

Changing morbidity pattern in oesophagus, stomach and duodenum in Turkish patients: a time-trend analysis

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ABSTRACT

Background: From an epidemiological point of view it is interesting to study changing morbidity patterns in disease, especially in upper gastrointestinal diseases. It was previously noted that there was a difference in yield of upper gastrointestinal endoscopy in consecutive years. It was also noticed that there was a difference in occurrence of reflux disease and peptic ulcer disease when comparing Turkish immigrants and native Dutch patients.

Aim: To determine the yield of upper gastrointestinal endoscopy in patients of Turkish descent living in the Zaanstreek region (the Netherlands) in consecutive years.

Material and Methods: All Turkish patients undergoing an upper gastrointestinal endoscopy from 1992 until 2009 were included in this study. Findings of endoscopy were retrieved from the files.

Results: The yearly number of Turkish patients undergoing endoscopy varied from 8 to 15% of the total number of upper gastrointestinal endoscopies. An increase in Turkish patients undergoing endoscopy was seen; this was mainly due to an increase in Turkish women. A decrease was seen in the prevalence of ulcer disease; however, hiatus hernia and reflux oesophagitis increased. The number of patients with nodular gastritis decreased while the number of patients with erosive gastritis increased. In this study period there were two patients with oesophageal cancer and nine patients with gastric cancer; no conclusions can be drawn here.

Conclusion. From the present study it is concluded that in the Turkish population living in the Zaanstreek region, the prevalence of peptic ulcer disease is decreasing, while the prevalence of reflux disease is rising.

KEYWORDS

Gastroscopy, epidemiology, diagnostic yield, peptic ulcer disease, reflux disease

INTRODUCTION

Studying morbidity patterns is interesting from an epidemiological point of view. For instance, acute rheumatic disease was once a major problem in the Western world leading to significant heart disease. Nowadays, mainly due to better hygiene and antibiotics, this disease has almost been eradicated. Also the morbidity pattern of diabetes is changing. Its incidence rises.¹ The prevalence of reflux disease is increasing in the Western world.²

Upper gastrointestinal symptoms frequently occur in general as well as in gastroenterological practice. Upper gastrointestinal endoscopy is applied routinely for diagnostic purposes. The most important endoscopic diagnoses are reflux oesophagitis, peptic ulcer disease and cancer of the oesophagus or stomach. Upper abdominal symptoms, and especially gastro-oesophageal reflux disease, are associated with a huge economic burden and decrease the quality of life.³ Some data report on changes in findings of upper gastrointestinal endoscopy.⁴ For instance, peptic ulcer disease used to be one of the major abnormalities in gastroenterology. Nowadays this condition is becoming rare, at least in the Western world.⁵

In earlier studies done in the Zaanstreek region it was noticed that there were clear differences in the occurrence of reflux disease and peptic ulcer when Turkish immigrants were compared with native Dutch patients.⁶ It was also seen

that there was a change in the yield of upper gastrointestinal endoscopy in consecutive years.⁴ Given these results, the question rises whether changes in yield of upper gastrointestinal endoscopy also occur in patients of Turkish descent.

For this reason the results of upper gastrointestinal endoscopy in patients of Turkish descent in consecutive years were determined.

PATIENTS AND METHODS

All consecutive upper gastrointestinal endoscopies from 1992 until 2009, done in the endoscopy department of the Zaan Medical Centre, the regional hospital of the Zaanstreek region in the Netherlands, were included.

In the Zaanstreek region, there is a large population (about 10% of the total population) originating from Turkey (first, second as well as third generation). Only patients of Turkish descent were included in the present study. All patients were identified by their well-known Turkish family names. Endoscopies done because of direct follow-up after a previous diagnosis were excluded.

