



Original Article

Determinants of Gastroesophageal Reflux Disease in Patients Visiting Tertiary Care Hospitals, Lahore

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ABSTRACT

Gastroesophageal reflux disease is a persistent and widespread condition that affects people of all ages. It has multiple symptoms and has a remarkable effect on the lifestyle and work performance of the person. **Objective:** To assess the determinants of GERD in patients visiting tertiary care hospitals, Lahore. **Methods:** A cross-sectional study was conducted at The University of Lahore Teaching Hospital and Jinnah Hospital Lahore for 6 months. Non-probability convenient sampling technique was used to record data of 100 participants by utilizing a validated questionnaire. **Results:** The results revealed that 40% of males and 60% of females participated in the study. Their BMI showed that 44% of participants were overweight and 18% were obese. 61% of the participants developed GERD complications. Analysis of the questionnaire revealed that 66% of the participants had a basic knowledge of GERD. An important determinant identified was the sedentary lifestyle of 70% of the participants. **Conclusion:** The study concluded that GERD is found to be more prevalent in patients having obesity, diabetes, hypertension, heart disease, and kidney disease. It deduced that modifiable risk factors can determine the progression of the disease. In this regard, awareness and public health education campaigns would play a promising role in the reduction of disease.

INTRODUCTION

Gastroesophageal reflux disease is a condition in which muscles of the lower esophageal sphincter are affected due to which food returns to the esophagus. The main etiologic reasons are assumed to be aberrant LES pressure and enhanced reflux during transitory LES relaxations. This can cause discomfort, bad breath, heartburn, indigestion, nausea, vomiting, and acidity. Heartburn is found to be the most common symptom [1]. GERD can also be asymptomatic that is characterized by the presence of esophageal mucosal injury which can be erosions, peptic ulceration, or Barrett's esophagus [2]. Pathophysiology of GERD can include Transient lower esophageal sphincter

relaxation play and anomalies of the lower esophageal sphincter pressure. Besides this, hiatal hernia, altered esophageal clearance, delayed gastric emptying, and compromised mucosal defensive factors are contributing factors to GERD. Another term identified in pathophysiology of GERD is acid pocket. It occurs because of the abnormal amalgamation of chime with acid in the proximal stomach [3]. Normally, for diagnosis of GERD PPI trial, endoscopy or biopsy is advised. Also, ambulatory reflux monitoring is used which gives the best confirmation of GERD [4]. Many factors may contribute to the development of the disease. The two main categories of

risk factors are modifiable and non-modifiable factors. The modifiable factors include obesity, alcohol consumption, smoking, tomato preserves, coffee, carbonated beverages, and fatty or spicy meals. However, the non-modifiable factors include age, gender, pregnancy, and genetic factors [5]. Medical treatment for GERD incorporates fundoplication and Gastric Bypass. These surgeries are done alone and also in combined form [6]. Other than this alginate therapy is used. Awareness for combating GERD can be very productive in management of the symptoms. Dietary modifications can treat GERD like having less sugar intake and more fiber consumption. Changing eating behavior can also help in treatment since late night meals, large meals, and calorically dense foods increase gastric acid production and gastric distention. Besides, avoiding beverages, chocolates, alcohol, caffeine, spicy foods, carbonation, and peppermint can also be effective since these food consumption cause reductions in LES tone [7]. Fiber laden diet can manage GERD symptoms since it induces a decrease in the number of gastroesophageal refluxes and the frequency of heartburn each week by having more fiber in the diet [8]. A low nickel diet can manage GERD symptoms [9]. GERD is a digestive disorder that occurs when stomach acid frequently flows back into the tube connecting the mouth. If it is left untreated it can progress into ulcers, scarring of the esophagus, and Barrett's esophagus. GERD has an impact on the daily lives of affected individuals interfering with physical activity, impairing social functioning, disturbing sleep and reducing productivity of work on the quality of life of patients [10-12]. It can lead to more absentees at the workplace because of disturbed sleep that can compromise the overall productivity of the person and the organization. The researchers will define the determinant causing GERD among patients in order to highlight or find out the risk factors leading to GERD. So that after the identification of these factors, an awareness plan for the promotion of healthy habits can be devised. Eventually, the provision of extensive health education would be a promising approach to reducing GERD prevalence.

