

Clinical Predictors of Mental Disorders Among Medical Outpatients

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Background: Mental disorders are common among primary care patients and often not detected by primary care physicians. We report on clinical cues that may allow physicians to target patients for psychiatric screening.

Methods: Two hundred fifty consecutive adults presenting to a walk-in clinic completed previsit surveys assessing demographics, symptom characteristics, recent stress, functional status (Medical Outcomes Study Short Form-6), and mental disorders (Primary Care Evaluation of Mental Disorders [PRIME-MD]). Patients with positive findings for a mental disorder on the PRIME-MD underwent a semistructured interview. Immediately after the visit, physicians completed the Difficult Doctor Patient Relationship Questionnaire.

Results: Patients averaged 50.5 years of age (range, 18-92 years). Little more than half were women (53%); 43%, white; 44%, African American; 8%, Hispanic; and 6%, other. Twenty-six percent had an underlying mental disorder; 11% had more than 1 mental disorder. Sixteen per-

cent had a depressive disorder; 6%, major depression; 11%, an anxiety disorder; 2%, panic disorder; and 9%, a somatoform disorder. Independent correlates of a mental disorder included reporting recent stress (odds ratio [OR], 6.7; 95% confidence interval [CI], 3.3-13.6), having 5 or more physical symptoms (OR, 4.0; 95% CI, 2.1-7.9), or reporting health to be less than very good (OR, 2.2; 95% CI, 1.1-4.3). There was a stepwise increase in the likelihood of having a mental disorder and number of correlates present. Among patients with no predictors, only 2% had an underlying mental disorder, compared with 72% among patients with all 3 clinical predictors.

Conclusions: Patients who report recent stress, 5 or more physical symptoms, or poor health are more likely to have an underlying mental disorder. These clinical cues may allow clinicians to select patients in whom formal screening for mental disorders would be particularly fruitful.

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MENTAL DISORDERS are present in up to one third of patients seen in the outpatient setting.¹⁻⁸ Despite the availability of a number of case-finding instruments,^{2,9,10} however, such disorders frequently remain undiagnosed.^{2,3,11} Screening for mental disorders in all outpatients has not been shown to be cost-effective or feasible. An alternative strategy would be to target patients at higher risk, especially given the time constraints and competing demands of primary care clinicians.^{12,13}

In a previous study of 500 patients presenting to an ambulatory clinic with physical complaints, we discerned the following 4 clinical predictors that significantly increased the likelihood of a depressive or anxiety disorder: recent stress, severity of the presenting symptom, total number of physical symptoms, and poor

self-rated health status (S4 model).⁴ These 4 factors also have been found to predict the presence of a depressive or anxiety disorder among referrals to a rheumatology clinic.¹⁴ The S4 model factors often become apparent during the normal course of an interview, and identify a population of patients in whom psychiatric screening may be particularly warranted.

In this study, we sought to examine how well this model behaves in another cohort of primary care walk-in patients, and expanded mental disorders to include somatoform disorders as well as depressive and anxiety disorders.

RESULTS

PATIENT CHARACTERISTICS

Two hundred sixty-three consecutive patients were approached, and 250 agreed to participate in our study. No patient was

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PATIENTS AND METHODS

Consecutive walk-in patients to the Adult Primary Care Clinic at Walter Reed Army Medical Center, Washington, DC, during the month of August 1998 were invited to participate. Enrollment was conducted during all clinic hours and during every clinic, until 250 patients had been enrolled. Only patients with dementia were excluded from the study. Immediately before seeing the physician, all patients completed a questionnaire on symptom severity (0-10 scale) and duration (number of days), previous visits for the symptom (yes or no), worry about serious illness (yes or no), stress in the previous week (yes or no), and presence of common symptom-related expectations.^{15,16} They also completed the Medical Outcomes Study Short Form-6, a 6-item scale that measures functional status in the following 6 domains: overall health, role function, physical function, social function, emotional health, and physical pain.¹⁷ Patients also underwent evaluation for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*¹⁸ depressive and anxiety disorders using the Primary Care Evaluation of Mental Disorders (PRIME-MD).² Patients with positive findings on the Patient Questionnaire portion of the PRIME-MD were interviewed using the Clinician Evaluation Guide to make criteria-based diagnoses of *DSM-IV* depressive and anxiety disorders. The PRIME-MD has been found to be 86% accurate, compared with evaluation by independent mental health professionals, with an overall sensitivity of 83% and specificity of 88%. For threshold disorders (major depression, generalized anxiety disorder, and panic disorders), the specificity is higher, ranging from 92% to 99%. Our institution's human use committee approved this protocol. The demographics, case-mix, and psychometric properties of patients seen in military settings have previously been shown to be comparable to those in civilian practice.^{19,20}