All endoscopies were carried out with Olympus endoscopes: in the beginning of the 1990s with fiberoptic endoscopes, from 1993 on with the video systems EVIS 100, Exera 140 and 180 video endoscopes. All endoscopy reports were handwritten in a standardised format. From 2003 a customised version of Endobase™ system from Olympus was used. Endoscopies were done on the request of the general practitioner or the specialist, mostly internist or gastroenterologist, sometimes surgeon or cardiologist. Trend lines were plotted in the individual figures.

RESULTS

The yearly number of Turkish patients undergoing endoscopy from 1992 until 2009 varied from 8% of the total number of upper gastrointestinal endoscopies in 1992 to a maximum of 13% in 2005. This yearly number showed a steady fluctuation and reflects the percentage of Turkish people living in the Zaanstreek region (*figure 1*).

Figure 2 shows the absolute number of Turkish patients in the consecutive years, with the number of endoscopies without macroscopic abnormalities. The number of Turkish patients increased, while the number of endoscopies without abnormalities showed a parallel increase. *Figure 3* shows the number of Turkish men and women. The percentage of women increased.

In *figure 4* the yearly percentage of endoscopies showing duodenal or gastric ulcers is shown. There was a clear trend in decreasing prevalence of ulcer disease. This was mainly

Figure 1. The percentage of Turkish patients undergoing upper gastrointestinal endoscopy in the consecutive years

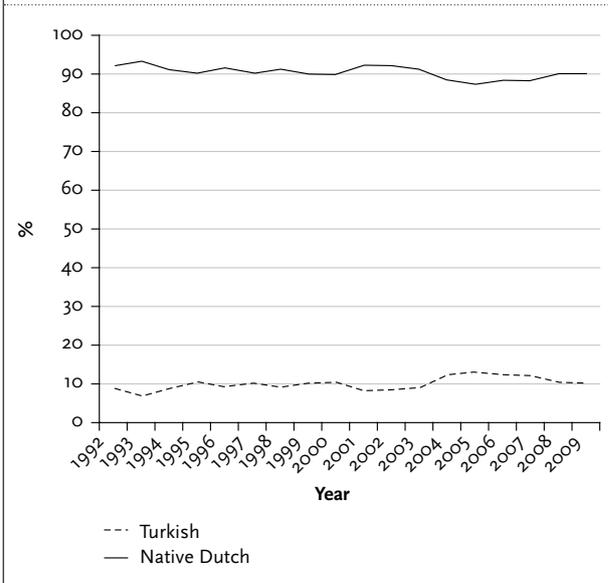
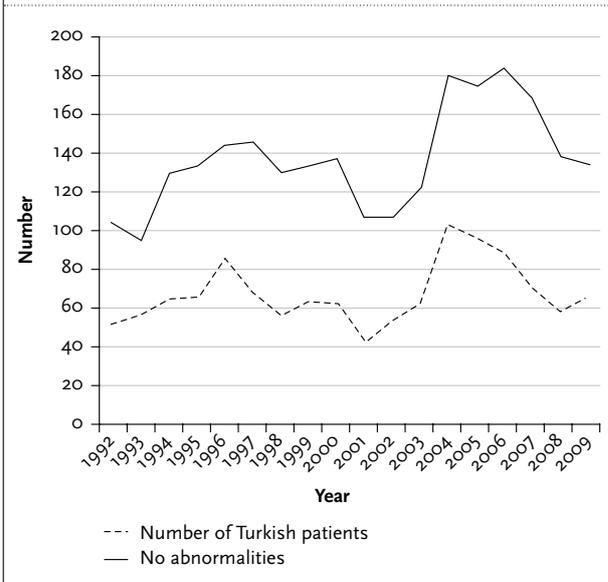


Figure 2. The absolute number of Turkish patients each year with the number of patients showing no abnormalities during endoscopy



due to changes in duodenal ulcer. However, the percentage of gastric ulcers, although less strong, also decreased.

Figure 5 shows the increase in two major signs of reflux disease, namely reflux oesophagitis and hiatus hernia. Both increased.

