



PROFILE OF PERSONS WITH GASTRO-ESOPHAGEAL REFLUX DISEASE IN A METROPOLITAN CITY IN MAHARASHTRA STATE

Physiology

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ABSTRACT

This cross-sectional descriptive study was conducted among 346 respondents (125 females; 36.12% and 221 males; 63.88%) by administering a pre-tested and pre-validated questionnaire via Google forms, using the chain sampling technique to determine the profile of persons with gastro-esophageal reflux disease. The mean age of female participants was 28.66 $\pm$ 10.22 years, while that for their male counterparts was 29.32 $\pm$ 9.76 years. The mean body mass index was 23.95 $\pm$ 4.86 kg/m² and 25.04 $\pm$ 4.36 kg/m² for females and males, respectively. Respondents preferred spicy food and had a predilection for lying down immediately after meals, which are risk factors for the disease. Significant gender differences were observed in employment status; self-perception of being overweight versus actual BMI; exercising in gym; consumption of tobacco, alcohol, coffee, chocolate, carbonated drinks; self-reported overeating and symptom of nausea / vomiting. Community-based programmes would be necessary to create awareness about this lifestyle disease.

KEYWORDS

Acid reflux, GERD, GORD, Heartburn, Hyperacidity

INTRODUCTION

As per the Montreal definition (2006), gastro-esophageal reflux disease (GERD) is the presence of heart burn, regurgitation, or both, at least once weekly. [1] The regurgitation of gastric contents and acid into the esophagus is caused by the spontaneous and repeated opening of lower esophageal sphincter or its inappropriate closure. [2] The disease generally presents as heartburn and acid regurgitation, [3] but can also display atypical symptoms, such as, dysphagia, chest pain, asthma, chronic cough and laryngitis [4] or occasionally gum and dental erosions may be the only presentation and the symptoms may not correlate with the endoscopic picture. [5] Conversely, patients can be symptomatic without objective evidence of esophagitis. [6, 7]

The reported risk factors and prevalence for GERD vary across studies. Some studies have listed older age, male gender, ethnicity, family history, higher socioeconomic status, increased BMI, consumption of non-steroidal anti-inflammatory drugs, high meat consumption, low fruit consumption and tobacco use as major risk factors. [8-13] Other risk factors for GERD include pregnancy, [14] obesity, genetic factors, nutritional factors, alcohol and tobacco consumption, posture after meals and dinner-to-sleep time interval, [15] scleroderma, Zollinger-Ellison syndrome, post-laparoscopic gastric banding for morbid obesity, after Heller myotomy for achalasia cardia and prolonged nasogastric intubation [5]

On the other hand, some other studies have found female gender, [16, 17] large fatty diet [18] shorter dinner-to-bed time [19] and younger age [7] to be significant risk factors. Some Indian studies [10, 16, 20] have also reported inconsistent association with BMI, age, gender, alcohol, tobacco use and diet.

Although the symptoms and the disease are seldom life-threatening, but GERD can adversely affect quality of life, reduce work productivity, and lead to increased health-care resource utilization. [21] The complications of GERD include esophagitis, esophageal ulcer, upper gastro-intestinal bleeding, esophageal stricture, Barrett's esophagus and adenocarcinoma. [22-24]

Investigations, such as, upper GI endoscopy and 24 hour oesophageal pH monitoring have several limitations. [25, 26] There is no gold standard diagnostic test for GERD. [27] Questionnaire-based diagnosis of GERD is reliable with high sensitivity and specificity. [28]

The objective of the present study was to determine the profile of persons with GERD using a questionnaire that was administered online to willing adult participants of either gender.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted among adult respondents of either gender by administering a pre-tested and pre-validated questionnaire via Google forms, using the chain sampling technique. Informed consent was taken on the Google forms. The data were adapted to Microsoft Excel spreadsheet (Microsoft Corporation, Redmond, WA, USA) and analyzed using SPSS statistical software Windows Version 25.0 (IBM Corporation, Armonk, NY, USA). The percentage of responses and the standard error of difference between two sample proportions were calculated. For continuous data, the standard error of difference between two means was calculated. 95% Confidence interval (CI) was stated as: [Mean - (1.96)*Standard Error] – [Mean + (1.96)* Standard Error]. The statistical significance was determined at $p < 0.05$.

