ORIGINAL CONTRIBUTION

Physical Symptoms in Primary Care

Predictors of Psychiatric Disorders and Functional Impairment

Kurt Kroenke, MD; Robert L. Spitzer, MD; Janet B. W. Williams, DSW; Mark Linzer, MD; Steven R. Hahn, MD; Frank V. deGruy III, MD; David Brody, MD

Objective: To examine how the type and number of physical symptoms reported by primary care patients are related to psychiatric disorders and functional impairment.

Design: Outpatient mental health survey.

Setting: Four primary care clinics.

Patients: One thousand adult clinic patients, of whom 631 were selected randomly or consecutively and 369 by convenience.

Main Outcome Measures: Psychiatric disorders as determined by the Primary Care Evaluation of Mental Disorders procedure; the presence or absence of 15 common physical symptoms and whether symptoms were somatoform (ie, lacked an adequate physical explanation); and functional status as determined by the Medical Outcomes Study Short-form General Health Survey.

Results: Each of the 15 common symptoms was frequently somatoform (range, 16% to 33%). The presence of any physical symptom increased the likelihood of a diagnosis of a mood or anxiety disorder by at least twofold to threefold, and somatoform symptoms had a particularly strong association with psychiatric disorders. The likelihood of a psychiatric disorder increased dramatically with increasing numbers of physical symptoms. The prevalence of a mood disorder in patients with 0 to 1, 2 to 3, 4 to 5, 6 to 8, and 9 or more symptoms was 2%, 12%, 23%, 44%, and 60%, respectively, and the prevalence of an anxiety disorder was 1%, 7%, 13%, 30%, and 48%, respectively. Finally, each physical symptom was associated with significant functional impairment; indeed, the number of physical symptoms was a powerful correlate of functional status.

Conclusions: The number of physical symptoms is highly predictive for psychiatric disorders and functional impairment. Multiple or unexplained symptoms may signify a potentially treatable mood or anxiety disorder.

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From the Department of Medicine, Uniformed Services University of the Health Sciences, Bethesda, Md (Dr Kroenke); the Biometrics Research Department, New York State Psychiatric Institute, and the Department of Psychiatry, Columbia University, New York, NY (Drs Spitzer and Williams); the Departments of Medicine, New England Medical Center, Boston, Mass (Dr Linzer), and Albert Einstein College of Medicine, Bronx, NY (Dr Hahn); the Department of Family Practice, University of South Alabama, Mobile (Dr deGruy); and the Department of Medicine, Mercy Catholic Medical Center, Darby, Pa (Dr Brody).

PHYSICAL SYMPTOMS are exceedingly prevalent, generating an estimated 400 million clinic visits each year in the United States alone, or 57% of all outpatient encounters.[1] Functional impairment comparable to many medical disorders has been demonstrated for several symptoms, such as back pain, chronic fatigue, and dizziness.[2-4] Faced with the symptomatic patient, the physician's objectives are typically to define the cause and to provide curative or palliative therapy. Unfortunately, 30% to 75% of physical symptoms lack a precise organic cause even after costly diagnostic testing, and medications or other treatments are often ineffective.[5,6]

Physical symptoms are a common manifestation of potentially treatable psychiatric disorders, particularly depression and anxiety.[7-9] Indeed, physical rather than emotional symptoms are the predominant complaints in patients with psychiatric disorders who seek care in the general medical setting.[9-13] While depression or anxiety is present in 20% to 40% of primary care patients,[14-16] these disorders remain undiagnosed and untreated at least half of the time.[16-19] Furthermore, they result in disability and functional im-

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METHODS

Details of the PRIME-MD Study, including patient sampling procedures, have been described elsewhere.[21] Briefly, the study population consisted of 1000 patients who presented for medical care at four primary care clinics. The first 369 patients were selected by convenience independent of the participating physicians' suspecting or knowing that a patient had any psychiatric disorder. The remaining 631 patients were selected consecutively or randomly using site-specific methods to avoid sampling bias. The convenience sample and the consecutive or randomly selected sample did not differ significantly in terms of age, sex, ethnicity, education, functional status, or frequency of psychiatric diagnoses. Patients had a mean age of 55 years (range, 18 to 91 years); 60% were women, 58% were white, and 28% were college graduates. Of the total sample, 77% were established clinic patients; the remainder were seen for the first time. The study protocol was approved by the institutional review boards of all study centers.

