Health status and management of chronic non-specific abdominal complaints in general practice

H A M JANSSEN

J A J BORGHOUTS

J W M MURIS

J F M METSEMAKERS

B W KOES

J A KNOTTNERUS

SUMMARY

Background. *While chronic non-specific abdominal complaints are common in general practice, data on patients' perspective and management of these complaints are lacking. Knowledge of these data is important for the development of guidelines for management and assessment of the burden of chronic non-specific abdominal complaints on society.*

Aim. *To draw a comprehensive picture of chronic non-specific abdominal complaints in general practice, including volume, patients' perspective, and health care involvement.*

Method. *In a retrospective study, 644 patients were selected in 16 general practices. Patients and general practitioners (GPs) received a questionnaire regarding the nature of complaints and health care management during the previous 12 months.*

Results. *Overall, 619 questionnaires were returned and 291 patients participated. Of the study population, 15% of patients were diagnosed as suffering from non-ulcer dyspepsia, 39% from irritable bowel syndrome, and 45% from other abdominal complaints. Over 50% of patients suffered from chronic non-specific abdominal complaints on a daily or weekly basis. In these patients, general health perception is impaired and above norm scores on SCL-anxiety and SCL-depression scales were recorded. Only 4% of patients showed complete resolution of complaints during the previous 12 months. Fifty-two per cent of patients consulted their GP for abdominal complaints. Diagnostic modalities were used frequently. Medication was prescribed in 83% of patients with abdominal complaints. Twenty per cent of patients were referred to secondary or tertiary care. There was a considerable inter-doctor variation in the management of chronic non-specific abdominal complaints.*

Conclusion. *Once non-specific abdominal complaints have become chronic they are mainly managed by the GP. The impact on patients' physiological and psychological well being is large. Diagnostic and therapeutic modalities are frequently used. Given the considerable inter-doctor variation, research into the evidence base of management strategies is recommended.*

Keywords: *abdominal disorders; patients' perspective; disease management.*

H A M Janssen, MD; J A Knottnerus, professor; J W M Muris, MD, PhD; JF M Metsemakers, MD, PhD, Department of General Practice, Maastricht University, The Netherlands; J A J Borghouts, PhD, TNO Prevention and Health, Leiden, The Netherlands; B W Koes, professor, Department of General Practice, Erasmus University, Rotterdam, The Netherlands.

Submitted: 11 January 1999; final acceptance: 14 October 1999.

Introduction

PATIENTS with non-specific abdominal complaints comprise a large proportion of primary care and gastroenterology practice.[1-6] Abdominal complaints are a frequent reason for visiting a general practitioner (GP); the annual incidence rate is 15/1000.[7] However, as yet, diagnosis and management of non-specific abdominal complaints, defined as abdominal pain or discomfort not explained by structural or biochemical abnormalities after clinical examination, has received little research attention.

Jacobs *et al*[8] reported that the management of non-specific abdominal complaints differed greatly between 55 GPs. Muris *et al*[9] reported a 15-month follow-up study of 578 consecutive patients with non-acute abdominal pain (including pain of organic origin) and concluded that non-acute abdominal pain is mainly seen and managed in general practice. In a survey of 43 English GPs, Thompson *et al*[10] found that explanation and reassurance are the first choice of most GPs in the management of irritable bowel syndrome (IBS). In addition, almost all GPs prescribe drugs in the management of IBS (more than is justified according to Thompson *et al*). Few patients in this study were referred to a specialist.

These studies all reflect the GPs' perspective, whereas the patients' perspective (health status and course of complaints) is not discussed. Since non-specific abdominal complaints include non-ulcer dyspepsia (NUD) and IBS, it would be of interest to know whether there are differences regarding diagnostic and therapeutic strategies chosen for these groups and also whether there are differences regarding patients' perspective. In the aforementioned studies this differentiation was not made.

Data on the diagnostic and therapeutic strategies chosen in primary care are of importance in the development of guidelines for the management of these complaints. In addition, such data are of importance in assessing the burden of chronic non-specific abdominal complaints on society. However, despite this importance, few detailed data are available. The aim of this study was to draw a comprehensive picture of chronic non-specific abdominal complaints in general practice, including volume, patients' perspective, and health care involvement. Therefore, we formulated the following research questions:

- What are the characteristics and course of complaints and the functional health status of patients with chronic non-specific abdominal complaints in general practice?
- What is the health care involvement of patients with chronic non-specific abdominal complaints in general practice, including GP visits, diagnostic and therapeutic management, and referrals?
- Are there differences regarding the above-mentioned items for the three subgroups of patients with NUD, IBS, and other abdominal complaints?

