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Original Article

Prevalence and Risk Factors of Gastroesophageal Reflux Disease in Tabriz, Iran

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Abstract

Background: Gastroesophageal reflux disease (GERD) is one of the most common gastrointestinal problems in the west while different reports indicate an increase in the prevalence in Iran. The aim of this study was to estimate the prevalence and clinical spectrum of GERD in staff of a referral hospital and evaluate the risk factors.

Methods: This cross-sectional study using a modified Mayo clinic questionnaire was performed on staff of Imam Hospital, Tabriz, Iran on a pilot of 50 subjects, and a randomly selected group consisted of 522 subjects in the year 2005. GERD symptoms were defined as at least weekly heartburn and/or acid regurgitation during the past year.

Results: Response rate was 95%. Mean age of responders was 40.02±10.72 yr. The prevalence of recurrent heartburn and/or acid regurgitation experienced at least weekly and monthly was 26.8% and 34.1%, respectively. They were not related to age and gender. The severity of symptoms was mainly reported of a mild to moderate degree. 45% of the cases reported at least one of the atypical symptoms. There was no relation between marriage status and prevalence of GERD. On the other hand, GERD was less common among cases with no family history of upper gastrointestinal disease. The prevalence of frequent GERD was more common among medical staff. Increased BMI (but no recent weight gain or lose) was associated with higher prevalence of GERD symptoms only in women. Interestingly 33% of our population had a history of using antacid or PPIs which was more among cases with frequent GERD symptoms.

Conclusion: This study revealed a high prevalence of frequent GERD symptoms in a selected population of Tabriz. Atypical symptoms should be considered in this area.

Keywords: *Gastroesophageal reflux disease, Prevalence, Iran*

Introduction

Gastroesophageal reflux disease (GERD) resulting in several complications is increasing in frequency in several parts of the world. This common upper gastrointestinal problem has been a matter of interest in the last few years.

Literatures suggest a low prevalence of GERD in Asia than in the west. In the USA 20% of the population experience the cardinal symptoms at least once a week (1). This extent has been reported to decrease to 4.8% and 2.5% in China (1). Studies on selected groups, like patients with an illness related to GERD show higher prevalence. The wide spectrum of GERD symptoms, as well as lack of studies may provide underestimation. The variation in both the prevalence and symptom complexes of GERD results in not only from variation in pathophysiology of the disease but also from how patients may perceive their symptoms.

We believe that its incidence has increased in the last few years, which can be ascribed to a true increase in the prevalence and/or an intensified awareness. The aim of this study was to estimate the prevalence and clinical spectrum of GERD in staff of a hospital in Tabriz, northwest of Iran and evaluate the risk factors.

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Materials and Methods

Imam General Hospital in Tabriz is one of the referral hospitals in North West of Iran. This hospital comprises approximately 1038 staff, with several wards. A cross-sectional study was performed on systematized random selection from each ward or office of Imam Hospital during autumn 2005. A pilot study on 50 individuals was carried out by the same method which the results are included.

The aim of the study was explained for randomly selected individuals by educated team of interviewers (educational supervisors of the hospital) and questionnaire was self completed for a maximum of 30 min.

We used the modified Mayo clinic questionnaire (2) which was previously validated for Farsi language. The original questionnaire consisted of 72 questions. The questionnaire covers demographic characteristics (age, gender…), major and atypical GERD symptoms and medical history. This self-completed questionnaire is designed in colored pages to guide the responder to skip additional questions on a symptom when the answer is negative. Additionally we asked about quality of their job.

GERD symptoms were defined as frequent (e.g. at least weekly symptoms) heartburn and/or acid regurgitation over the past year.

Percentages were used for categorical data whereas continuous numerical data were expressed as mean±standard deviation. The results are given in their 95% confidence intervals. Univariate analysis was performed by using the independent samples *t*-test and Pearson chi-square test whenever appropriate. $P< 0.05$ indicated statistical significance. Statistical interpretation of data was performed using SPSS software for windows version 13.

Results

A pilot study on 50 systematized-randomly selected subjects from target population was provided to evaluate feasibility, feedback of our study population and evaluate possible harms. Response rate was 100% and questionnaire was self completed in 30 min.

Then 522 subjects from the same population were randomly selected; once the pilot group was excluded. Response rate was 95% and fifteen questionnaires were ignored according to the impaired internal validity. Thus a total of 530 valid questionnaires were analyzed.

The age of the responders ranged from 20 to 65 yr with a mean age (±SD) of 40.02±10.72 yr. Results of the pilot study were included. The prevalence of recurrent heartburn and/or acid regurgitation experienced at least weekly and monthly was 26.8% and 34.1%, respectively.

The prevalence of heartburn and/or acid regurgitation experienced by the subjects within the past year and for the smaller subset is shown in Table 1. GERD was more common among medial staff; 33.1% of medical staff and 18.1% of officials had GERD.

The severity of symptoms was observed on a five-point scale and was reported mainly of a moderate degree, while 11% of subjects reported sever typical symptoms. The duration of symptoms reported by subjects are shown in Fig. 1.

There was no difference in the prevalence of any GERD symptoms between male and female subjects while the association between BMI and symptoms was only found in women. The characteristics of subjects with or without Gastroesophageal reflux symptoms are compared and demonstrated in Table 2.

Atypical symptoms such as globus sensation (15.3%), hoarseness (21%), chest pain (15%) and asthma (5.1%), were reported frequently, and even more in subjects with GERD (Table 2).

Drinking excess amount of tea was associated with higher prevalence of GERD symptoms. Subjects with recurrent GERD did not drink more cups of tea, but we found a cut pint of 12 cups daily which increased the risk of GERD related symptoms (Pv= 0.027).

There was no relation between marriage status and prevalence of GERD symptoms; while GERD was more common among cases with

positive family history of upper gastrointestinal disease (57% vs. 30%) (Pv= 0.041). Recent pregnancy (4.1%) or using oral contraceptives (5.8%) did not seem to influence the prevalence of GERD in women.

Medical staff reported frequent GERD symptoms more than non-medical staff, while having most of the meals at home (68% of subjects with GERD) or hospital (31% of subjects with GERD) did not influence the prevalence or severity of GERD symptoms (Pv= NS).

Thirty three percent of our population had a history of using antacid or proton pump inhibitors (PPIs) which was more among cases with frequent GERD symptoms (70% vs. 15%) ($P<$ 0.0005).

However almost 15% of subjects with recurrent symptoms did not feel suffering from the symptoms, 32% reported acid regurgitation as the dominant anguish symptom, followed by heart burn, epigastric and chest pain.

Self perception about health and "Feeling good" was significantly poorer in subjects with frequent GERD (P= 0.019). Over 80% of subjects without GERD felt "grate" or "fair", while only 50% of subjects with GERD reported so.

Table 1: The prevalence of typical gastrointestinal reflux symptoms by frequency of symptoms in male and female

	Male (%)	Female (%)	Total (%)
Heart burn			
At least weekly	14.4	15.2	15
At least monthly	21.2	22.4	21.2
Acid regurgitation			
At least weekly	16.1	19.8	18.3
At least monthly	25.4	29.5	27.5
Heart burn or Acid regurgitation			
At least weekly	23.2	28.3	26.8
At least monthly	30.1	35.8	34.1

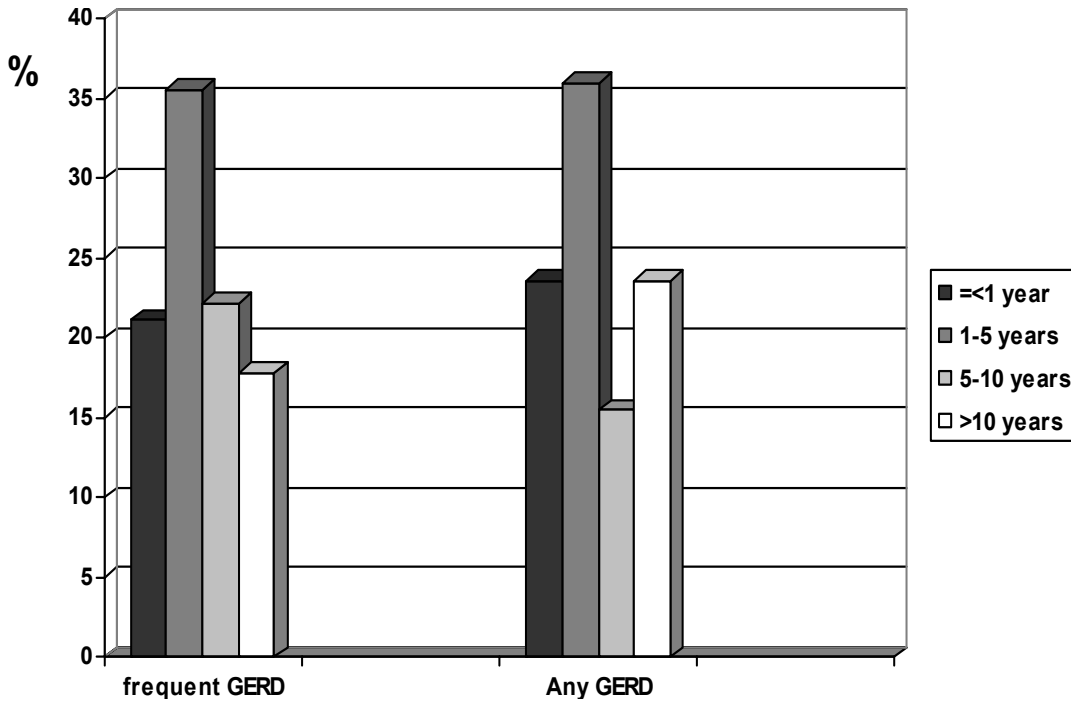

Fig. 1: Duration of major symptoms of Gastroesophageal reflux disease reported by study population

