

# Somatic Symptoms in Primary Care: Etiology and Outcome

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*Although somatic complaints are the predominant reason for seeking general medical care, their etiology and prognosis remain poorly understood. In a random sample of the records of all patients visiting an urban primary care clinic during four 1-month periods, 289 patients had one or more somatic symptoms, a total of 433 symptoms. Using explicit criteria, physician raters classified nearly half (48%) of the symptoms as either psychiatric or idiopathic in etiology. Reviewing follow-up notes for 12 months after the index visit, raters found that at least one-fourth of the symptoms persisted. Independent predictors of symptom persistence were prior visits for the same symptom, symptom type (i.e., headache or back pain), male gender, and greater medical comorbidity (i.e., seven or more medical diagnoses). Developing better management strategies for prevalent, medically unexplained, persistent somatic symptoms is a health care priority.*

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Somatic symptoms account for more than half of all outpatient encounters, or an estimated 400 million clinic visits in the United States each year.<sup>1</sup> Although the prognosis for the majority of common symptoms as they present in primary care is favorable in terms of mortality or serious morbidity, these symptoms do account for substantial health care utilization and costs.<sup>2</sup> Moreover, inadequacies in our current understanding of the etiology and epidemiology of common symptoms results in diagnostic uncertainty, ineffective management, inability to meet patients' expectations, and frustration among providers.<sup>3–5</sup> The goals of this study were to establish by record review in a primary care practice the frequency of somatic symptoms, their probable etiology, and their outcome over 12 months. In particular, we wanted to determine which factors are associated with a physical etiology of a symptom at baseline and which variables predict poor symptom outcome (i.e., persistence) at follow-up.

## METHOD

### Setting

The study was conducted in the primary care clinic of Wishard Hospital, a 600-bed public teaching hospital that

provides care for residents of Indianapolis. The clinic is staffed by internal medicine faculty and residents and has more than 40,000 patient visits annually. Encounter information, including information on prescriptions, diagnostic tests, referrals, and diagnoses, is captured in the electronic medical record of the Regenstrief Medical Record System.

### Patient Sample

A record of all Wishard clinic visits is stored electronically in the Regenstrief Medical Record System. Patient lists were generated for all primary care clinic visits during the months of March, June, September, and December, 1997. These four months were selected to minimize potential seasonal bias in symptom-related visits. The visits for each month were then randomly arranged in a list by using a computerized random number table. A total of 633

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unique patient charts were included in the list. Chart auditing for a particular month continued until 75 records of visits with a physician's note documenting one or more somatic symptoms had been obtained. Patients were enrolled in the study only once; thus, repeat visits by the same patient were not audited. From this random sample of 300 unique patients with one or more symptoms, 289 were ultimately included in our analysis (11 cases were inadvertent patient duplications or had other technical difficulties).

Of the 633 unique patient charts reviewed from the randomly generated list of primary care clinic visits, 289 had a physician's note for the index clinic visit in which one or more symptoms were documented, 168 had a note but no somatic symptoms were documented, and 176 did not have a note for the date of the purported clinic visit. The latter group included primary care clinic visits where a direct encounter with a physician was not required (e.g., nurse visits or visits for prescription refills, blood pressure checks, or diabetes education) or visits where a physician encounter may have occurred but a visit note was not filed in the duplicate medical clinic record. Thus, there were a total of 457 patients for whom a physician's note on the index visit could be retrieved, and 289 (63%) of those patients had one or more somatic symptoms documented. The three patient groups (those with no note, those with a note but no symptoms, and those with one or more symptoms) were similar in age, gender, race, insurance status, and number of health care visits during the 12 months before and after the index visit.

### Chart Audit

For each eligible patient, data were collected on age, gender, race, insurance status, provider relationship (new or established), and comorbidity as determined by the number of medical, psychiatric, and symptom/symptom syndrome diagnoses in the patient's cumulative problem list in the Regenstrief Medical Record System. In addition, all somatic symptoms documented for the index clinic visit were recorded in a standardized abstract form. For each symptom, two primary variables were determined—final classification of symptom etiology and symptom outcome 12 months after the index visit. All charts were reviewed by one of two physician investigators (A.A.K. and A.K.), and a 25% sample of the charts was independently audited by both investigators to determine interrater agreement on the two primary study variables of symptom etiology and symptom outcome.

