Somatization Disorder in a University Hospital

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Somatization disorder is a condition characterized by multiple unexplained complaints. To characterize this disorder as it occurs in a university hospital, a sample of 213 patients admitted to adult medical and surgical services was studied. Nineteen of these patients (9 percent) met the Diagnostic and Statistical Manual of Mental Disorders, ed 3, *criteria for somatization disorder. A significantly higher proportion of the women compared with the men interviewed had the disorder (14 percent vs 3 percent, P < .01). Fourteen percent of the divorced, separated, or widowed subjects qualified for the diagnosis, compared with 7 percent of the married subjects and 5 percent of the never-married subjects (P < .05). Likewise, 32 percent of single patients with children at home had somatization disorder, compared with 4 percent of subjects in all other household configurations (P < .001). When compared with matched controls, patients with somatization disorder had hospitalizations of roughly equal duration and expense, but had a much higher proportion of negative findings on workup for their presenting complaints (74 percent vs 21 percent, P < .01). Nevertheless, these patients perceived their health as significantly worse than those without the disorder (P < .001). None of the patients enrolled in this study had the diagnosis of somatization disorder at admission or discharge. This study documents that patients with somatization disorder are common, are unrecognized, and are admitted to the hospital for nonproductive workups.*

Physicians frequently label patients who present with unexplained symptoms as difficult, especially patients with somatization disorder, who have a longstanding pattern of repeated complaints for which diagnostic workup reveals no physical cause. The very definition of the disorder implies a history of numerous, fruitless investigations. Hospitalization for a diagnostic workup might represent a particularly expensive and risky instance of a negative diagnostic pursuit.

Somatization disorder is defined in the *Diagnostic and Statistical Manual of Mental Disorders,* ed 3, (DSM-III)[1] as a syndrome whose criteria include symptom onset before the age of 30 years and complaints from a prescribed list of at least 14 unexplained symptoms for women or 12 for men. These symptoms must have caused the patient to take a medicine other than aspirin, consult a physician, or change daily routine. The complaints must not be caused by alcohol or drugs and not be a side effect of his medication.

Somatization disorder is fairly common in the outpatient primary care setting, constituting 5 percent of one family practice clinic's adult patients.[2] Patients with somatization disorder also appear frequently in certain inpatient settings, making up 2 to 10 percent of patients seen by consultation-liaison psychiatric services.[3–6] Although these patients appear to overutilize health care resources,[7] several important questions have been wholly unanswered: What proportion of hospital admissions are of patients with somatization disorder? What happens to them once admitted? Is their condition ever diagnosed as somatization disorder? What other diagnoses do they have?

The purpose of this study was to document the prevalence of somatization disorder in a university hospital, to characterize the patients so affected, and to assess the results of their admission.

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METHODS

The University of South Alabama Medical Center is a 420-bed tertiary care teaching hospital that serves the southwestern Alabama region. It admits about 50 patients per day to 19 admitting services. There are nine intensive care units.

Data were collected in two phases. During the first phase, July and August 1985, all medical and surgical ward admitting services were included in the sampling frame. The obstetric and psychiatric services were excluded because these patients generally are not admitted for a medical diagnostic workup and can therefore shed no light on whether the medical workup is unnecessary. The pediatric service was excluded because of the anticipated low prevalence of somatization disorder among children and the difficulty of administering the interview to them. Likewise, the intensive care units were excluded because of the difficulty of interviewing patients in this setting. All patients aged 19 years or more who were not too sick or demented were eligible. During this phase one interviewer was available, and patients were selected for inclusion through an interview of every second eligible patient on the daily admission census in the order of admission. If the patient refused or was unavailable for interview (because of diagnostic testing, physical therapy, or surgery), the next patient on the census list was approached and the every-other-patient pattern was resumed from that point. These patients underwent the full diagnostic interview for somatization disorder as specified in the DSM-III manual.[1]

In July and August of 1986 another cohort of admissions was interviewed. Those interviewed included patients admitted to all the ward services sampled previously and the adult intensive care units as well. The inclusion and exclusion criteria were otherwise identical. Two interviewers were available, and a different sampling strategy was employed. Using the daily admission census, all eligible admissions were randomly sequenced and divided into two lists. Each interviewer began at the top of the list and worked downward until she reached either the end of the list or the end of the day, whichever came first. The patients in this sample were interviewed for detection of somatization disorder exactly as the first group. In addition, a number of questions relating to family, household, and sociodemographic status were asked.