Methods

Patients and procedures

The GPs and patients who participated in this study were recruited from the Registration Network Family Practices (RNH) of the University of Maastricht, The Netherlands.[11] The RNH provides a computerised anonymised database containing certain patient characteristics and all relevant health problems. Relevant health problems are coded using the International Classification of Primary Care (ICPC)[12] with diagnostic criteria based on the International Classification of Health Problems in Primary Care (ICHPPC-2).[13] The patient population is very similar to the Dutch general population regarding age, gender, type of health insurance, and level of education.[14] Potentially eligible patients were identified using five relevant ICPC codes:

- abdominal pain without organic explanation (ICPC codes D01, D02, and D06); and/or
- NUD (ICPC code D87); and/or
- IBS (ICPC code D93).

The patients were registered with 30 GPs working in 16 practices. Patients were included on the basis of the following criteria:

- abdominal pain without organic explanation and/or NUD and/or IBS (ICPC codes D01, D02, D06, D87 or D93);
- at baseline, symptoms had to be present for at least six months;
- no evidence of an organic cause of the symptoms; and
- 18 to 70 years of age.

Patients were excluded when there was a malignancy of the gastrointestinal tract. All patients and GPs were asked to fill out a questionnaire covering the period of the previous 12 months.

Instruments

The GP questionnaire contained items about age, gender, diagnoses, diagnostic modalities, therapeutic interventions, and new referrals to specialists during the previous 12 months. The patient questionnaire contained items about duration, nature, localisation, frequency, and severity of the complaints. The severity of abdominal pain was measured on an 11-point ordinal scale, ranging from zero (no pain) to 10 (very severe pain).

The Nottingham Health Profile (NHP) was used to assess the general health perception. The first section of the NHP reflected six items: energy, pain, emotional reactions, sleep, physical mobility, and social isolation. Subscales of the Symptom Checklist 90 (SCL-90) were used to assess the psychological conditions ‘depression’ and ‘anxiety’. The original versions of the NHP and SCL-90 as well as the Dutch translations have been shown to be valid and reliable instruments.[15-18]

Statistics

Descriptive statistics were used to present the results. A subgroup analysis was performed for the diagnostic categories NUD, IBS, and other abdominal complaints. Differences between responders and non-responders were analysed using the Chi-square test statistics (for categorical variables), the Student *t* test (for continuous variables), and the Mann–Whitney test (for non-parametrical comparison). A two-sided significance level of 0.05 was used (SPSS 8.0).

Results

The study population initially consisted of 644 patients with chronic non-specific abdominal complaints. The GPs filled out and returned 628 (97.5%) questionnaires related to these patients. Of these 628 patients, nine were excluded from the analysis because they did not meet our inclusion criteria (eight were over 70 years of age and one was younger than 18 years of age).

Therefore, the study population consisted of 619 patients. The mean age was 45.2 years (SD = 13.3 years) and the male–female ratio was 1:1.4. At the beginning of the study, the median duration of complaints was 5.2 years (range one to 41 years). The GP was visited five times (median) the previous year, of which one time (median) was for abdominal complaints. Of the patients, 15% were diagnosed as having NUD (D87), 39% were diagnosed as having IBS (D93), and 45% were diagnosed as having abdominal pain without organic explanation (D01, D02, and D06).

After being asked by letter by their GP to participate, 291 patients (47%) filled out and returned the questionnaire. Among the non-responders there were significantly more males, they were significantly younger, had significantly longer duration of complaints, and paid significantly fewer visits to their GP because of abdominal complaints — as well as for all complaints — in the previous 12 months.

Table 1 presents the characteristics of complaints of the responders. Over half of the responders reported suffering abdominal complaints on a weekly or even daily basis. Of the visitors, 65% suffered on a weekly or daily basis, whereas of the non-visitors 49.5% suffered on a weekly or daily basis. When the patients were asked about the nature of their abdominal complaints, 84% said they experienced stomach aches, 58% complained about abdominal distension, 50% about flatus, 31% about eructations, 30% about diarrhoea, and 28% about constipation (not in table). Forty-seven per cent of the patients reported no change or worsening of the complaints during the previous 12 months. Patients with IBS scored highest on the pain intensity scale (4.1 mean). Overall, 4% reported to have recovered in that previous year, while in the NUD group this was 8%.