The 1000 study participants were evaluated with PRIME-MD, a procedure that allows clinicians to make *Diagnostic Statistical Manual of Mental Disorders, Revised Third Edition*[22] criteria-based diagnoses of mood, anxiety, alcohol, eating, and somatoform disorders, which together account for the majority of psychiatric disorders encountered in primary care practice.[14-16,23] The PRIME-MD consists of a 26-item self-administered patient questionnaire (PQ) and a clinician evaluation guide (CEG) that the physician uses to inquire about positive responses on the PQ to establish the presence or absence of one or more psychiatric disorders. Data regarding the validity and utility of PRIME-MD are reported elsewhere.[21] Briefly, the average amount of time spent by the physician administering the CEG to patients who scored positively on the PQ (n=790) was 8.4 minutes. The agreement between PRIME-MD diagnoses and blinded reinterviews by mental health professionals was modest (κ=0.71 for any psychiatric diagnosis, ranging from 0.55 to 0.73 for specific modules) but approximated the levels of agreement among mental health professionals using validated but much lengthier psychiatric interviews. Concurrent validity was further supported by the strong correlation between PRIME-MD diagnoses and standard psychiatric symptom severity scales as well as indexes of functional impairment and health care utilization.

The somatoform section of the PRIME-MD PQ inquires about 15 physical symptoms or symptom clusters (**Table 1**) that account for over 90% of symptoms reported in the outpatient setting.[1,3,4] The 15 physical symptoms are used solely to prompt entry into the somatoform module; there is another PQ item about disease concern that screens for hypochondriasis, while the other 10 PQ items are psychiatric or nonphysical symptoms that prompt entry into the mood, anxiety, eating, or alcohol modules. Thus, any predictive relationship between physical symptoms and mood or anxiety disorders identified in our study at least is not a result of measurement bias that would pertain if physical symptoms endorsed by patients on PRIME-MD produced a lower threshold for querying about nonsomatoform mental disorders.

Physical symptoms are prefaced in the PQ by the query, "During the past month, have you often been bothered by . . . (1) stomach pain? (2) back pain? . . . " For each symptom, patients simply check "yes" or "no." The physician reviews the PQ and enters the somatoform module in the CEG only if the patient has endorsed three or more symptoms on the PQ. For each symptom endorsed on the PQ, the CEG has a two-step probe. First, the physician asks, "Has (symptom) bothered you a lot in the past month?" If the patient replies yes, the CEG instructs the physician to decide: "Based on your clinical judgment, does the symptom have a physical explanation that is adequate to explain its severity and associated disability?" Only if the physician answers no to this question is the symptom classified as somatoform. Thus, a somatoform symptom is one that is both recently bothersome and physically unexplained.

The Medical Outcomes Study Short-form General Health Survey (SF-20)[24] was used to measure functional status in six domains: physical, social, and role functioning; mental health; bodily pain; and general health perceptions. Analysis of variance and χ^2 analysis were used to compare continuous and categorical variables, respectively. Analysis of covariance was used to adjust functional status scores for the number of medical disorders, age, sex, minority status, educational level, and site. Similarly, multiple logistic and linear regression methods were used to control for the effects of these confounding variables when assessing the independent effect of physical symptoms on psychiatric comorbidity and functional status.

pairment comparable to that seen in chronic medical disorders.[19,20]

Because of the pervasiveness of physical symptoms in outpatient practice and their potential relationship to common psychiatric disorders, we analyzed data from the Primary Care Evaluation of Mental Disorders (PRIME-MD) Study[21] to answer the following questions: (1) How often are common physical symptoms somatoform, ie, lacking an adequate physical explanation? (2) Are certain types of physical symptoms particularly likely to be associated with psychiatric disorders and functional impairment? and (3) Is the number of physical and somatoform symptoms predictive of psychiatric disorders and functional impairment?

RESULTS

TYPE OF SYMPTOM

Table 1 shows the prevalence of each of the 15 physical symptoms in our primary care patients (range, 3% to 58%) and the proportion of symptoms that were judged to be so-

matoform (range, 16% to 33%). Fatigue and insomnia were less frequently somatoform because the PRIME-MD automatically prohibits classification of either of these two symptoms as somatoform if the physician decides they are due to a mood or anxiety disorder. The degree of physician familiarity with a patient did not affect the likelihood of a symptom's being judged somatoform: the mean number of physical symptoms endorsed on the PQ (4.3, 4.5, and 4.8) as well as the proportion that physicians considered somatoform (20%, 21%, and 18%) were similar among patients who were known "not at all," "somewhat," or "fairly well" by the physician evaluating them.

