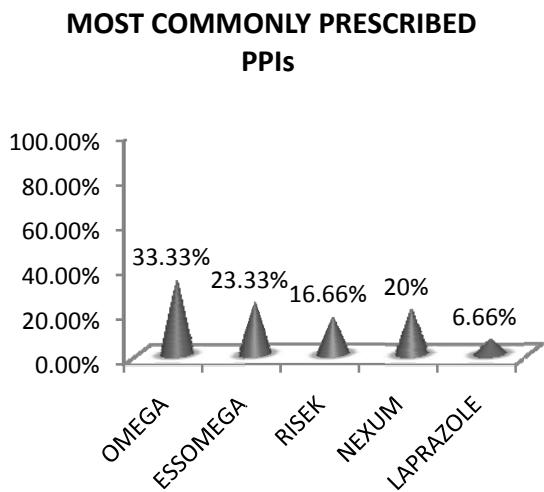
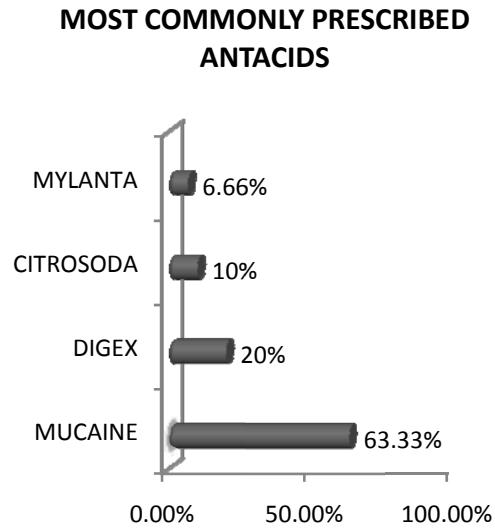
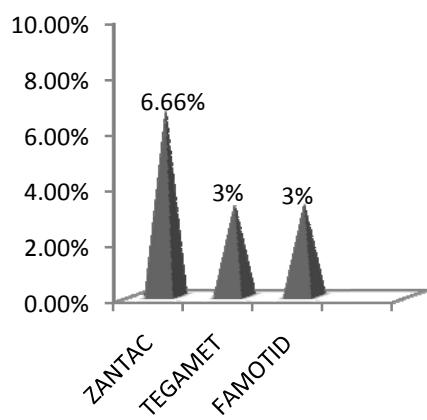
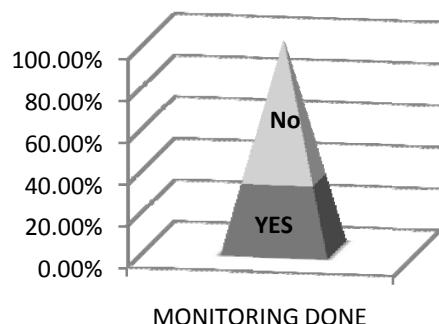
**FIGURE 7****FIGURE 8**

Figure 9: shows most commonly prescribed H-2 blockers were Zantac 6.66% and Famotid and Tagamet as 3.33%. Figure 10: reveals that monitoring was done in 33.3% of patients while 66.67% were not monitored properly.

**FIGURE 9****COMMONLY PRESCRIBED H2-RA****FIGURE 10****MONITORING DONE**

## DISCUSSION

GERD is a spectrum disease. GERD management is basically done by lifestyle modification, medications and surgery. Treatment may be done in conjunction. In Pakistan and worldwide, the initial treatment is started with modifying lifestyle and medications while surgery is done only when there is a critical need and patient have consent [7].

To ascertain the drug therapy given to GERD patients, systematic study was carried out. Patient evaluation is done carefully as symptoms and factors suggestive of GERD are non-specific. Mostly, diagnosis is done by physical and clinical examination and patient

are rarely subjected to endoscopic procedures. Esophageal Manometry, Esophageal pH monitoring, Esophagogastroduodenoscopy (EGD), Barium swallow X-rays are used for diagnosing. These procedures are only employed when the patient doesn't improve or to check GI injury. GERD is caused by the dysfunction of cardia, which allows the backflow of reflux into the esophagus. Variety of factors may contribute to this disease including obesity, hiatus hernia, hypercalcemia as well as the use of medication such as prednisolone. Certain foods, medical condition, personal habit or medications (specially that lowers LES pressure) may aggravate the symptoms. The heartburn occurring more than twice a week is suggestive of GERD.

