

Panic Disorder: Epidemiology in Primary Care

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One hundred ninety-five patients in a primary care practice were screened with the National Institute of Mental Health Diagnostic Interview Schedule, a structured psychiatric interview, so that the epidemiology of panic disorder could be studied. Thirteen percent of the patients met criteria described in the Diagnostic and Statistical Manual of Mental Disorders, ed 3 (DSM-III) for panic disorder (6.7 percent if the DSM-III exclusionary criteria are used). An additional 8.7 percent of patients, labeled in the study as having simple panic, had four or more autonomic symptoms of panic disorder but did not meet DSM-III criteria (three panic attacks in a three-week period). Compared with controls, patients with panic disorder or simple panic had a significantly higher lifetime risk of major depression, multiple phobias, and avoidance behavior and higher scores on their psychological distress scales. Patients with panic disorder and simple panic often misinterpreted their symptoms as being due to a physical illness and had significantly higher scores on the somatization scale of the SCL-90 and on a medical review of symptoms than did the controls with no panic disorder.

It is important to diagnose panic disorder accurately because double-blind placebo-controlled studies have demonstrated the efficacy of psychopharmacologic treatments, including tricyclic antidepressants (notably imipramine and desipramine), the high-potency benzodiazepine (alprazolam) and monoamine oxidase inhibitors (phenelzine). Primary care physicians, by screening patients with complaints of tension and anxiety, as well as multiple unexplained somatic complaints for panic disorder, may be able to reduce somatic preoccupation and disease phobia by instituting effective therapy.

Patient complaints of anxiety and nervousness account for 11 percent of visits to primary care physicians according to data from the 1980 National Ambulatory Medical Care (NAMC) survey.¹ Moreover, two somatic complaints frequently associated with anxiety (headaches and abdominal pain) represented 18.7 percent of the major reasons for the primary care visits. In a recent study of 95 internal medicine outpatients utilizing depression and anxiety self-rating scales, Linn and Yager² found a 12 percent prevalence of severe anxiety. A survey of primary care practices in the United States showed that 21.8 percent of the patients had been prescribed psychotropic

medications over a one-year period, with benzodiazepines the most commonly prescribed agents.³

Not only is pathological anxiety a primary reason patients visit physicians and a common etiology for psychophysiological complaints,⁴ but it also represents a psychological response to acute or chronic medical illness. Thus, Zung⁵ has demonstrated that pathological anxiety (defined as a score greater than 45 of the Zung Anxiety Scale) occurs in 9 percent of patients in the community, in 32 percent of patients seeking medical care from primary care physicians, and in 52 percent of patients with a known cardiologic illness. Anxiety frequently amplifies patients' complaints of organic illness and increases utilization of health care. For example, Dirks et al⁶ have demonstrated that patients with asthma and severe anxiety have three times the rates of hospitalization as control asthmatic patients with similar degrees of physiologic asthma but low levels of anxiety.

Despite the frequency of anxiety as a primary com-

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plaint and as a pathological coping response to medical illness, few psychiatric epidemiologists have studied anxiety in the context of primary care. Instead the primary focus has been on major depression, where studies have demonstrated a high rate of affective illness in primary care, frequent misdiagnosis due to somatization by depressed patients, and increased utilization of primary care physicians' time by patients who have not had their depression accurately diagnosed and treated.⁷⁻¹⁰ Part of the problem is that anxiety has been considered a symptom, not a syndrome. Anxiety is often considered an adjustment reaction to life events and treated with supportive counseling or sedative hypnotic medications. Recent psychiatric research, however, has delineated a severe form of anxiety termed *panic disorder* that appears to have a biologic-genetic basis¹¹ and responds poorly to sedative hypnotics, but can be effectively treated with other pharmacologic agents.¹²