The probable symptom etiology was classified according to the criteria outlined in Appendix 1. The categories were physical, psychiatric, idiopathic, and symptom syndrome. A fifth category (mixed psychiatric-physical) was used if the physician's note implied that both a physical disorder and psychiatric factors were causing or contributing to the symptom. The physician rater first reviewed only the index note and made an *initial* etiological classification and then reviewed all follow-up notes before making a *final* etiological classification. Although the final etiological classification was used in most analyses, this sequential approach allowed us to determine how often initial diagnoses subsequently had to be revised and, in particular, how often symptoms were markers for occult but serious disorders. Interrater agreement was good, with a kappa of 0.75 for both initial and final etiological classifications. The physician raters also recorded whether their diagnostic certainty regarding etiological classification was high or not high.

Symptom outcome was determined by reviewing all physician notes for the 12 months after the index visit. We recorded symptom outcome according to the physician's note for the last visit that mentioned the symptom during this 12-month period. The categories were symptom resolved, symptom improved, symptom unchanged, symptom worse, or outcome not mentioned. Interrater agreement for the outcome classification was excellent, with a kappa of 0.84.

Secondary symptom-specific variables that were abstracted from the record included 1) duration of symptom; 2) type of visit (i.e., first visit for that symptom, return visit but symptom improved, return visit but symptom not improved, visit for chronic or recurrent symptom); 3) whether the symptom was the principal reason for that clinic visit, rather than being mentioned incidentally during a visit for some other problem; 4) intended follow-up interval; and 5) actions specific to the symptom that were taken by the physician, including tests ordered, medications prescribed, nonpharmacological treatments prescribed, and referrals made to other clinics.

### Analysis

Descriptive statistics were calculated for all study variables. Univariate comparisons between groups were made by using the chi-square test for categorical variables and analysis of variance for continuous variables. Multiple logistic regression models were constructed to determine

which variables were independently associated with the two primary dependent variables: symptom etiology and 12-month outcome. Variables entered into the models included were those for which significant differences were found in the univariate analyses as well as factors felt to be potentially clinically relevant, such as demographic characteristics. Additional models were run to determine whether interaction among the independent variables was present.

## RESULTS

The 289 patients with symptoms had a mean age of 55.5 years (SD = 16.4). A total of 73% (N = 211) were women, 60% (N = 173) were African American, and 39% (N = 113) were non-Hispanic white. These patients had a total of 433 somatic symptoms documented on their index visit. The 289 patients included 187 (65%) patients with one symptom, 67 (23%) with two symptoms, 29 (10%) with three symptoms, and six (2%) with four or five symptoms. Patients with a single symptom were demographically similar to those with multiple symptoms. For the remainder of this paper, symptoms rather than patients are used as the unit of analysis.

The frequency of specific types of symptoms is summarized in Table 1. Pain complaints of some type constituted 47% (N = 201) of all symptoms. Back pain, headache, and pains involving the lower or upper limbs were the most common locations of pain. Dyspnea, cough, and other respiratory complaints were the most common non-pain symptoms.

### Etiological Classification

Table 2 summarizes the patient and visit characteristics for symptoms with the etiological classifications of physical, idiopathic, and psychiatric symptoms. Few symptoms were classified as symptom syndrome (five symptoms) or mixed psychiatric-physical (10 symptoms); therefore, the symptom syndrome symptoms were included in the idiopathic category, and the mixed psychiatric-physical symptoms were included in the psychiatric category. Among the three broad categories, physician raters classified 52% of symptoms as physical in etiology, 37% as idiopathic, and 10% as psychiatric.

As shown in Table 2, physician raters had high diag-

nostic certainty when classifying a symptom as physical in etiology, both after the index visit and after reviewing all follow-up information. Diagnostic certainty was low for symptoms initially classified as psychiatric but increased substantially with follow-up information. Physician raters were least confident in classifying a symptom as idiopathic in both their initial and final classification.

