

The Frequency of Gastroesophageal Reflux Disease among obese

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ABSTRACT

Objective: To determine the frequency of GERD endoscopically among obese patients

Study design: This study was a cross-sectional survey.

Setting: Study will be conducted through medical out-patient department, Services Hospital Lahore.

Duration of study: The study will be completed in six months after approval of synopsis.

Subjects and methods: 100 patients fulfilling inclusion and exclusion criteria were selected from the out-patient department. They were counseled regarding upper GI endoscopy and later appointments were given. Frequency of GERD was documented in these patients and then data analysis was performed.

Results: Out of 100 patients, 42 were found to have endoscopically confirmed GERD. Out of 58 female patients, 23 had confirmed GERD, and out of 42 males only 19 had the confirm disease.

Conclusion: GERD is frequent among obese people. Obese patients who present with GERD symptoms must be taken more seriously as they have about 50% chance of having endoscopic GERD in them.

Key words: Gastroesophageal reflux disease, GERD, Obesity, Reflux.

INTRODUCTION

Gastroesophageal reflux is a normal physiologic phenomenon experienced intermittently by most people, particularly after a meal. Gastroesophageal reflux disease (GERD) occurs when the amount of gastric juice that refluxes into the esophagus exceeds the normal limit, causing symptoms with or without associated esophageal mucosal injury¹.

The worldwide prevalence of being overweight and obesity has been increasing at an alarming rate over the last decade, indiscriminately affecting populations of both higher and lower middle income countries². The rise in obesity coincides with rising prevalence of gastroesophageal reflux disease^{3,4} and gastroesophageal reflux disease is a common disorder that has been linked to obesity.

Obesity is a postulated risk factor for gastroesophageal reflux disease, although individual studies have conflicting results.⁵⁻⁹ Some studies suggest that an increased body mass index (BMI) is associated with increased esophageal acid exposure¹⁰ and with an increased risk of hospitalization for esophagitis¹¹. In contrast, other studies, including one of the largest population-based studies to date, have found no association between BMI and gastroesophageal reflux disease¹²⁻¹⁴. Potential explanations for the disparate results include a true lack of an association between BMI and gastroesophageal reflux disease, differences in

definitions or methodology, dissimilar study populations, or a lack of power to detect an effect in some studies. Additionally, many studies assessing the relationship between gastroesophageal reflux disease and obesity are symptom-based and lack objective tests to confirm this association.

The mechanism by which obesity promotes GERD remains unclear. One potential mechanism is related to mechanical factors whereby an increase in abdominal fat leads to an increase in intragastric pressure¹⁵, and increased frequency of transient lower esophageal sphincter relaxation.¹⁶ Obese patients may have an increased risk for hiatal hernia, which has a role in initiating and promoting gastroesophageal reflux¹⁷. On the other reports, there was not statistically significant association between BMI and hiatal hernia.

MATERIAL AND METHODS

This cross-sectional study was conducted through medical out-patient department, Services Hospital Lahore. The study was completed in six months after approval of synopsis. The calculated sample size was 100 cases, with 10 % margin of error, 95 % confidence level, taking expected percentage of GERD in obese (BMI > 30 Kg/m² group) of 47.7 % which was least among all BMI groups. 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

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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 history, clinical examination, liver function tests and abdominal ultrasound, known diagnosis of gastroesophageal malignancy, pregnant and patients requiring emergency endoscopy were excluded from this study.

Data collection procedure: Subjects were selected from Medical Out-Patient Department, Services Hospital Lahore, upon the basis of inclusion criteria. All the patients were offered upper gastrointestinal endoscopy. The procedure, its benefits and risks were fully explained to them. An informed written consent was then taken regarding undergoing this procedure and for the permission to use this data for research purpose. They were assured regarding confidentiality & expertise. For each patient, history was taken regarding demographic information (like age, sex and address), and symptoms of GERD (acid regurgitation retrosternal pain, epigastric heart burn, epigastric pain or retrosternal heart burn). Patient were said to have GERD only when endoscopy confirmed findings of mucosal breaks such as

erosions / ulcerations in esophageal mucosa of variable lengths. Effect modifier like intake of medicine other than for GERD, were controlled by stratification. All their information was collected through a proforma attached as annexure.

Data analysis: Data was collected and compiled in the computer and analyzed using SPSS version 10. 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 inclusion and exclusion criteria from out-patient department, Services Hospital Lahore.

Figure 2 shows that patients were distributed normally according to age. Mean Age of study population was 46.04 years \pm SD of 11.77561.

Figure 3 represents the gender distribution among study population. 42% of total population was male, while 58% were females.

