

Epidemiological features of gastro-esophageal reflux disease in Iran based on general population

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ABSTRACT

Aim: The aim of this study was to evaluate the epidemiology of GERD base on population study in Tehran providence.

Background: Gastro-esophageal reflux disease (GERD) is a common and chronic problem. Recent reports from developing countries indicate increment in the incidence and prevalence of the disease over the past.

Patients and methods: This study was a cross-sectional household survey conducted from May 2006 to December 2007 in Tehran province, Iran. Participants completed a valid gastro-esophageal reflux Questionnaire. The questionnaire included personal and family characteristics such as age, gender, and educational status. In addition, interviewers asked them regarding 10 GI symptoms.

Results: Altogether 18180 individuals participated in this cross-sectional study. The mean \pm SD age of participant was 38.7 \pm 17.1 and 9072 (49.9%) were women. The prevalence of GERD was 8.85 (8.43-9.26). There was significant relationship between age, sex, marital and educational status with GERD. GERD symptoms were more common in women, older people, individuals with low education and married people. There was overlap between GERD, irritable bowel syndrome (IBS) and uninvestigated dyspepsia (UD).

Conclusion: According to our finding although the prevalence of GERD in our population is less than other studies, this prevalence is increasing in recent years.

Keywords: Gastro-esophageal reflux disease, population-based, Epidemiological feature.

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Introduction

Gastro-esophageal reflux disease (GERD) is a common and chronic problem(1). and using different definitions, characterized by heartburn and regurgitation symptoms varies in different populations, (2, 3). Recent reports from developing countries indicate that the incidence and prevalence

of disease is increasing (2, 4). GERD has a significant impact on patients quality of life and imposes a large financial burden on the health care system (5, 6). So many studies were published regarding this disorder in last years. Conventionally, endoscopy is used for diagnosis of this disease. But when symptoms of gastro-esophageal reflux disease are typical and the patient responds to therapy, no diagnostic tests are necessary to verify the diagnosis (6-8). Consequently the patient may be categorized

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according to their symptoms and endoscopic findings (9).

The most important symptoms of GERD are heartburn and acid regurgitation. According to studies in the USA, 7% of the population experienced symptoms at least once a day and 44% at least once a month (10, 11).

Epidemiological studies in Europe and the USA concluded that the incidence of GERD is higher in the west was than in Asia (2). But it seems that the prevalence of GERD in Asia has risen in recent years (12-15). In 1994 a community interviewed resurvey (16) showed more than 4 times increase in the prevalence of heart burn in the Asia (17). Up to now a population based study for evaluating the prevalence of GERD has not been performed in Iran. Between 1994 and 1999 a retrospective evaluation of endoscopic reports was performed at single center in Tehran and according to this reports, endoscopic GERD features increased more than 3 times (from 20% to 70%) (12). Considering the importance of burden of GERD, it is important to have an accurate estimation of GERD prevalence and incidence. The aim of this study is the evaluation the epidemiology of GERD according to a population based study in Tehran province.

Patients and Methods

This study was a cross-sectional household survey conducted from May 2006 to December 2007 in Tehran province, Iran which was designed to find the prevalence of gastrointestinal symptoms and disorders and the related factors (18-23). A total of 18180 adult persons drawn up randomly on the basis of the list of postal codes and systematic samples of these postal codes and their related address were drawn from the databank registry of Tehran central post office (approximately 5000 households selected and all members surveyed). The mean \pm SD age of participant was 38.7 ± 17.1 and among them 9072

(49.9%) were women. These random samples covered urban and rural areas of five cities including Tehran metropolitan, Damavand, Varamin, Firoozkoush, Pakdasht. Then trained health personnel from corresponding local health centre visited each of the 5000 selected houses, and asked them to participate in the first interview, according to the first part of our questionnaire. Before the interview, the interviewer explained the purpose of these questions to all eligible individuals and requested their participation. The research protocol was approved by the Ethics Committee of Research Center for Gastroenterology and Liver Diseases, Shahid Beheshti University of Medical Sciences and all study participants signed a consent form.

The questionnaire included two parts. The first part consisted of questions regarding personal and family characteristics such as age, sex, educational level. In addition, interviewers asked about 10 gastrointestinal symptoms including; abdominal pain, constipation, diarrhea, bloating, heartburn, acid regurgitation, nausea and vomiting, weight loss, anorexia, and difficulty in swallowing. The prevalence of these symptoms has been reported in our previous study(24). Those who reported at least one of these gastrointestinal symptoms participated in the second interview.

GERD was defined as the presence of heartburn and/or acid regurgitation at least once a week for the last 3 months. A burning feeling that rises through the chest was defined as heartburn. Liquid coming back into the mouth and leaving a bitter or sour taste was defined as acid regurgitation. All who reported regular use of anti reflux medication also reported reflux symptoms occurring often enough to be included among the reflux patients (20).

Student's t-test and Pearson's χ^2 test was carried out to test for independence between two discrete classification variables. A P values less than 0.05 was considered statistically significant.