Figure 6 shows the prevalence of two major signs of endoscopic gastritis, namely nodular gastritis and erosive gastritis. While nodular gastritis decreased, erosive gastritis increased.

Figure 3. The percentage of Turkish men and women in the consecutive years

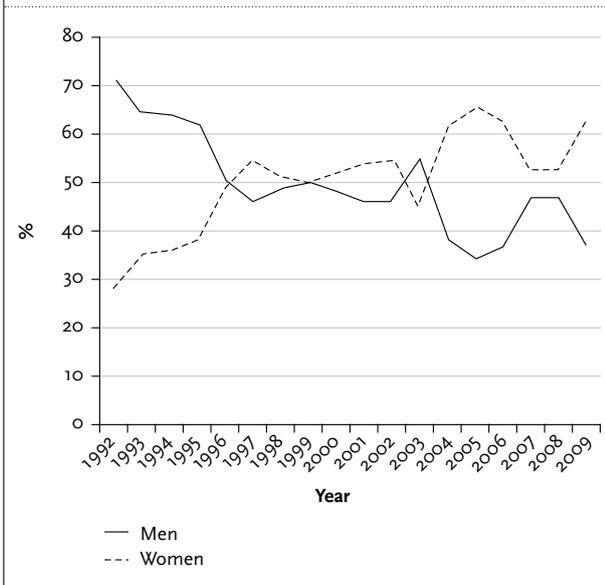


Figure 5. The prevalence of hiatus hernia and reflux oesophagitis in Turkish patients in the consecutive years

