Prevalence of Mental Disorders in Primary Care

Implications for Screening

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Objectives: To determine the prevalence of five mental disorders in primary care and to identify patient groups that have a relatively high prevalence of these disorders.

Design: Two-stage case identification design that involves administration of a 16-item screening instrument followed by an independent diagnostic assessment.

Settings: Three family practice offices in Rhode Island.

Subjects: A total of 937 primary care patients completed the brief screen, 388 of whom completed the independent diagnostic assessment.

Prevalence Estimation: A Bayesian procedure was used to estimate prevalence of mental disorder from screening and assessment results. Independent assessments were based on the Structured Clinical Interview for DSM-III-R administered by a mental health professional.

Results: The prevalence estimates were alcohol abuse

or dependence, 3.2%; generalized anxiety disorder, 2.8%; major depressive disorder, 14.1%; obsessive-compulsive disorder, 2.2%; panic disorder, 6.2%; and any of the five disorders, 22.0%. The prevalence of any of the five disorders was higher in patients returning for follow-up visits (27.9%) than in those either presenting with a new illness (21.7%) or seeking a routine physical examination (11.8%). The combined prevalence was also higher in patients with a chronic medical problem (25.8%) than in those without (16.7%).

Conclusions: Patients returning for follow-up care and, to a lesser extent, those with chronic medical problems appear to be at increased risk of having a mental disorder. The practice of selectively screening new patients for mental health problems is questioned. Screening efforts in primary care should include established patients and those with chronic medical illnesses as well as new patients.

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RESEARCHERS, clinicians, and policy makers all seek a better understanding of the amount, type, variety, and distribution of mental disorders in primary care. Accumulating evidence suggests that mental disorders are highly prevalent in primary care¹⁻⁹ and commonly escape the detection of primary care physicians.^{10,11} In response to these findings, public health initiatives have been developed to help improve the recognition and treatment of mental disorder in primary care.^{12,13} Basic epidemiologic research has the potential to facilitate these initiatives by defining the prevalence of specific mental disorders in primary care and by identifying patient groups at an increased risk for specific mental disorders.

The administration of structured psychiatric interviews to representative samples of primary care patients provides a means of estimating the prevalence of specific mental disorders in pri-

mary care populations. Systematic diagnostic interview assessments, such as the Schedule for Affective Disorders and Schizophrenia,¹⁴ the Diagnostic Interview Schedule,¹⁵ and the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition* (DSM-III-R) (Patient Edition) (SCID-P),^{16,17} permit determinations of the presence or absence of specific mental disorders based on well-defined criteria. Because of the long length of these interviews and the low expected prevalence of individual mental disorders in unselected primary care samples, researchers have generally relied on two-stage case identification procedures for prevalence estimates. All previous relevant studies known to us have applied this

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SUBJECTS AND METHODS

SUBJECTS

The data are from the Symptom-Driven Diagnostic System for Primary Care (SDDS-PC) (trademark of The Upjohn Co, Kalamazoo, Mich) Validation Study,¹⁹ which was conducted in 1992 at three private family practice offices in cooperation with the Brown University (Providence, RI) Departments of Psychiatry and Family Medicine. The practices, which consist of six full-time and one part-time board-certified family physicians and two nurse practitioners, serve patients from Rhode Island and Massachusetts. All patients who were 18 through 70 years of age and provided informed consent were eligible to participate in the study.

ASSESSMENT PROCEDURES

A two-stage sampling design was used in which consenting subjects were given the SDDS-PC screen for multiple disorders in primary care. A subset of patients in the screen sample agreed to participate in a SCID-P interview. All interviewers were provided extensive SCID-P training and were blinded to the screen results.

The SDDS-PC screen, which consists of 16 items, includes subscales for the presence of five mental disorders and suicidal ideation in the past 30 days. The disorders include major depressive disorder, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, and alcohol abuse or dependence. These disorders were selected because of the empirical evidence of treatment efficacy. The development and validation of the SDDS-PC screen is fully described elsewhere.¹⁹ The SCID-P, which was used as the diagnostic standard for *DSM-III-R* diag-

noses, was developed by Michael First, MD, for the *DSM-IV* field trials.²⁰

STATISTICAL PROCEDURES

The demographic characteristics of the samples that did and did not receive the SCID-P were compared using χ^2 tests for categorical variables and *t* tests for continuous variables. All tests were two tailed with $\alpha=.05$.