The previous diagnostic category of anxiety neurosis has now been divided into panic disorder and generalized anxiety disorder.¹³ Generalized anxiety disorder is manifested by a persistent anxiety state. Panic disorder is characterized by sudden recurrent attacks with at least four of the following symptoms: palpitations, dyspnea, diaphoresis, trembling or shaking, chest pain or discomfort, paresthesias in hands and feet, dizziness or faintness, hot and cold flashes, a feeling of unreality, and a fear of impending doom, going crazy, or losing control. The patient must have three of these episodes in a three-week period to meet the *Diagnostic and Statistical Manual of Mental Disorders-III* (DSM-III) criteria for panic disorder. Panic disorder occurs frequently in the general population with four studies estimating that 1.6 to 2.9 percent of women and 0.6 to 1.7 percent of men suffer from it.^{11,14-16}

Because of the lack of epidemiologic studies on anxiety in primary care, the authors designed this study to determine (1) the prevalence of panic disorder in a university-based primary care clinic, (2) the tendency for patients with panic disorder to somatize (selectively focus on the frightening physical symptoms associated with their anxiety attacks), (3) the spectrum of severity of panic attacks, and (4) their relationship to affective illness.

METHODS

The University of Washington Family Medical Center is an outpatient clinic with 7,000 registered patients and 19,000 outpatient visits annually. It is staffed by 30 residents and faculty physicians. The ratio of visits by female patients to male patients is 2.5:1.

In this family medicine practice, two psychiatric interviewers administered an abridged version of the National Institute of Mental Health Diagnostic Interview Schedule (DIS)¹⁷ to 195 randomly selected pa-

tients who were 17 years of age and over. Prior to the study, both interviewers were trained in the use of the DIS by the senior author (W.K.). In order to assess their interrater reliability, 10 percent of the research interviews were completed with both interviewers present. The two raters were in almost complete agreement in the classification of panic disorder cases (Kappa = .90, $P < .006$) as well as diagnoses of depression and alcohol abuse (Kappa = .90 or above).

The DIS section on panic disorder was administered to 195 patients. The DIS has one screening question for panic disorder: "Have you ever had a spell or attack when all of a sudden you felt frightened, anxious or very uneasy in situations when most people would not be afraid?" If the patient answers no to this question, the interviewer is then instructed to skip the rest of the section on panic disorder. Unfortunately, this screening question's sensitivity has not been evaluated empirically. The DIS screening question focuses entirely on patients' awareness of the psychological symptoms of fear generated by intense anxiety. Many primary care patients with panic disorder, however, selectively focus on one of the autonomic symptoms of panic or on a psychophysiologic symptom caused by their intense autonomic arousal and minimize symptoms of nervousness as secondary.^{4,18}

Given this problem, four questions were added to the DIS screening question to identify core somatic symptoms of panic disorder.

1. Do you ever have sudden episodes of rapid heart beat or feeling like your heart is pounding loudly?
2. Do you ever have sudden episodes of lightheadedness or feeling faint?
3. Do you ever have sudden episodes of sweating, hot flashes, or trembling?
4. Do you ever have sudden episodes of chest tightness or a feeling of smothering or not being able to get enough air in to breathe?

If the patient answered yes to the DIS screening question or to one of the four additional questions, the interviewer proceeded with the subsequent DIS questions on panic disorder. All patients who had a history of panic attacks with at least four somatic symptoms and one out of every four patients who did not meet criteria for panic disorder were interviewed further to screen for simple phobias, alcohol abuse or dependence, and major depression resulting from the reported associations of these illnesses with severe anxiety disorders.

Utilizing DSM-III criteria,¹³ patients were classified as having panic disorder, simple phobia, major depression, or alcohol abuse. The cutoff point in DSM-III criteria for panic disorder requires the patients to have three panic attacks in a three-week period and at least four autonomic symptoms occurring during an attack. An additional diagnosis was added that was called simple panic for patients who fulfilled the criteria of suffering from acute anxiety attacks that included four or more autonomic symptoms, but who

TABLE 1. THE INCIDENCE OF PANIC DISORDER AND SIMPLE PANIC

	Diagnosis				
	Simple Panic No. (%)	Past Simple Panic No. (%)	Panic Disorder No. (%)	Past Panic Disorder No. (%)	No Panic Disorder No. (%)
Female	17 (100.0)	13 (68.4)	22 (84.6)	12 (85.7)	79 (65.5)
Male	0 (0.0)	6 (31.6)	4 (15.4)	2 (14.3)	40 (34.5)
Total	17 (100)	19 (100)	26 (100)	14 (100)	119 (100)

had fewer than three panic attacks in a three-week period. All diagnoses made by the two interviewers were carefully reviewed by the senior author (W.K.). Exclusion criteria such as major depression or agoraphobia were not used in this study because the accuracy of the hierarchical diagnostic formulation of DSM-III (in which affective disorder is given top priority) has been questioned. Others have suggested that the DSM-III be modified to allow simultaneous diagnosis of affective disorder and panic disorder to provide a more accurate depiction of the clinical picture.¹⁹ Patients were classified as having past episodes of panic disorder or simple panic if they met DSM-III criteria for these disorders but had not had spontaneous anxiety for a minimum of one month.

SUBJECTS

The 195 patients (53 male and 142 female) ranged in age from 17 to 84 years with a mean of 37.2 years and a median of 33.6 years. Ninety-six patients were married, 67 were never married, and 31 were separated, divorced, or widowed. There were 176 white, 11 black, 4 Hispanic, and 4 Asian patients. In terms of Hollingshead social class index, 1.7 percent of patients were from social class I, 14.4 percent were from social class II, 46 percent were from social class III, 23.6 percent were from social class IV, and 14.4 percent were from social class V.²⁰ Compared with the norms of the clinic population, there were no significant differences in age, ratio of female-to-male patient visits to the clinic, race, or socioeconomic status.

PSYCHOLOGICAL MEASURES

To help validate the diagnostic findings, patients completed a battery of psychological tests including the Beck Depression Inventory (short form),²¹ Zung Anxiety Scale,²² and the SCL-90 subscales on depression, anxiety, phobic-anxiety, and somatization.²³ A patient self-rating of a medical review of systems was also completed.

STATISTICAL METHODS

Major analyses compared primary care patients with

and without panic disorder. The chi-square test with Yates' correction was used to test the statistical significance of relationships between two categorical variables. When panic, simple panic, and no disorder patients were compared on continuous variables (psychological tests and number of phobias), the distributions of the data were inspected and the proper test statistic was chosen. The distribution of the SCL-90 depression and somatization scales were symmetric; thus, conventional Student *t* tests were used. Welch's test²⁴ was used to test the Zung Anxiety Scale because, although its distribution was symmetrical, the variances were heterogeneous. The number of phobias and the SCL-90 anxiety and phobic anxiety scales had distributions that were quite skewed, but because the variances in the patient groups were not significantly different, Kruskal-Wallis tests on the mean ranks were used. A median test was used to analyze Beck Depression Inventory scores due to its skewed distribution and heterogeneous variances.

RESULTS

PREVALENCE

Table 1 describes the prevalence of panic disorder in the 195 patients. Seventeen (8.7 percent) patients had present simple panic and 19 (9.7 percent) had past simple panic. As shown, 26 patients (13.3 percent) met DSM-III criteria for current panic disorder and 14 (7.2 percent) had past panic disorder. Of the patients with current panic disorder, 61 percent had consulted a physician about their anxiety symptoms, as contrasted with only 23.5 percent in the current simple panic group.

The demographic analyses indicated that patients with panic were not significantly different from patients without panic by age, race, marital status, living situation, number of dependent children at home, or socioeconomic status. The groups were different, however, on sex ($\chi^2(4) = 14.14, P < .01$). Women were more likely than men to have simple panic or panic disorder. Because sex could confound subsequent analyses on psychological variables, these analyses were done exclusively on women.