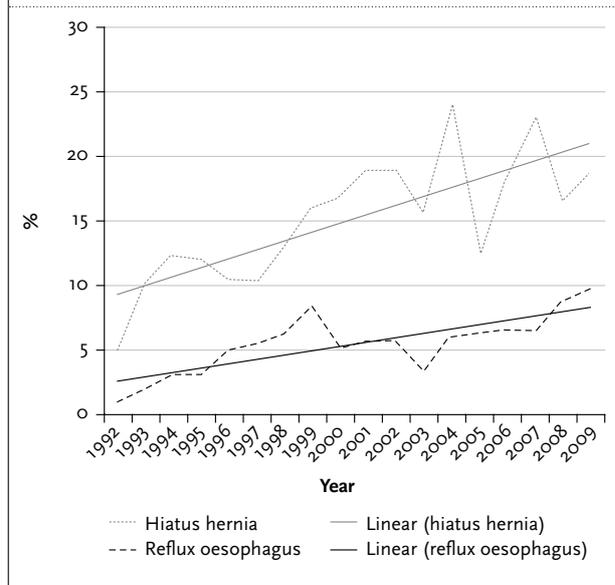


Figure 4. The yearly prevalence of ulcer disease in the Turkish patients

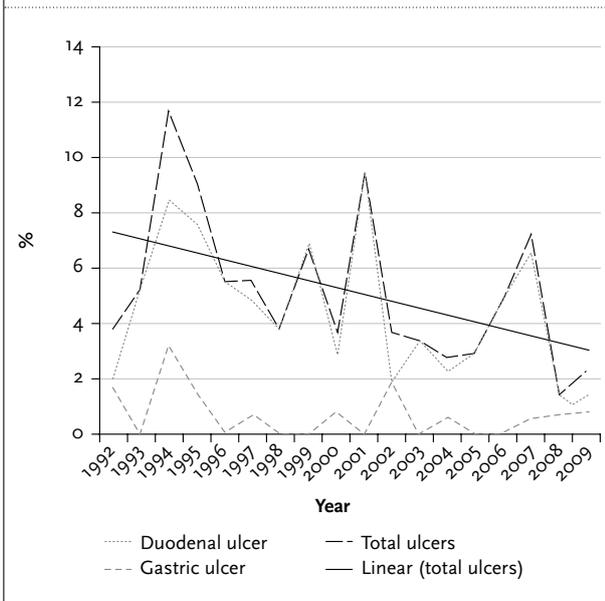
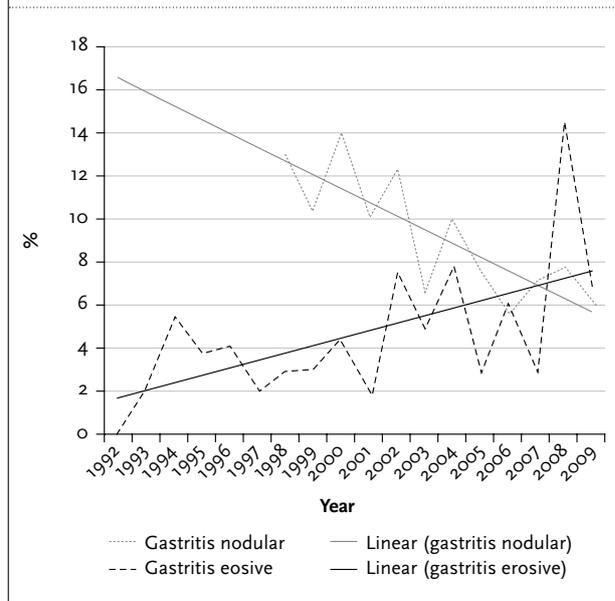


Figure 6. The yearly prevalence of gastritis



In the total study period, two oesophageal and nine stomach cancers were diagnosed in the Turkish patients. This number is too small to warrant any analysis.

DISCUSSION

For clinical purposes it is interesting to study prevalence of diseases in different populations. The problem in studying upper abdominal symptoms, and more specifically

reflux disease, is that there are cultural differences in the registration of symptoms. There are language barriers in understanding common terms of reflux.² In this respect the present study is unique in that only objective parameters such as the presence of oesophagitis and hiatus hernia or ulceration, are used in order to establish the correct endoscopic diagnosis. As people from different ethnicities or races often have very different cultural habits such as eating habits, food storage, hygiene, and socio-economic standards, it is always plausible that there are also differences in

morbidity patterns. It is also interesting to study changes in the morbidity patterns in consecutive years.

The number of Turkish women undergoing upper gastrointestinal endoscopy steadily increased in the consecutive years. The reason for this rise is not obvious. All people in the Netherlands have a mandatory health insurance, hence health care is accessible to everyone.

Peptic ulcer disease had a tremendous effect on morbidity and mortality until the last decades of the 20th century, when epidemiological trends started to point to an impressive fall in its incidence. Two important developments are associated with the decrease in rates of peptic ulcer disease: the discovery of effective and potent acid suppressants, and of *Helicobacter pylori*.⁷ In general the number of patients with active ulcer disease is decreasing in the Zaanstreek region.⁴ In addition, there is a strong difference in occurrence of peptic ulcer disease in people of Turkish descent when compared with the native Dutch population. The pattern of peptic ulcer disease in Turkish patients resembles the same pattern as 50 years ago in the Netherlands.⁸ In the present study it is shown that the prevalence of peptic ulcer disease, though much higher, also decreases in the Turkish population. This is probably due to a decrease in acquisition of *H. pylori*.⁹ In another large study from the Netherlands it was confirmed that the incidence of duodenal ulcers declined while the incidence of gastric ulcers was stable over time. The authors think that test and treatment regimens for *H. pylori* have contributed to this decline.⁵ In a Brazilian study a decrease in duodenal ulcer prevalence was also observed, 1.3% a year in ten years of follow-up.¹⁰ Decreasing prevalence of *H. pylori* infection has been reported in some countries. In another Brazilian study only children were examined. Prevalence of *H. pylori* was 60% in the first year of the study and 30% in the last.¹¹

Figure 6 shows that data on nodular gastritis were first recorded in 1998. The reason for this was the introduction of new endoscopes with a higher resolution. Nodular gastritis strongly correlates with *H. pylori* gastritis.¹² The symptoms of nodular gastritis and endoscopic features regress significantly after *H. pylori* therapy with a proton pump inhibitor and two antibiotics. Why erosive gastritis increased in the Turkish population is not obvious. While erosive gastritis is also correlated with *H. pylori* gastritis, it is also possible that non-steroidal anti-inflammatory drug use is responsible for this increase. The only possible explanation for the finding that nodular gastritis decreased from 1998 is the decline in the incidence of *H. pylori*.