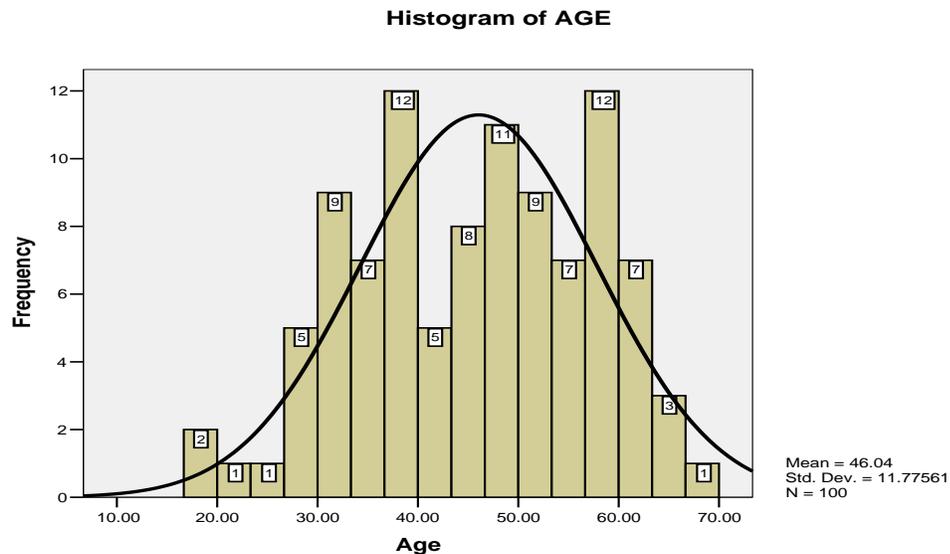


Figure 1: Histogram representing age distribution

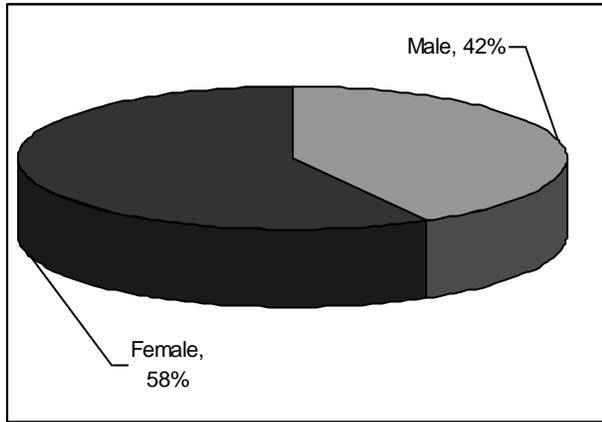


Figure 2: Representation of sex distribution among study subjects

Figure 4 shows pie chart representation of endoscopically confirmed GERD cases among the study subjects. 42% subjects were found to have endoscopic evidence for GERD while 58% had normal endoscopic studies.

While Figure 5 further dissects the GERD cases from those with GERD symptoms only, upon the basis of 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 represents presence of endoscopically confirmed GERD cases and subjects with GERD symptoms only, distributed into defined age groups. Here, group D had maximum number of endoscopically confirmed cases (16) while group B had maximum number of symptomatic patients (21) without actual disease.

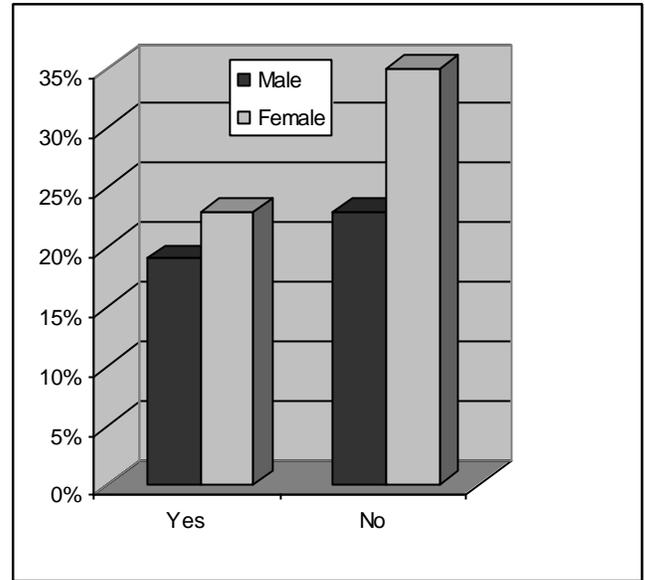


Figure 4: Bar Chart for distribution of confirmed GERD among male and female study population

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

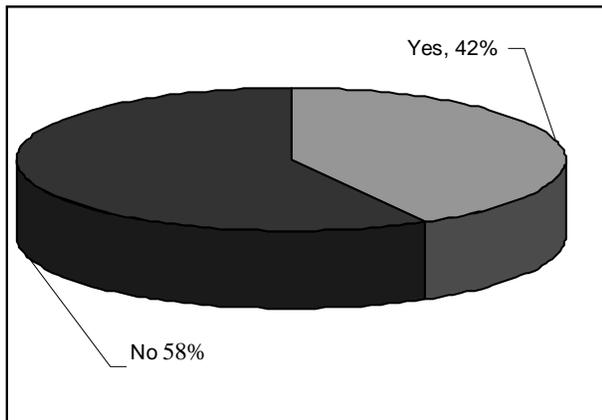


Figure 3: Pie Chart for presence and absence of GERD in percentages.