TABLE 2. PRESENCE OF COEXISTING DIAGNOSES OF MAJOR DEPRESSION

Female Patient Diagnosis	Simple Panic Patients (n = 17)	Panic Disorder Patients (n = 22)	No Disorder Patients (n = 28)
No major depression	4	2	20
Present major depression	5	12	2
Past major depression	8	8	6

PRESENCE OF COEXISTING DEPRESSION

Table 2 presents comparisons of simple panic, panic disorder, and control patients according to the presence or absence of a diagnosis of major depression. The lifetime rate of major depression was 76 percent in female simple panic patients, and 95 percent in female patients with panic disorder, compared with only 28.6 percent in female patients with no panic disorder. Both panic groups had significantly higher rates of depression at some point in their lifetime: simple panic ($\chi^2(1) = 9.31$; $P < .005$), and panic disorder ($\chi^2(1) = 19.15$; $P < .001$).

Differences in the presence of current major depression also occurred across the groups: 29.4 percent in patients with simple panic and 54.5 percent in patients with panic disorder. Patients with panic disorder ($\chi^2(1) = 14.70$, $P < .001$) and simple panic ($\chi^2(1) = 4.42$, $P < .05$) had significantly more current major depression than patients with no panic disorder.

Severity of depressive episodes in patients with panic disorder was demonstrated by their help-seeking behavior: 75 percent of patients with panic disorder and 46.2 percent of patients with simple panic had consulted a physician about depression at some time in the past.

PRESENCE OF PHOBIAS

Patients with panic disorder often develop multiple phobias and avoidance behavior. The expectation was that patients with panic disorder would have significantly more phobias than the patients with no panic disorder. The group with no panic disorder had a mean of 1.2 phobias per patient, significantly fewer than the two panic disorder groups: simple panic patients had 3.3 phobias ($\chi^2 = 13.8$, $P < .001$) and panic disorder patients had 4.8 phobias ($\chi^2 = 33.1$, $P < .001$).

PSYCHOLOGICAL TESTS

Patients with simple panic and panic disorder scored significantly higher on all measures of anxiety, depression, and somatization than the controls (with the

exception of the phobic anxiety scale of the SCL-90 in simple panic patients), and also had a significantly higher mean number of positive symptoms on a medical review of systems (Table 3).

SCREENING QUESTIONS

An additional eight (50 percent) patients with simple panic and five (19.2 percent) patients with panic disorder who were not identified by the DIS screening question were identified by one of the four somatic screening questions. Female patients with panic disorder were added to those with simple panic to examine differences between patients who were given a diagnosis utilizing the DIS screening question and those classified according to the four somatic screening questions.

A total of 65 percent of the patients identified by the DIS screening question had panic disorder compared with only 38 percent of the patients identified by the somatic screening questions. Table 4 compares these two groups with patients not identified by either screening method. Patients identified by DIS screening scored higher on all parameters than did those identified by somatic screening. Differences on the Zung Anxiety Scale and the SCL-90 somatization and depression scales did not reach statistical significance. Female patients identified by the somatic screening questions had significantly higher scores on all measures of distress (Zung Anxiety Scale, Beck Depression Inventory, and SCL-90 somatization, depression, anxiety, and phobic anxiety scales) and significantly more phobias than those patients with no panic disorder.

DISCUSSION

PREVALENCE

In this study a lifetime prevalence of panic disorder was found in 20.5 percent of the UW Family Medicine Clinic outpatient sample, with 13.3 percent of the 195 patients meeting DSM-III criteria for a current episode of panic disorder. If DSM-III exclusion criteria had been utilized so that patients with major depression could not be classified as having panic disorder, the prevalence rate would decrease to 6.7 percent for panic disorder and 6 percent for simple panic. The data from the psychological tests (Beck Depression Inventory, Zung Anxiety Scale, and SCL-90) support the validity of these diagnoses. These patients reported significantly more anxiety and depression than did the patients with no disorder. Of all patients asked to participate in the study, 53 percent agreed to do so. Hence, even if all 47 percent of the patients who did not participate had not met panic disorder criteria, the lowest possible prevalence of panic disorder would still be 7.1 percent (3.6 percent if the DSM-III exclusion criteria had been utilized).

Several supporting studies demonstrate a high

TABLE 3. CENTRAL TENDENCIES OF PSYCHOLOGICAL TESTS ACROSS FEMALE SAMPLES

	Simple Panic Present	Panic Disorder Present	No Disorder
Beck Depression*	6.3**	7.5**	1.9
Zung Anxiety***	48.2**	52.2**	38.2
SCL—Somatization*** nonpatient norm	62.9**	63.0**	53.0
SCL—Depression*** nonpatient norm	64.5**	68.3**	52.8
SCL—Phobic anxiety* nonpatient norm	54.1	59.6**	44.3
SCL—Anxiety*	61.7**	68.5**	46.9
Review of systems	16.8†	14.1**	7.3

*Median
 **P < .005
 ***Means
 †P < .05
 Note: SCL-90 scores were converted to standardized (t score) norms for nonpatient populations

TABLE 4. PSYCHOLOGICAL TEST SCORES OF PATIENTS IDENTIFIED BY SOMATIC AND DIS SCREENING QUESTIONS

	Somatic Screening (n = 12) Questions	DIS Screening (n = 25) Questions	No Disorder (n = 78)	Somatic Screening vs DIS Screening P value	Somatic vs No Disorder P value
Beck Depression Inventory	5.4	9.2	2.3	< .05	< .001
Zung Anxiety Scale	47.3	52.1	38.2	—	< .01
SCL-90 somatization	62.7	63.4	53.0	—	< .001
SCL-90 depression	62.9	68.6	52.8	—	< .01
SCL-90 phobic-anxiety	50.3	60.8	44.3	< .05	< .05
SCL-90 anxiety	57.6	69.6	46.9	< .01	< .001
Number of phobias	3.0	4.7	1.2	< .05	< .001

prevalence rate of severe anxiety in primary care patients. Zung,⁵ in a study of primary care practice, found that 32 percent of patients scored 45 or greater on the Zung Anxiety Scale. In this study only 27 percent of patients scored 45 or more on the Zung Anxiety Scale. Moreover, the finding that 15.7 percent of patients scored in the moderate-to-severe depressive range on the brief Beck Depression Inventory places this estimate in the middle of at least five other study estimates of the prevalence of depression in primary care, namely, 12 to 25 percent.⁷⁻¹⁰ This percentage (15.7 percent) is slightly lower than that found in this same clinic in a study of 145 randomly selected clinic patients (in which 17.2 percent scored eight or more on the brief Beck Depression Inventory).⁸

Finlay-Jones and Brown²⁵ found, utilizing a structured psychiatric interview, that 17 percent of 164 female primary care patients suffered from severe anxiety with 8 percent having anxiety alone and 9 percent having anxiety and major depression. The NAMC sur-

vey mentioned earlier asked physicians to record the patient's principal complaint in the patient's own words. Anxiety and nervousness accounted for 11 percent of visits. Moreover, in a recent survey, 350 primary care physicians rated anxiety disorders as the most common psychiatric problem seen in their clinics.²⁶ Clearly, more substantiation of the study findings in both university-based and private primary clinics is needed, but findings from these studies consistently suggest that panic disorder is one of the most common clinical problems primary care physicians see.

PANIC DISORDER AND SOMATIZATION

Overall, 5 (19.2 percent) out of the 26 patients who had panic disorder were identified by the somatic screening questions, and 8 (47 percent) of 17 of the patients with simple panic were identified by the somatic screening questions.

That patients identified by the somatic screening questions had significantly higher scores on all measures of psychological distress compared with the group with no panic disorder supports the contention that the former are a clinically important group who would be missed by the DIS screening question. The results support the National Ambulatory Medical Care Survey,¹ which found that 70 percent of patients with a psychiatric problem present to primary care physicians with an initial focus on a somatic complaint. The tendency for primary care patients to somatize may result in an underestimate of psychiatric illness by epidemiologists and physicians who utilize screening questions that are primarily psychological in focus. Moreover, many primary care patients have both medical and psychological illness, but often attribute psychological symptoms to their medical illness.^{4,6}

The data from the patient's self-rating medical review of systems questionnaires and the SCL-90 somatization scale also support the notion that anxiety attacks are associated with multiple somatic symptoms. Two past studies have documented that patients with panic disorder often present to primary care physicians with somatic complaints.^{4,27} The three most common presentations were for cardiac symptoms (chest pain, tachycardia), gastrointestinal symptoms (especially epigastric distress), and neurologic symptoms (headache, dizziness, syncope, or paresthesias).⁴ The presentation of cardiac complaints by patients with panic disorder is especially likely to lead to expensive and potentially iatrogenic medical testing. Two recent studies have documented with structured psychiatric interviews that patients with chest pain and negative coronary angiography have a very high prevalence of panic disorder.^{18,28}

In a recent study, Noyes et al²⁹ not only provided support for the hypochondriacal tendencies in patients with panic disorder but found that treatment markedly decreased this focus on somatization. They found that prior to treatment patients with panic disorder scored as high on an index of hypochondriasis, the Illness Behavior Questionnaire,³⁰ as a group of hypochondriacal psychiatric patients. After treatment patients with panic disorder had significant reductions in somatic preoccupation, disease phobia, and disease conviction as measured by the Illness Behavior Questionnaire.

Both the results of the present study and those of Noyes and colleagues²⁹ underscore the notion that hypochondriasis is a prominent feature of panic disorder and that adequate diagnosis and treatment of panic disorder are essential to alleviate patient suffering and to avoid the wasteful use of medical resources.

IMPLICATIONS FOR PRIMARY CARE PHYSICIANS

One of the major implications of this study is that pri-

mary care physicians need to differentiate the ubiquitous symptom of anxiety, which is often secondary to stressful life events, from the syndrome of panic disorder. This differentiation is especially important because psychopharmacologic treatment with tricyclic antidepressants, monoamine oxidase inhibitors, and alprazolam has been found to be effective in panic disorder,¹² while benzodiazepines, which are effective for short-term adjustment reactions, are ineffective. Yet community studies of patients with panic disorder have demonstrated that more than one half (55 percent) of patients with panic disorder used a sedative hypnotic agent in the past with 22 percent taking a sedative hypnotic daily for a year.¹⁶ Most of these medications were prescribed by primary care physicians. Thus, the medications that primary care physicians traditionally prescribe for symptoms of anxiety—the sedative hypnotics—are still often used, yet are ineffective in panic disorder and may worsen the symptoms of a concurrent depression.

Recognition of panic disorder in primary care can be aided by the recognition of the episodic nature of the anxiety and autonomic symptoms, the multiple phobias and avoidance behavior these patients develop, and the frequent concurrent major depression. Four other recent studies have documented that 60 to 88 percent of patients with panic disorder had a major depressive episode at some point in their lifetime.³¹⁻³⁴ In a primary care epidemiologic study Goldberg³⁵ also documented that 67 percent of patients with mental illness had mixed symptoms of anxiety and depression. Pharmacologic studies demonstrating that panic disorder and major depression respond to similar medications (tricyclic antidepressants and monoamine oxidase inhibitors) support the theory that these disorders are secondary to malfunction of similar biologic matrices.¹²

This study also suggests that there is a spectrum of severity of panic disorder in the community. A large subset of patients had simple panic. These patients also had multiple phobias, avoidance behavior, and a high lifetime risk of major depression. Norton et al³⁶ and Von Korff et al³⁷ have also demonstrated a spectrum of severity of panic disorder, and Norton et al found that patients with infrequent panic attacks had significant psychological distress. Patients with psychiatric illness in primary care in other studies have been documented to have less severe illness than patients with similar illnesses who present to psychiatrists,³⁸ but still present in need of treatment. Recent psychopharmacologic evidence has suggested that patients with severe anxiety who do not meet criteria for panic disorder are significantly more apt to respond to treatment with tricyclic antidepressants than to treatment with benzodiazepines.^{39,40} Clearly primary care is a rich environment in which to carry out future treatment studies on patients with anxiety disorders, and primary care physicians and psychiatrists have a unique opportunity to collaborate in this research.

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