The diagnosis of somatization disorder was made by an interviewer-administered questionnaire designed strictly in accordance with the DSM-III criteria, which are detailed in the Appendix. The charts of all women having more than 14 unexplained symptoms and men having more than 12 unexplained symptoms were reviewed for findings that might explain their complaints.

Utilization data were obtained as follows: each patient from both sampling frames who met the criteria for somatization disorder was matched to a control patient by age (within five years), sex, race, admitting service, and, as closely as possible, date of admission. These two groups had their hospitalization records scrutinized carefully and were compared with each other on length and cost of hospitalization and results of diagnostic testing. The hypothesis was that patients with somatization disorder tend to have extensive and expensive workups with negative findings.

Additional utilization data were available from the second cohort only. These patients were asked to record the number of physician office visits, emergency room visits, hospitalizations, and surgeries they had had in the previous ten years. Corroboration of their estimates by review of all medical records from all sources was not possible.

Wherever possible, data from both sampling frames were pooled and analyzed as one data set. Most analyses are of the pooled data set. Data concerning household configuration and previous utilization estimates were available from the second cohort only. Patients with somatization disorder were compared with all other interviewees for most analyses, excepting their hospital experience; here, patients with somatization disorder were compared with an equal number of matched controls. Where categorical data were compared, the chi-square test was used. Where interval data were compared, Student's *t* test was used.

RESULTS

During the two sampling frames, 1,562 patients were admitted to the hospital. Nine hundred thirty-nine were excluded because of admitting service or age. Of the 623 eligible patients, interviews were begun with 223 patients and completed with 213 patients. Of the 400 patients with whom interviews were not begun, 210 were initially selected but were unavailable either because of diagnostic tests (90), surgery (45), severity of illness or dementia (60), or refusal (14). The remaining 200 patients not interviewed were systematically excluded by the sampling strategy because of limited interviewer resources. Of the 213 patients with the completed interviews, 73 subjects were from the first study phase and 140 subjects were from the second phase of interviews.

The prevalence of somatization disorder and selected demographic categories of the patients studied are displayed in Table 1. Note that the overall prevalence of the disorder was 19 of 213 patients interviewed (9 percent). Fourteen percent of the women interviewed met the criteria, whereas only 3 percent of the men did so ($P < .01$). The disorder distributed more evenly by race, with 7 percent of white and 11 percent of black patients meeting the criteria. This difference was not significant. Distribution by marital status was interesting, with a significantly higher

TABLE 1. DEMOGRAPHIC DESCRIPTION OF SAMPLE

	Total Sample	Somatization Disorder	Percent
Total sample	213	19	9
Sex			
Female	115	16	14
Male	98	3*	3
Race			
White	113	8	7
Black	100	11	11
Marital status			
Never married	40	2	5
Married	103	7	7
Separated, divorced, widowed	70	10**	14
Household structure (n = 140)			
With children but no spouse	19	6	32
All other	121	5***	4
Admitting service			
Medical ward services	132	15	11
Internal medicine	89	14	16
Family practice	10	1	10
Neurology	14	0	0
Gynecology	19	0	0
Surgical ward services	63	2	3
General and urologic surgery	35	0	0
Neurosurgery	10	2	20
Otolaryngology	3	0	0
Orthopaedics	15	0	0
Intensive care units	18	2†	11
Total	213	19	9

* $\chi^2 = 7.669$, df = 1, $P < .01$
** $\chi^2 = 7.208$, df = 2, $P < .05$
*** $\chi^2 = 17.087$, df = 1, $P < .001$
† *Comparing medical ward services, surgical ward services, and intensive care units:* $\chi^2 = 7.884$, df = 2, $P < .02$

TABLE 2. HOSPITAL EXPERIENCE OF PATIENTS WITH SOMATIZATION DISORDER AND MATCHED CONTROLS

Variable	Cases (n = 19) Mean (SD)	Controls (n = 19) Mean (SD)
Days in hospital	4.74 (3.68)	5.26 (4.75)
Cost of hospitalization	$2349 (1168)	$3279 (3229)
Number of diagnoses at discharge	4.00 (1.80)	2.79 (1.90)
Number of psychiatric or behavioral diagnoses	0.32 (0.75)	0.37 (0.76)
Number of consultations requested	0.79 (0.98)	0.68 (0.11)
Number of diagnostic tests performed	17.11 (11.96)	20.53 (24.52)
Proportion of tests that were abnormal	0.12 (0.09)	0.20 (0.10)
Number of invasive tests*	0.53 (0.51)	0.42 (0.61)