Results

A total of 18180 participants were included in this cross-sectional study. Of these 8% refused to participate in the interview, so they were replaced with additional random samples. A total 2931 participants who had at least one gastrointestinal symptom, were referred to participate in the second interview to complete the second part of questionnaire. Among them 1610 were found to have GERD and the prevalence of GERD was 8.9 (8.4-9.3). The demographic information of the participants is shown in table 1.

Table 1. Demographic data of population study

	Male (n=9108)	Female (n=9072)	P- value
Age (years)	38.95±17.4*	38.40±16.7	<0.001
Age groups(years)			<0.001
16-29	3060(38.6)†	3502(38)	
30-39	1721(18.9)	1724(19)	
40-49	1494(16.4)	1542(17)	
50-59	1011(11.1)	1052(11)	
60-69	683(7.5)	689(7.6)	
70-79	510(5.6)	408(4.5)	
>80	173(1.9)	118(1.3)	
Education			<0.001
Less than high school	1621(17.8)	2292(25.3)	
High school	5738(63.0)	5234(57.7)	
College	1748(19.2)	1533(16.9)	
Marital Status			<0.001
Single	3151(34.6)	2458(27.1)	
Married	5875(64.5)	5878(64.8)	
Widowed	55(0.6)	662(7.3)	

* Mean ± standard deviation; † Number (%)

The prevalence rates of GERD by sociodemographic characteristics are presented in table 2. There is a significant relation between sex and GERD. Prevalence rate of GERD in women (11.1%) were higher than in men (6.6%). Also age, education and marital status have a significant relation with GERD. Prevalence rate of GERD in low educated people was 10.9% in contrast to 5.8% in high educated people and in married

people was 11.1% in contrast to 3.1% in singles. On the other hand this prevalence in the 16-29 age group was 3.9% and this prevalence increased with increasing the age so that the prevalence rate in >70 age group was 15.4%.

Table 2. Prevalence rate of GERD per 100 persons with 95% confidence interval (CI) by sociodemographic characteristics

	Number	Prevalence	P- value
Sex			
Male	598	6.6(6.1-7.1)*	<0.001
Female	1009	11.1(10.5-11.7)	
Age			
16-29	272	3.9(3.5-4.4)	<0.001
30-39	304	9.3(8.3-10.3)	
40-49	373	12.4(11.2-13.6)	
50-59	294	12.6(11.3-14)	
60-69	183	12.4(10.7-14.1)	
>70	184	15.4(13.3-17.4)	
Marital Status			
Married	1267	11.1(10.5-11.7)	<0.001
Single	182	3.1(2.7-3.6)	
Widowed	136	19.1(16.2-22)	
Divorced	13	11.7(5.6-17.8)	
Education			
College	204	5.8(5 -6.6)	<0.001
High school	396	7.4(6.7-8.1)	
Less than high school	996	10.9(10.2-11.5)	

* Prevalence per 100 person (95% confidence interval)

73.8% of GERD patient had acid regurgitation and 61.6% of them had heartburn. An overlap was observed between uninvestigated dyspepsia UD, GERD and irritable bowel syndrome IBS. 64.9% of patient with UD diagnosed with GERD and 34% of patient with GERD diagnosed with IBS.

Discussion

In this paper we surveyed to estimate the prevalence rate of GERD. The importance of this study is to allow us to report an actual prevalence rates of different gastrointestinal symptoms involved GERD in our community. GERD is a common chronic gastrointestinal disorder in Asia.

Although is prevalent in the Western countries (2, 13, 25, 26) but it is less prevalent in Asia compared with western population (27, 28). For example the prevalence of GERD in our population was 8.85% which is less than in studies which was carried out in the UK, US, Finland, Spain and Italy with prevalence 21%, 20%, 9.8% and 9% respectively (12). These differences could be due to different cultural and socioeconomic behaviors including food and life styles. On the other hand we found a significant relation between sex and age with GERD. Although this relation in our study was significant, but there are some study with no relation between this two factors and GERD (4, 29-31). Education level and marital status were the other significant factors with GERD. The prevalence of GERD in married people and low educated people were higher than singles and high educated people respectively. this finding was compatible with other studies (32, 33). The prevalence of acid regurgitation in patients with GERD was higher than heart burn. But in some western studies prevalence of heart burn was higher (29, 34). Although approximately half of patients with GERD had BMI>25, the previous study with the same data did not show any association between GERD and BMI (35). Another important point in our study was the overlap of GERD with irritable bowel syndrome (IBS) and uninvestigated dyspepsia (UD). This was also observed in our previous studies (36, 37). The results obtained from previous studies show the importance of these three disorders (GERD, IBS, and UD) and the need for further studies to evaluate their association. All in all according to our study although the prevalence of GERD in our community is less than other countries, this prevalence is increasing in recent years. In conclusion we predict that the Iranian population will face an accelerating cost and disease burden from GERD and further research is needed to effectively utilize the health care resources.

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