Anxiety disorders were present in 24% to 50% of patients endorsing specific symptoms (vs 18% in the overall study sample) and mood disorders were present in 32% to 62% (vs 26% in the overall sample). Somatoform symptoms had a particularly strong association with psychiatric disorders. The likelihood of an anxiety or mood disorder increases dramatically as one moves from the group without a particular symptom to the group with that symptom, and then to the group in whom that symptom is somatoform.

The calculation of unadjusted odds ratios (ORs) confirms this pattern: most physical symptoms were associated with at least a twofold-to-threefold increased likelihood of a mood or anxiety disorder. The ORs for the 15 symptoms ranged from 1.9 to 5.5 for a mood diagnosis and from 1.3 to 8.9 for an anxiety diagnosis. When adjusting for demographic characteristics (age, sex, minority status), medical comorbidity (number of physical disorders), and study site, ORs declined but remained statistically significant for most symptoms. However, when also controlling for the number of physical symptoms endorsed by the patient, only insomnia retained a significant adjusted OR for a mood disorder (3.7; 95% confidence interval [CI], 2.5 to 5.4) or anxiety disorder (2.7; 95% CI, 1.7 to 4.1). In summary, all of the physical symptoms were associated with an increased likelihood of a mood or anxiety diagnosis, but the number of symptoms rather than the specific type of symptom was the strongest predictor.

When symptoms were judged to be somatoform, the ORs ranged from 1.0 to 29.9 for a mood diagnosis (12 symptoms had an OR of ≥3.0) and 1.9 to 12.3 for an anxiety diagnosis (13 symptoms had an OR of ≥3.0). However, when adjusting for the variables described above, including the total number of physical symptoms, the ORs for a mood diagnosis remained significant only for somatoform fatigue (4.3; 95% CI, 2.9 to 6.5) and somatoform insomnia (2.4; 95% CI, 1.6 to 3.5). Adjusted ORs for an anxiety diagnosis remained significant only for somatoform palpitations (2.2; 95% CI, 1.6 to 3.2) and somatoform insomnia (3.0; 95% CI, 2.0 to 4.5). Like physical symptoms in general, somatoform symptoms are more likely to predict a mood or anxiety diagnosis as the total symptom count rises.

Functional impairment was substantial in symptomatic patients regardless of the specific type of symptom. As shown in **Table 2**, there were considerable differences in SF-20 scores between patients with and without each symptom. A five- to 10-point decrement on an SF-20 scale is similar to that seen with several chronic medical disorders.[20,25]

Table 1. Relationship Between Common Physical Symptoms and Psychiatric Disorders in Primary Care Patients*

Symptom	With Symptom, %	Cases Where Symptom Is Somatoform, %	Percent With Anxiety Disorder If			Percent With Mood Disorder If		
			Symptom Absent	Symptom Present	Symptom Somatoform	Symptom Absent	Symptom Present	Symptom Somatoform
Fainting	3.4	33.3†	17	50	73	25	62	91
Menstrual problems‡	32.5	33.3	16	36	41	24	46	52
Headache	36.4	30.2	12	28	46	18	40	53
Chest pain	20.8	27.3†	14	33	49	21	46	66
Dizziness	23.9	27.2†	12	35	52	20	46	58
Palpitations	27.2	25.6†	11	36	49	19	45	59
Sexual problems	6.4	25.0	17	28	40	26	31	27
Nausea, vomiting, gas, or indigestion	43.3	22.7	10	28	48	19	36	53
Constipation/diarrhea	28.6	22.1	14	28	39	21	38	59
Abdominal pain	19.2	20.7	15	31	53	22	43	63
Dyspnea	31.5	18.9†	13	29	46	19	41	63
Fatigue	58.0	18.7§	6	26	28	7	40	41
Insomnia	33.5	17.4§	9	35	36	14	51	44
Joint or limb pain	58.7	17.1	9	24	48	14	34	56
Back pain	40.8	15.7	11	28	46	18	38	54

*N=1000 patients (except for somatoform symptoms, where complete data were available for 933 patients).
† Not classified as somatoform if symptom occurs only during panic attacks.
‡ Analysis for this symptom restricted to women younger than 55 years (n=255).
§ Not classified as somatoform if physician decides that symptom is due to a mood or anxiety disorder.

