

# Impact of gastroesophageal reflux symptoms on health resource usage and work absenteeism in Spain

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## ABSTRACT

**Objectives:** to estimate the impact of gastroesophageal reflux (GER) symptoms on the utilization of healthcare services and work absenteeism in Spain.

**Methods:** a cross-sectional study on 2,500 subjects representative of the Spanish population from 40 to 79 years of age. Data were collected via a telephone interview in January 2002 using Locke's questionnaire after its cross-cultural adaptation and validation for telephone use in Spain.

**Results:** GER is responsible for 296.8 doctor consultations (95% CI: 245.3-348.7) per 1,000 inhabitants per year, for 24 esophagogastrointestinal radiographic studies per 1,000 inhabitants per year (95% CI: 18-30), for 32.4 (95% CI: 25.5-39.3) high digestive endoscopies per 1,000 inhabitants per year, and for the loss of 201 (95% CI: 0-411.1) working days per 1,000 employed inhabitants with GER per year. In relation to medication intake, GER resulted in 4,092 (95% CI: 3,300-5,133) treatment days with H2 antagonists per 1,000 inhabitants per year, 9,030 (95% CI: 7,846-10,332) treatment days with proton pump inhibitors per 1,000 inhabitants per year, and 1,082 (95% CI: 519-1,549) treatment days with prokinetics per 1,000 inhabitants per year.

**Conclusions:** GER has a large impact on the utilization of healthcare resources and work absenteeism in Spain, in contrast to the widespread belief that it is an illness of little importance.

**Key words:** Gastroesophageal reflux. Pyrosis. Epidemiology. Utilization of resources. Absenteeism.

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## INTRODUCTION

Gastroesophageal reflux symptoms (GERS) are very common worldwide. In Spain, the annual prevalence of heartburn or acid reflux is 32% (1). This prevalence is lower than the 60% reported in the US (2), but its burden on the healthcare system is greater, since 28% of people with GERS in Spain have consulted a physician (3), compared with only 5% of Americans (2). In addition to this different behaviour pattern in visits to physicians, differences in the clinical management of these symptoms have also been suggested (4), but detailed and comprehensive data are lacking.

An estimation of the burden of gastroesophageal reflux symptoms (GERS) on the healthcare system should include at least an approximation to the number of visits to physicians, work-up tests performed, drug use, and resulting work absenteeism.

Therefore, the objective of this work is to estimate the impact of GER on the utilization of healthcare services and on work absenteeism in Spain.

## PATIENTS AND METHODS

### Design and participants

The study characteristics have been described elsewhere (1). Briefly, a random sample of persons representative of the Spanish population of both sexes aged 40-79 years was obtained, using the national telephone directory in computerized format. This sample was stratified by sex, age, province, and size of town of residence, in proportion to the number of inhabitants recorded for each Spanish population stratum by the 1999 National Population Census. The study was formally approved by the Clinical Research Ethics Committee of the San Carlos Hospital (Hospital Clínico San Carlos) in Madrid.

Telephone calls were made in the morning, afternoon, evening and at night for 6 days a week excluding Sundays and all telephone numbers not corresponding to private homes were ruled out. Once telephone contact had successfully been made with any given home, the nature and objectives of the study were explained, and respondents were asked to give their formal consent to participating in same. In cases in which consent was obtained, respondents were questioned as to their age and sex, and, provided that they came within the established stratum, the interview then proceeded. Where respondents failed to come within this quota, we asked about any other resident who might possibly meet these criteria and, where such a person was available, we duly obtained his/her consent and collaboration. Only one interview was conducted per home. Sample size was set at 2,500 persons.

### Study variables

We used Locke et al. questionnaire (5), adapted and validated for telephone-interview use in the Spanish population (6). This questionnaire comprises 80 questions organized into sections, and a scored list of psychosomatic symptoms, referring to the preceding year.

We defined heartburn as a burning feeling that rises through the chest, and acid regurgitation as liquid coming back into the mouth leaving a bitter or sour taste. A person was deemed to be suffering from GERS when he/she reported heartburn or acid regurgitation in the preceding year, irrespective of their frequency, severity or evolution.

Questionnaire includes information regarding use of health resources. All subjects were questioned about consulting the physician for any reason in the prior year, and the number of visits. Also, those reporting GER symptoms were asked about medical consultation because of them, number of visits, and diagnostic procedures indicated. Interviewers were instructed to recognize by description common diagnostic procedures (radiological studies, upper endoscopy, manometry and pHmetry).

Those subjects reporting GER symptoms were asked about the use of antacids, H<sub>2</sub> blockers, proton pump inhibitors (PPI) and prokinetics. Subjects were asked to read trade name of drugs from boxes or to remind it when that was not possible. When trade names did not fit exactly with any name in a list of commercially available drugs (259 of 1,046 times), the name was evaluated by a gastroenterologist and a pharmacist were compared to a list using the *Vademecum* and the database of the Official College of Pharmacist, to clarify the drug. Drug was accepted if both provided the same interpretation, and rejected (23 times of 259) if not. Subjects were also asked the number of treatment days with each drug and who prescribed the drug.