After each patient visit, physicians completed the 10-item Difficult Doctor Patient Relationship Questionnaire²¹ to assess clinician-perceived difficulty of the encounter, and indicated whether a subspecialty referral was provided. This questionnaire previously has been shown to be a reliable instrument with an internal consistency of 0.88 to 0.96, with a score of greater than 30 indicating a difficult encounter.²²

Statistical analyses were performed using Stata Statistical Software.²³ Categorical variables were analyzed using χ^2 testing, and continuous variables were assessed using Student *t* or Kruskal-Wallis testing as appropriate. Our primary outcome variable was the presence of a mental disorder. Variables significant on univariate screen at $P < .20$ were identified as potential predictive variables and fit into a logistic regression model after the methods of Hosmer and Lemeshow.²⁴ The performance of individual predictors and the overall model were compared with the model's original performance in the derivation set of 500 general medical patients.⁴

Table 1. Characteristics of 250 Walk-in Patients Stratified by Psychiatric Status

Characteristic	Depressive, Anxiety, or Somatoform Disorder		P
	Present (n = 63)	Absent (n = 187)	
Mean age, y	47	52	.11
Women, %	32	20	.04
Race, %			
White	43	40	.29
African American	46	38	
Other	14	22	
Married, %	59	60	.45
College education, %	32	32	.94
Recent stress, %	79	35	<.001
Mean symptom severity level 1*	6.0	5.4	.06
Mean symptom count of 1†	5.3	2.8	<.001
Overall functional status	30	53	<.001
Excellent or very good, %			
Serious illness worry, %	62	62	.94
Mean Functional Status Score	23.4	24.1	<.001

*Rated by the patient on a visual analog scale of 0 (none) to 10 (unbearable).

†Indicates number of physical symptoms reported as currently bothersome from the (Primary Care Evaluation of Mental Disorders) (PRIME-MED) checklist of 15 physical symptoms.²

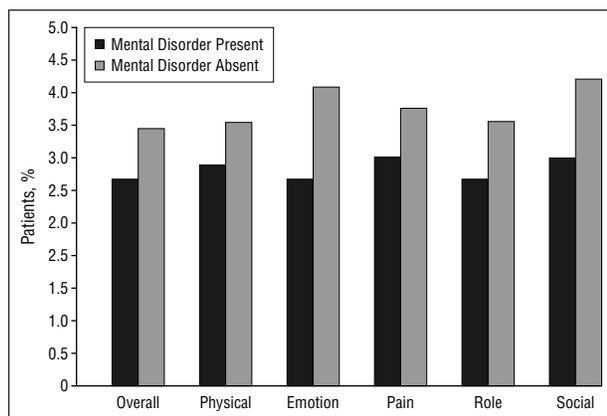
excluded because of a language barrier. Patients averaged 50.5 years in age (range, 18-92 years); 53% were women. Forty-three percent were white, and 44% African American. Patients presented with a variety of symptoms, with more than 1 symptom present 11% of the time. The leading symptom category was musculoskeletal complaints, present in one third of subjects. Pain of some type was reported among 155 patients (62%). Fifty percent had experienced their symptom less than 2 weeks and 69% less than a month.

Nearly all patients (99%) had at least 1 previsit expectation, including a desire for a causal explanation (81%), anticipated time for recovery (65%), medication prescription (66%), diagnostic test (50%), a focused physical examination (48%), or a subspecialty referral (40%). Nearly two thirds (62%) were worried that their symptom might represent a serious illness. Twenty patients (8%) were considered difficult by their clinician.

PREVALENCE OF PSYCHIATRIC DISORDERS

A mental disorder was present in 65 (26%) of patients, with 25 (10%) experiencing 2 or more disorders. A depressive disorder was present in 40 (16%); major depression, 15 (6%); anxiety disorders, 26 (10%); panic disorder, 3 (1%); and somatoform disorder, 23 (9%).

There were no differences between patients with and without psychiatric disorders in age, race, marital status, or educational attainment (**Table 1**). There were also no differences in symptom duration or symptom severity, number or type of previsit expectations, patient worry that the symptom could potentially represent a serious illness, or likelihood that the patient was considered difficult by their clinician. However, patients with



Functional status score by presence of depressive, anxiety, or somatoform disorder. Functional status was measured in 6 domains using the Medical Outcomes Study Short Form-6.¹⁷ Five of the domains use 5-point Likert questions scored from 1 to 5, with 5 representing better functioning. Pain is scored on a 6-point scale. The 6 domains of functioning include overall ("In general, would you say your health is excellent, very good, good, fair, or poor," with excellent scored as 5 and poor as 1); physical ("In the past week, to what extent did your health problems limit you in your everyday physical activities? [1-5]"); pain ("How much bodily pain have you had during the past week? [1-6]"); emotion ("During the past week, how much have you been bothered by emotional problems [such as feeling anxious, depressed, or irritable] [1-5]?"); role ("During the past week, how much difficulty did you have doing your daily work, both inside and outside the house, because of your physical health or emotional problems? [1-5]"); and social ("During the past week, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups? [1-5]"). $P < .001$ for all comparisons between patients with and without a mental disorder.