El-Serag did an extensive study on the epidemiology of gastro-oesophageal reflux disease. He applied a Poisson regression model on population-based studies reporting on reflux symptoms. Population-based studies reporting the prevalence of symptoms at two time points in the same source population were reviewed. And, finally, he

studied longitudinal studies that noted the prevalence of symptoms and oesophagitis in primary and secondary care. The Poisson model revealed a significant ($p < 0.0001$) trend for an increase in the prevalence of reflux symptoms in the general population over time. Separately, significant increases with time were found for North America ($p = 0.0005$) and Europe ($p < 0.0001$) but not Asia ($p = 0.49$). Studies of the same source population over time indicated an increase in the prevalence of reflux in the US, Singapore and China but not Sweden. An increase in the prevalence of reflux symptoms or oesophagitis was found in the majority of longitudinal studies. There is evidence that the prevalence of reflux symptoms has increased during the past two decades.¹³ In accordance with these results, it was already shown that the prevalence of reflux oesophagitis and hiatus hernia is also increasing in consecutive years in the Zaanstreek region.⁴ Reflux oesophagitis was diagnosed in only 5.8% of Turkish patients. Turkish men suffered more often from reflux oesophagitis (81 vs 19%, $p < 0.0001$), and hiatus hernia (58 vs 42%, $p < 0.0001$) than women. Women on the other hand more often showed no abnormalities ($p < 0.0001$).¹⁴ The present study shows that prevalence of reflux oesophagitis and hiatus hernia, although lower than in native Dutch, increases in consecutive years in the Turkish population. This rise was only seen in Turkish men (data not shown).¹⁴ The reason for this increase is not obvious. Unfortunately no data are present on body mass index and specific dietary habits. On the other hand it has already been postulated that the decreasing prevalence of *H. pylori* infection can be responsible for an increase in reflux disease. In a large population-based study it was seen that amongst 1640 patients diagnosed with reflux oesophagitis only 9.7% were of Turkish descent. *H. pylori* was present in 60.6% of Turkish patients and in 18.5% of Dutch patients. All Turkish patients only suffered from mild oesophagitis.⁶ Immigrants with reflux disease are significantly younger than native Dutch patients, mean age 42 vs 57 years, respectively ($p < 0.0001$).¹⁵ Reflux disease is not very common in Turkey. Atug *et al.* did a multicentre study in order to test the efficacy of esomeprazole. It took 52 collaborators to include a total of 235 patients.¹⁶ In a study in 630 subjects randomly selected out of 8857 adults in Turkey it appeared that the prevalence of heartburn was 10% and for acid regurgitation 15.6%.¹⁷ Bor *et al.* conducted a population-based survey on the prevalence of reflux disease in Turkish people in a low-income region and concluded that there was no difference with developed countries. However, reading the paper carefully it appeared that reflux was detected in a low prevalence and that most people suffered from dyspepsia. The prevalence of heartburn was only 10%.¹⁸

From the present study it is concluded that in the Turkish population living in the Zaanstreek region, the prevalence of peptic ulcer disease is decreasing, while the prevalence

of reflux disease, although still lower than in the native Dutch patients, is rising. Possible explanations could be the decreasing acquisition of *H. pylori*. If this trend continues than the burden of peptic ulcer disease and its complications such as bleeding and perforation decrease, but it could contribute to the increasing incidence of more serious complications associated with reflux, such as oesophageal adenocarcinoma, as well as costs to healthcare systems and employers.