On all items of the NHP, the responders scored above the norm. Patients with NUD scored significantly lower on the item ‘sleep’ than patients with IBS. In addition, patients with NUD scored significantly lower on SCL subscales ‘anxiety’ and ‘depression’ than patients with IBS and patients with other abdominal complaints. Non-visitors scored significantly lower on the NHP subscale ‘pain’ and the SCL subscale ‘depression’ than visitors. During the previous 12 months, 52% of the patients visited their GP for chronic abdominal complaints. In 80% of these patients, the GP performed a physical examination (Table 2). Twenty-five per cent of NUD patients underwent an endoscopic examination. Diagnostic modalities were most frequently applied to patients with other abdominal complaints.

In 50% of the total population with chronic non-specific abdominal complaints, the GP had prescribed medication in the previous year (Table 3). Of the patients that had visited their GP, 48% were reassured, 28% were advised about their diet, and 83% received medication. In the subgroup of patients with IBS, reassurance, counselling concerning psychosocial stress, and dietary advice were given more frequently than in the other subgroups. Ninety-one per cent of patients with NUD who visited their GP received a prescription for medication; antacids, antispasmodics, proton pump inhibitors, and H_2-receptorantagonists were the most frequently prescribed drugs. For patients with IBS, antispasmodics and fibre supplements were the most frequently prescribed drugs. For patients with other abdominal complaints, antacids, antispasmodics, and H_2-receptorantagonists were the most frequently used drugs.

Twenty per cent of the patients that visited the GP because of abdominal complaints during the previous 12 months were

Table 1. Characteristics of complaints reported by responders (%).

	Total[a] (n =291)	NUD[b] (n = 36)	IBS[c] (n = 125)	Other[d] (n = 130)	Visitors[e] (n = 182)	Non-visitors[f] (n = 107)
Presence of abdominal complaints						
Daily	32.1	37.1	33.1	29.8	39.8	19.8
Weekly	27.0	17.1	33.9	23.1	25.7	29.7
Monthly	20.1	8.6	20.3	23.1	17.0	24.8
A few times a year	20.8	37.1	12.7	24.0	17.5	25.7
Course of complaints (previous year)						
Total recovery	3.8	8.4	3.2	3.1	4.9	1.9
Better	48.8	41.6	41.6	57.7	50.6	46.7
No change	37.8	38.9	42.4	33.1	35.2	41.1
Worse	9.6	11.1	12.8	6.1	9.3	10.3
Mean pain intensity (11-point scale) (SD)	4.0 (2.7)	3.6 (2.9)	4.1 (2.7)	3.9 (2.6)	4.2 (2.7)	3.6 (2.2)

[a]17 cases missing; [b]nine cases missing; [c]one case missing; [d]seven cases missing; [e]at least one visit for chronic non-specific abdominal complaints to the GP the previous 12 months; [f]no visit for chronic non-specific abdominal complaints to the GP the previous 12 months.

Table 2. Diagnostic modalities in patients with chronic non-specific abdominal pain in general practice during the previous 12 months (reported by the GPs).[a]

		1 visit[b]				
	Total population (*n* = 619)	Total (*n* = 321)	NUD (*n* = 56)	IBS (*n* = 116)	Other (*n* = 149)	Between practice range (%)
Physical examination	42.0%	80.4%	78.6%	78.4%	82.6%	41.2–100.0
Laboratory examination	11.6%	21.8%	12.5%	18.1%	28.2%	0.0–50.0
X-ray	5.0%	9.3%	7.1%	8.6%	10.7%	0.0–35.7
Endoscopy	6.3%	11.8%	25.0%	6.9%	10.7%	0.0–37.5
Other	7.3%	13.7%	8.9%	12.9%	16.1%	–

[a]Since more than one modality can be applied in one patient the sum of the column percentages may exceed 100%; [b]at least one visit for abdominal complaints to the GP during the previous 12 months.

referred to a specialist (Table 4). Referral most often took place among the subgroup of patients with other abdominal complaints.

For all patients, a gastroenterologist was the specialist that was most frequently referred to. Three per cent of patients with NUD and 4% of patients with IBS were referred to a psychologist.

Discussion

In this study, it was shown that in the previous 12 months 4% of patients stated that their complaints had fully disappeared, while in the NUD group this figure was 8%.

Whitehead *et al*[19] reported that about half of patients with functional bowel disorders have psychiatric disorders, especially depression, and generalised anxiety disorder. In our study, all patients showed anxiety and depression scores above the norm. Patients with IBS had the highest levels of anxiety and depression symptoms. The general health status of patients with chronic non-specific abdominal complaints was impaired. Patients with IBS had more health problems in all areas than patients with NUD or other abdominal complaints.