Finally, information regarding employment and absenteeism were obtained. For this purpose subjects reporting

GER symptoms were asked if they had missed working days because of them and the number of days.

### Statistical analysis

Ninety-five percent confidence intervals were calculated for the main parameters of healthcare services usage or work absenteeism, assuming a simple random sampling. When estimations correspond to the intensity of usage of a service by its users (e.g., number of visits to the physician by those consulting, number of diagnostic procedures by those receiving procedures, days taking a medication among users, days of work absenteeism by those missing days from work, etc.), 95% confidence intervals took into account the sampling error of users of that service and the sampling error of their utilization intensity (7).

Moreover, the relationship between having GERS and using selected drugs was summarized by odds ratios (OR) obtained by logistic regression. Models were adjusted for age, sex, use of non-steroidal antiinflammatory drugs (NSAIDs), and use of acetyl-salicylic acid.

## RESULTS

### Doctor visits

Of the 2,500 people interviewed, 2047 (81.9%; 95% CI: 80.4-83.4%) had consulted a doctor at least once for any reason over the previous year, generating a total of 10,302 visits. Of the 791 subjects with GERS, 223 (28.19%; 95% CI: 25.0-31.3%) had consulted their physician for this condition, generating a total of 742 visits (0.94 visits per person with GERS per year), representing 7.2% of all doctor visits per year for any reason.

### Diagnostic procedures

Of all 223 persons consulting their physician for GERS in the previous year, 115 (51.6%; 95% CI: 44.9-58.1%) had undergone some procedure due to these symptoms. Esophagogastroduodenal radiography and upper gastrointestinal endoscopy were most frequent. In total, 30 subjects (13.4%) had undergone a radiologic study, 51 (22.8%) subjects endoscopy, and 30 (13.4%) subjects both tests. Only 7 subjects (3.1%) underwent a manometry and/or pHmetry.

### Use of antireflux drugs

When the utilization frequency of antacids was measured in the whole population, 478 (19.1%) subjects reported having used them at least once a week, 151 (6.1%)

once or several times a week, and 102 (4.1%) had used them daily. Of all subjects with GERS, 53.7% had used antacids over the previous year (30.6% less than once a week, 14.1% once or several times a week, and 9% daily), a significantly higher proportion ( $p < 0.0001$ ) than the reported 17.9% of subjects without GER, (13.9% less than once a week, 2.3% once or several times a week and 1.8% daily). After adjusting for age, sex, NSAID utilization, and use of acetyl-salicylic acid, there was a clear association between the existence of GER and the use of antacids (OR: 5.2; 95% CI: 4.3-6.3).

Antacids were prescribed by the physician in 50.8% of subjects, and by the pharmacist in 5.9%; 43.2% of those interviewed were self-medicated.

Of the 2,500 subjects interviewed, 287 (11.5%) reported having used prokinetics, H2 blockers or PPIs in the previous year. Of 791 people with GER, 168 (21.2%) had used these drugs, a significantly higher proportion ( $p < 0.0001$ ) than that of subjects without GERS, of whom only 7.0% had used them (Table I). The presence of GERS was associated with the use of H2 blockers, prokinetics or PPIs (OR: 3.6; 95% CI: 2.8-4.7) after adjusting by age, sex, use of NSAIDs, and use of acetyl-salicylic acid,

**Table I. Number of individuals taking each group of medicinal products, and days of intake in the complete sample and GER subgroup**

	Intake in general population		Intake in subjects with GERS	
	n	Days of use per year	n	Days of use per year
H2 blockers	94	195.27 ± 166.08	55	185.1 ± 166.08
PPIs	168	207.7 ± 161.058	105	216.6 ± 158.313
Prokinetics	40	134.48 ± 153.299	22	117.6 ± 143.063

Of the total of subjects with GERS, 55 (7%) used H2 antagonists, with a mean intake of 185.1 (95% CI: 144.9-233.3) days per year; 105 (13.3%) used PPIs for a mean of 216.6 (95% CI: 186.8-246.2) days per year; and 22 (2.8%) used prokinetics for 117.6 (95% CI: 58.9-176.6) days per year.

In contrast to antacids, these drugs (H2 blockers, PPIs, and prokinetics) were prescribed by the physician in 95.2% of cases, by the pharmacist in 1.8%, and only 3% were given by self-medication.

### Work absenteeism

Of the 791 individuals with GERS in the previous year, 189 were unemployed (no paid work). Of all 602 employed subjects, 17 (2.8%; 95% CI: 1.5-4.1%) had missed work at least one day due to GERS. The mean number of working days missed due to GERS was 7.12 ± 14.39 days (interval 1-56).