REFERENCES

1. Patterson CC, Dahlquist GG, Gyürüs E, Green A, Soltesz G, for the Eurodiab Study Group. Incidence trends for childhood type 1 diabetes in Europe during 1989-2003 and predicted new cases 2005-2010: a multicentre prospective registration study. *Lancet*. 2009;373:2027-33.
2. Sharma P, Wani S, Romero Y, Johnson D, Hamilton F. Racial and geographic issues in gastroesophageal reflux disease. *Am J Gastroenterol*. 2008;103:2669-80.
3. Wahltqvist P, Reilly MC, Barkun A. Systemic review: the impact of gastro-oesophageal reflux disease on work productivity. *Aliment Pharmacol Ther*. 2006;24:259-72.
4. Loffeld RJLF, van der Putten ABMM. The yield of upper gastrointestinal endoscopy: a study of a ten-year period in the "Zaanstreek". *Neth J Med*. 2003;61:18-22.
5. Groenen MJ, Kuipers EJ, Hansen BE, Ouwendijk RJ. Incidence of duodenal ulcers and gastric ulcers in a Western population: back to where it started. *Can J Gastroenterol*. 2009;23:604-8.
6. Loffeld RJ. *H. pylori* and reflux esophagitis in Turkish patients living in the Zaanstreek region in the Netherlands. *Dig Dis Sci*. 2003;48:1846-9.
7. Malfertheiner P, Chan FK, McColl KE. Peptic ulcer disease. *Lancet*. 2009;374:1149-61.
8. Loffeld RJLF, van der Putten ABMM. The occurrence of duodenal or gastric ulcer in two different populations living in the same region: a cross-sectional endoscopic study in consecutive patients. *Neth J Med*. 2001;59:209-12.
9. Loffeld RJLF, van der Putten ABMM. Changes in prevalence of *Helicobacter pylori* infection in two groups of patients undergoing endoscopy and living in the same region. *Scand J Gastroenterol*. 2003;38:938-41.
10. Saul C, Teixeira CR, Pereira-Lima JC, Torresini RJ. Prevalence and reduction of duodenal ulcer: a Brazilian study. (Retrospective analysis in the last decade: 1996-2005). *Arq Gastroenterol*. 2007;44:320-4.
11. Kawakami E, Machado RS, Ogata SK, Langner M. Decrease in prevalence of *Helicobacter pylori* infection during a 10-year period in Brazilian children. *Arq Gastroenterol*. 2008;45:147-51.
12. Dwivedi M, Misra SP, Misra V. Nodular gastritis in adults: clinical features, endoscopic appearance, histopathological features, and response to therapy. *J Gastroenterol Hepatol*. 2008;23:943-7.
13. El-Serag HB. Time trends of gastroesophageal reflux disease: a systematic review. *Clin Gastroenterol Hepatol*. 2007;5:17-26.
14. Wegman AI, Loffeld RJ. Gastroscopy in immigrants of Turkish descent. *J Gastroenterol Hepatol*. 2009;24:1187-90.
15. Loffeld RJ, van der Putten AB. Prevalence of gastroesophageal reflux disease in immigrants living in the Zaanstreek region in the Netherlands. *Dis Esophagus*. 2004;17:87-90.
16. Atug O, Gırla A, Kalaycı C, Doalr E, Isitan F, Oguz D, et al. Turkish HEMANEX study group. Esomeprazole in acute and maintenance treatment of reflux oesophagitis: a multicentre prospective study. *Adv Ther*. 2008;25:552-66.
17. Kitapcıoğlu G, Mandıracıoğlu G, Caymaz Bor C, Bor S. Overlap of symptoms of dyspepsia and gastroesophageal reflux in the community. *Turk J Gastroenterol*. 2007;18:14-9.
18. Bor S, Mandıracıoğlu A, Kitapcıoğlu G, Caymaz-Bor C, Gilbert RJ. Gastroesophageal reflux disease in low-income region on Turkey. *Am J Gastroenterol*. 2005;100:759-65.