After clinical investigations, treatment plan is devised. Mostly management is based on acid suppression. Elevating the head of the bed, avoid smoking, heavy meals, reducing weight and other such measures may also be helpful. Medication class generally used was PPI, H-2 Blockers, Antacids, Prokinetics, Sucralfate etc. These may be used alone or in combination depending upon the individual patient need. Typically, the treatment is initialized with the safest drugs such as antacids, H-2 blockers and then PPIs, but in some cases, PPIs were employed as a first-line therapy. Proton pump inhibitors are the first choice of therapy because they are significantly more effective than H<sub>2</sub>RAs in achieving and sustaining an intra-gastric pH above 4.0 [8]. PPIs in combination with H-2RA were not commonly prescribed. Usually the PPIs were given along with some cyto-protective. Most commonly prescribed PPI were omeprazole and esomeprazole. In severe esophagitis, esomeprazole may be superior [9]. Esomeprazole has found to be superior over other PPIs in acid suppression [10]. H-2 blocker cimetidine is more frequently prescribed while Antacids are given safely both in pregnant and normal individual. Ulsanic®, a cyto-protective agent was repeatedly given in combination with PPIs. Promotility/ Prokinetic agents like Motilium® are often prescribed for enhancing the speed of gastric emptying. Dose

is individualized according to the patient need. Duration of treatment and frequency of drugs to be given depends on the requirement of the patient and severity of the condition.

Treatment strategy employed in non-erosive, erosive or a complicated reflux disease is on-demand PPI therapy, continuous PPI therapy and High dose PPI therapy, respectively, depending upon the severity of a disease and a grade of esophagitis present. Patients with mild erosive GERD are prescribed On-demand PPI for symptomatic relief [11, 12, 13]. However, long-term therapy with PPI should be avoided. The patients poorly responsive to PPIs may result from the poor control of duodenogastric reflux. Many patients without esophagitis have simultaneous acid and bile reflux, which increases with increasing esophagitis grade [14]. Studies have come up with 2 approaches; step-up and step-down approach, the step-down approach includes the start of therapy with most effective drug like PPIs then using histamine receptor blockers and then antacids. This approach is more cost-effective, but, in Pakistan it is not much practiced. Step-up approach or On-demand PPI therapy were employed more often than any other treatment modality.

Sometimes GERD can cause serious complications when remain untreated for a long time. Inflammation of the esophagus from stomach acid can cause bleeding or ulcer formation. In addition, scars from tissue damage can narrow the esophagus and make swallowing difficult. Some people can develop Barrett's esophagus, which can lead to cancer. Monitoring and patient compliance ultimately effect the treatment outcome. If the patient doesn't comply with treatment regimens, the relapse of disease occur which is generally more severe. Relapse is managed by medications. Compensatory modalities may consist of increase in dose or change of therapy or it may be judgmental depending upon the condition of patient [15, 16].

Counseling is mostly done by the physician/gastroenterologist itself dealing with the patients.

## CONCLUSION

Managing a GERD patient according to standard treatment is not difficult if proper anti-reflux therapy is chosen and counseling is done. Effective acid suppression is likely to remain the cornerstone of therapy for GERD. But sole pharmacotherapy with medications would not be as much effective in coping up disease as with combined pharmacologic and non-pharmacologic measures. Non-pharmacologic measures should always be considered, especially in patients whose GERD symptoms can be classified as inconvenient rather than troublesome. Evading smoking, reducing heavy drinking and eating, and addressing obesity also have self-evident health benefits. The postural and dietary interventions may avoid some GERD symptoms. In many patients GERD is a chronic relapsing disease. Long-term maintenance is the key to therapy. Maintenance therapy will vary in individuals ranging from mere lifestyle modifications to prescription medication as treatment. The goal of the therapy is usually symptomatic relief, resolution of esophagitis and prevention of relapse of disease and mucosal injury, so symptoms must be analyzed and direct accordingly. It is concluded that stress should be laid on importance of following medication regimens for a prescribed time period otherwise the condition may exacerbate and will become a burden on both the patient and physician as it increases the cost of management and eventually affect the patient's quality of life.

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