

THE SYMPTOMS OF UPPER GASTROINTESTINAL, PSYCHOSOCIAL CO-MORBIDITY, EFFECTS ON PATIENTS & HEALTH CARE SEEKING IN GENERAL PRACTICE

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Abstract

There is also a limited understanding of the pathophysiology of upper gastrointestinal (GI) effects. In patients with functional gastrointestinal problems, psychological symptoms have been shown to be more frequent, although it is disputed if they are directly related to GI symptoms or rather indicate reasons for seeking health treatment. The aim of our research was to compare co-morbidity between patients with and without upper GI symptoms, particularly psychological and social problems. Furthermore, we explored whether the occurrence of psychiatric and social disorders was part of a larger trend of health care utilization due to sickness. Case control research focused on the population based on the second Dutch National Survey of General Practice (conducted in 2001). Cases and controls (individuals not experiencing any of these complaints) matched by gender, age, PCP-practice and ethnicity were contrasted (adults attending their primary care provider (PCP) with upper GI symptoms). The key outcome indicators were communication duration, somatic and psychosocial diagnosis prevalence, (psycho) pharmacological agent dosage levels, and referral rates. Using odds ratios, the Chi square test and multivariable logistic regression analysis, the data was analyzed.

As a result, data was analyzed for 13,389 patients with upper GI signs and 13,389 control patients. Twice as often as controls (8.6 vs 4.4 times/year), patients with upper GI symptoms attended their PCP. There were not only more psychiatric and emotional issues in people with upper GI signs, but also more clinical problems in their PCP (odds ratios (ORs) ranged from 1.37 to 3.45). Drugs of any ATC type (ORs range from 1.39 to 2.90), including psychotropic agents, have been used most commonly in patients with upper GI symptoms. When we corrected for non-attending control patients, the found variations were less pronounced. In the multivariate regression study, patients with upper GI effects were more closely correlated with communication frequency and not psychiatric or social co-morbidity.

To conclude, people with upper GI symptoms most often attend their PCP for some organ system issues, even psychosocial problems. The correlation between upper GI symptoms and psychological issues is misleading and could represent higher health care standards in general.

Keywords: gastrointestinal

Introduction

Popular problems affecting 25-40% of the general population during their lifespan are upper gastrointestinal (GI) symptoms. There are only a handful of cases of organic diseases such as peptic ulcers and gastro-esophageal reflux disease, and no cause is found in other

patients. The ROME III guidelines define these functional upper gastrointestinal signs, which include dyspepsia, heartburn, epigastric pain and other abdominal problems. They are never life-threatening, but they pose a serious burden on health care services and on the quality of life. (El-Serag & Talley, 2003) The pathophysiologic pathways involved in functional gastrointestinal symptoms are still

poorly known, considering their significant medical and economic consequences. Psychological variables have historically been held responsible for the effects of upper GI. (Levenstein, 2002)

The etiological model shifted significantly with the discovery of *Helicobacter Pylori*, but eradication treatment proved to be of only modest use in functional dyspepsia (Moayyedi *et al.*, 2005). Several pathways have been postulated to play an etiological function in dyspepsia, including visceral hypersensitivity and altered brain-gut experiences (reviewed in Chua, 2006). A renewed interest in psychological aspects in pathophysiology has arisen in recent years. Interestingly, as compared to controls, signs of neurosis, anxiety, hypochondria and depression were shown to be more prominent in patients with unidentified gastrointestinal problems. However, whether psychiatric causes are causative of functional dyspepsia or whether they are related to elevated health care needs in general remains a subject of controversy (Barry & Dinan, 2006).

In 2001, among more than 100 practices in the Netherlands studying health issues and contact with the primary care practitioner (PCP) of 400,000 residents over a span of one year a Nationwide Study of General Practice was undertaken. This survey gave us the rare opportunity to perform a population-based case control analysis of patients with upper GI symptoms on clinical and social comorbidity and health care criteria. (Saad & Chey, 2006). The goal of our research was to examine whether psychiatric and social issues in patients with upper GI symptoms are more common and whether their occurrence is part of a larger trend of use of health care related to disease.