### Global impact of GERS on the health system and work absenteeism

On the basis of these data, it can be estimated that GERS are responsible for 296.8 (95% CI: 245.3-348.7) visits to the doctor per 1,000 inhabitants per year, for carrying out 24 (95% CI: 18-30) esophagogastroduodenal radiologic studies per 1,000 inhabitants per year, 32.4 (95% CI: 25.5-39.3) upper GI endoscopies per 1000 inhabitants per year, and the loss of 201 (95% CI: 0-411.1) working days per 1,000 employed inhabitants with GER per year.

Regarding medication use, GERS are responsible for 4,092 (95% CI: 3,300-5,133) treatment days with H2 blockers per 1,000 inhabitants per year, 9,030 (95% CI: 7846-10,332) treatment days with PPIs per 1,000 inhabitants per year, and 1082 (95% CI: 519-1,549) treatment days with prokinetics per 1,000 inhabitants per year.

### DISCUSSION

The results of this study show the great impact of GERS on the utilization of healthcare resources and work absenteeism. This is in contrast with the widespread belief that this condition is of negligible importance.

### Physician visits

To our knowledge, no study has estimated the proportion of total medical visits motivated by GERS. We found that 7.3% of doctor visits were related to GER, and this demand is in contrast to the general belief that GER is a largely benign condition. GER, therefore, is responsible for a considerable proportion of doctors clinical activity.

When studying the frequency of visits to the doctor by subjects with GER, Spanish data are very similar to those obtained in the US (8) and in Switzerland (9). This shows that the needs of these patients, once identified, are probably similar.

### Work-up procedures

In our country, a large proportion of the subjects visiting physicians undergo complementary tests, especially gastroscopy, which is the test of choice in these cases (10). However, the use of these tests in Spain is very similar to that recorded in an American study, where 11% of patients with GERS had an X-ray, and 20% endoscopy every year (11). It is interesting to note the use of radiography in a relatively large proportion of patients with a degree of overlap with gastroscopy, which suggests that this is possibly used while waiting for endoscopy.

## Utilization of medicinal products

The use of drugs by subjects with GERS in Spain is very similar to that recorded in the US and Australia, where approximately 50% use antacids and 20% use other medications (12,13). Subjects with GER are 5 times more likely to use antacids and 4 times more likely to use an antireflux drug (H<sub>2</sub> blockers, prokinetics, PPIs), in accordance with previous data indicating that GERS are a major predictor of antacid use (14,15). There is a large difference in prescription origins. While antacids are often self-medicated, antireflux drugs are almost exclusively prescribed by physicians. PPIs are most frequently used (by twice the number of subjects who use H<sub>2</sub> blockers), in agreement with data obtained in other countries and an increasing tendency (11). More specifically, each patient takes a PPI 60% of days in a year, which is a similar rate to that observed in other European countries, with a high percentage of patients on long-term treatment (16). It is likely that new strategies, such as treatment on demand, which has recently proved effective at reducing intake of tablets (17), could cut down its utilization, even when a large proportion of patients with GER require long-term treatment. Globally, the utilization of medication is qualitatively and quantitatively comparable to that recorded in other countries with similar economies. This is an important finding, since a high proportion of Spanish subjects visit their doctor for GER (3), showing indirectly that this does not necessarily lead to more prescribing or less self-medication.

## Work absenteeism

GER is a chronic condition that affects quality of life and reduces work productivity (18). There are few data on work absenteeism due to GERS in Europe. One study reported that this does not produce absenteeism (19), while another described at least one day of absenteeism in 7.7% of the active population, with a mean of 5.4 days per year (9). In the US, 4.5% of subjects with GERS miss some working days because of their condition, losing 4.6 working days per year more than subjects without any digestive functional disorder (8) and 0.5 days per year more than subjects without GER (20). In the North American population, Dean et al. found that 2.6% of subjects with GER stop working because of their condition for some period of time during their working week (11), while Henke et al. found that 9% of subjects with GER lose hours or days of work because of it, and 3% sometimes cannot go to work (21). In our study, 2.8% of the active population admitted to miss work because of GER on an average of 7 days per year, which is similar to data obtained in the US and Switzerland. Taking into account the high prevalence of GER, its global impact on work absenteeism in Spain is relatively high.

## Methodological aspects

To correctly interpret our results it is important to comment on some methodological aspects of our work. Firstly, this was based on a large sample representative of the Spanish population. Secondly, the information on lifestyle and utilization of some healthcare services (mainly preventive ones) obtained by telephone was found to be reproducible and reliable when compared to that recorded in personal interviews in the patients' homes (22,23). Thirdly, the information obtained about the utilization of healthcare services is that reported by each subject. There is evidence to support the reliability of self-reported information on the utilization of healthcare services (24,25). Although there is a tendency to underestimate the use of services with time elapsed and frequency of use due to failed recall, there is no evidence that these errors differ in relation to the presence of GERS, so our results are probably conservative. Finally, our results inform about the impact of GER on healthcare resources and work absenteeism, but do not evaluate whether these estimations of utilization are correct or absenteeism is sufficiently proven. Therefore, they cannot confirm the potential of correct clinical management of GER to control utilization of healthcare resources and absenteeism.

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