METHODS

Sample size was thirty $n=30$. Sampling method was Simple Random sampling and allocation between groups was done using sealed envelope method. Male and female students having neck pain at least once in the last month. Age group of 18 to 30 years. Patients with chronic neck pain due to faulty head posture. Exclusion Criteria: Fracture of cervical spine, Cervical Spondylolisthesis, Tumors of spine, Systemic disorders, Cervical radiculopathy. Structured Questionnaire and Pain Numeric Scale NDI (The NDI

contains 10 item with 7 related to daily activities, 2 related to pain, and 1 related to concentration [21]. Thirty patients in total were chosen and randomly divided into the treatment group and the control group. For two months, interventions were used three to four times each week. Each individual did 10-12 repetitions of a weight that they could lift ten times on the first training session (ten repetitions maximum) and worked their way up to fifteen repetitions in phase one. For four weeks, they remained at this level. In phase two, subjects worked out for three sets of 15-20 repetitions at maximal load after the initial 10 repetitions, with a minute of rest in between sets. The subjects in the Control group underwent a specially created strength training program that included cervical isometrics. This training regimen was divided into two halves. both the first and second phases last for four weeks. Each participant did 5-10 repetitions of a weight that they could lift 10 times during the first training session (10 repetitions maximum) in phase one, working their way up to a load that could be accomplished for a maximum of 12 repetitions. For four weeks, they remained at this level. Phase two saw the patients performing three sets of five to ten repeats of the initial twelve to fifteen repetitions at their maximum load, with a minute of rest in between sets. Data was entered and analyzed using SPSS version 21.0. Cross tabulation and multiple bar charts were used to present the data. Independent samples t-test was applied at 5% level of significance to compare the means of two study groups for the continuous outcome variables.

RESULTS

According to Figure 1, frequency distribution showed that 50% participants ranged from age 20-29 years while 17% belongs from 30-39 years as well as 19% belong from 40-49 years and also 14% from age 50-59 years.

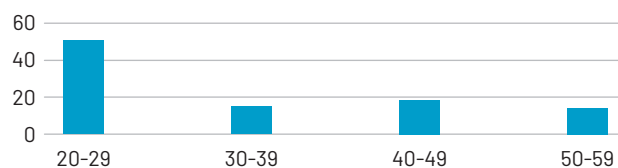


Figure 1: Frequency distribution of age among GERD patients

The frequency distribution showed that 66% of participants knew about GERD while 34% didn't. 51% of participants were having heartburn, while 57% had burps due to indigestion while 60% of participants did not feel nausea. The frequency distribution showed that 68% of participants have a long-term medication while 32% of participants did not. The frequency distribution showed that 40% participants were doing crash diet while 64% participants skipped meal. The frequency distribution showed that 70% participants are living sedentary lifestyle,

16% were moderate and 14% were intense. The frequency distribution showed that 50% participants consume lean meat, 32% consume red meat, 8% consume nuts and seeds and 10% consumed legumes (Figure 2).

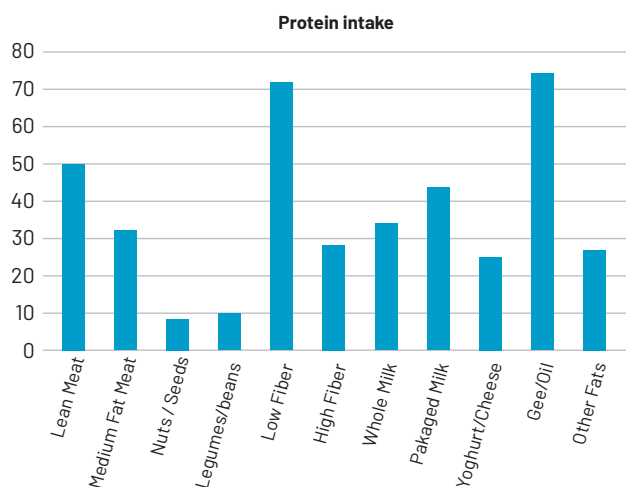


Figure 2: Frequency Distribution of protein intake among GERD patients

The frequency distribution showed that 74% participants consume low fiber while fruits 26% consume high fiber fruits. The frequency distribution showed that 34% participants consume whole-milk, 44% consume packaged milk and 22% participants consume yogurt and cheese. The frequency distribution showed that ghee and oil is consumed by 76% participants, 20% consume dressings, mayonnaise, butter, margarine and 4% participants consume sweet candy, soft drinks and jellies. The frequency distribution showed that 68% participants consume coffee while 32% participants did not (Figure 3).