Methods:

Second National Dutch General Practice Survey

The report was undertaken by NIVEL (Netherlands Center for Health Care Research) in the context of the second Dutch National Survey of General Practice in 2001. 195 PCPs in 104 practices involved in this study. Eight of the participating activities were omitted from review due to the poor consistency of data registration. Virtually all residents are registered with a PCP in the Netherlands, which serves as a gatekeeper to secondary treatment. In this national survey, the mid-time population size recorded was 375,899, comprising a 2.4 percent sample of the Dutch population. In terms of age, ethnicity, social status, degree of urbanization, ethnic minority groups and form of health insurance, the patient demographic was representative of the Dutch population. For Dutch PCPs, the participating PCPs were representative in terms of age, gender and position in disadvantaged areas. Single-handed activities, however, were relatively underrepresented (32% instead of 44% nationally) (Westert *et al.*, 2005)

Research architecture and survey methodology have been published elsewhere in greater detail. In brief, all active PCPs were labeled for a one-year span with reports on all

patient contacts, including diagnoses, referrals and medications. Both diagnoses were coded according to version 1 of the International Classification of Primary Care and medicines were coded according to the classification scheme for anatomical therapeutic chemistry (ATC). Different health issues have been reported independently during one consultation. (Lamberts & Wood, 1987)

Selection of patients and controls

Not only did we include dyspepsia, but we used a broad description of upper GI symptoms, including epigastric pain, heartburn, esophageal dysfunction, stomach function problems, and peptic ulcers, to include optimal generalization of general practice. Epigastric stomach pain (D02), heartburn (D03), esophageal disease (D84; comprising esophageal diverticulum, esophagitis and reflux esophagitis), duodenal ulcer (D85), other peptic ulcer (D03), esophageal disease (D84; including esophageal diverticulum, esophagitis and reflux esophagitis), duodenal ulcer (D85), other peptic ulcer (D85), patients with upper GI symptoms were selected from the overall study population under the condition that they were registered with their PCP during the registration period. In the second Dutch National Survey, there was no separate recording of the findings of endoscopic investigations or laboratory results.

Control patients were randomly chosen in the absence of any of the above-mentioned diagnoses during the registration process and were uniquely matched (1:1) by experience, sex and age (± 2 years, if not necessary ± 5 years). As it is understood that dyspeptic complaints are caused by ethnic origin, control patients were also matched by ethnicity. Native Dutch, Western immigrants (Europe (excluding Turkey), North America, Oceania, Israel, Japan or Indonesia) and non-Western immigrants (Turkey, Asia (excluding Japan and Indonesia), Central and South America, Africa) were identified as ethnic groups according to Statistics Netherlands. For all analyses, we picked adult patients (18 years and over).

Outcome measures

The prevalence of diagnosis in the separate ICPC-chapters was the primary outcome measure. Psychosocial comorbidity has been described in the 'psychological' and/or 'social' ICPC-chapter as the prevalence of one or more diagnoses. Secondary outcome indicators were prescribing rates at the main class ATC level, psychopharmacological agent prescription rates (defined as anxiolytic agents (N05B), sedatives and hypnotic agents (N05C) and antidepressants (N06A), communication frequency and secondary care referral rates. 'Health care seeking' was described by the last two secondary result indicators.

Statistical Analysis

Missing values were only present for 'education level' and 'ethnicity,' and using iterative chained equations (Raghuathan *et al.*, 2001) were multiplied. In order to

compare proportions between groups, we used predictive statistics for baseline properties and odds ratios and the Chi square test. To test for variations in ways, we used the student's t-test. We used two-sided checks and when $P < 0.01$, found important findings. We conducted logistic regression analysis of multivariable random effects to explain separate correlations between patient behaviors (including matching variables) and dyspepsia, thereby accounting for any interaction between interclusters (i.e. PCP practice). The 'touch frequency' constant variable was categorized. For statistical analysis, we used SPSS for Windows (version 14.0.2) and STATA (version 10.1).