Predictors of a physical etiology for a symptom were evaluated by using logistic regression analysis (in which psychiatric and idiopathic etiologies were collapsed into a single *nonphysical* category). Table 3 shows the factors that were independently associated with a physical etiology. Physician raters were much more likely to have high diagnostic certainty for symptoms they classified as physical in etiology than for those classified as nonphysical (odds ratio = 10.1, 95% confidence interval [CI] = 6.0–17.2). Other factors that approximately doubled the likelihood of a physical etiology were a first visit for the symptom or a return visit at which symptom improvement was noted, a visit with a new rather than established provider, tests ordered or medications prescribed for the symptom, and African American race.

### Symptom Outcome

Overall, 26% of the symptoms (N = 112) were documented as not improved at follow-up, 19% (N = 82) were documented as improved, and 55% (N = 239) did not have any outcome mentioned. Table 4 shows the factors independently associated with symptom persistence, using all of the cases (i.e., collapsing the totals for symptoms that were improved and not mentioned into a single *nonpersistent* category). The strongest predictor of symptom persistence was a chronic or recurrent symptom for which there had been prior visits (odds ratio = 4.9, 95% CI = 2.9–8.0). Male gender, symptom type (i.e., headache or back pain), and higher medical comorbidity (i.e., seven or more medical diagnoses noted on the cumulative problem list) all made it 1.5 to 2 times more likely a symptom would persist. Younger age made it more likely a symptom would persist and diagnostic testing made it less likely, but these two predictors were only marginally significant.

In a second logistic regression model that included only the 195 symptoms for which symptom outcome was actually documented, three independent predictors emerged: a chronic or recurrent symptom for which there had been prior visits (odds ratio = 2.9, 95% CI = 1.5–5.5), age less than 60 years (odds ratio = 2.3, 95% CI = 1.3–4.5), and a nonphysical etiology (odds ratio = 2.1, 95%

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CI = 1.1–3.9). Finally, all three logistic regression models (one for etiology and two for outcome) were rerun by entering interaction terms for the independent variables. No interactions contributed to the improvement of predictive power of the model as indicated by rank correlation measured by the *c*-index.

Serious diagnoses unsuspected at the index visit did not appear during follow-up. Only 14 symptoms in 11 patients were classified as idiopathic at the index visit and were reclassified as physical after the physician raters reviewed all follow-up notes. The data for these 11 patients (in patients with several symptoms, all symptoms were due to the same cause) showed that the final diagnosis was already part of the differential diagnosis at the index visit for five patients and represented only a minor change from the initial diagnosis for four patients. For only two patients was there a major shift from the index visit to the final diagnosis: leg pain initially thought to be osteoarthritis was eventually diagnosed as diabetic neuropathy, and nonspecific dizziness was later felt to be due to coronary artery disease. Eighteen symptoms that were initially considered physical in etiology were ultimately classified as idiopathic, and nine symptoms initially considered idiopathic

were subsequently classified as psychiatric. It is interesting to note that no symptom initially classified as psychiatric was later classified as physical, nor was any symptom initially deemed physical subsequently classified as psychiatric.

### Specific Symptom Types

The number of cases of any specific type of symptom (Table 1) was too small to do statistical analyses. However, we examined for major differences among symptoms for our two primary variables—etiology and outcome. Symptoms that were classified as physical in more than 80% of cases included upper respiratory infection symptoms, cough, dermatological complaints, and swelling. In contrast, headache and back pain were each classified as physical in only one-fourth of cases. Back pain was the symptom most often classified as idiopathic (71% of cases). Regarding outcome, back pain and headache were most likely to persist (45% and 41% of the cases, respectively). Most other symptoms persisted in 20% to 33% of cases.

### DISCUSSION

Slightly more than half of the somatic symptoms examined in this study were classified as probably physical in etiology, more than a third were classified as idiopathic, and 10% were classified as psychiatric. In an earlier chart review study of symptoms in primary care, we classified three-fourths of somatic symptoms as idiopathic and only 16% as physical.<sup>6</sup> In three other studies, the proportion of symptoms classified as idiopathic was lower, at 20%,<sup>7</sup> 31%,<sup>8</sup> and 32%,<sup>9</sup> respectively. Our present study findings, combined with those of the previous four reports, suggest that at least one-third of somatic symptoms reported by patients can be classified as idiopathic (i.e., symptom-only) in etiology.