Forty-eight per cent of our study population did not visit the GP for abdominal complaints during the previous year. Recent views on diagnosis and management of IBS state that once a positive diagnosis is made further investigations only need to take place when indicated (i.e. when alarm symptoms are present or in patients older than 45 years of age).[20-29] In our study, however, we found that physical examination and other diagnostic modalities were used relatively frequently for these patients.

For NUD patients, additional diagnostic modalities were applied frequently, including endoscopic examination. According to the guidelines of the Dutch College of General Practitioners for management of NUD in general practice,[30] endoscopic examination is allowed in the diagnostic phase of NUD. After this phase, it should be ordered only in case of suspicion of ulcer disease or in case of relapse of NUD for the second time in a one-year period.

In the group of patients with other abdominal complaints, diagnostic modalities were applied even more frequently. In 48% of the patients who visited the GP because of chronic non-specific abdominal complaints, reassurance was given. This is in accordance with the guidelines for the management of IBS.[25] Eighty-one per cent of patients with IBS received medication. This is high, considering that no single drug has shown to be effective in patients with IBS.[31] In 23% of patients with NUD, antispasmodics were used as treatment. (Antispasmodics are not part of usual care treatment of NUD.) In the treatment of IBS, antacids were prescribed for 11% of the patients. (Antacids are also not part of usual care in IBS.) In the treatment of other abdominal complaints, antacids, antispasmodics, and H_2-receptorantagonists were most frequently used. This all may suggest that there is diagnostic uncertainty caused by the overlap between NUD and IBS in one patient, as has been described by various authors.[3,32-34]

Of the patients who visited their GP during the previous 12 months for abdominal complaints, 20% were referred. Jacobs[8] *et al* found that 15% of patients with non-specific abdominal complaints were referred. Muris *et al*,[35] who studied patients with

Table 3. Therapeutic modalities advised or applied by the GP during the previous 12 months in patients with chronic non-specific abdominal pain in general practice (reported by the GPs).[a]

	Total population (*n* = 619)		1 visit to GP[b]								
			Total (*n* = 321)		NUD (*n* = 56)		IBS (*n* = 116)		Other (*n* = 149)		Between practice
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	range (%)
Reassurance	154	24.9	154	48.0	13	23.2	63	54.3	78	52.3	0.0–67.3
Counselling concerning psychosocial stress	59	9.5	59	18.4	7	12.5	25	21.6	27	18.1	0.0–35.3
Dietary advice	89	14.4	89	27.7	13	23.5	43	37.1	33	22.1	0.0–47.1
Medication	310	50.1	266	82.9	51	91.1	94	81.0	121	81.2	20.0–89.3
Paracetamol/aspirin	30	4.8	27	8.4	5	8.9	8	6.9	14	9.4	0.0–16.4
Antacids	99	16.0	82	25.5	22	39.3	13	11.2	47	31.5	0.0–64.7
Antispasmodics	115	18.6	106	33.0	13	23.2	52	44.8	41	27.5	0.0–42.9
Laxatives	31	5.0	27	8.4	5	8.9	8	6.9	14	9.4	0.0–20.0
Fibre supplements	34	5.5	30	9.3	1	1.8	18	15.5	11	7.4	0.0–32.1
Antidepressants	23	3.7	22	6.9	3	5.4	9	7.8	10	6.7	0.0–15.4
Proton pump inhibitors	24	3.9	22	6.9	6	10.7	5	4.3	11	7.4	0.0–11.5
H_2-receptorantagonists	43	6.9	36	11.2	9	16.1	10	8.6	17	11.4	0.0–16.4
Antiemetics	16	2.6	10	3.1	1	1.8	2	1.7	7	4.7	0.0–18.2

[a]Since more than one modality can be applied in one patient the sum of the column percentages may exceed 100%; [b]at least one visit for chronic non-specific abdominal complaints to the GP during the previous 12 months.