The procedure that was used for prevalence estimation is based on the methods for a prospective sampling design that is described in detail by Kraemer.²¹ By definition, prevalence is equal to the sum of the number of true-positive (TP) and the number of false-negative (FN) results divided by the total number of subjects assessed. However, because only a subset ($n=388$) of those screened ($n=937$) actually received the full diagnostic assessment (the SCID-P), Bayesian procedures must be used to estimate TP and FN rates in the screened sample. Each estimate is based on the screen positive rate (*Q*) of the sample that received the screen and the positive predictive value (PPV) and negative predictive value (NPV) of the sample that received both the screen and the SCID-P. Where TP is the product of *Q* and PPV, FN is the product of $(1-Q)$ and $(1-NPV)$. Therefore, the prevalence (*P*) is computed as the sum of the estimates of TP and FN: $P=(Q \times PPV) + [(1-Q)(1-NPV)]$.

Stratified rates were also estimated. Stratification variables include gender, reason for visit (the patient indicated whether the visit was for a routine physical examination, a new illness, or a follow-up), and chronic medical problem (the physician was systematically asked whether the patient presented with a chronic medical problem). Stratification analyses included only those subjects with necessary stratification data. Rates are presented with 95% confidence intervals.

strategy by using a brief screening instrument followed by selective administration of a more extensive diagnostic interview.

Hoeper and colleagues¹⁰ were the first to estimate the prevalence of specific mental disorders in a primary care practice. Their study, which was conducted in Marshfield, Wis, concluded that the overall prevalence of Research Diagnostic Criteria (RDC)¹⁸ mental disorders was 26.7%, with major depression (5.8%) and phobic disorder (5.8%) as the two most prevalent disorders.¹⁰ Schulberg and coworkers⁵ subsequently determined that 9.2% of an adult sample presenting to three primary care clinics in the Pittsburgh, Pa, area met *DSM-III* criteria for depression (major depressive episode, bipolar II disorder, dysthymia, or adjustment disorder with depressed mood). Other common disorders in that study included alcohol abuse (8.2%), substance abuse (7.1%), phobia (6.8%), and antisocial personality disorder (5.8%).

Von Korff and coworkers⁶ estimated that 25% of an urban primary care sample met criteria for at least one of nine *DSM-III* disorders: major depression (5.0%), dysthymia (3.7%), panic disorder (1.4%), generalized anxiety disorder (4.6%), obsessive-compulsive disorder (1.1%), cognitive impairment (7.8%), alcohol abuse or dependence (5.0%), schizophrenia (0.4%), and phobias (7.8%).

Barrett and colleagues⁷ reported that the prevalence of RDC diagnoses was 26.5% in patients in a primary care practice in Hanover, NH. In their sample, 10.0% of the patients met criteria for one of the specific depressive disorders, 5.3% were classified as having a mental disorder without depression, and an additional 11.2% were classified as having significant depressive symptoms but not a specific depressive disorder.

Blacker and Clare⁸ found an overall prevalence of psychiatric disorder of 35.3% among consecutive patients in an inner-city general health center in London, England. The most common disorders were stress/adjustment (17.9%), RDC minor depressive disorder (5.7%), RDC major depressive disorder (4.3%), and anxiety disorders (3.2%) including anxiety neurosis, panic disorder, and phobic disorder. Alcoholism (2.6%), major personality disorder (2.6%), schizophrenia and related psychotic disorders (2.6%), drug dependence (1.2%), and bipolar disorder (0.9%) were all less common.

The present study applied a two-stage diagnostic procedure to consenting adult patients at three family practices in Rhode Island. A screening instrument was administered, followed by the SCID-P modified for primary care. Prevalence estimates are presented for five *DSM-III-R* disorders (major depression, panic disorder, gen-

eralized anxiety disorder, obsessive-compulsive disorder, and alcohol abuse or dependence). The relationships between selected clinical variables and specific mental disorders are examined.

RESULTS

The recruitment of patients proceeded in the following manner. A total of 1340 patients were invited to partici-

pate in the study. Nine hundred thirty-seven subjects (70%) were screened. Of the screened sample, 388 (41%) received the SCID-P. The sample had a mean age of 38.4 years (SD=13.2) and was primarily female (71.8%), white (97.6%), married (58.6%), and well educated (66.9% had at least some college). For the most part, the demographic characteristics of those who did and did not receive the SCID-P are similar (**Table 1**). However, a slightly higher, yet significantly different, proportion of the sample that received the SCID-P were married (64.4% of those who received the SCID-P vs 54.6% of those who did not).

The 1-month prevalence estimates are as follows: alcohol abuse or dependence, 3.2%; generalized anxiety disorder, 2.8%; major depressive disorder, 14.1%; obsessive-compulsive disorder, 2.2%; panic disorder, 6.2%; and any of the five disorders, 22.0%. These rates were also stratified by gender (**Table 2**). Women had approximately a twofold elevation in rates of major depressive disorder, obsessive-compulsive disorder, and panic disorder. Men had higher rates of alcohol abuse or dependence.

Rates of mental disorders were also stratified by the reason for the visit (**Table 3**). The patient was asked if the visit was for a new illness (n=248, 30% of the 828 who provided this information), a follow-up (n=263, 31.7%), or a routine physical examination (n=317, 38.3%). The rates of each mental disorder were considerably lower for those who were presenting for a routine physical examination (eg, 11.8% had at least one disorder). The patients were also classified on the basis of the physician's report of the chronicity of the medical problem. Half of the patients were classified as having a chronic medical problem (n=415, 50.6% of the 820 with chronicity information). The patients presenting with chronic medical problems had elevated rates of major depressive disorder (chronic problem, 16.0%; no chronic problem,

Table 1. Demographics of Screened Sample

	Received SCID-P*	Did Not Receive SCID-P	χ^2	df	P
Gender, No. (%)			0.32	1	.57
M	105 (27.1)	159 (29.0)			
F	283 (72.9)	390 (71.0)			
Race, No. (%)			4.25	2	.12
W	380 (97.9)	530 (97.4)			
B	1 (0.3)	8 (1.5)			
Other	7 (1.8)	6 (1.2)			
Marital status, No. (%)			12.9	4	.01
Married	246 (64.4)	297 (54.6)			
Living with someone	20 (5.2)	48 (8.8)			
Widowed	11 (2.9)	18 (3.3)			
Separated or divorced	34 (8.9)	42 (7.7)			
Never married	71 (18.6)	139 (25.6)			
Education, No. (%)			5.65	3	.13
<9th grade	6 (1.6)	14 (2.6)			
High school	106 (27.7)	178 (33.1)			
Some college	94 (24.6)	134 (25.0)			
Graduated college	176 (46.1)	211 (39.3)			
Age, y, mean (SD)	39.4 (12.4)	37.8 (13.7)	$t=-1.84$	881.6	.07

*SCID-P indicates Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (Patient Edition).

Table 2. Prevalence of Psychiatric Disorders

Diagnosis	Rates/100 (95% Confidence Interval)		
	Men	Women	Total
Alcohol abuse or dependence	7.6 (4.5 to 10.7)	1.7 (0.7 to 2.7)	3.2 (2.0 to 4.4)
Generalized anxiety disorder	0.0 (0.0 to 0.0)	3.9 (2.5 to 5.3)	2.8 (1.8 to 3.8)
Major depression	7.5 (4.4 to 10.6)	16.5 (13.8 to 19.2)	14.1 (11.9 to 16.3)
Obsessive-compulsive disorder	0.9 (-0.3 to 2.1)	2.7 (1.5 to 3.9)	2.2 (1.2 to 3.2)
Panic disorder	4.0 (1.6 to 6.4)	7.1 (5.1 to 9.1)	6.2 (4.6 to 7.8)
Any of the above	14.5 (10.2 to 18.8)	24.9 (21.6 to 28.2)	22.0 (19.3 to 24.7)

Table 3. Prevalence of Psychiatric Disorders Stratified by Patient's Reason for Visit to Physician

Diagnosis	Rates/100 (95% Confidence Interval)		
	New Illness	Follow-up	Routine Physical Examination
Alcohol abuse or dependence	1.2 (-0.2 to 2.6)	7.4 (4.3 to 10.5)	0.9 (-0.1 to 1.9)
Generalized anxiety disorder	2.7 (0.7 to 4.7)	4.5 (2.0 to 7.0)	1.5 (0.1 to 2.9)
Major depression	15.7 (11.2 to 20.2)	16.9 (12.4 to 21.4)	5.0 (2.6 to 7.4)
Obsessive-compulsive disorder	1.8 (0.2 to 3.4)	0.8 (-0.4 to 2.0)	1.6 (0.2 to 3.0)
Panic disorder	5.6 (2.7 to 8.5)	8.3 (5.0 to 11.6)	2.8 (1.0 to 4.6)
Any of the above	21.7 (16.6 to 26.8)	27.9 (22.4 to 33.4)	11.8 (8.3 to 15.3)

11.2%) and panic disorder (chronic problem, 7.8%; no chronic problem, 4.0%) (**Table 4**).

COMMENT

Our results are broadly consistent with previous research on the measurement of mental disorders in primary care. In accord with earlier studies, we found that major depression was the most common mental disorder in primary care practice^{7,22} and that rates of mental disorders tended to be elevated among women.^{7,23,24}

At the level of individual disorders, our prevalence estimates tended to be somewhat higher than previously reported figures (**Table 5**). In particular, our estimate that 14.1% of primary care patients meet criteria for major depression is well above previously published findings (2.8% to 9.2%). In contrast, our estimates for the prevalence of generalized anxiety disorder (2.8%) and alcohol abuse or dependence (3.2%) fall between previously published estimates of 1.6% to 11.9% and 2.6% to 5.0%, respectively. However, we also present higher rates of panic disorder (6.2% vs 1.4% to 4.3%) and obsessive-compulsive disorder (2.2% vs 0.7% to 1.2%) than have been previously reported in primary care. The extent to which these differences are attributable to actual differences in patient populations rather than differences in survey methods remains unknown.

The rates that we found in primary care are, for the most part, elevated relative to the general population. For instance, in the Epidemiologic Catchment Area Program²³ 1-month prevalence rates were as follows: alcohol abuse

or dependence, 2.8%; generalized anxiety disorder, not reported; major depressive disorder, 2.2%; obsessive-compulsive disorder, 1.3%; and panic disorder, 0.5%. More recently, in the National Comorbidity Survey²⁴ (which did not report 1-month prevalence) the 12-month prevalence rates were as follows: alcohol abuse without dependence, 2.5%; alcohol dependence, 7.2%; generalized anxiety disorder, 3.1%; major depressive disorder, 10.3%; obsessive-compulsive disorder, not reported; and panic disorder, 2.3%.

IMPLICATIONS FOR MENTAL HEALTH SCREENING

In recent years, considerable effort has been devoted to improving the recognition and diagnosis of mental disorders in primary care. Several studies have examined whether feeding back to primary care physicians the results of symptom questionnaires affects the detection and treatment of mental disorders.^{22,25,26} We recommend the screening of all primary care patients. However, in situations where limited clinical resources make this infeasible, consideration should be given to selective screening of patients at a high risk for mental disorders. In our sample, the prevalence of mental disorders among patients presenting for follow-up appointments exceeded the comparable prevalence among patients presenting for routine physical examinations. In a similar manner, the prevalence of mental disorders among patients with a chronic medical problem exceeded the prevalence of mental disorders among patients without a chronic medical problem.

Each year large numbers of patients receive routine physical examinations. According to the National Ambulatory Medical Care Survey, general medical examinations are the most common primary reason for medical visits in office-based practice, accounting for approximately 30 million office visits each year.²⁷ Our findings suggest that routine mental health screening at these visits may yield comparatively low rates of disorder (11.8%), yet a substantial number of patients.

Research on improving the detection of mental disorders in primary care has tended to focus almost exclusively on depressive disorders and alcoholism. Our findings suggest that in addition to these conditions, panic disorder (6.2%) is a logical candidate for the development of screening procedures. The rationale of screening for panic disorder is enhanced by the finding that in community

Table 4. Prevalence of Psychiatric Disorders Stratified by Patient's Report of Chronicity

Diagnosis	Rates/100 (95% Confidence Interval)	
	No Chronic Medical Problem	Chronic Medical Problem
Alcohol abuse or dependence	2.5 (0.9 to 4.1)	4.4 (2.4 to 6.4)
Generalized anxiety disorder	3.1 (1.3 to 4.9)	3.3 (1.5 to 5.1)
Major depression	11.2 (8.1 to 14.3)	16.0 (12.5 to 19.5)
Obsessive-compulsive disorder	1.3 (0.1 to 2.5)	3.0 (1.4 to 4.6)
Panic disorder	4.0 (2.0 to 6.0)	7.8 (5.3 to 10.3)
Any of the above	16.7 (13.0 to 20.4)	25.8 (21.7 to 29.9)

Table 5. Selected Studies of Prevalence of Mental Disorders Among Primary Care Patients*

Source, y	Disorder, Rates/100					
	Alcohol Abuse	GAD	Major Depression	OCD	Panic Disorder	Any Disorder
Hoeper et al, ¹⁰ 1979	...	1.6	5.8	...	...	26.7
Schulberg et al, ⁵ 1985	8.2	...	9.2	0.7	1.7	...
Von Korff et al, ⁶ 1987	5.0	4.6	5.0	1.1	1.4	33.1
Barrett et al, ⁷ 1988	...	2.9	2.2†	...	...	26.5
Blacker and Clare, ⁸ 1988	2.6	...	4.8	...	3.2	35.1
Zinbarg et al, ⁹ 1994	...	11.9	7.9	1.2	4.3	...
Present study	3.2	2.8	14.1	2.2	6.2	22.0

*GAD indicates generalized anxiety disorder; OCD, obsessive-compulsive disorder; and ellipses, not reported.

†Includes treated major depression.

samples, panic disorder is associated with impaired social and marital functioning, financial dependency, and suicide attempts.²⁸⁻³⁰ At the same time, the comparatively low prevalence of generalized anxiety disorder (2.8%) and obsessive-compulsive disorder (2.2%) may present greater challenges to successful screening programs.

LIMITATIONS

There are several limitations in the methods used to derive the prevalence estimates. The screened sample was not a random sample of primary care patients, as participants were self-selected. Furthermore, the sample that received the comprehensive diagnostic interview (the SCID-P) was not randomly selected from the screened sample. Because the prevalence estimates are based on this two-stage sampling procedure, the extent to which the subset who received the SCID-P is not representative of the screened sample will bias our estimates. A second limitation concerns the time that elapsed from screening to administering the SCID-P; for nearly half the subjects, it exceeded 14 days. A third limitation concerns the uncertain reliability and validity with which patients classified their reasons for visits and physicians classified the chronicity of the patients' medical conditions.

CONCLUSIONS

Efforts to improve the recognition and treatment of mental disorders in primary care must ultimately rely on a basic understanding of the prevalence and distribution of the major mental disorders in this practice setting. This report confirms earlier findings that mental disorders are highly prevalent in primary care. Within primary care, patients returning for follow-up care and those with chronic medical problems appear to be at an increased risk for mental disorders. Although this finding corroborates the widespread clinical impression that mental disorders are concentrated among long-term medically ill patients, it challenges the practice of selectively screening new patients and those seeking routine physical examination. This suggests that programs screening for mental disorders must not focus exclusively on new patients, but include established primary care patients as well as those with chronic medical illnesses.

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