The strongest correlate of a physical etiology was high diagnostic certainty of the physician rater. Although the rater's diagnostic certainty may not correspond exactly with the diagnostic certainty of the primary care physician caring for the patient, the physician rater used only data documented by the primary care physician. If future studies directly querying primary care physicians about their diagnostic certainty verify our findings from physician raters, this verification would suggest that clinicians are much more confident when classifying a somatic symptom as physical in etiology than when categorizing it as idiopathic or psychiatric. Other correlates of a physical etiology in-

**TABLE 1. Frequency Distribution of Specific Somatic Symptoms Documented in the Charts of a Random Sample of Patients Visiting an Urban Primary Care Clinic During Four 1-Month Periods (N = 289)**

Somatic Symptom	N	Percent of All Somatic Symptoms (N = 433)
Back pain	42	9.7
Lower limb pain	39	9.0
Upper limb pain	26	6.0
Headache	26	6.0
Dyspnea	25	5.8
Cough (other than upper respiratory infection)	25	5.8
Pain, other	24	5.5
Upper respiratory infection symptoms	21	4.8
Abdominal pain	19	4.4
Chest pain	19	4.4
Swelling	16	3.7
Dermatologic	13	3.0
Dizziness	10	2.3
Sleep complaints	10	2.3
Fatigue	9	2.1
Nasal symptoms	6	1.4
Pain in multiple joints	6	1.4
Nausea	5	1.2
Abnormal sensory symptoms	5	1.2
Gastroenteritis symptoms	5	1.2
Other symptoms	82	18.9

cluded a first visit or a visit with a new provider (or a return visit but with symptom improvement), African American race, and two physician actions in response to the symptom—prescription of medications or ordering of diagnostic tests.

Classification of symptom etiology at the initial visit was correct in the vast majority of cases, and in only two cases was there a diagnostic shift of any major clinical importance. These findings substantiate those of a few previous studies that have suggested that the history and

physical examination provide 75% or more of the diagnostic information, that primary care physicians' initial diagnostic impressions are quite accurate, and that "missed" serious diagnoses are uncommon in patients presenting with somatic complaints.<sup>3,6,10-16</sup>

Although only 10% of symptoms were classified as probably psychiatric, no systematic psychiatric screening or diagnostic measures were applied in this naturalistic study. Depressive and anxiety disorders are present in 50% or more of patients with unexplained, persistent, or mul-

**TABLE 2. Etiology of Somatic Symptoms Documented in the Charts of a Random Sample of Patients Visiting an Urban Primary Care Clinic During Four 1-Month Periods (N=289), by Characteristics of the Patient, Visit, and Symptom<sup>a</sup>**

Variable	Symptom Etiology						Analysis <sup>b</sup> p
	Physical (N=222)		Idiopathic (N=157)		Psychiatric (N=44)		
	Mean	SD	Mean	SD	Mean	SD	
Age (years)	57.2	16.3	57.4	16.0	49.2	13.9	0.02
Number of diagnoses in record							
Medical	7.7	4.4	7.3	4.6	7.0	4.6	0.52
Psychiatric	0.4	0.7	0.4	0.8	1.1	1.2	<0.001
Symptom or symptom syndrome	2.3	2.1	2.3	1.9	3.2	2.0	0.03
	N	%	N	%	N	%	
Female gender	164	74	110	70	34	77	0.52
African American race	142	64	96	61	18	41	0.03
Symptom is principal reason for visit	164	74	94	60	28	64	0.01
Established provider relationship	138	62	108	69	32	73	0.20
Visit type							<0.001
First ever for this symptom	115	52	77	49	9	20	
Return visit							
Symptom improved	44	10	9	6	0	0	
Symptom not improved	82	37	71	45	35	80	
Duration of symptoms							<0.0001
Not known	115	52	104	66	22	50	
Less than 2 weeks	44	20	17	11	1	2	
2 weeks to 1 month	20	9	6	4	3	7	
1-12 months	33	15	20	13	9	20	
More than 1 year	9	4	9	6	9	20	
Intended follow-up interval							0.77
Not documented	49	22	33	21	9	20	
1 to 6 weeks	71	32	44	28	11	25	
7 to 12 weeks	44	20	31	20	13	30	
>12 weeks	60	27	49	31	11	25	
Medications prescribed for symptom							0.04
None	62	28	64	41	13	30	
Previous medications continued	47	21	36	23	12	27	
Medications changed or started	113	51	57	36	19	43	
Nonpharmacological treatments	22	10	14	9	4	9	0.94
Referral related to symptom	24	13	16	10	4	9	0.68
Tests ordered because of symptom	49	22	24	15	8	18	0.19
High diagnostic certainty of physician raters							
Initial	167	75	31	20	20	45	<0.0001
Final	189	85	50	32	34	77	<0.0001

<sup>a</sup>N=423 somatic symptoms (10 cases had missing data on final etiology classification).

<sup>b</sup>Statistical significance determined by analysis of variance for continuous variables and chi-square tests for categorical variables.

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multiple somatic complaints.<sup>7</sup> It is likely that some proportion of the patients with idiopathic symptoms in our study had coexisting and potentially treatable mental disorders.

In 25% of cases, symptoms persisted, which was defined by 1) the presence of one or more follow-up notes in the 12 months after the index visit, with at least one note mentioning symptom outcome; and 2) explicit mention that the symptom was the same or worse in the last physician's note that documented symptom outcome. This definition may result in a conservative estimate of persistence, since the most common finding (in more than half of all cases) was no subsequent mention of the symptom in follow-up notes. Two prospective primary studies have suggested that 70% or more of symptoms improve in the first several weeks after an initial clinic visit,<sup>9,17</sup> while 20%–30% may persist for at least several months afterward, although this duration may vary considerably, depending on the specific type of symptom as well as how long it had existed before the baseline evaluation and the presence of previous episodes.<sup>13,15–21</sup>

It is not surprising that the strongest predictor of symptom persistence over the 12 months of follow-up was previous visits for the same symptom before the index visit. Consistent with previous studies, headache or back pain were also twice as likely to persist, compared with other symptoms.<sup>17,18,22,23</sup> Men were also more likely to experience persistent symptoms, a finding noted in one other primary care study.<sup>17</sup> Although it is well established that women report higher rates of most types of symptoms,<sup>24</sup> there are fewer data regarding gender differences in the natural history of symptoms. It may be that once men seek care for symptoms, their prognosis in terms of symptom resolution is less favorable. Finally, increased medical comorbidity as measured by the number of medical problems documented in the patient's cumulative electronic medical record was a predictor of symptom persistence, whereas in two previous prospective studies poorer self-rated health as reported by patients predicted symptom persistence.<sup>9,17</sup> While the variables used in these studies were not identical, objectively measured medical comorbidity and patient self-assessed health may share some common prognostic factor (e.g., worse health) that relates to symptom outcome.

Our study has several important limitations. First, outcome was explicitly documented for only about half of the symptoms. Thus, it would be important to prospectively validate our predictors of symptom persistence in a study in which outcomes were ascertained for all subjects. Second, both assignment of etiological classification and rating of symptom outcome were based solely on information available in the medical records. Prospective studies using uniform data collection protocols, including collection of data directly from both providers and patients, are necessary to establish etiology and outcome more rigorously. Third, the study sample was made up of patients presenting with any type of somatic complaint. Although this design allowed us to examine the prevalence of specific types of symptoms and examine questions that are generic across symptoms, the small number of cases of any given symptom limited the ability of this particular study to draw symptom-specific conclusions. Thus, larger studies focusing on specific symptoms are needed to complement the findings from our cohort of patients presenting with any type of somatic symptom.

In summary, somatic symptoms are prevalent in primary care practice and appear to be explained by a physical disorder in only 50% to 60% of cases. At least one in four symptoms documented in the medical record may persist at 1-year follow-up. Ways of improving our approach to somatic symptoms in primary care might include use of

**TABLE 3. Independent Correlates of a Physical Etiology for Somatic Symptoms Documented in the Charts of a Random Sample of Patients Visiting an Urban Primary Care Clinic During Four 1-Month Periods (N = 289)**

Correlate	Odds Ratio	95% CI
High final diagnostic certainty of physician rater	10.1	6.0–17.2
First ever visit for symptom, or return visit with symptom improved	2.3	1.4–3.8
African American race	2.0	1.2–3.3
Tests ordered because of symptom	1.8	1.0–3.3
Medications prescribed for symptom	1.7	1.1–2.8
New provider visit (i.e., not an established provider relationship)	1.7	1.1–2.8

**TABLE 4. Predictors of Symptom Persistence 1 Year After Index Visit for Somatic Symptoms Documented in the Charts of a Random Sample of Patients Visiting an Urban Primary Care Clinic During Four 1-Month Periods (N = 289)**

Predictor	Odds Ratio	95% CI
Prior visits for same symptom (chronic or recurrent)	4.9	2.9–8.0
Male gender	2.0	1.2–3.3
Headache or back pain	2.0	1.1–3.7
High number ( $\geq 7$ ) of medical diagnoses in record	1.7	1.0–2.8
Age less than 60 years	1.5	0.9–2.5
Tests ordered for symptom	0.5	0.2–1.1

diagnostic algorithms for unexplained symptoms; better detection and management of depressive and anxiety disorders, including collaboration with mental health profes-

sionals; attention to symptom-related expectations and concerns; and development of new management strategies for unexplained or persistent symptoms.<sup>25–28</sup>

#### APPENDIX 1. Criteria for Classifying Etiology of Somatic Symptoms as Physical, Psychiatric, or Idiopathic

##### Physical

1. Direct attribution
  - a. Symptom linked to physical cause (disease, injury, medication) in assessment of note (e.g., “headache due to hypertension,” “migraine headache,” “leg pain due to trauma”)
  - b. Similar to 1a, but appears anywhere in physician’s note (e.g., “patient presenting with migraine headache,” “return visit for benign positional vertigo,” “patient reports worsening angina,” “osteoarthritis pains have improved”)
2. Implied cause
  - a. Symptom with objective findings (on physical examination or testing) that can be directly linked to a diagnosis the physician is listing (e.g., maxillary tenderness is noted on examination, and sinusitis is noted in the assessment; patient has urinary frequency, and diabetes or urinary tract infection is listed in the assessment)
  - b. Similar to 2a, but diagnosis is not listed in the physician’s assessment. However, relationship of the objective findings to the symptom is obvious or likely (e.g., a patient comes in with leg pain following a fall, bruising on the leg is noted on examination, and, although no diagnosis is listed on assessment, the physician prescribes ice and a nonsteroidal anti-inflammatory drug; a patient comes in with dizziness, nystagmus is noted on examination, and, although the diagnosis is not listed [or it is simply listed as dizziness], meclizine is prescribed).
  - c. Similar to 2a, but no diagnosis or action noted by the physician. However, it is apparent that the objective finding is both related directly to the symptom and is evidence that the symptom has some physical cause (e.g., leg swelling is the patient’s complaint, and 2+ edema is noted on examination; pruritus is reported by patient, and rash is noticed on examination; dizziness is noted by patient, and orthostatic hypotension is noted on examination; the patient complains of dyspnea, and spirometry shows obstructive airways disease).
  - d. Symptom that by its description or association can logically be linked to a diagnosis mentioned in the physician’s note, although the objective findings were not documented (e.g., a patient with shortness of breath and edema [and maybe rales on physical exam] is given diagnosis of congestive heart failure in the assessment; a patient with nasal congestion and frontal pain is given diagnosis of sinusitis; a patient mentions joint pain, and the assessment lists osteoarthritis).

##### Psychiatric (and mixed psychiatric-physical)

1. Direct attribution (similar to rules for “Physical”)
2. Implied cause
  - a. Direct mention of a psychiatric disorder, such as depression, anxiety, somatization, or substance abuse, that is likely linked to the patient’s symptoms (e.g., fatigue or insomnia in a patient for whom depression is mentioned in the note)
  - b. Mention of psychosocial terms, such as stress or family problems, symptoms that may reasonably be related to a psychiatric cause (e.g., fatigue, trouble sleeping, headaches), absence of corresponding physical diagnosis, and diagnostic or treatment action that suggests the physician was thinking of a psychiatric cause (e.g., prescription of psychotropic medication, a mental health referral, etc.)

##### Idiopathic (and symptom syndrome)

1. For idiopathic etiology: symptom does not meet the criteria for physical or psychiatric etiology
2. For symptom syndrome etiology: symptom is part of a conventional symptom cluster, such as irritable bowel syndrome, fibromyalgia, temporomandibular joint syndrome, chronic fatigue syndrome

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