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Research Article

**INCIDENCE OF GASTROESOPHAGEAL REFLUX DISEASE  
AMONG OBESE POPULATION****Dr Naima Hussain<sup>1</sup>, Dr Haroon Rafique<sup>2</sup>, Dr Hannan Raza Khan<sup>3</sup>**<sup>1</sup> House Officer, Allied Hospital, Faisalabad<sup>2</sup> Demonstrator Forensic Medicine Mohi ud Din Islamic Medical College Mirpur AJK<sup>3</sup> Medical Officer, Govt General Hospital, Ghulam Muhammad Abad, Faisalabad**Article Received:** April 2020**Accepted:** May 2020**Published:** June 2020**Abstract:****Aim:** To determine the endoscopic frequency of GERD in obese patients**Study design:** This study is cross-sectional.**Place and Duration:** In the Gastroenterology outpatient department of Allied Hospital Faisalabad for six months duration from October 2019 to March 2020.**Cases and methods:** 100 patients were selected from the outpatient clinic who met the inclusion and exclusion criteria. The patients were informed about the upper gastrointestinal endoscopy and then arranged an appointment. The incidence of GERD has been documented in these patients, followed by data analysis.**Results:** GERD was confirmed endoscopically in 42 of 100 patients. Out of 58 female patients, 23 had confirmed GERD, and out of 42 males only 19 had the confirm disease.**Conclusion:** GERD is common in obese people. Obese patients with GERD symptoms should be taken more seriously because they have a 50% chance of having endoscopic GERD.**Key words:** gastroesophageal reflux disease, GERD, obesity, reflux.**Corresponding author:****Dr. Naima Hussain,**

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**INTRODUCTION:**

Gastroesophageal reflux disease is a normal physiological phenomenon that occurs sporadically in most people, especially after a meal<sup>1-2</sup>. Gastroesophageal reflux disease (GERD) occurs when the amount of gastric juice flowing back into the esophagus exceeds the normal limit, causing symptoms with or without damage to the associated esophageal mucosa<sup>3-4</sup>. The global incidence of overweight and obesity has increased at an alarming rate over the past decade and has affected the population in high- and middle-income countries without discrimination. The increase in obesity coincides with the occurrence of gastroesophageal reflux disease and gastroesophageal reflux disease is a common disease associated with obesity<sup>5-6</sup>. Obesity is the risk factor for gastroesophageal reflux disease, but the results of individual studies are conflicting. Some studies show that a higher body mass index (BMI) is associated with increased esophageal acid exposure and an increased risk of hospitalization due to esophagitis<sup>7-8</sup>. However, other studies, including one of the largest population studies to date, have not shown a link between BMI and gastroesophageal reflux disease. Possible explanations for the different results include the lack of a true relationship between BMI and gastroesophageal reflux disease, differences in definition or methodology, different study populations, or lack of power to detect an effect in some studies<sup>9-10</sup>. In addition, many studies assessing the relationship between gastroesophageal reflux disease and obesity are symptomatic and there is no objective evidence to confirm this relationship. The GERD supportive obesity mechanism remains uncertain. A potential mechanism is associated with mechanical factors in which an increase in abdominal fat leads to an increase in abdominal pressure and a higher frequency of temporary relaxation of the lower esophageal sphincter<sup>11</sup>. Obese patients may increase the risk of esophageal hernia that plays a role in initiating and promoting gastroesophageal reflux disease. In other reports, there was no statistically significant relationship between BMI and hiatal hernia.

**TOOLS AND METHODS:**

This cross-sectional study was conducted at the Gastroenterology outpatient department of Allied Hospital Faisalabad for six months duration from October 2019 to March 2020. The calculated sample size was 100 cases with a 10% error margin, 95% confidence level, and 47.7% was the lowest among

all BMI groups, assuming the expected GERD percentage in 47.7% of obesity (BMI group > 30 kg / m<sup>2</sup>). All patients between 18 to 70 years of both genders, presence of one or more of GERD symptoms described as acid regurgitation retrosternal pain, epigastric heart burn, epigastric pain or retrosternal heart burn, Obese (BMI > 30) and presence or absence of medication intake other than GERD were included in the study. All those patients with H/O medication intake for GERD, alcohol intake or smoking, known case of chronic liver disease as determined by clinical examination, history, abdominal ultrasound and liver function tests known diagnosis of gastro esophageal malignancy, pregnant and patients requiring emergency endoscopy were excluded from this study.