Results:

Co-morbidity

The diagnosis of any organ system, including neurological and social disorders, was more common in patients with upper GI symptoms than in control patients. In the control group, 2,306 patients (17%) did not have PCP contact during the registration time, while by definition, all patients had at least one PCP contact in the upper GI symptom group. The disparities between the control group and the patients with upper GI effects were smaller but remained statistically important as we accounted for non-attending patients. Odds ratios then ranged from 1.12 (95 percent CI 1.02 to 1.24) for the ICPC' maternity and family planning 'chapter to 1.80 for psychiatric diagnoses (95 percent CI 1.66 to 1.91) and 2.77 diagnoses in the digestive system (95 percent CI 2.60 to 2.95; evidence not shown), minus diagnoses identifying the upper GI symptoms category. Both those with and without upper GI symptoms, the most prevalent psychiatric and social diagnoses were identical and the most commonly presented clinical issues were overlapping with all patient classes when upper GI symptoms were not taken into account (data not shown).

Prescription of (psycho) pharmacological agents

As shown in the following table, in people with upper GI signs, PCPs recommended more psychotropic medications than in control patients. Such elevated levels of prescribing have been observed with both anxiolytic, sedative and antidepressant agents. However, for all ATC-main groups in the category of patients with upper GI symptoms, the number of recommended patients during the registration time was higher relative to the controls. In the general prescribing volume, this was mirrored. The mean number of prescriptions for patients with upper GI effects was 16.4 (95% CI 16.1 to 16.8), compared - 8.4 in the control community (95 percent CI 8.2 to 8.7). This disparity was somewhat less pronounced when medications for acid-related conditions were omitted (mean number of prescriptions in the group with upper GI symptoms 13.7, 95 percent CI 13.4 to 14.0).

Proportion of patients with a prescription for psychopharmacological agents.

	Upper GI symptoms (n = 13,389)	Control patients (n = 13,389)	Odds ratio (95% CI)
Psychotropic drugs [†]	31.5	17.2	2.21 (2.09-2.34)
Anxiolytic agents (N05B)	17.5	8.7	2.22 (2.07-2.40)
Sedatives and hypnotic agents (N05C)	12.9	7.3	1.89 (1.74-2.05)
Antidepressants (N06A)	11.9	5.9	2.15 (1.96-2.35)

[†]including anxiolytic agents, sedative/hypnotic agents and antidepressant drugs

Psychosocial co-morbidity and health care seeking

With 8.6 (95% CI 8.5 to 8.8), the mean number of PCP-contacts in patients with upper GI symptoms was about twice as high as compared to controls (mean number of contacts 4.4; 95 percent CI 4.3 to 4.5). When corrected for non-attending control patients, this distinction was somewhat less pronounced (mean number of contacts 5.3; 95 percent CI 5.2 to 5.4). Moreover, relative to control patients, more patients with upper GI signs were referred to a specialist: 42% of patients were referred to secondary treatment compared to 26% of control patients (OR 2.01, 95 percent CI 1.99 to 2.21). The dependent variable is the diagnosis of upper GI symptoms. The level of touch was closely correlated with this group of patients, while psychiatric diagnosis was only weakly associated, and socioeconomic problems were not at all associated. Remarkably, there was an opposite correlation of endocrine diagnosis with upper GI complaints. The patient community was not separately concerned with the use of NSAIDs.

Discussion:

We also found in this large population-based case management sample that patients with upper GI symptoms attend their PCP with psychiatric and social issues more often than patients who do not have these concerns. Furthermore, more anxiolytic, sedative and antidepressant agents were recommended for PCPs than for patients with no upper GI symptoms. The higher health treatment standards of patients with upper GI signs, however, were not limited to psychosocial problems, but covered all organ systems. Compared to control patients, patients with upper GI symptoms attended their PCP twice as frequently and obtained up to twice the amount of medications in each ATC class. We have found that upper GI effects are most closely related not to psychiatric and social co-morbidity, but to high communication frequency in general.