Of the 90 comparisons in Table 2 showing differences between patients with and without each of the 15 symptoms on the six SF-20 scales, 88% of the differences were 10 points or greater, and 60% were 15 points or greater. Because SDs varied among the six SF-20 scales, we also determined the effect size of each symptom on functional status, calculated as the average difference in SF-20 scores between patients with and without each symptom divided by the SD for that SF-20 scale.[26] Most of the effect sizes shown in Table 2 were substantial, with 69% being 0.50 or greater and 91% being 0.25 or greater. Symptom-related impairment was global with sizable decrements across all scales rather than just selected scales. Even on the bodily pain scale, nonpain symptoms were associated with mean decrements comparable to pain symptoms. This may reflect the considerable correlation among symptoms, with many patients endorsing a variety of both pain and nonpain physical complaints.

NUMBER OF SYMPTOMS

In our sample, patients endorsed a median of four physical symptoms on the PRIME-MD PQ. As shown in **Table 3**, the likelihood of a mood or anxiety disorder increased dramatically with increasing numbers of physical symptoms. In going from patients with the fewest to the most symptoms, the prevalence of anxiety disorders increased from 1% to 48% and the prevalence of mood disorders, from 2% to 60%. Somatoform symptoms were associated with proportionately more psychiatric diagnoses. For example, one or two symptoms judged to be somatoform were associated with psychiatric comorbidity nearly comparable to six to eight physical symptoms simply endorsed on the PQ.

The number of physical symptoms was also a powerful correlate of functional impairment (**Figure**) and remained so even when controlling for age, sex, minority status, educational level, number of medical disorders, and the presence of a mood or anxiety disorder. Using the mean of the six SF-20 scales as the dependent variable in a multiple linear regression analysis, significant effects ($P<.001$) were found for number of physical symptoms (standardized regression coefficient=−0.44), presence of a mood or anxiety disorder (−0.33), number of physical disorders (−0.16), and age (−0.09). Examination of the partial R^2 revealed that the number of physical symptoms accounted for 35% of the variability in functional status. Interestingly, when both the total number of physical symptoms and the number of somatoform symptoms were entered, the latter no longer remained significant.

COMMENT

Physical symptoms that are identified by medical outpatients as currently bothersome increase the likelihood of a depressive or anxiety disorder by at least twofold to threefold. Somatoform symptoms and the total number of physical symptoms are particularly

Table 2. Decrement in SF-20 Functional Status Scores Associated With Various Physical Symptoms*

Symptom	SF-20 Functional Status Scale, Average Difference (Effect Size) Between Patients With and Without Symptom†					
	Physical Function	Social Function	Role Function	Mental Health	Bodily Pain	Health Perceptions
Fainting	18 (0.64)	28 (0.99)	42 (1.00)	12 (0.58)	21 (0.75)	23 (0.84)
Menstrual problems	2‡ (0.08)	3‡ (0.12)	6‡ (0.15)	12 (0.59)	6‡ (0.22)	5‡ (0.20)
Headache	6 (0.21)	9 (0.30)	12 (0.30)	13 (0.63)	15 (0.54)	14 (0.53)
Chest pain	18 (0.68)	16 (0.58)	31 (0.76)	14 (0.69)	25 (0.89)	25 (0.91)
Dizziness	18 (0.65)	18 (0.64)	28 (0.67)	14 (0.69)	20 (0.72)	22 (0.80)
Palpitations	19 (0.70)	15 (0.53)	26 (0.63)	14 (0.69)	18 (0.64)	22 (0.81)
Sexual problems	7‡ (0.25)	9‡ (0.31)	8‡ (0.20)	4‡ (0.18)	7‡ (0.25)	10‡ (0.37)
Nausea, vomiting, gas, or indigestion	11 (0.39)	9 (0.32)	16 (0.38)	10 (0.52)	16 (0.57)	16 (0.57)
Constipation/diarrhea	11 (0.40)	13 (0.44)	15 (0.37)	10 (0.48)	13 (0.45)	14 (0.52)
Abdominal pain	12 (0.44)	13 (0.47)	22 (0.53)	12 (0.60)	22 (0.80)	21 (0.76)
Dyspnea	25 (0.93)	18 (0.62)	29 (0.71)	11 (0.54)	21 (0.74)	22 (0.81)
Fatigue	17 (0.63)	17 (0.60)	27 (0.64)	15 (0.74)	18 (0.65)	24 (0.87)
Insomnia	16 (0.60)	17 (0.61)	22 (0.54)	16 (0.80)	19 (0.67)	21 (0.78)
Joint or limb pain	20 (0.72)	14 (0.49)	22 (0.54)	10 (0.49)	26 (0.92)	19 (0.71)
Back pain	17 (0.64)	13 (0.45)	19 (0.45)	10 (0.50)	23 (0.82)	19 (0.69)
Mean±SD§	71±27	82±28	73±41	72±20	59±28	56±27

*SF-20 indicates Medical Outcomes Study Short-form General Health Survey.

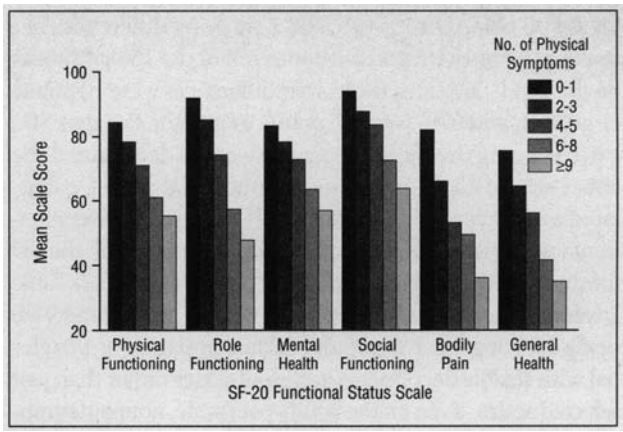
† Average difference equals decrease in SF-20 score (rounded in table, but not for effect-size calculations) in patients with symptom vs those without that symptom. Effect size=average difference÷SD.

‡ Difference between those with and without this symptom not significant. All other differences, $P<.001$.

§ Mean SF-20 scores for entire patient sample. Scales scored 0 to 100, where 100 equals best functioning.

Table 3. Number of Physical Symptoms and Association With Psychiatric Disorders

No. of Symptoms	No. of Patients	No. (%) With Psychiatric Disorder		
		Anxiety	Mood	Any
Physical (n=1000)				
0-1	215	2 (1)	5 (2)	16 (7)
2-3	225	17 (7)	27 (12)	50 (22)
4-5	191	25 (13)	44 (23)	67 (35)
6-8	230	68 (30)	100 (44)	140 (61)
≥9	139	66 (48)	84 (60)	113 (81)
Somatoform (n=933)				
0	654	68 (10)	107 (16)	162 (25)
1-2	143	42 (29)	60 (42)	74 (52)
3-5	87	35 (40)	40 (46)	77 (89)
≥6	49	27 (55)	34 (69)	46 (94)



Relationship between the total number of physical symptoms reported by patients on the Primary Care Evaluation of Mental Disorders and the functional status as measured by the Medical Outcomes Study Short-form General Health Survey (SF-20). The SF-20 scores are adjusted for number of physical disorders, age, sex, minority status, educational level, and study site. Decline in functional status was significant (P<.001) for all scales.

powerful correlates of psychiatric illness and functional impairment.

Patients with multiple or unexplained physical complaints have sometimes been referred to as the "worried well," a pejorative label that implies an absence of disease and an inappropriate use of health services. However, only a minority of patients who experience common symptoms actually report them to a health care provider.[27,28] Factors that precipitate a clinic visit include persistent symptoms, perceived seriousness, functional impairment, expectations for medication, diagnostic testing or referral, and psychological distress such as depression, anxiety, and stress.[7-9,29,30] The uncertainty and suffering related to these factors should not be dismissed.

The fact that 16% to 33% of the 15 common physical symptoms endorsed on the PQ were ultimately judged to be somatoform is perhaps a conservative estimate of the proportion of symptoms that may be physically unexplained, because to qualify as somatoform with the PRIME-MD, a symptom must be physically unexplained and have bothered the patient a lot in the past month. Studies that define a somatoform symptom as one that is physically unexplained but that do not require an impairment threshold (eg, "bothered a lot in the past month") will produce higher estimates of the proportion of physical symptoms that are somatoform. Also, symptoms for which the physician believed additional evaluation was required to exclude a physical cause were classified by the PRIME-MD as not somatoform; thus, it is likely that at least some of these symptoms would eventually prove to be somatoform after a negative diagnostic workup.

What are the implications of labeling a symptom as somatoform? Coexisting mood and anxiety disorders do not in themselves prove a psychiatric cause for physical symptoms, nor does the lack of a definitive physical explanation confirm a psychopathologic disorder. Indeed, there remain many boundary diseases—fibromyalgia, irritable bowel syndrome, chronic fatigue syndrome, tension headache, premenstrual syndrome, environmental illness, and others—that consist primarily of symptoms for which satisfactory physiologic or psychologic explanations have not been established.

Even individual symptoms such as headaches, dizziness, menstrual complaints, and fatigue frequently lack a verifable anatomic or physiologic abnormality. Clearly, the designation of a symptom as somatoform involves considerable judgment, etiologic uncertainty, and interobserver variability. While clinical judgment remains the standard whereby symptoms are classified as somatoform in psychiatric nosology,[22] it is hoped that by expanding on the limited research done on physical symptoms to date, we will better unravel the relative contributions of physical and psychiatric factors. In the meantime, exploring emotional factors is more often neglected than pursuing physical causes because of the societal stigma attached to psychological attributions (ie, "Are you saying this is all in my head?").

Our study has several limitations. First, symptoms were identified by a questionnaire rather than a presenting complaint, and subjects endorsed a median of four physical symptoms. However, after further probing with the CEG, patients often admitted that a number of these symptoms were not currently bothersome. Because some symptom scales used for psychiatric screening ask subjects to grade the severity of their symptoms, it is possible that symptom checklists like the PRIME-MD that simply inquire about the presence or absence of a symptom may overestimate clinically relevant symptoms. In any case, the PRIME-MD physical symptom count proved to be a powerful marker of psychiatric comorbidity and impairment. Like the erythrocyte sedimentation rate for physical disorders, elevated PRIME-MD symptom counts are suggestive though not diagnostic of potential psychopathologic disease.

The cross-sectional design of our study does not al-

low us to examine the question of temporal relationship. Nonetheless, the strength of the association as well as the dose-response relationship between physical symptoms and psychiatric disorders should encourage physicians to at least screen for the potentially treatable mood and anxiety disorders that so frequently accompany physical complaints.

Although the PRIME-MD was the method used to enumerate physical symptoms in our study, other well-validated self-report symptom inventories are available, not to mention the even more commonly used clinical interview that draws on spontaneously volunteered complaints augmented by a review of systems. The PRIME-MD does have a practical advantage of marrying self-reported symptoms with a criteria-based psychiatric interview that achieves a reasonable balance of efficiency, accuracy, utility, and patient acceptance.[21]

Simon and Von Korff[13] found that persons with psychiatric disorders were just as likely to admit to psychological as to physical symptoms. However, the subjects in that study were community respondents rather than clinic patients, and they were explicitly asked about a list of symptoms rather than presenting to a physician with a specific complaint. A wealth of literature on somatization suggests that the majority of patients with psychiatric disorders who are seen in the general medical sector present with physical rather than emotional complaints.[7-9]

Subscribing to an either-or, mind-body dualism detracts from the proper evaluation and management of that large number of patients whose symptoms we do not fully understand. While no physician who evaluates a symptomatic patient wants to miss a serious and potentially treatable physical cause, costly and exhaustive wild goose chases often add little beyond the initial history, physical examination, and focused laboratory testing.[3,5,31-33] Depression, anxiety, and other psychosocial factors should be considered earlier in the evaluation of patients with multiple or unexplained physical symptoms rather than routinely reserving them as diagnoses of exclusion. It is hoped that the PRIME-MD or other efficient methods for detecting psychiatric disorders may improve both the clinical outcome and cost-effectiveness of caring for the symptomatic patient in primary care practice.

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PRIME-MD materials can be obtained from Biometrics Research, New York State Psychiatric Institute, 722 W 168th St, New York, NY 10032 (Dr Spitzer).

Reprints not available.

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