Table 4. Number of new referrals to medical specialists and allied care during the previous 12 months in patients with chronic non-specific abdominal complaints as reported by GPs.[a]

	Total population (*n* = 619)		1 visit[b]				
			Total (*n* =321)	NUD (*n* = 56)	IBS (*n* = 116)	Other (*n* = 149)	Between practice range (%)
	n	%	%	%	%	%	
No referral	550	88.8	80.4	83.9	82.8	77.2	50.0–100
Gastroenterologist	41	6.6	11.5	8.9	12.1	12.1	0.0–50.0
Social worker	4	0.6	1.2	0.0	0.0	2.7	0.0–6.3
Dietician	3	0.5	0.9	1.8	0.0	1.3	0.0–3.6
Psychologist	7	1.1	2.2	3.6	3.4	0.7	0.0–7.4
Gynaecologist	10	1.6	2.8	0.0	1.7	4.7	0.0–6.3
Surgeon	3	0.5	0.9	1.8	0.9	0.7	0.0–3.1
Other	6	1.1	1.8	1.8	1.8	2.1	0.0–17.8

[a]Since a patient can be referred to more than one specialist the sum of column percentages may exceed 100%; [b]at least one visit for chronic non-specific abdominal complaints to the GP during the previous 12 months.

non-acute abdominal pain, found that 17% of patients were referred within 15 months. In that study, 61% of patients had non-specific abdominal complaints. However, neither of these studies are completely comparable to our study because the patients in Jacobs's and Muris's studies did not all have chronic non-specific abdominal complaints.

We found differences on a number of relevant patient characteristics between responding and non-responding patients. Responders had a significantly shorter duration of complaints at the beginning of the study and visited the GP significantly more often than non-responders, for abdominal complaints as well as in general. This may suggest that the responding patients comprise a subgroup of patients who more often suffered from their abdominal complaints at the time they were asked to participate in this study. Non-responders probably would have responded differently to questions on characteristics of complaints, general health perception, and psychological assessment. Nevertheless, because the entire study population was used in describing the management of chronic non-specific abdominal complaints, the non-response did not have any consequences for our estimates of the frequencies of the use of diagnostic modalities, therapeutic interventions, and referrals. This study shows that chronic non-specific abdominal complaints have a great impact on patients. General health perception is clearly impaired and patients suffer from such psychological disturbances as depression and anxiety.

Fifty-two per cent of patients still seek help from their GP in the course of one year after a median duration of complaints of four years. Apparently, the other 48% find their own way of dealing with their complaints without help from their GP. Only 20% of patients are referred to secondary care. This means that when patients consult their GP (for chronic non-specific abdominal complaints) the largest part of the management of these complaints is done in general practice.

Not all of the GPs in our study acted according to the current views regarding diagnosis and management of IBS and NUD. Many diagnostic investigations were carried out and drugs were very often prescribed. This suggests that when these complaints become chronic, GPs still find indications for further investiga-

tions. Judging by the large practice range, GPs are not of one mind regarding diagnosis and treatment of chronic non-specific abdominal complaints. Prospective studies are needed to investigate the long-term clinical course of chronic non-specific abdominal complaints. Evaluation of guidelines regarding diagnosis and management of chronic non-specific abdominal complaints is important in reducing expensive and unnecessary investigations and treatments.