**Data collection procedure:** All patients underwent upper gastrointestinal endoscopy. The procedure, benefits and risks have been fully explained. Written informed consent has been obtained to undergo this procedure and obtain consent to use this data for research purposes. A history of demographic information (such as age, gender and direction) and GERD (acid deficiency, interstitial pain, epigastric burning, epigastric pain or epigastric burning) was obtained for each patient. Patients are said to have GERD only if endoscopy has confirmed mucosal breaks results, such as erosions of varying length / ulceration in the esophageal mucosa. An effect-modifying factor, such as taking non-GERD drugs, was controlled by stratification. All information was collected additionally using the attached form.

**Data analysis:** The data was collected and compiled on a computer and analyzed using SPSS version 18. The mean and standard deviation will be calculated for all quantitative variables, i.e. Age, Frequencies and percentages were calculated for all qualitative variables, i.e. gender, presence or absence of GERD. Data was stratified for the use of medicines for co-morbid disease, to address effect modifiers.

**RESULTS:**

A total of 100 patients were selected according to the inclusion and exclusion criteria. Fig shows that patients are usually divided by age. The mean age of the study population was 46.04 years  $\pm$  11.77561 SD. Figure 3 shows the gender distribution among the study population. 42% of the general population were men and 58% women.

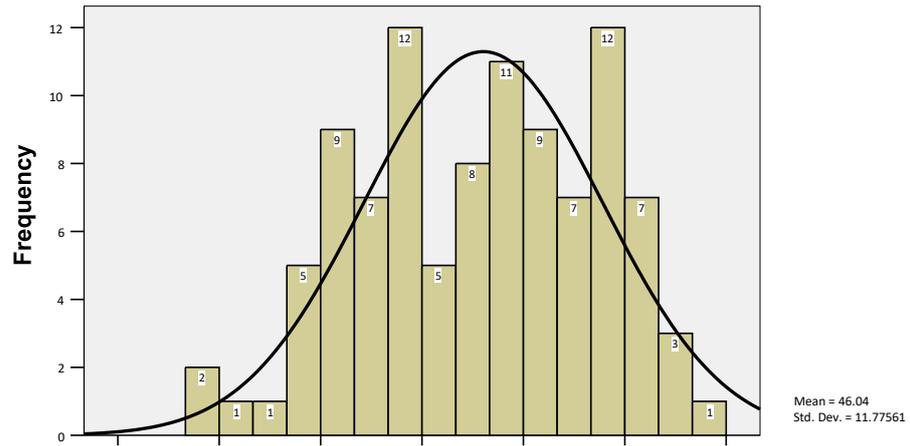


Figure 1: Histogram representing age distribution

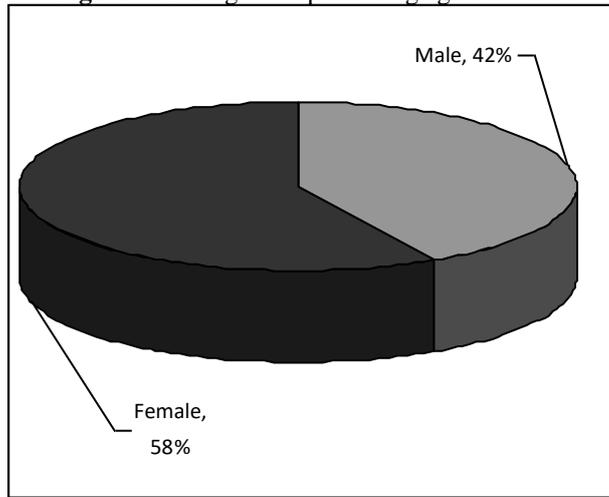


Figure 2: Representation of sex distribution among study subjects

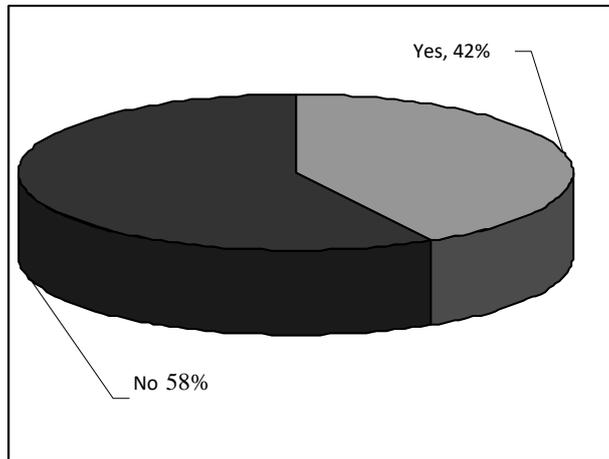
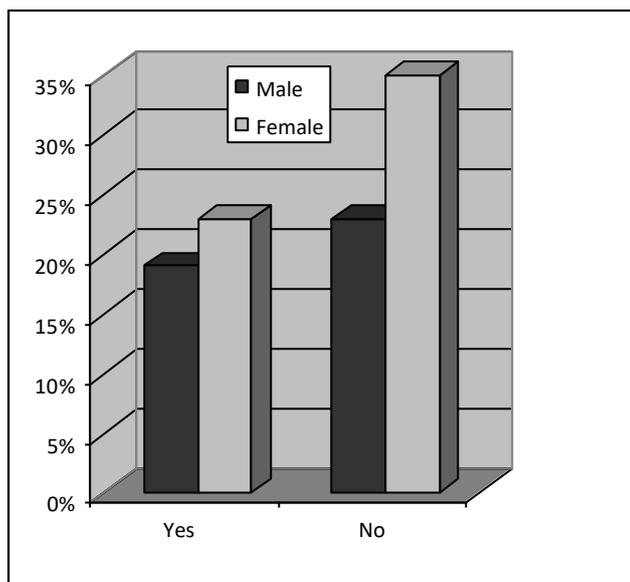


Figure 3: Pie Chart for presence and absence of GERD in percentages.

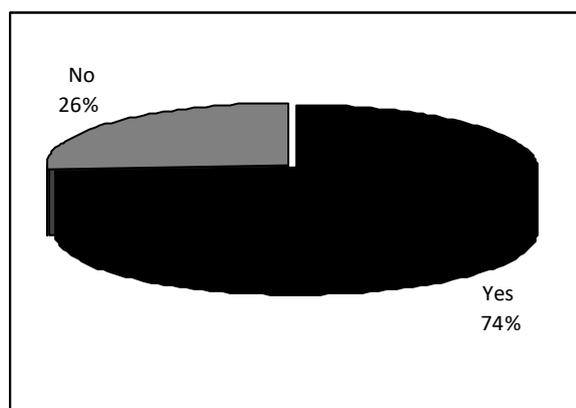


**Figure 4:** Bar Chart for distribution of confirmed GERD among male and female study population

Figure 4 shows the representation on a pie chart of endoscopically confirmed GERD cases among the subjects. While 42% of cases had GERD on endoscopic results, 58% had normal endoscopic tests. Figure 5 also distinguishes GERD cases only from those with GERD symptoms based on gender. It shows that for females, out of 58% only 23% actually had disease. While for males, out of 42% only 19% had the disease. Table 1 shows the presence of endoscopically confirmed GERD cases and individuals with GERD symptoms and distributed by specific age groups. In this case, the maximum number of endoscopically confirmed cases (16) in group D and the maximum number of patients with symptoms (21) in group B without real disease were recorded.

**Table 1:** Cross Tabulation between Endoscopically confirmed disease and predefined age groups

Age in years	GERD confirmed on endoscopy		Total
	Yes	No.	
A: 18-30	3	6	9
B: 31-40	7	21	28
C: 41-50	8	16	24
D: 51-60	16	12	28
E: 61-70	8	3	11
Total	42	58	100