Our research is the largest population-based survey published to date, to the best of our knowledge, exploring the topic of psychosocial co-morbidity, health care needs and upper GI symptoms. To obtain an optimal generalization to the general practice community, we used a broad description, covering both organic and functional dyspepsia. In this second National Study, which further enhances the generalization of our results, almost 100 PCPs participated. In attempt to objectify the PCP diagnoses of psychiatric co-morbidity, we did not use validated questionnaires. Our analysis was focused on cross-sectional knowledge and was not planned to indicate temporal or causal associations.

Several case-control trials exploring the association between functional dyspepsia and psychiatric distress have been published. It has been observed that fear, neuroticism, depression and life tension associate with functional dyspepsia (Bennet *et al.*, 1991). While the extrapolation of these findings is limited due to low patient numbers and/or the preference of patients with dyspepsia from secondary care environments, a major multinational population-based review indicated that psychological stress was correlated with upper gastrointestinal symptoms (Pajala *et al.*, 2005) who investigated a large sample ($n = 2,201$) of the German population, published similar findings. The psychopathology found in people with functional gastrointestinal disorders was stated in the above study to be of two kinds: one as a feature of the condition itself, while the other causes the person to visit a doctor (Herschbach *et al.*, 1999). This is in line with our observations that patients with upper GI signs have psychosocial morbidity more often and their PCP presents more health issues.

Frequent or extreme symptoms, growing age and lower socio-economic status are causes that have been shown to lead to health treatment of dyspeptic patients. Indeed, in our study, low levels of schooling were separately related to patients with upper GI symptoms, but an inverse correlation between age and upper GI symptoms was found. Hypersensitivity to body conditions and an aggressive management strategy striving to fix one's (medical) problems (Cheng, 2000), psychological distress and anxiety are other causes that could support obtaining medical treatment, although these results have not been verified by others (Koloski *et al.*, 2003)

While our research was not meant to explain causal associations, the association between upper GI signs, communication frequency and psychological co-morbidity is tempting to speculate. Patients who regularly visit their PCP due to their coping style and exposure to physical signs (or other causes, but unidentified) will only have a high risk of being diagnosed in any health sector, even the psychosocial one. In other words, upper GI signs and psychosocial complaints can all be signs of and not etiologically linked to elevated health care demands. This theory is confirmed by our observation that the most

common diagnoses (overall as well as in the psychosocial subsections) were identical in both patient classes. In this regard, it is important that endocrine diagnoses, which can be viewed as quantitative diagnoses (assessed through test findings and therefore less reliant on the perception of PCPs) and not dependent on psychosomatic variables, in our research had an inverse relationship with the patient population, also after age change. In the other hand, several organ systems, including the stomach, can cause signs of psychological distress and anxiety that prompt patients to see a doctor. While there is inadequate support for the effectiveness of therapeutic treatments in functional dyspepsia (Moayyedi *et al.*, 2006) this hypothesis indicates that for patients with upper GI symptoms, exploration of psychological issues can be helpful.

The high prescribing rates found in our sample for patients with upper GI symptoms included not only acid suppressant medications, but also all types of ATC. While it is recognized that the most commonly used medications are acid suppressants, our research is the first to specifically illustrate the polypharmacy of patients with upper GI symptoms. Our findings suggest that when prescribing additional medications to these patients, caution is required as the likelihood of adverse effects and unintended drug-drug interactions rises when the number of prescriptions increases (Johnell & Klarin, 2007).

Conclusion:

In conclusion, our research indicates that patients with upper GI symptoms have elevated health treatment needs that go beyond dyspeptic complaints and neurological disorders and concern almost all organ systems. In a well-designed longitudinal analysis, it is important to determine if psychological depression is the common cause of perceived ill health or whether psychological distress and upper GI symptoms are also indicators of elevated health care needs.

References:

- Barry, S., & Dinan, T. G. (2006). Functional dyspepsia: are psychosocial factors of relevance. *World Journal of Gastroenterology: WJG*, 12(17), 2701.
- Bennett, E., Beaurepaire, J., Langeluddecke, P., Kellow, J., & Tennant, C. (1991). Life stress and non-ulcer dyspepsia: a case-control study. *Journal of psychosomatic research*, 35(4-5)
- Bröker, L. E., Hurenkamp, G. J., ter Riet, G., Schellevis, F. G., Grundmeijer, H. G., & van Weert, H. C. (2009). Upper gastrointestinal symptoms, psychosocial co-morbidity and health care seeking in general practice: population-based case control study. *BMC family practice*,
- Cheng, C. (2000). Seeking medical consultation: perceptual and behavioral characteristics distinguishing consulters and nonconsulters with

- functional dyspepsia. *Psychosomatic Medicine*, 62(6), 844-852.
8. Chua, A. S. B. (2006). Reassessment of functional dyspepsia: a topic review. *World Journal of Gastroenterology: WJG*, 12(17), 2656.
 9. El-Serag, H. B., & Talley, N. J. (2003). Health-related quality of life in functional dyspepsia. *Alimentary Pharmacology & Therapeutics*, 18(4), 387-393.
 10. Herschbach, P., Henrich, G., & von Rad, M. (1999). Psychological factors in functional gastrointestinal disorders: characteristics of the disorder or of the illness behavior?. *Psychosomatic Medicine*, 61(2), 148-153.
 11. Johnell, K., & Klarin, I. (2007). The relationship between number of drugs and potential drug-drug interactions in the elderly. *Drug safety*, 30(10), 911-918.
 12. Koloski, N. A., Talley, N. J., Huskic, S. S., & Boyce, P. M. (2003). Predictors of conventional and alternative health care seeking for irritable bowel syndrome and functional dyspepsia. *Alimentary pharmacology & therapeutics*, 17(6), 841-851.
 13. Lamberts, H., & Wood, M. (1987). *ICPC, international classification of primary care*. Oxford University Press, USA.
 14. Levenstein, S. (2002). Bellyaching in these pages: upper gastrointestinal disorders in *Psychosomatic medicine*. *Psychosomatic medicine*, 64(5), 767-772.
 15. Moayyedi, P., Shelly, S., Deeks, J. J., Delaney, B., Innes, M., & Forman, D. (2006). Pharmacological interventions for non-ulcer dyspepsia. *Cochrane Database of Systematic Reviews*, (4).
 16. Moayyedi, P., Soo, S., Deeks, J., Delaney, B., Harris, A., Innes, M. & Forman, D. (2005). Eradication of *Helicobacter pylori* for non-ulcer dyspepsia. *Cochrane Database of Systematic Reviews*, (2).
 17. Pajala, M., Heikkinen, M., & Hintikka, J. (2005). Mental distress in patients with functional or organic dyspepsia: a comparative study with a sample of the general population. *Alimentary pharmacology & therapeutics*, 21(3), 277-281.
 18. Raghunathan, T. E., Lepkowski, J. M., Van Hoewyk, J., & Solenberger, P. (2001). A multivariate technique for multiply imputing missing values using a sequence of regression models. *Survey methodology*, 27(1), 85-96.
 19. Saad, R. J., & Chey, W. D. (2006). Current and emerging therapies for functional dyspepsia. *Alimentary pharmacology & therapeutics*, 24(3), 475-492.
 20. Westert, G. P., Schellevis, F. G., de Bakker, D. D., Groenewegen, P. P., Bensing, J. M., & Van der Zee, J. (2005). Monitoring health inequalities through general practice: the Second Dutch National Survey of General Practice. *European Journal of Public Health*, 15(1), 59-65