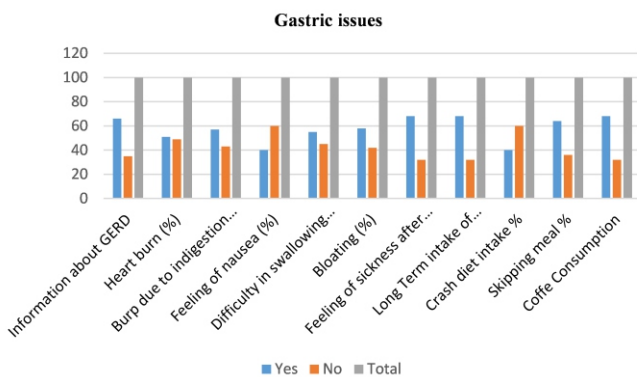


Figure 3: Frequency distribution of gastric issues among GERD patients

Physical Activity

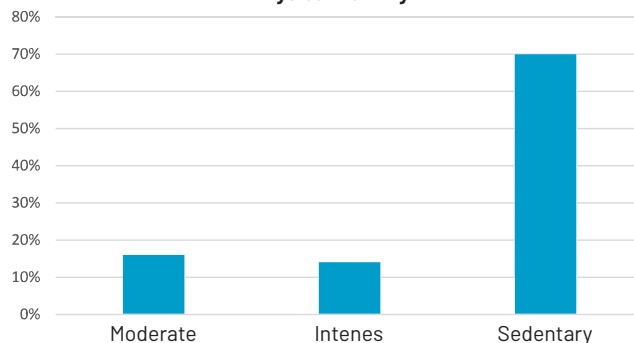


Figure 4: Frequency distribution of physical activity among GERD patients

DISCUSSION

Gastroesophageal Reflux Disease (GERD) is increasing due to lifestyle changes and quality of life resulting in esophagitis and many other diseases [13-16]. GERD ratio in Pakistan is 28.9%. The high rate of occurrence of GERD is due to regular usage of spicy fast food, carbonated drinks, sedentary lifestyle, and unhealthy dietary practices. According to the findings of this study, GERD is more frequent in adults due to high consumption of fast food, spicy food, carbonated drinks, coffee, and more screen timing and the similar results were done in another study, who showed that 28.7% patients from the age 29 years, he also concluded that the patients had this issue due to genetic, environmental and non-genetic factors [17]. It was also concluded that females are facing this issue due to many reasons such as obesity, sedentary lifestyle, high consumption of caffeine and family history of GERD [18]. In the current study, 66% of patients had knowledge about GERD and 35% of patients did not knowledge about GERD due to low literacy and educational levels similar results showed in a study which depicted that people in Riyadh had good knowledge about GERD because of attending different educational program and health conference about GERD [12]. In this study, 60% of patients did not feel nausea, and 40% of patients felt vomiting badly because, in GERD, the lower esophageal sphincter (LES) does not function properly, and acid reflux in which stomach acid may creep up in esophagus which may result in nausea. Indigestion or heartburn can also contribute to nausea. However, a similar study presented that patients may experience coughing and burping which can lead to a nauseated feeling [17]. Another study presented that burping is highly common in GERD patients due to indigestion [18]. Similar results were shown by the current study that 57% of patients had burped a lot and 43% of patients didn't burp. Probiotics have a crucial function in gastrointestinal health. Probiotics are found in a variety of meals and supplements [19]. Probiotics mechanisms have been proposed to include direct interaction with gut

luminal bacteria, metabolic effects resulting from enzymatic activities, impact on barrier function and crosstalk with the central nervous system, and enteric immunity. Probiotics that contain bacteria strains from the genus *Lactobacillus* and *Bifidobacterium* presented decreased gastrointestinal symptoms. In the current study, 61% of patients know about probiotics can reduce GERD symptoms and 39% of patients did not know about probiotics importance, similar results were discussed by Tsai et al., in 2020, he concluded that due to the presence *Lactobacillus* and *Bifidobacterium* in probiotics can help in reducing GERD symptoms [11]. Fruits and vegetables are naturally low in fat and sugar, which help to lower stomach acid. GERD has shown to be 33% less common in people who ate the most fruits and vegetables. GERD was shown to be 36% less common in women who ate the most fruits and vegetables. Magnesium is a mineral that is used in several acid reflux therapies. Magnesium hydroxide or magnesium carbonate, along with aluminum hydroxide or calcium carbonate, are commonly used in antacids. These concoctions can neutralize acid and elevate discomfort. According to this study, 59% of patients had knowledge about the importance of fruit to prevent GERD symptoms, and a previous study was done by Shruthi that banana has a natural antacid effect in the body and helps in preventing heartburn and acid reflux [12]. Additional fat surrounding the stomach compresses the stomach, and more fluid goes upward in the esophagus, which can cause GERD. This makes it more likely to experience stomach acid leakage and GERD. The added pressure also causes the sphincter that sits between the stomach and the esophagus to relax, allowing stomach acid into the esophagus. The present study showed that 61% of obese participants had other complications like diabetes heart disease and hypertension with GERD while 39% of participants did not have any complications. Furthermore, the study by Gu et al., reported that obesity is a major risk factor for GERD, which can lead to various complications [17]. The current study showed that 68% of participants had a feeling of heartburn after a meal and 32% of participants do not have any feeling. A similar study conducted by Taraszewska who reported that heartburn is the most common symptom of GERD after taking meals due to indigestion and acid reflux [18]. Intake of long-term GERD medication can increase the risk of esophageal cancer. Over-the-counter medications have side effects like heartburn, when stomach acid rises, it causes a burning sensation in the chest or neck. According to this study, 68% of patients had taken the long-term medication which causes side effects like heartburn while 32% of participants had not taken long-term medications. Furthermore, it was observed that long-term therapy to prevent GERD requires follow-up to decrease

the risk of adverse effects. The acid in the stomach flows back up into the esophagus this irritates the lining of the esophagus cause dry cough and heartburn due to acid reflux makes difficult to swallow certain food [17]. This study showed that 37% of participants had a change in diet and 63% of participants did not change in diet a similar study was held by Dagli and Kalkan in 2017 who studied that lifestyle modification has a significant impact on GERD therapy [13]. Caffeine contains coffee identified as a possible trigger for heartburn and relaxes the lower esophageal sphincter (LES) which triggers GERD symptoms. In this study 68% of participants consumed coffee and 32% of participants did not consume it. In the present study, 50% of participants consumed lean meat, 32% of participants consumed red meat and 10% of participants consumed legumes showed that most of the patients had knowledge about good dietary practices of protein. Furthermore, in 2017 a research was done by Ahmadnezhad et al., who studied that majority of patients consume a lot of protein with a lot of fat, which is more likely to cause GERD. Patients had advised taking lean meat because low-fat meats like chicken, turkey, fish, and shellfish can help to relieve acid reflux symptoms [15]. Fiber can aid with cholesterol reduction, constipation prevention, and digestion. Fibrous meals such as whole grains and root vegetables, make individual feel full, which may help to prevent heartburn [20]. In 2018 Morozov et al., studied that fiber-enriched food can decrease LES resting pressure and decrease heartburn frequency and the present study assess that 74% of participants consumed low fiber food items in diet while 26% of participants consumed high fiber [8].

CONCLUSIONS

This study specified along with the results of former studies that GERD is a highly prevalent disease globally. It was concluded that in the current study GERD was commonly found in the patients having obesity, diabetes hypertension, heart diseases, and kidney disease. It was also spotted that many modifiable risk factors that noticeably affect the degree of the disease. Awareness campaigns and public health education like seminars and conferences would help in lowering the ratio of disease.

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