References

1. Thompson WG, Heaton KW. Functional bowel disorders in apparently healthy people. *Gastroenterology* 1980; **79:** 283-288.
2. Drossman DA, Sandler RS, McKee DC, Lovitz AJ. Bowel patterns among subjects not seeking health care. *Gastroenterology* 1982; **83:** 529-534.
3. Drossman DA, Li Z, Andruzzi E, *et al*. U.S. householder survey of functional gastrointestinal disorders. *Dig Dis Sci* 1993; **38:** 1569-1580.
4. Everhart JE, Renault PF. Irritable bowel syndrome in office-based practice in the United States. *Gastroenterology* 1991; **100:** 998-1005.
5. Harvey RF, Salih SY, Read AE. Organic and functional disorders in 2000 gastroenterology outpatients. *Lancet* 1983; **i:** 632-634.
6. Mitchell CM, Drossman DA. Survey of the AGA membership relating to patients with functional GI disorders. *Gastroenterology* 1987; **92:** 1282-1284.
7. Lamberts H. *Diagnosis in general practice.* Utrecht: Huisartsenpers, 1984.
8. Jacobs HM, Luttik A, de Melker RA, *et al*. Patiënten met niet-specifieke buikklachten en huisartsgeneeskundig handelen. Een eerste inventarisatie. *T Soc Gezondheidsz* 1993; **71:** 79-86.
9. Muris JWM, Starmans R, Fijten GH, *et al*. Abdominal pain in general practice. *Fam Pract* 1993; **10:** 387-400.
10. Thompson WG, Heaton KW, Smyth GT, Smyth C. Irritable bowel syndrome: the view from general practice. *Eur J Gastroenterol Hepatol* 1997; **9:** 689-692.
11. Metsemakers JFM, Höppener P, Knottnerus JA, *et al*. Computerised health information in the Netherlands: a registration network of family practices. *Br J Gen Pract* 1992; **42:** 102-106.
12. Lamberts H, Wood M. *The international classification of primary care.* Oxford: Oxford University Press, 1983.
13. Classification Committee of WONCA. *ICHPPC-2 defined. International classification of health problems in primary care.* Oxford: Oxford University Press, 1983.
14. Metsemakers JFM. *Unlocking patients' records in general practice for research, medical education and quality assurance: the registration Network Family Practices.* [PhD Thesis.] Amsterdam: Thesis Publishers, 1994.
15. Hunt SM, McEwen J, McKenna SP. Measuring health status: a new tool for clinicians and epidemiologists. *J Roy Coll Gen Pract* 1985; **35:** 185-188.
16. König-Zahn C, Furer JW, Tax B. Measuring health status: 1. General health. [In Dutch.] Van Gorcum Assen 1993; 100-104.
17. Derogatis LR, Rickels K, Kock AF. The SCL-90 and the MMPI: a step in the validation of a new self-report scale. *Br J Psychiatry* 1976; **128:** 280-289.
18. Arrindell WA, Ettema JHM. *SCL-90: a guideline to a multidimensional and psychopathology indictor.* [In Dutch.] Lisse: Swets Test Services, 1986.
19. Whitehead WE. Psychosocial aspects of functional gastrointestinal disorders. *Gastroenterol Clin North Am* 1996; **25:** 21-34.
20. Maxwell PR, Mendall MA, Kumar D. Irritable bowel syndrome. *Lancet* 1997; **350:** 1691-1695.
21. Lynn RB, Friedman LS. Irritable bowel syndrome. Managing the patient with abdominal pain and altered bowel habits. *Med Clin North Am* 1995; **79:** 373-390.
22. Camilleri M, Prather CM. The irritable bowel syndrome: mechanisms and a practical approach to management. *Ann Intern Med* 1992; **116:** 1001-1008.
23. Thompson WG, Gick M. Irritable bowel syndrome. *Semin Gastrointest Dis* 1996; **7:** 217-229.
24. Francis CY, Whorwell PJ. The irritable bowel syndrome. *Postgrad Med J* 1997; **73:** 1-7.
25. Drossman DA, Thompson WG. The irritable bowel syndrome: review and a graduated multicomponent treatment approach. *Ann Intern Med* 1992; **116:** 1009-1016.
26. Thompson WG. Irritable bowel syndrome: pathogenesis and management. *Lancet* 1993; **341:** 1569-1572.
27. Harris MS. Irritable bowel syndrome. A cost effective approach for primary care physicians. *Postgraduate Medicine* 1997; **101:** 215-226.
28. Almounajed G, Drossman DA. Newer aspects of the irritable bowel syndrome. *Gastroenterology* 1996; **23:** 477-495.
29. Dalton CB, Drossman DA. Diagnosis and treatment of irritable bowel syndrome. *Am Fam Physician* 1997; **55:** 875-880.
30. Numans ME, de Wit NJ, Geerdes RHM, *et al*. Dutch College of General Practitioners: guideline stomach complaints. [In Dutch.] *Huisarts en Wetenschap* 1996; **39:** 565-77.
31. Klein KB: Controlled treatment trials in the irritable bowel syndrome: a critique. *Gastroenterology* 1988; **95:** 232-241.
32. Talley NJ, Phillips SF, Bruce B, *et al*. Multisystem complaints in patients with the irritable bowel syndrome and functional dyspepsia. *Eur J Gastroenterol Hepatol* 1991; **3:** 71-77.
33. Agreus L, Svärdsudd K, Nyren O, *et al*. Irritable bowel syndrome and dyspepsia in the general population: overlap and lack of stability over time. *Gastroenterology* 1995; **109**: 671-680.
34. Holtmann G, Goebell H, Talley NJ. Functional dyspepsia and irritable bowel syndrome: is there a common pathophysiological basis? *Am J Gastroenterol* 1997; **92:** 954-959.
35. Muris JWM, Starmans R, Fijten GH, Knottnerus JA. One-year prognosis of abdominal complaints in general practice: a prospective study of patients in whom no organic cause is found. *Br J Gen Pract* 1996; **46:** 715-719.

Acknowledgement

This study was supported by the Netherlands Organisation for Scientific Research (NWO) number 940-31-032.

Address for correspondence

J W M Muris, Department of General Practice, Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands.