

Chapter 5



Follow-up study on health care use of patients with somatoform, anxiety and depressive disorders in primary care.

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Abstract

Objective Better management of affective and somatoform disorders may reduce consultation rates in primary care. We investigated the use of primary care for undifferentiated somatoform disorder, other somatoform disorders, anxiety and depressive disorders prospectively.

Methods In eight general practices 1046 consulting patients (25-79 yrs) were screened, and a stratified sample of 473 were interviewed using SCAN 2.1. We had electronic records of 400 participants regarding somatic diseases, medication and healthcare use through their general practitioner.

Results In the follow-up year patients with psychiatric disorders had more face-to-face contacts with the general practitioner than patients who had no psychiatric disorder. Undifferentiated somatoform disorder had an independent impact on the use of primary care after adjustment for anxiety and depressive disorders, resulting in 40% more consultations (IRR 1.4 (95% CI: 1.0-1.9)). Anxiety disorders had no independent effect.

Conclusion Health care planning should focus on the recognition and treatment of somatoform as well as depressive disorders.

Introduction

Psychiatric disorders may have a significant impact on consultation rates in primary care. Patients with anxiety and depressive disorders report more use of health care than patients without these disorders.^{1 2} A similar assumption can be made for somatoform disorders, considering the predominant presentation of physical symptoms.^{3 4 5} Additionally, hypochondriacal beliefs and high somatic concern have found to be related to a high utilisation of health care.^{6 7}

With an estimated prevalence rate between 13% and 27%, undifferentiated somatoform disorder is the most prevalent somatoform disorder in primary care.^{8 3} Somatization disorder and hypochondriasis are encountered less, with prevalence rates below 5%.⁹ In DSM-IV the diagnosis of undifferentiated somatoform disorder (USD) can be made when at least one medically unexplained physical symptom leads to substantial impairment for a minimum of 6 months.¹⁰ Hence, health-seeking behaviour is not an explicit part of the definition.

The comorbidity of somatoform disorders with affective disorders is substantial.^{11 12} E.g. in an earlier report on the SOUL-study, we found that one out of two patients with an anxiety/depressive disorder had a comorbid somatoform disorder in primary care.⁸ It is as yet unclear which portion of the health care use may be ascribed to each disorder. High health care use in patients with an anxiety/depressive disorder might well be the result of a comorbid somatoform disorder or vice versa.

We prospectively studied the use of primary care by patients with DSM-IV diagnoses of undifferentiated somatoform disorder, other somatoform disorders, anxiety - and depressive disorders. We aimed at assessing the independent contribution of each of the disorders to primary care utilisation while controlling for somatic disease.

Methods

Study design

The SOMatisation study of the University of Leiden (SOUL-study) was designed as a cohort study with a two-stage selection procedure for clinical assessment at baseline. In the initial stage high-risk patients were identified by means of screening questionnaires. In the second stage all high-risk patients and a sample of 15% of the low risk patients were invited for a psychiatric diagnostic interview.

All interviewed patients were followed prospectively. After a follow-up of 6 months a second set of questionnaires was sent to provide for information on self-

reported health care use and persistence of symptoms. After a follow-up of 12 months data were gathered on health care use in primary care using the electronic medical records of the general practitioner (GP).

Setting

The study took place in eight university-affiliated general practices in the vicinity of Leiden, The Netherlands, with approximately 21,500 enlisted patients. In the Netherlands the GP is the central gatekeeper for the provision of health care. All patients are listed with one GP and primarily consult him or her for all health problems.¹³ This system offers the GP the opportunity to have an overall insight in the patients' demands for health care. In addition, most conditions are treated in general practice and the GP indicates whether a referral to secondary care is appropriate. GPs play an important part in mental health care.¹⁴ If a referral is indicated for a somatoform or an affective disorder, the Dutch GP has the option of a primary care mental health psychologist or a mental health service. The electronic medical records of the GP cover all information, including reports from laboratories and specialists. As a consequence, GP records facilitate research on clinical assessment of reported symptoms.

Patient sample

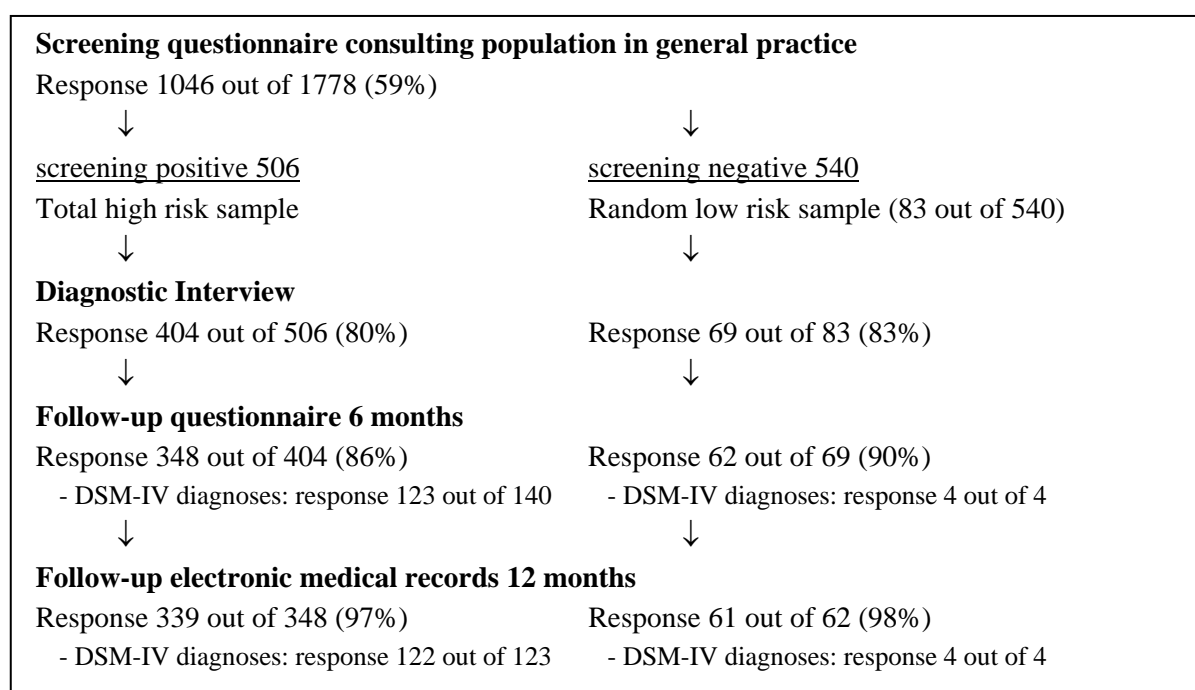
Between April 2000 and December 2001 a sample of 1778 attendees, aged 25 to 80, were sent the screening questionnaires by mail. After two weeks non-responders were sent a reminder including a copy of the questionnaires. For each practice the researchers included consecutive patients on 13 to 30 arbitrary days within a three-month period by using the (electronic) schedule of the GPs. To avoid language problems the study was limited to Dutch natives. Patients were excluded if they were unable to participate in an interview due to handicaps such as deafness, aphasia, or cognitive impairment. A total number of 1046 patients (59%) returned the questionnaire and indicated that they were willing to participate.

Participants completed the Physical Symptom Checklist (PSC)¹⁵ and the Hospital Anxiety and Depression Scale¹⁶ (HADS). The PSC is a checklist of 55 physical symptoms that were mentioned in the DSM-III classification.¹⁷ It includes a broad array of symptoms, covering most organ systems. The PSC has 51 non-gender specific items and four gender specific items, one for men and three for women. We excluded the gender-specific items from the analyses to rule out bias. There are 11 general/ neurological items, 10 autonomic items, 8 musculoskeletal/pain items, 13 gastrointestinal items, 5 urological/genital items and 4 items about feeling hot/cold. The presence of symptoms is rated on a severity scale from 0 to 3 (4-point Likert scale) for the preceding week. A symptom is rated as present for the scores 2 and 3:

‘bothersome often or most of the time during the previous week’; the total score ranges from 0 to 51. In the present study the internal consistency of the PSC was 0.88 (Cronbach’s alfa). The HADS consists of 14 questions on mental distress (7 questions on depression and 7 questions on anxiety); the total score ranges from 0-42. It contains no questions on physical symptoms. A total score of 15 or more on the HADS or a score of 5 or more on the PSC defined the high-risk sample.

A sample of patients was contacted by mail and telephone for an interview in person at their home address and 473 out of 589 responded (80%). We obtained complete follow-up data on health care use on 400 of the 473 patients (85%). (See table 1.)

Table 1. Flow-chart of the design and response of the SOUL study.



Clinical assessment of psychiatric disorders

WHO-certified psychologists used the Schedules for Clinical Assessment in Neuropsychiatry (SCAN 2.1)¹⁸ for the subsequent psychiatric diagnostic interviews. Throughout the study we held regular sessions with the interviewers to maintain the diagnostic standards. During the interview patients were asked about concurrent physical illnesses, and the interviewers made the clinical decision whether symptoms were ‘unexplained’ or not. The GP-researcher (IAA) supervised all interviews for medical diagnostic data. Whenever necessary, medical diagnostic data concerning symptoms were obtained from the individual general practitioners. When doubt remained the symptom was regarded as ‘explained’.

Current disorders were diagnosed with special emphasis on impairment. Scoring algorithms on DSM-IV diagnoses were derived from the official computer program. To obtain a better understanding of the comorbidity and to avoid arbitrary interpretations, we chose not to apply the hierarchic rules of DSM-IV. The interviewers did not classify the symptoms as part of a somatoform disorder or of an anxiety or depressive disorder at the time of the interview. All chronic somatoform disorders lasting at least 6 months were diagnosed: ‘Acute pain disorder’ and ‘Somatoform disorder Not Otherwise Specified’ were excluded. In this paper chronic pain disorder was regarded as undifferentiated somatoform disorder, and as such placed in the same group.¹⁹

Medical consumption

Self-report data on use of healthcare were obtained after a follow-up of 6 months. In the questionnaire patients were asked to report contacts with a psychiatrist, psychologist or social worker, visits to hospital or specialist and admission to hospital.

The electronic medical records of the GP were available through the central database of the general practice registration network Leiden RNUH-LEO, and provided data on medical history (‘health problems’), practice contacts and prescriptions. In these records health problems are coded according to the International Classification of Primary Care (ICPC-1)²⁰ and all contacts are linked to coded health problems, so that the start and duration of an episode is documented. In addition, relevant health problems for which no direct contact with the GP was needed were registered. Medication is coded by the Nordic ATC (Anatomical Therapeutical Chemical).

The GP-consultation rate was computed by counting all face-to-face contacts within office hours in the year after baseline assessment. The GP-prescription rate was computed by counting all prescriptions issued by the GP in the year after selection. The prescriptions for psycholeptics (antipsychotics, anxiolytics, hypnotics & sedatives) or antidepressants were calculated separately.

Health status

Somatic morbidity was assessed at baseline by means of the Cumulative Illness Rating Scale (CIRS-14), a morbidity index that includes a wide range of diseases. It classifies severity of disease in terms of impairment and required treatment (ranging from 0 to 4) for 14 categories (organ systems). When two diseases are present within a category, the disease with the higher score is counted. A total morbidity score is computed by adding the severity weights.^{21 22 23} We computerised the calculation of this score, using all available baseline data from RNUH-LEO. We excluded the category ‘psychiatric’

for the somatic morbidity score. The category 'psychiatric' will be presented separately.

For each patient the number of unique somatic prescriptions (issued by GP or specialist) was calculated in the year prior to selection (thus repeats were excluded). This was possible since both GPs and pharmacists use the same computer system. We assumed this number to be a measure of somatic morbidity, increasing the consultation rate generated by the CIRS. It can be seen as a measure of the stability of diagnoses. Moreover, new prescriptions always generate GP-contact.

Analyses

Non-response analyses were conducted on gender, age, consultation rate and prescriptions in the year preceding baseline. Non-response on the screening questionnaire was higher among younger male patients. The consultation rate among non-responders did not differ from responders: 5.3 (se 0.2) versus 5.7 (se 0.2). Given the fact that we included consulting patients the number that had received one or more prescriptions of psycholeptics or antidepressants in the preceding year was higher than one would expect in a population sample, that is 26% and 15% respectively. Response was not affected by use of medication. Among patients with or without prescriptions of psycholeptics response rates were 61% and 60% respectively (Chisq, $p=0.19$). Among patients with or without prescriptions of antidepressants response rates were 62% and 58% respectively (Chisq, $p=0.30$). Non-responders to the interview scored on average 2 points higher on the distress symptom score (HADS total) than responders on the screening-questionnaire at baseline. Again, the consultation rate and use of psycholeptics or antidepressants among non-responders did not differ from responders.

Of the 473 interviewed patients 60 patients had an anxiety and/or depressive disorder and 119 patients had a somatoform disorder. The 119 patients with a somatoform disorder had a total of 121 diagnoses: 93 undifferentiated somatoform disorder, 13 chronic pain disorder, 9 hypochondriasis, 4 somatisation disorder and 2 conversion disorder (body dysmorphic disorder was not diagnosed). A more detailed description of prevalence rates and comorbidity can be found elsewhere.⁸ For the analyses patient numbers were weighted by the inverse of their probability of selection to adjust for differential sampling. This made figures representative for the original population.

GP-consultation rate was the main outcome measure. Because of the skewed distribution both averages and median were calculated. Incidence rate ratios (IRR) are presented to quantify the influence of the presence of psychiatric disorders on GP consultation rate. E.g., an IRR of 1.5 for disorder X is interpreted as an increase in consultation rate by 50% when disorder X is present.²⁴ IRRs were obtained from Poisson regression models. Multivariate analyses were performed in STATA 6.0 by

Table 2. Baseline measures. Data are weighted for the sampling scheme.

	None of the mental disorders (n=274)	Anxiety or depressive disorder (n=51)	Somatoform disorders, undifferentiated * (n=94)	Somatoform disorder, others** (n=12)	Total (n=400)
Patient characteristics (questionnaire)					
Gender (men)	28 %	28 %	20 %	17 %	28 %
Age: - 65 and over	23 %	4 %	4 %	0 %	17 %
- mean (se)	52 (0.8)	43 (1.3)	45 (1.0)	44 (2.8)	49 (0.6)
Physical symptoms [#] , mean (se)	4 (0.3)	11 (1.1)	10 (0.7)	15 (3.0)	6 (0.3)
Distress symptoms ^{##} , mean (se)	8 (0.3)	21 (1.1)	15 (0.8)	20 (2.3)	11 (0.4)
Health status					
Somatic morbidity, mean (se):					
- CIRS somatic morbidity score	6.8 (0.2)	7.5 (0.5)	7.0 (0.4)	6.8 (0.9)	6.9 (0.2)
- Number of unique somatic prescriptions (GP or other)	5.0 (0.3)	6.3 (0.7)	6.3 (0.5)	5.7 (0.9)	5.4 (0.2)
Psychiatric morbidity, mean (se):					
- CIRS psychiatric severity score	0.4 (0.0)	1.5 (0.1)	1.0 (0.1)	1.7 (0.2)	0.6 (0.0)
Use of anxiolytics (self report at time of interview)	3 %	14 %	15 %	8 %	6 %
Use of antidepressants (self report at time of interview)	5 %	37 %	25 %	42 %	12 %

* Undifferentiated somatoform disorder included chronic pain disorder.

** Other somatoform disorders: hypochondriasis, somatization disorder and conversion disorder.

PSC total score

HADS total score

Poisson regression models that took into account the sample scheme (SVYPOIS pweight stratum cluster).²⁵ In the first step models were built including indicator terms for the psychiatric disorders (not shown in results). In the second step the effect of potential confounding variables was tested by including gender, age and somatic morbidity (CIRS 'somatic' and number of unique somatic prescriptions) in the model.

Results

Only a small percentage of the patients with identified DSM-IV disorders was over 65 (between 0% and 4%). Patients without psychiatric disorders had an average age of 51 years, and 23% were over 65 (Table 2). This is in line with the low prevalence rates in the age group 65-79 years we reported earlier.⁸ Somatic (co)morbidity was equally distributed over all groups. Compared to patients without psychiatric disorders, patients with DSM-IV-defined disorders reported a lot more physical symptoms on the PSC and used more antidepressants and anxiolytics.

Use of primary care during follow-up is summarised in table 3. Patients with none of the mental disorders had an average of 4.8 contacts with the GP during the follow-up year. This is in accordance with figures reported by the national statistics.³¹ The patient groups with psychiatric disorders had more GP-consultations than the group without disorders. Despite the seemingly similar somatic morbidity as measured by the CIRS (Table 2), the number of non-psychiatric (somatic-related) prescriptions was higher in patients with psychiatric disorders. Data from the follow-up questionnaire (follow-up at 6 months) showed that many patients with disorders had had contact with a psychiatrist, psychologist or social worker: respectively 59%, 68% and 39% for patients with anxiety or depressive disorders, undifferentiated somatoform disorders, or other somatoform disorders.

Table 4 shows the extent to which GP consultation was predicted independently by psychiatric disorders and somatic morbidity. All models were additionally corrected for patients' age and gender and the number of unique somatic prescriptions (IRRs not shown).

In the first model (model 1) undifferentiated somatoform disorder contributed independently to the GP consultation rate: patients with an undifferentiated somatoform disorder had a 1.4 times higher consultation rate than patients without these disorders. Other somatoform disorders and depressive disorders also showed this

Table 3. Follow-up measures of medical consumption. Data are weighted for the sampling scheme.

	None of the mental disorders (n=274)	Anxiety or depressive disorder (n=51)	Somatoform disorders, undifferentiated * (n=94)	Somatoform disorder, others** (n=12)	Total (n=400)
Medical consumption					
<i>Data from patient records (1 yr):</i>					
Face-to-face contact with GP [#] : mean (se) median	4.8 (0.2) 4	7.5 (0.9) 7	6.9 (0.6) 5	9.8 (3.5) 5.5	5.5 (0.3) 4
Somatic prescriptions by GP ^{&} : mean (se) median % use	8.0 (0.6) 5 86 %	13.0 (3.6) 6 82 %	12.4 (1.7) 8 95 %	14.3 (4.2) 8.5 92 %	9.7 (0.7) 5 87 %
Antidepressants by GP ^{&} : mean (se) median % use	0.4 (0.1) 0 7 %	3.5 (1.0) 0 40 %	2.1 (0.4) 0 32 %	4.7 (2.1) 1 58 %	1.0 (0.2) 0 16 %
Psycholeptics by GP ^{&} : mean (se) median % use	0.6 (0.1) 0 20 %	4.2 (2.5) 0 37 %	2.3 (0.6) 0 46 %	4.9 (3.2) 0 25 %	1.5 (0.4) 0 27 %
<i>Data from questionnaire (½ yr):</i>					
- contact with psychiatrist, psychologist or social worker	14 %	59 %	39 %	68 %	23 %
- visit to hospital or specialist	48 %	43 %	48 %	33 %	48 %
- admission to hospital	7 %	14 %	10 %	0 %	8 %

* Undifferentiated somatoform disorder included chronic pain disorder.

** Other somatoform disorders: hypochondriasis, somatization disorder and conversion disorder.

Consultations and visits within office hours

& GP prescriptions include repeats by GP of medication that was initiated by specialists

tendency, though they were not significant. The presence of an anxiety disorder did not contribute independently to the consultation rate. Patients with a high level of somatic morbidity had a 1.6 times higher consultation rate compared to patients with a low level of somatic morbidity.

In model 2 the effect of having a single psychiatric disorder was compared to the effect of having two or more psychiatric disorders. The GP consultation rate increased 1.4 times when a single disorder (somatoform or depressive or anxiety) was diagnosed, and 1.8 times when two or more of these disorders were present.

Table 4. Predictors for GP-consultation rate (incidence rate ratios (IRRs) from multivariate Poisson regression models^{##}).

	GP consultation	
	IRR	95% CI
Model 1[#]		
Undifferentiated somatoform disorder [§]	* 1.4	(1.1-1.7)
Other somatoform disorders ^{§§}	1.2	(0.6-2.2)
Depressive disorders	1.4	(0.8-2.3)
Anxiety disorders	1.0	(0.8-1.4)
CIRS somatic morbidity score		
- low score (<5)	1.0	reference
- intermediate score (5-8)	1.2	(1.0-1.5)
- high score (≥9)	** 1.6	(1.3-2.0)
Model 2[@]		
Psychiatric disorders		
- none of the psychiatric disorders (n=274)	1.0	reference
- a single disorder (n=91)	* 1.4	(1.1-1.8)
- two or more disorders (n=35)	** 1.8	(1.2-2.5)
CIRS somatic morbidity score		
- low score (<5)	1.0	reference
- intermediate score (5-8)	1.2	0.9-1.6
- high score (≥9)	** 1.6	1.3-2.0

^{##} All models were additionally corrected for the sampling scheme and for patients' age and gender and the number of unique somatic prescriptions.

[§] Undifferentiated somatoform disorder included chronic pain disorder.

^{§§} Other somatoform disorders: hypochondriasis, somatization disorder, conversion disorder.

[#] Model 1: reference groups are patients without a disorder in the specified diagnostic group (including patients without any of the psychiatric disorders).

[@] Model 2: reference groups are patients without any of the specified disorders; a single disorder = a somatoform or depressive or anxiety disorder; two or more disorders = a somatoform disorder with co-morbid anxiety or depressive disorder, or anxiety disorder with co-morbid depressive disorder.

* p ≤ 0.05; ** p ≤ 0.005

Discussion

Main findings

In the follow-up year patients with psychiatric disorders had more face-to-face contacts with the GP than patients without psychiatric disorders. The impact on the use of primary care by patients with somatoform disorders was comparable to patients with depressive or anxiety disorders. In the GP's waiting room one out of six patients will have a somatoform disorder and one out of 13 will have an anxiety or depressive disorder.⁸ As we found an average consultation rate of at least 7 within a year, a GP in the Netherlands will see approximately 45 patients with these psychiatric disorders every week. Undifferentiated somatoform disorder contributed independently to a higher use of primary care after adjustment for anxiety and depressive disorders: the GP consultation rate increased by 40%.

39%-68% of patients with a psychiatric disorder reported mental health treatment in primary or secondary care in 6 months. We consider this a valid outcome, given the fact that we diagnosed current disorders with clinical impairment (DSM-IV). In a mental health survey in the Dutch population (NEMESIS) it was found that 34% of patients with mood disorders and 18% of patients with anxiety disorders (DSM-III-R) had used ambulatory mental health care in the past 12 months, not including primary care psychologist or social worker (as we did). Moreover, they found that people who had a lifetime history of psychiatric disorder but who had been disorder-free in the past 12 months still had a four times higher use of mental health care compared to persons with no lifetime disorder.¹

Limitations of the study

Despite the scale of the SOUL study, a comprehensive study including approximately 1000 consulting patients with interviews and follow-up of 400 selected patients, the power to estimate health care use for the more specific somatoform disorders such as somatization disorder was limited.⁸ Disorders related to substance abuse, psychotic disorders or personality disorders were not taken into account.

For the main outcome measure, GP consultation rate, we used the reliable electronic medical records of the GP. To get information on health care use other than GP we relied on self-report data. Although the validity of self-report data is uncertain, in many studies it is the only available resource.

When comparing consultation rates of disorders one should be aware of the effects of prescribing medication. Particularly when dealing with anxiety and depressive disorders a certain number of consultations will be initiated by the GP to monitor the prescribed medication. Since the SOUL-study focused on current

psychiatric disorders most patients would not be in a 'stable phase' with respect to the use of medication. On the other hand, in the 'healthy group' there was a substantial number of patients with current use of psycholeptics or antidepressants, possibly disorders in remission.

Health care use and co-morbidity

An increased use of primary care due to depressive disorders has been reported repeatedly. In a general medical setting in the USA Luber found that patients diagnosed as depressed had a significantly higher resource utilization of all types; they had an average of 5.3 visits compared to 2.9 visits for non-depressed patients.²⁶ Even symptoms of depression have been found to increase consultation.^{27 28} Considering the high rate of co-morbidity, a substantial number of depressed patients will have an additional somatoform disorder.^{11 12 8}

This paper establishes that patients with an undifferentiated somatoform disorder more often visited the GP than patients without psychiatric disorders, independent of the presence of co-morbid anxiety or depressive disorders. Other studies gave indications of an increased use of primary care in patients with an undifferentiated somatoform disorder^{4 29 3}, but they did not take into account the considerable overlap between depressive and somatoform disorders.

There are several aspects of the diagnosis 'undifferentiated somatoform disorder' that may explain the patients' reasons for consultation, such as diagnostic reassurance and management of symptoms or limitations. This is in accordance to findings that somatoform disorders contribute independently to an increase in symptoms and functional limitations, after adjustment for co-morbid affective disorders.^{11 8}

Implications of the study

Although we realize that the classification of somatoform disorders has been debated³⁰ and in particular alternatives of abridged forms of somatization disorder have been studied in primary care, we chose to diagnose somatoform disorders according to the prevailing DSM-IV classification. We found that the prevalent entity "undifferentiated somatoform disorder" has a prognostic value in terms of health care utilization. Since both depressive and somatoform disorders contributed independently to the use of primary care, we believe that health care planning should focus on recognition and treatment of both depressive and somatoform disorders. An integrative approach for both disorders could be advantageous for patient and doctor.

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References

1. Bijl RV, Ravelli A. Psychiatric morbidity, service use, and need for care in the general population: results of The Netherlands Mental Health Survey and Incidence Study. *Am J Public Health* 2000; 90:602-607.
2. Koopmans GT, Donker MC, Rutten FH. Common mental disorders and use of general health services: a review of the literature on population-based studies. *Acta Psychiatr Scand* 2005; 111:341-350.
3. Fink P, Sorensen L, Engberg M, Holm M, Munk-Jorgensen P. Somatization in primary care: prevalence, health care utilization, and general practitioner recognition. *Psychosomatics* 1999; 40:330-338.
4. Lynch DJ, McGrady A, Nagel R, Zsembik C. Somatization in Family Practice: Comparing 5 Methods of Classification. *Prim Care Companion J Clin Psychiatry* 1999; 1:85-89.
5. Schmitz N, Kruse J. The relationship between mental disorders and medical service utilization in a representative community sample. *Soc Psychiatry Psychiatr Epidemiol* 2002; 37:380-386.
6. Hollifield M, Paine S, Tuttle L, Kellner R. Hypochondriasis, somatization, and perceived health and utilization of health care services. *Psychosomatics* 1999; 40:380-386.
7. Jyvasjarvi S, Joukamaa M, Vaisanen E, Larivaara P, Kivela S, Keinanen-Kiukaanniemi S. Somatizing frequent attenders in primary health care. *J Psychosom Res* 2001; 50:185-192.
8. De Waal MW, Arnold IA, Eekhof JA, van Hemert AM. Somatoform disorders in general practice: Prevalence, functional impairment and comorbidity with anxiety and depressive disorders. *Br J Psychiatry* 2004; 184:470-476.
9. Escobar JI, Gara M, Waitzkin H, Silver RC, Holman A, Compton W. DSM-IV hypochondriasis in primary care. *Gen Hosp Psychiatry* 1998; 20:155-159.
10. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington D.C.: APA, 1994.
11. Kroenke K, Spitzer RL, deGruy FV 3rd, Hahn SR, Linzer M, Williams JB et al. Multisomatoform disorder. An alternative to undifferentiated somatoform disorder for the somatizing patient in primary care. *Arch Gen Psychiatry* 1997; 54:352-358.
12. Jacobi F, Wittchen HU, Holtung C, Hofler M, Pfister H, Muller N et al. Prevalence, co-morbidity and correlates of mental disorders in the general population: results from the German Health Interview and Examination Survey (GHS). *Psychol Med* 2004; 34:597-611.

13. Boerma WGW, De Jong FAJM, Mulder PH. Health Care and General Practice across Europe. Utrecht, The Netherlands: 1993.
14. Boerma WG, Verhaak PF. The general practitioner as the first contacted health professional by patients with psychosocial problems: a European study. *Psychol Med* 1999; 29:689-696.
15. De Waal MWM, Arnold IA, Spinhoven P, Eekhof JAH, Assendelft WJJ, Van Hemert AM. Detection of psychiatric disorders in primary care with checklists for mental and physical symptoms. Submitted.
16. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983; 67:361-370.
17. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Third Edition. Washington D.C.: APA, 1980.
18. WHO. SCAN 2.1. Vragenschema's voor de klinische beoordeling in de neuropsychiatrie: deel 1. Genève: Rijksuniversiteit Groningen, afdeling Sociale Psychiatrie, 1999.
19. Grabe HJ, Meyer C, Hapke U, Rumpf HJ, Freyberger HJ, Dilling H et al. Somatoform pain disorder in the general population. *Psychother Psychosom* 2003; 72:88-94.
20. Lamberts H, Wood M. International Classification of Primary Care (ICPC). Oxford: Oxford University Press, 1990.
21. Linn BS, Linn MW, Gurel L. Cumulative Illness Rating Scale. *J Am Geriatr Soc* 1968; 16:622-626.
22. Extermann M. Measuring comorbidity in older cancer patients. *Eur J Cancer* 2000; 36:453-471.
23. Miller MD, Towers A. A manual of guidelines for scoring the Cumulative Illness Rating Scale for Geriatrics (CIRS-G). Pittsburgh: University of Pittsburgh, 1991.
24. Scott Long J. Regression models for categorical and limited dependent variables. Thousand Oaks, California: SAGE Publications, 1997.
25. Stata Corporation. Stata Reference Manual Release 6. College Station, Texas, USA: Stata Press, 1999.
26. Luber MP, Hollenberg JP, Williams-Russo P, Didomenico TN, Meyers BS, Alexopoulos GS et al. Diagnosis, treatment, comorbidity, and resource utilization of depressed patients in a general medical practice. *Int J of Psychiatry Med* 2000; 30(1):1-13.
27. Rowan PJ, Davidson K, Campbell JA, Dobrez DG, MacLean DR. Depressive symptoms predict medical care utilization in a population-based sample. *Psychol Med* 2002; 32:903-908.
28. Dowrick CF, Bellon JA, Gomez MJ. GP frequent attendance in Liverpool and Granada: the impact of depressive symptoms. *Br J Gen Pract* 2000; 50:361-365.
29. Grabe HJ, Meyer C, Hapke U, Rumpf HJ, Freyberger HJ, Dilling H et al. Specific somatoform disorder in the general population. *Psychosomatics* 2003; 44:304-311.
30. Mayou R, Kirmayer LJ, Simon G, Kroenke K, Sharpe M. Somatoform Disorders: Time for a New Approach in DSM-V. *Am J Psychiatry* 2005; 162:847-855.

31. Statistics Netherlands: www.cbs.nl/en/organisation/organisation.htm,
www.cbs.nl/en/figures/keyfigures/population-society.htm#health-welfare.