psychiatric disorders were more likely to be female (relative risk [RR], 1.6; 95% confidence interval [CI], 1.02-2.5), to report recent stress (RR, 2.3; 95% CI, 1.8-2.8), and to report a greater number of other somatic symptoms (5.4 vs 2.8; $P < .001$). Patients with mental disorders also had worse functioning in all 6 domains assessed (**Figure**).

REGRESSION MODELING

Variables that differed between patients with and without mental disorders on univariate screen at $P < .20$ included age, sex, symptom duration and severity, recent stress, number of somatic symptoms, serious illness worry, and overall health status; these were included in our initial regression model. Variables independently significant in predicting the presence of an underlying mental disorder included recent stress (odds ratio [OR], 6.7; 95% CI, 3.3-13.6), 6 or more somatic symptoms (OR, 4.0; 95% CI, 2.1-7.9), and reporting oneself to have less than very good overall health (OR, 2.2; 95% CI, 1.1-4.3) (**Table 2**). There was a stepwise increase in the likelihood of a mental disorder with increasing number of predictors; patients with 0, 1, 2, or 3 predictors had a likelihood of a depressive or anxiety disorder of 2%, 19%, 39%, or 72%, respectively. Using regression coefficients, 79% of patients were correctly classified as having or not having a mental disorder. Sensitivity and specificity were calculated for different thresholds of the 3-predictor model. A threshold of at least 1, 2, and 3 predictors had a sensitivity for depressive or anxiety

Table 2. Independent Predictors of Depressive or Anxiety Disorders

Predictor	Odds Ratio (95% Confidence Interval)	
	General Medicine Patients* (n = 250)	General Medicine Patients† (n = 500)
Stress recently (past week)	6.7 (3.3-13.6)	4.9 (3.0-8.0)
Symptom count of 6 or greater‡	4.0 (2.1-7.9)	3.1 (1.9-5.2)
Self-rated health less than excellent or very good	2.2 (1.1-4.3)	2.7 (1.4-5.0)
Severity of symptom of 6 or greater§	1.4 (0.7-2.8)	2.0 (1.2-3.3)

*Present study. Hosmer-Lemeshow²⁴ goodness of fit test: $\chi^2 = 2.18$; $P = .70$; area under receiver operating characteristic curve, 0.81.

†Found in Kroenke et al.⁴

‡From the Primary Care Evaluation of Mental Disorders (PRIME-MD) checklist of 15 physical symptoms.²

§Rated on a scale of 0 (none) to 10 (unbearable).

||Not significant.

disorders of 98%, 74%, and 30%, respectively, and a specificity of 33%, 70%, and 95%, respectively. In other words, 74% of patients with a depressive, anxiety, or somatoform disorder diagnosed by means of the PRIME-MD had 2 or more clinical predictors, whereas 98% of patients without a disorder had 1 or fewer predictors.

COMMENT

Mental disorders were present in one fourth of patients presenting to our walk-in clinic. Three of the variables (symptom count, stress, and health status) in the original S4 model predicted patients with underlying depressive, anxiety, and somatoform disorders, validating the results of our previous study.⁴ In both studies, the strongest predictor of an underlying mental disorder was the presence of recent stress, followed by greater number of physical symptoms. The weakest predictor of an underlying disorder in our previous studies^{4,14} was patient rating of their presenting symptom severity as greater than 5 (on a visual analog scale of 0 [none] to 10 [unbearable]). In the present study, although patients reporting their symptom severity as greater than 5 (on the same visual analog scale from 1 to 10) were more likely to have a mental disorder (RR, 1.3; 95% CI, 1.0-1.6), this variable was not an independent predictor when included with the other 3 predictors (OR, 1.4; 95% CI, 0.7-2.7). As in our previous studies, there was a stepwise increase in the percentage of patients with mental disorders with increased number of predictors present. Among patients with no clinical predictors, only 2% had an underlying disorder; among those with all 3 predictors, 72% had an underlying mental disorder.

The exact questions in our study were (1) "During the past week, have you been under stress?" and (2) "In general, would you say your health is excellent, very good, good, fair, or poor?" scored as positive for patients answering less than very good. Physical symptom count was measured using the PRIME-MD 15-symptom checklist,

with endorsement of 6 or more symptoms considered positive for this model. During clinic encounters, multiple somatic complaints often become apparent early in the interview and might serve as a surrogate for a formal symptom checklist.