SD—Standard deviation
* *Includes all blood vessel catheterizations, all fiberoptic procedures, all biopsies (unless done during another invasive procedure), myelograms, and lumbar punctures*
All P values nonsignificant by Student's t test

proportion of separated, divorced, or widowed subjects qualifying for the diagnosis of somatization disorder (14 percent) than those who either were married (7 percent) or never married (5 percent) ($P < .05$). Likewise, household structure was another distinguishing characteristic, with a significantly higher proportion of single parents with children having somatization disorder (32 percent) than all other household configurations (4 percent) ($P < .001$). Patients with somatization disorder did not distribute evenly by service: they were underrepresented on the surgical ward services (3 percent) when compared with the medical ward services (11 percent) and the intensive care units (11 percent) ($P < .02$). Sixteen percent of the sample admitted to internal medicine ward services had somatization disorder.

The hospital experience of patients with somatization disorder is compared with their matched controls in Table 2. The large standard deviations in this table attest to the wide variation within the groups, and the similarity of the mean scores suggests that the hospitalization experience was similar for the two groups. In Tables 3 and 4 something quite different is demonstrated, however. The results of tests done to confirm the presenting complaint or admitting diagnosis were negative far more frequently among the patients with somatization disorder than among the control patients, 74 percent vs 21 percent ($P < .01$). If mitral valve prolapse with normal coronary arteries is considered a positive explanation for chest pain, the proportions were 63 percent vs 21 percent, still significant at the <.01 level. Consequently, the discharge diagnoses were different for the two groups. In the group determined to have somatization disorder, 32 percent had definitive, "organic" diagnoses (eg, pyelonephritis, nephrolithiasis, sarcoidosis, bronchospasm, etc), while the remaining 68 percent had diagnoses that represent complaints of reported but undocumented findings (eg, chest pain, headache, weight loss, back pain, transient weakness, etc). In the control group the proportions are 79 percent with definitive diagnoses (Graves' disease, lung cancer, pancreatitis, fractured hip, pneumonia, etc), while 21 percent have diagnoses that represent unverified complaints (chest pain, syncope, hyperventilation). This difference between the two groups is highly significant ($P < .01$), suggesting that although patients with somatization disorder are by no means free of disease or abnormalities, they do tend to have negative test findings for their presenting complaints.

Despite these test results, patients with somatization disorder judged that their health was significantly worse than those without it ($P < .001$), as illustrated in Table 5.

TABLE 3. COMPARISON OF PRIMARY DIAGNOSES AND INVESTIGATIONS BETWEEN PATIENTS WITH SOMATIZATION DISORDER AND MATCHED CONTROLS

Somatization Disorder (n = 19)			Matched Control (n = 19)		
Diagnosis	**Procedure**	**Results***	**Diagnosis**	**Procedure**	**Results***
Angina pectoris	Cardiac catheterization	–	Graves' disease	Thyroid function tests, thyroid scan	+
Chest pain	Pulmonary angiography	–	Pyelonephritis	Urine culture and sensitivity	+
Headaches	Computerized tomography, lumbar puncture	–	Lung cancer, pneumonia	Computerized tomography of the chest, bronchoscopy	+
Cushingoid symptoms	Endocrine workup	–	Chest pain	Cardiac catheterization	–
Hemoccult-positive stool	Upper gastrointestinal series, colonoscopy	–	Cellulitis wound, leg	Culture, bone scan	–
Hemoptysis	Bronchoscopy	–	Syncope	Holter, computerized tomography of the head, electroencephalogram, echocardiogram	–
Transient ischemic attacks	Cerebral angiography	–	Fractured hip	Hip roentgenogram	+
Low back pain	Myelogram, computerized tomography of the lumbar spine	–	Low back pain	Lumbar roentgenogram	+
Chest pain	Cardiac enzymes, electrocardiogram	–	Coronary artery disease	Cardiac catheterization	+
Pelvic pain	Cultures, pelvic ultrasound	–	Pneumonia	Chest roentgenogram examination	+
Headaches	Computerized tomography of the head, electroencephalogram	–	Pyelonephritis	Urine culture and sensitivity, intravenous pyelogram	+
Sickle cell pain crisis	No workup done		Pancreatitis	Abdominal ultrasound serum amylase	+
Chest pain	Cardiac catheterization (mitral valve prolapse)	– +	Low back pain	Plain films, back	+
Chest pain	Cardiac catheterization (mitral valve prolapse)	– +	Rectal bleeding	Colonoscopy	+
Pyelonephritis	Urine culture and sensitivity	+	Pyelonephritis	Urine culture and sensitivity	+
Bronchospasm	Pulmonary function tests	+	Hyperventilation	Pulmonary function tests, electrocardiogram, ventilation/perfusion scan	–
Hyperglycemia	Serum glucose	+	Diabetes mellitus	Serum glucose determination	+
Sarcoidosis	Bronchoscopy	+	Rectal bleeding	Colonoscopy	+
Nephrolithiasis	Ultrasound, intravenous pyelogram	+	Pulmonary contusion	Chest roentgenogram	+

** –-Negative results; +-positive results*

Some of the patients with somatization disorder reported extraordinarily high utilization rates for both inpatient and outpatient services; one patient estimated over 100 hospitalizations in the previous ten years, and seven estimated over 100 visits to physicians' offices or emergency rooms or both in the same time frame. There were significant Pearson product-moment correlations between the number of unexplained symptoms and the estimated previous hospitalizations, office visits, and emergency room visits, but there was no way to control for recall bias or to corroborate these estimates. These data were therefore regarded as too unreliable to report with confidence.

DISCUSSION

This study documents a high prevalence of somatization disorder in this university hospital, occurring in 9 percent of the patients studied. To put this finding in perspective, all diagnoses made in this hospital in 1984 were reviewed. The most frequent diagnosis was general symptoms (ICD-9 No. 780), accounting for 9.4 percent of the 2,364 diagnoses made that year. This diagnosis was followed by pneumonia, diabetes mellitus, cellulitis or abcess, and asthma, each of which occurred 5 to 6 percent of the time. Somatization disorder was not recorded as a diagnosis for any of the patients in this study; in fact, this diagnosis has

TABLE 4. RESULTS OF INVESTIGATION OF PRESENTING COMPLAINT

	Somatization Disorder (n = 19)	Matched Control (n = 19)
Positive diagnostic test results	5	15
Negative diagnostic test results	14*	4**

* $\chi^2 = 10.556$, df = 1, $P < .01$
** Two patients with chest pain had normal coronary arteries but prolapsing mitral valves; they are counted in this analysis as negative tests. If their test results were counted as positive, then $\chi^2 = 6.909$, df = 1, $P < .01$

TABLE 5. SELF-ASSESSMENT OF HEALTH STATUS

	Somatization Disorder (n = 19)	No Somatization Disorder (n = 194)
Good or excellent	1	117
Fair or poor	18	77*

* $\chi^2 = 21.222$, df = 1, $P < .001$

been made only one time in this hospital between January 1984 and December 1986. Although somatization disorder can be diagnosed easily by means of a clinical interview similar to a review of systems, the disorder is a common but a commonly overlooked entity in this hospital setting.

Sixteen of the 19 subjects who qualified as having somatization disorder in this study were women (84 percent); other reports likewise emphasize a strong preponderance of women, describing cases of somatization disorder among men as rare.[1,8]

The association between somatization disorder and household composition is striking and previously unreported, although a similar pattern has been found among somatizers in the outpatient setting.[2] The cross-sectional design of this study does not permit inferences about the causal or temporal sequence of this relationship.

The distribution of cases by admitting service is striking but not surprising. The two admissions to the coronary care unit were to rule out myocardial infarction as a cause of chest pain. The two cases on the surgical ward services were both neurosurgical admissions, one for a diagnostic workup of low back pain (including a normal myelogram) and the other for a diagnostic workup of headaches. The remaining cases were admitted to medical ward services, primarily for the diagnostic workup of nonspecific complaints.

While patients with somatization disorder did not have particularly long or expensive hospitalizations, the investigations of their presenting complaints were usually fruitless. These hospitalizations were not always unnecessary or inappropriate, but it is clear that in some cases prior knowledge of the patient's career of negative findings on workup would have modified or eliminated the diagnostic pursuit.

While this study has shown that patients with somatization disorder are common, unrecognized, and admitted for nonproductive testing, it does not establish the extent to which these nonselected and undiagnosed patients actually overutilize health care resources by repeatedly seeking health care. They certainly report overutilization, but thorough retrospective medical record review or prospective follow-up, or both, would be necessary to document conclusively the extent of overutilization, and this study was not designed to accomplish these goals.

The sampling methodology may have excluded from interview the most severely ill patients, thereby introducing a sampling bias. Approximately one third of the patients who were eligible for study were actually interviewed; of those not interviewed, about one half were systematically excluded by the sampling strategy and the other half were not interviewed because their illness was too severe, because they were in surgery, because they were in physical therapy, because they were undergoing diagnostic testing, or because they refused. The prevalence of somatization disorder among this excluded group is unknown. A sample of 40 of these patients was chosen, and their mean length of stay and cost of hospitalization (5.03 days ± 3.94, and $2774 ± $2401, respectively) was nearly identical to the group with somatization disorder. No obvious disparity thus exists between these two groups in terms of utilization, but this finding provides only partial reassurance about the representativeness of the sample. Additional interviewers could have captured a higher proportion of the eligible subjects, but uncertainty about those patients who refuse or are too ill to interview will always exist. This caveat notwithstanding, a large number of patients with somatization disorder were found; irrespective of the "true" prevalence, this problem is of considerable magnitude.

Another limitation of this study concerns the instrument used to diagnose somatization disorder. The DSM-III criteria for the diagnosis are straightforward; somatization disorder can be diagnosed easily without recourse to a structured psychiatric interview such as the Diagnostic Interview Schedule,[9] which requires over one hour to administer but yields a number of other psychiatric diagnoses, including major depression and panic disorder. Both of these conditions are treatable and are characterized by frequent somatic complaints. The interview used in this study takes only 20 minutes to administer, thereby allowing the interviewers to sample a larger proportion of patients admitted to the hospital each day, but was designed to make the diagnosis of somatization disorder only. At this stage of the research, what was lost in comprehensive psychiatric data was judged to be less critical than what was gained in sampling power, and the short interview was chosen. A more comprehensive psychiatric

profile of these patients would add considerably to the value of these findings, however.

As this university hospital provides tertiary care, it is unclear how closely somatization disorder in this setting resembles the same disorder in different settings, or how representative the prevalence is of the prevalence in general. Certainly replication in other types of hospitals and in other locales is indicated.

Finally, this study does not address the problem of what constitutes proper management of patients with somatization disorder. It suggests that some admissions are at least nonproductive, if not unnecessary. Studies such as the one by Smith et al[10] suggest that avoiding these admissions is sometimes possible, but the literature on how these patients should be treated is preliminary, tentative, and incomplete.[11–13] Prospective clinical trials are certainly in order.

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APPENDIX

Diagnostic Criteria for Somatization Disorder*

A. A history of physical symptoms for several years' duration beginning before the age of 30 years.

B. Complaints of at least 14 symptoms for women and 12 for men, from the 37 symptoms listed below. To count a symptom as present, the individual must report that the symptom caused him or her to take medicine (other than aspirin), alter his or her life pattern, or see a physician. The symptoms, in the judgment of the clinician, are not adequately explained by physical disorder or physical injury, and are not side effects of medication, drugs, or alcohol. The clinician need not be convinced that the symptom was actually present, eg, that the individual actually vomited throughout her entire pregnancy; report of the symptom by the individual is sufficient.

Sickly: Believes that he or she has been sickly for a good part of his or her life.

Conversion or pseudoneurological symptoms: Difficulty swallowing, loss of voice, deafness, double vision, blurred vision, blindness, fainting or loss of consciousness, memory loss, seizures or convulsions, trouble walking, paralysis or muscle weakness, urinary retention, or difficulty urinating.

Gastrointestinal symptoms: Abdominal pain, nausea, vomiting spells (other than during pregnancy), bloating (gassy), intolerance (eg, gets sick) to a variety of foods, diarrhea.

Female reproductive symptoms judged by the individual as occurring more frequently or severely than in most women: painful menstruation, menstrual irregularity, excessive bleeding, severe vomiting throughout pregnancy or causing hospitalization during pregnancy.

Psychosexual symptoms for the major part of the individual's life after opportunities for sexual activity: sexual indifference, lack of pleasure during intercourse, pain during intercourse.

Pain: Pain in back, joints, extremities, genital area (other than during intercourse); pain on urination; other pain (other than headaches).

Cardiopulmonary symptoms: Shortness of breath, palpitations, chest pain, dizziness.

* *From American Psychiatric Association Committee on Nomenclature and Statistics: Diagnostic and Statistical Manual of Mental Disorders, ed 3. Washington, DC, American Psychiatric Association, 1980*