Table 2: Characteristics of subjects with or without gastroesophageal reflux symptoms

	GERD (%)	NO GERD (%)	*P*
Male gender	37.2	27.2	NS
Age	41.7±11.2	40.9 ± 10.3	NS
Smoking	11	4.5	0.045
Drinking Tea	95.1	95.4	NS
Mean cups daily	6	5.8	NS
Drinking Coffee	24.1	22.3	NS
Mean cups daily	0.65	0.51	NS
Atypical symptoms	50	32.2	0.015
Medical Staff	89.9	81.9	0.014
Self medication	45.6	22.3	0.026
Positive family history	63.2	45.2	0.030
OCP in women	6.1	5.2 %	NS
BMI	24.5±3.3	24.1± 3.4	NS
BMI in women	24.5±3.6	23.0± 3.4	0.043
Meal in hospital	27.2	22.5	NS

Discussion

Despite the fact that GERD is believed to be uncommon in the orient, very little is known about the current state and aspects of the disease, especially in Middle East. The Asia-Pacific consensus report on the management of the GERD recognized GERD is less common and milder in endoscopic survey in Asia than in the West and does not support the idea of increasing frequency of the disease (3). Our results are to some extent limited to the study population but we believe that is reliable for further studies considering the characteristics of our sample, especially if confirmed by further population based studies.

Yet studies regarding to the prevalence of GERD are mainly from western countries or are limited by the absence of a validated questionnaire. A study from Iran on healthy blood donors, reported the prevalence of GERD as 14% (4). Another study from Tehran, reports daily heartburn and/or acid regurgitation in 2.1% and 4.7% of the university students and blood donors, respectively (5). In a retrospective evaluation of endoscopic reports between 1994 and 1999, an increase more than 3 folds is reported in endoscopic GERD (from 20% to 70%) (4).

A study from our region done by a face to face interview, reports a low prevalence (2.7%) of GERD (6) but we have earlier reported a higher prevalence of weekly GERD (6.3%) in a young population with a mean age of 22.48 yr (7).

The lacking data about GERD seems more serious when concerning abut the complications of this chronic condition. According to past studies and our findings, the prevalence of GERD might have been increasing dramatically in Asia over the past decade (with acid regurgitation as the dominant symptom); changes in eating habits, increasing dietary fat and body weight and increasing stress levels mar all be contributed. Official national data reveals about 40% of Iranian consume more food than they need and the average Iranian consumes 40% more car-

bohydrate and 30% more fat then needed (4). The independent association between increased BMI and reflux symptoms has been reported in the USA (8), Finland (9) and Norway (10). In the present study this association is only found in women. Decreased physical activity, using fast foods and low fiber intake which are closely related to an increase in BMI may be responsible for GERD symptoms in part. Similar findings were reported from a case-control study in Sweden where an association between estrogen replacement therapy and GERD was noted as well (11).

Higher prevalence of GERD in medical staff of our study, regardless of main meals eaten at home or hospital, may support the effect of chronic stress on developing GERD in some part. The effect of psychological stress on GERD has been the matter of interest. Psychological stressors have been evaluated to reveal the effect on physiological functioning of the esophagus and stomach (12, 13). This high prevalence may also a result of awareness gained from work experiences.

GERD is a chronic condition which can significantly impair quality of life. There is evidence that severity of symptoms and less adequate close social support were significantly associated with health care seeking (11). Fortunately, subjects with frequent GERD had more attempt on receiving medical guidance in our study population, which may be ascribed to consciousness due to their work experiences. But unfortunately it seems that the treatment was not adequate in most of the patients; most of them were reporting persistent frequent symptoms likewise. The wide spectrum of gastroesophageal reflux symptoms, ranging from typical to extraesophageal manifestations and accompanied by self medication, may provide difficulties in the diagnosis and identifying the complications faced by patients with GERD which greatly affects health economics and patient health-related quality of life (14).

Increased recognition of the true impact of GERD, particularly among general physicians, should help to increase the timely use of effective reflux- based management strategies for these apparently disparate conditions.

We conclude that the prevalence of GERD may be higher in Iran than expected. The complication faced by patients with GERD which greatly affects health economics and patient health-related quality of life necessitates more attention.

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The authors declare that they have no Conflict of Interests.

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