RESULTS AND DISCUSSION

A total of 346 respondents (125 females; 36.12% and 221 males; 63.88%) participated in the study. The mean age of female participants was 28.66 $\pm$ 10.22 years (95% CI: 26.86–30.45 years), while that for their male counterparts was 29.32 $\pm$ 9.76 years (95% CI: 28.03–30.60 years). The minimum age, first quartile and maximum age are identical for both genders, but males have a lower median age and lower third quartile as compared to females. (Fig-1)

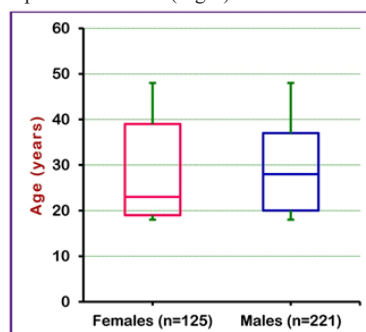


Fig-1: Box plot of age distribution

The mean body mass index (BMI) of female participants was 23.95 $\pm$ 4.86 kg/m² (95% CI: 23.09–24.80 kg/m²), while that for their male counterparts was 25.04 $\pm$ 4.36 kg/m² (95% CI: 24.47–25.62 kg/m²). The first quartile, median and third quartile of BMI is lower for females, while the minimum BMI for females is higher than that for males. Likewise, the maximum BMI of females is also higher than that for males. (Fig-2)

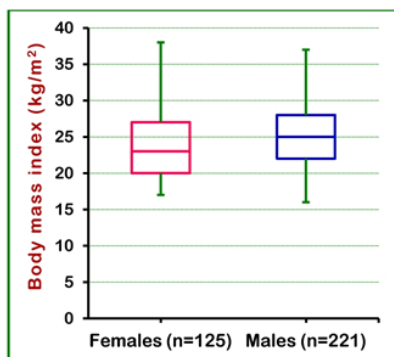


Fig-2: Box plot of distribution of body mass index

The frequency of GERD symptoms rises progressively with increasing BMI [29] and even short-term weight gain is associated with higher risk of GERD symptoms. [30] Obesity promotes GERD probably by increased abdominal pressure, delayed gastric emptying, increased frequency of transient lower esophageal sphincter relaxations and reduced lower esophageal sphincter resting pressure. [31-33]

Table: Gender differences

Parameter	Females (n=125)	Males (n=221)	Z value	'p' value
Graduate & above	65 (52.00%)	127 (57.47%)	0.982	0.327
Urban-based schooling	100 (80.00%)	185 (83.71%)	0.870	0.384
Student	58 (46.40%)	87 (39.37%)	1.273	0.204
Employed	31 (24.80%)	119 (53.85%)	5.237	<0.0001 *
Other occupation	36 (28.80%)	15 (6.78%)	5.548	<0.0001 *
"Feels" overweight	62 (49.60%)	80 (36.20%)	2.434	0.015 *
Actually overweight (BMI)	48 (38.40%)	110 (49.77%)	2.040	0.041 *
Daily exercise	38 (30.40%)	66 (29.86%)	0.104	0.920
Exercise in Gym	01 (00.80%)	23 (10.41%)	3.378	0.0007 *
Exercise at home	81 (64.80%)	134 (60.63%)	0.767	0.441
Never consumed tobacco	125(100.00%)	176 (79.64%)	5.409	<0.0001 *
Never consumed alcohol	123 (98.40%)	122 (55.20%)	8.489	<0.0001 *
Coffee consumption	28 (22.40%)	29 (13.12%)	2.234	0.025 *
Chocolate consumption	29 (23.20%)	14 (6.33%)	4.568	<0.0001 *
Carbonated drinks consumed	27 (21.60%)	78 (35.29%)	2.661	0.007 *
Lying down after meals	33 (26.40%)	74 (33.48%)	1.369	0.170
Self-reported overeating	...	17 (7.69%)	3.180	0.001 *
Preference for spicy food	122 (97.60%)	206 (93.21%)	1.765	0.076
Not taking any medication	113 (90.40%)	196 (88.69%)	0.495	0.617
Heartburn	44 (35.20%)	94 (42.53%)	1.338	0.180
Sore throat	02 (01.60%)	02 (00.90%)	0.581	0.561
Burping	13 (10.40%)	39 (17.65%)	1.812	0.070
Bad breath	03 (02.40%)	14 (6.33%)	1.626	0.103
Nausea / vomiting	14 (11.20%)	38 (17.19%)	2.151	0.031 *
Hiccups	02 (01.60%)	04 (01.81%)	0.143	0.888
Dyspnoea	06 (04.80%)	06 (2.71%)	1.018	0.307
Cough	01 (00.80%)	02 (00.90%)	0.101	0.920
Erosion of teeth	01 (00.80%)	02 (00.90%)	0.101	0.920
Headache	24 (19.20%)	29 (13.12%)	1.507	0.131

Z= Standard error of difference between two proportions; *Significant

Significant gender differences were observed in employment status; self-perception of being overweight versus actual BMI; exercising in gym; consumption of tobacco, alcohol, coffee, chocolate, carbonated

drinks; self-reported overeating and symptom of nausea / vomiting. (Table).

CONCLUSION

Respondents, of either gender, preferred spicy food and had a predilection for lying down immediately after meals, which are known risk factors for GERD. Factors with significant gender differences, that were observed in this study include self-perception of being overweight versus actual BMI; exercising in gym; consumption of tobacco, alcohol, coffee, chocolate, carbonated drinks; self-reported overeating and nausea / vomiting. Community-based programmes would be necessary to create awareness about this lifestyle disease.

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