**Figure 5:** Endoscopically confirmed GERD patients among subjects using drugs for co morbidities

#### DISCUSSION:

Gastroesophageal reflux disease has its specific spectrum of diseases, with extreme symptoms of

heartburn and acid reflux, but no endoscopic evidence of mucosal damage; On the other hand, Barrett's esophagus and esophageal adenocarcinoma

have devastating consequences<sup>11</sup>. Epidemiological studies in obese people show that the incidence of GERD is much higher than in the non-obese population. Jacobson et al. Nurses' health study observed that participants found an almost linear increase in the ratio (OR) for reflux symptoms for each BMI layer. Interestingly, even for participants with normal BMI (22.5–24.9 kg / m<sup>2</sup>) the risk increased compared to the control group with BMI in the range of 20.0–22.4 kg / m<sup>2</sup>. This study showed that patients with BMI in the area of obesity had 42% endoscopically confirmed the frequency of GERD (Fig. 4). These results can be compared with many other categorical comparative studies between different BMI groups, such as studies conducted by Solhpour. Two small studies focusing only on obese patients seeking bariatric surgery (BMI > 35-40 kg / m<sup>2</sup>) showed that the incidence of GERD was higher. In the first study, GERD symptoms were identified in 16 (53%) of 30 obese patients. The second study involved 31 obese patients who had abnormal esophageal acid in 19 (61%) patients. In additional population studies, OR was calculated for the presence of GERD in obese subjects compared to participants with normal weight. In the German national health study and study, the OR test for GERD was 2.6 for obese people (95% CI 2.2-3.2). Bristol Helicobacter calculated a similar OR for heartburn (OR 2.91, 95% CI 2.07-4.08) or acid deficiency (OR 2.23) in obese participants, but found no relationship between BMI and symptom severity<sup>12</sup>. Recent studies have focused on whether central lubrication speed, measured by waist-to-hip ratio, is more important than BMI in GERD pathogenesis. Theoretically, central obesity is prone to reflux, increasing intragastric pressure. In addition, visceral oil is metabolically active and produces various cytokines, including IL-6 and TNF- $\alpha$ , which may affect the motor activity of the esophagus. A large study on the Kaiser Permanente healthcare system (N = 80,110) found a significant relationship between increased abdominal diameter and reflux symptoms, regardless of BMI (OR 1.85, 95% CI 1.55-2.21). This relationship was observed only in the white population and did not apply to black and Asian participants. Similarly, El-Serag et al. They found that the relationship between elevated BMI and abnormal 24-hour esophageal pH parameters was explained primarily by changes in the waist. Hypotensive SLE (<10 mmHg) is a clear risk factor for GERD development, and the correlation between BMI and SLE pressure has been extensively studied<sup>13-14</sup>. One study looked at 43 patients with morbid obesity due to reflux symptoms, manometric abnormalities, and esophageal acid exposure PH. These patients were compared with 53 healthy control groups. LES pressure was significantly lower in the obese group compared to the control group (11.9  $\pm$  5.3 vs. 15.9  $\pm$  2.7 mmHg, respectively)<sup>15</sup>. In addition, LES

pressure in obese GERD patients was significantly lower than in obese patients with normal acid exposure.

### CONCLUSION:

Epidemiological data consistently show a link between elevated BMI and GERD symptoms, with a few exceptions. Multiple changes in esophagus physiology may explain the relationship between these two conditions. Obese people usually have more GERD symptoms than the rest of the population. In addition, older obese people are more likely to have ulcers on the esophagus if they have GERD symptoms. Chronic use of drugs in other diseases often does not pose an additional threat to GERD production in obese people. Treatment for GERD is required to eliminate the symptoms of GERD, but for obese people, more attention should be paid to obesity.

### REFERENCES:

1. Surdea-Blaga, Teodora, Dana E. Negrutiu, Mariana Palage, and Dan L. Dumitrascu. "Food and gastroesophageal reflux disease." *Current medicinal chemistry* 26, no. 19 (2019): 3497-3511.
2. Sebastianelli, Lionel, Marine Benois, Geoffroy Vanbiervliet, Laurent Bailly, Maud Robert, Nicolas Turrin, Emmanuel Gizard et al. "Systematic endoscopy 5 years after sleeve gastrectomy results in a high rate of Barrett's esophagus: results of a multicenter study." *Obesity surgery* 29, no. 5 (2019): 1462-1469.
3. Borbély, Yves, Esther Schaffner, Lara Zimmermann, Michael Huguenin, Gabriel Plitzko, Philipp Nett, and Dino Kröll. "De novo gastroesophageal reflux disease after sleeve gastrectomy: role of preoperative silent reflux." *Surgical endoscopy* 33, no. 3 (2019): 789-793.
4. Rees, Christopher J., Richard M. Cantor, Charles V. Pollack Jr, and Victoria G. Riese. "Gastroesophageal reflux disease." In *Differential Diagnosis of Cardiopulmonary Disease*, pp. 441-449. Springer, Cham, 2019.
5. Raj, P. Praveen, Siddhartha Bhattacharya, Shivanshu Misra, S. Saravana Kumar, Mohd Juned Khan, Sridhar Chinnaswami Gunasekaran, and C. Palanivelu. "Gastroesophageal reflux-related physiologic changes after sleeve gastrectomy and Roux-en-Y gastric bypass: a prospective comparative study." *Surgery for Obesity and Related Diseases* 15, no. 8 (2019): 1261-1269.
6. Chatila, Ahmed T., Minh Thu T. Nguyen, Timothy Krill, Russell Roark, Mohammad Bilal, and Gabriel Reep. "Natural history, pathophysiology and evaluation of

- gastroesophageal reflux disease." *Disease-a-Month* 66, no. 1 (2020): 100848.
7. Robert, Maud, Philippe Espalieu, Elise Pelascini, Robert Caiazzo, Adrien Sterkers, Lita Khamphommala, Tigran Poghosyan et al. "Efficacy and safety of one anastomosis gastric bypass versus Roux-en-Y gastric bypass for obesity (YOMEGA): a multicentre, randomised, open-label, non-inferiority trial." *The Lancet* 393, no. 10178 (2019): 1299-1309.
  8. Kristo, Ivan, Matthias Paireder, Gerd Jomrich, Daniel M. Felsenreich, Milena Nikolic, Felix B. Langer, Gerhard Prager, and Sebastian F. Schoppmann. "Modern esophageal function testing and gastroesophageal reflux disease in morbidly obese patients." *Obesity surgery* 29, no. 11 (2019): 3536-3541.
  9. Antonio Filho, M. M., Lyz B. Silva, Eduardo S. Godoy, Angela M. Falcão, Luiz G. de Quadros, Filho Zotarelli, J. Idiberto, Josemberg M. Campos, Filho Rabelo, and V. Lucio. "Omentopexy in sleeve gastrectomy reduces early gastroesophageal reflux symptoms." *Surgical laparoscopy, endoscopy & percutaneous techniques* 29, no. 3 (2019): 155-161.
  10. Pilone, Vincenzo, Salvatore Tramontano, Michele Renzulli, Claudio Zulli, and Luigi Schiavo. "Gastroesophageal reflux after sleeve gastrectomy: new onset and effect on symptoms on a prospective evaluation." *Obesity surgery* 29, no. 11 (2019): 3638-3645.
  11. Chowdhury, Sudipta Dhar, Gemlyn George, Kartik Ramakrishna, Balamurugan Ramadass, Srinivasan Pugazhendhi, John Mechenro, L. Jeyaseelan, and Balakrishnan Siddartha Ramakrishna. "Prevalence and factors associated with gastroesophageal reflux disease in southern India: A community-based study." *Indian Journal of Gastroenterology* 38, no. 1 (2019): 77-82.
  12. Singendonk, Maartje, Eline Goudswaard, Miranda Langendam, Michiel van Wijk, Faridi van Etten-Jamaludin, Marc Benninga, and Merit Tabbers. "Prevalence of gastroesophageal reflux disease symptoms in infants and children: a systematic review." *Journal of pediatric gastroenterology and nutrition* 68, no. 6 (2019): 811-817.
  13. Bingham, Sean M., and Pramodha Muniyappa. "Pediatric gastroesophageal reflux disease in primary care: Evaluation and care update." *Current Problems in Pediatric and Adolescent Health Care* (2020): 100784.
  14. Tashiro, Hiroki, and Stephanie A. Shore. "Obesity and severe asthma." *Allergology International* 68, no. 2 (2019): 135-142.
  15. Del Grande, Leonardo de Mello, Fernando Augusto Mardiros Herbella, Rafael Caue Katayama, William Guidini Lima, and Marco G. Patti. "Transdiaphragmatic Pressure Gradient (TPG) Has a Central Role in the Pathophysiology of Gastroesophageal Reflux Disease (GERD) in the Obese and it Correlates with Abdominal Circumference but Not with Body Mass Index (BMI)." *Obesity Surgery* 30, no. 4 (2020): 1424-1428.