A number of barriers to recognizing mental disorders in the busy outpatient setting have been identified, including time, stigmatization, and somatization. Most primary care visits are completed in less than 15 minutes.²⁵ Given the limited time, coupled with an expanded agenda of tasks expected from primary care physicians, case finding in selected patients may be more feasible than screening for mental disorders in every clinic attendee. There are a number of instruments available to make the diagnosis of mental disorders; in this study, we used the PRIME-MD. There are 2 versions of this instrument available, one that involves questions by clinicians based on patient responses to a questionnaire,² and another that requires clinicians to review patient answers to a questionnaire.²⁶ Both allow rapid diagnoses of the most common mental disorders in primary care, the first averaging 8.4 minutes of clinician time and the second taking less than 3 minutes in 85% of encounters. Patient time to complete either questionnaire is less than 10 minutes.⁴ Both questionnaires have been found to have a high degree of agreement with diagnoses made by independent mental health professionals (κ , 0.65-0.71; 85%-88% accuracy). Other case-finding instruments for depression have been found to take only 2 to 6 minutes to administer, with equally high accuracy.⁹ However, management of mental disorders includes more than making the diagnosis. Once identified, further evaluation of the patients' psychosocial environment, ie, deciding whether this is a self-limited situational disorder or one that merits treatment, followed by a discussion about the risks and benefits of various treatment options must occur. There have been no studies assessing how much more time it takes clinicians to manage mental disorders in primary care than other common primary care problems, although several studies have shown that most treatment of mental disorders occurs in primary care settings.²⁷ The burden of mental disorders to patients is enormous. Patients report greater stress, worse functioning in all aspects of their life, and greater worry. Patients with mental disorders consequently have higher utilization rates of health care services. Patients with mental disorders constitute a disproportionate percentage of referrals to gastroenterology,²⁸ rheumatology,²⁹ and neurology clinics.³⁰ Patients seen in these subspecialty settings with underlying mental disorders are significantly less likely to have an underlying gastroenterological, rheumatological, or neurologic cause for their symptoms. Safe, effective treatment for major depression or panic or generalized anxiety disorders is available, and treatment has been found to improve significantly the quality of patients' lives and to reduce their somatic complaints.

The S3 or S4 models are not suggested as substitutes for direct inquiry about items that permit criteria-based diagnosis of depressive, anxiety, or somatoform disorders. Preliminary evidence suggests that simply asking a few questions about depressed mood or anhedonia is quite sensitive (>90%) in screening for depressive disorders,³¹ although single-item screens for anxiety or so-

matoform disorders have not been studied. Although not replacing diagnostic questions, S3 items may nonetheless be clinically useful for several reasons. First, if 1 or more of the items spontaneously surface during the clinical interview of a medical patient, they may serve as red flags for a potential underlying mental disorder. Recent stress, multiple physical complaints, or low ratings of overall health identify patients at higher risk for underlying mental disorders in whom specific probing about mental disorders is particularly warranted.

Second, most patients who present with mental disorders in the medical setting report physical rather than emotional symptoms,^{4,32-34} and premature questioning about depression or anxiety can elicit negative reactions in some patients. A gradual approach linking physical complaints and psychological symptoms may be more effective. Indeed, the causal relationship (and directionality) between physical and emotional symptoms is not clear-cut in many medical patients. Therefore, the physician need not always insist on depression, anxiety, or somatization as the cause of the patient's physical symptoms, but rather can adopt a more neutral position by considering depressive or anxiety symptoms as simply coexisting conditions or a potential consequence of persistent physical distress.

Our study has several limitations. First, this sample consisted of patients presenting to a primary care walk-in clinic with a physical complaint. It would be helpful to test it in a sample of patients within the context of continuity-of-care visits. Second, a substantial proportion of patients had subthreshold diagnoses, such as minor depressive and anxiety disorders, for which antidepressants or other treatment have been studied inadequately. Although it is likely that the natural history of these disorders is more favorable, it has been found that such patients have higher rates of unmet expectations, are more likely to be reported as difficult by their provider, and have persistence of psychological symptoms for months after the initial encounter. Therefore, identification of such patients may be important.

Currently, the American Academy of Family Physicians, the Canadian Task Force on the Periodic Health Examination, and the US Preventive Services Task Force do not recommend the routine use of case-finding instruments among all clinic patients, recommending instead that clinicians remain alert for symptoms of mental disorders.⁹ Unfortunately, this strategy results in up to half of such patients being missed. The S3 or S4 models may be a way to alert clinicians to patients at high risk for an underlying disorder, since the number of predictors (symptom count, stress, health status) stratify them into groups ranging from a very low to a very high likelihood of a mental disorder.

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