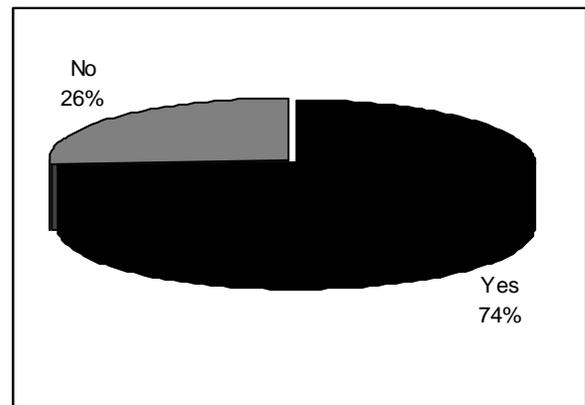


Figure 5: Endoscopically confirmed GERD patients among subjects using drugs for co morbidities

DISCUSSION

Gastroesophageal reflux disease has its own spectrum of disease, whose one end has classic symptoms of heart burn and acid reflux but no endoscopic evidence of mucosal damage; while the other end has devastating consequences of Barrett's esophageus and esophageal adenocarcinoma¹.

In obese individuals, epidemiologic studies suggest the prevalence of GERD is considerably higher than in the non-obese population⁶. Jacobson *et al.* looked at the participants of the Nurses' Health Study finding a nearly linear increase in the adjusted odds ratio (OR) for reflux symptoms for each BMI strata¹⁸. Interestingly, even for those participants with a normal BMI (22.5–24.9 kg/m²), the risk was elevated relative to a control group having a BMI in the range of 20.0–22.4 kg/m².

This study showed that patients with BMI in the range of obesity, had 42% frequency of endoscopically confirmed GERD (Figure 4). These results are comparable to many other studies with categorical comparison among different BMI groups like work done by Solhpour¹⁹. Two smaller studies, focusing solely on obese patients referred for bariatric surgery (BMI >35–40 kg/m²), found an even higher prevalence of GERD. In the first study, 16 of 30 (53%) obese patients described symptoms of GERD²⁰. The second study enrolled 31 obese patients finding that 19(61%) subjects had abnormal esophageal acid. Additional population-based studies have calculated the OR for the presence of GERD in obese individuals relative to normal weight participants. In the German National Health Interview and Examination Survey, the OR for GERD was 2.6 (95% CI 2.2–3.2) for obese individuals²¹. The Bristol Helicobacter Project calculated a similar OR for frequency of heartburn (OR 2.91, 95% CI 2.07–4.08) or acid regurgitation (OR 2.23) in obese participants but found no relationship between BMI and symptom severity⁷.

Recent studies have focused on whether central adiposity, as measured by the waist-to-hip ratio, may be more important than BMI in the pathogenesis of GERD. In theory, central obesity raises intragastric pressure, thus predisposing to reflux. In addition, visceral fat is metabolically active and produces a variety of cytokines including IL-6, and TNF- α which may affect esophagogastric motor activity. A large study (N = 80,110) from the Kaiser Permanente health system found a significant relationship between increased abdominal diameter and reflux symptoms independent of BMI (OR 1.85, 95% CI 1.55–2.21).²² This relationship was seen only in the white population and did not hold for black and Asian participants. Similarly, El-Serag *et al.* found that the

relationship between increasing BMI and abnormal 24 h esophageal pH parameters was primarily explained by changes in waist circumference²⁰.

A hypotensive LES (<10 mmHg) is a clear risk factor for the development of GERD and the correlation between BMI and LES pressure has been extensively investigated. One study assessed 43 morbidly obese patients for reflux symptoms, manometric abnormalities, and pH evidence of esophageal acid exposure.²³ These patients were compared to 53 healthy control subjects. LES pressure was significantly lower in the obese group in comparison to the control group (11.9 \pm 5.3 vs 15.9 \pm 2.7 mmHg, respectively). In addition, the LES pressure of obese patients with GERD was significantly lower than obese patients with normal acid exposure.

CONCLUSION

Epidemiologic data have consistently shown, with few exceptions, an association between increasing BMI and symptoms of GERD. Multiple changes in gastroesophageal physiology may explain the link between these two conditions. Obese people tend to have more GERD symptoms than the rest of population. Also older age obese have higher chances of having esophageal mucosal ulcerations if they have GERD symptoms. Chronic use of medicines for other illnesses usually pose no added threat to obese for producing GERD. Treatment of GERD is needed to eliminate GERD symptoms but as far as obese people are concerned, lot more attention should be paid to the obesity as well.

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