Clinical Medicine

Depression—Medical Utilization and Somatization

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We screened 147 primary care patients for depression using depression rating scales and a psychiatric interview. In the one year after screening, the patients with depression visited and phoned their physicians more frequently and had more medical evaluations than the nondepressed control group. The patients with depression were more likely to have nonspecific or vague complaints and psychophysiologic or depressive symptoms than the control group; their family physicians during this same period were more likely to diagnose a psychophysiologic problem.

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Epidemiologic studies in primary care have shown that major depression is one of the most common presenting problems seen by physicians. Many studies have been completed using depression rating scales such as the Beck Depression Inventory,[1] the Zung Self-Rating Depression Scale[2] and the Center for Epidemiologic Studies Depression Scale,[3] and the rates of depressive illness have varied between 12% and 25%, depending on the specific scale used and the cutoff points.[4-7] The scores of these scales correlate with clinical findings of major depression but in general are more sensitive than specific. Thus, the rating scales tend to pick up most patients who suffer from major depression, but also include many with false-positive results who suffer other psychiatric or medical conditions. Using structured psychiatric interviews, Zung and Hoeper and co-workers determined in two separate studies that 6% to 10% of the primary care population suffered from major depression.[7,8] This rate of 6% to 10% would make major depressive illness one of the three most frequently seen clinical problems in primary care (acute upper respiratory tract infection [7.9%] and hypertension [7.0%] are the two other most common diagnoses in a recent study of 38,511 patient visits to primary care physicians).[9]

Despite the high prevalence of major depression in primary care, in five studies primary care physicians detected only 18% to 50% of the cases.[4,6,7,10,11] Moreover, in two of the studies the physicians were not more likely to diagnose depression in the severely depressed than in the mildly or moderately depressed patients.[10,11] Three problems have been identified that impede the ability of primary care physicians to accurately diagnose depression. Due to the stigma of mental illness in western society, many patients with depression selectively focus on the somatic components of their depressive syndrome and present with complaints such as fatigue, anorexia, insomnia or a symptom of increased anxiety and depression such as headache, epigastric pain or back pain.[12] Second, many primary care patients have a coexisting medical illness that may cause symptoms similar to depression and thus mask their depressive illness.[13] Finally, physicians are usually trained to focus on the biologic or somatic differential diagnosis, with psychological problems thought of as diagnoses of exclusion; physicians also often have the same unconscious cultural bias as their patients against the diagnosis of mental illness.[14]

Because many patients with major depression present initially with somatic symptoms or worsening of symptoms of their chronic medical illness (or both), it would be extremely useful for physicians to have data on patterns of utilization (clinic visits, telephone calls, admissions to hospital) and patterns of symptoms that predict depression. Are there signals of depression other than complaints of dysphoric mood to which the primary care physician should be attuned? Widmer and colleagues have addressed this question in a series of retrospective studies of primary care practices[15-17] and suggested that patients with depression have significantly more clinic visits and hospital admissions in the seven months before a diagnosis of depression. They also determined that patients had increased presenting complaints of ill-defined "functional" symptoms, pain of undetermined cause and "nervous" complaints mainly of increased tension and feelings of anxiety. Due to the retrospective nature of these studies, however, current research criteria for depression were not used, nor were there any depression scales to validate the diagnosis.

The purpose of this study was to evaluate the patterns of utilization of primary care practice and the types of complaints, diagnoses and evaluations patients had in the two

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ABBREVIATIONS USED IN TEXT

DSM III = *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition
SADS = Schedule for Affective Disorders

years before screening for depression and a prospective one-year period after screening. Depression was defined by self-rating scales and a structured psychiatric interview. In addition, we evaluated the correlation between two commonly used depression rating scales: the Beck Depression Inventory[1] and the Zung Self-Rating Depression Scale.[2]

Patients and Methods

The study was conducted in the Family Medical Center at the University of Washington School of Medicine. Patients visiting the practice are similar to those in King County, Washington (Seattle and environs), by age, sex, ethnicity and insurance status. Subjects were recruited over a nine-month period. Clinic sessions were selected randomly, and within a given session a single physician's patients (aged 18 or older) were randomly selected to be approached for participation. As patients checked in, they were handed copies of the Beck Depression Inventory (short form) and the Zung Self-Rating Depression Scale, with a cover letter briefly explaining the study. Patients choosing to participate completed the inventories and returned them to a member of the staff.

In all, 147 patients enrolled as study subjects. Although it proved impossible to keep strict records of refusals to participate, such refusals were very uncommon and usually due to scheduling difficulties and other factors. The study group was representative of the clinic population generally, with the majority (70%) women and a mean age of 33 years.

The medical records of study participants were examined for the two years preceding and for the year following the index visit. Data abstracted included number and types of contacts, chief complaints, number and types of evaluations done—history, physical examination, blood tests, urinalysis, x-ray films, microbiologic tests—specific therapies recommended and diagnoses recorded. A small group of patients with scores on depression rating scales in the range of moderate to severe depression was contacted by the investigators and offered further evaluation using the Schedule for Affective Disorders and Schizophrenia (SADS) interview.[18] If a patient was found to be severely depressed or suicidal, the personal physician was notified, but in most cases, physicians were not aware of the study's progress or clinical findings unless the patients requested that their physician be so informed.

TABLE 1.—*Complaints and Diagnoses Used To Screen Patients With Possible Somatic Component*

1. Specific diagnosis, infection, objective sign or items not elsewhere classified—hypertension, carbuncle, conjunctivitis, diabetes mellitus, pancreatitis, neoplastic disorders
2. Injury—lacerations, motor vehicle accident, fractures, head injuries
3. Headache—tension or migraine headache
4. Neck or back pain—acute or chronic pain, strain
5. Acute musculoskeletal pain (exclude neck/back)—knee pain, hip pain, general muscle or joint complaints
6. Chest pain
7. Abdominal or pelvic pain—general abdominal pain, stomachache, dysuria, menstrual pain
8. Pain not elsewhere classified—generalized pain, eye pain, ear pain, skin pain
9. Nonspecific or functional complaint—fatigue, weakness, nausea, change of bowel habits, senility, tinnitus, palpitations, dizziness, itching, weight problems, menstrual problems
10. Psychiatric symptoms, behaviors and disorders (exclude depression)—anxiety, sleep disturbances, sexual problems, substance abuse, schizophrenia, obesity, hysterical and hypochondriacal disorders
11. Depression
12. Psychophysiologic disorders—irritable bowel syndrome, premenstrual syndrome, peptic ulcer disease, temporomandibular joint problems
13. Social problems—marital problems, unwanted pregnancy, financial or legal problems, death of family member, employment problems

Chief complaints and diagnoses were initially coded using the *International Classification of Primary Care* and the *International Classification of Health Problems in Primary Care*, respectively.[19,20] These classifications were further reduced by the authors to 13 clusters of complaints and diagnoses thought more appropriately to reflect the major factors important in this study (Table 1). A maximum of six complaints and diagnoses was coded for each time period.

Results

Depression Inventories

Scores on the Zung and Beck inventories were highly correlated in this patient population (N = 147), with a Pearson correlation of .72 ($P < .001$). Standard score cutoffs were used for significant depression. Figure 1 illustrates the correlation between the two inventories by categories of depression (none, mild, moderate, severe). In only four persons (3%) were the scores discrepant by more than one category. For the remainder of analyses done in the study, each of the 147 individual study subjects was classified by their most depressed Zung or Beck inventory score into one of four groups: severely depressed (N = 5), moderately depressed (N = 22), mildly depressed (N = 29) and not depressed (N = 91).

The 27 patients with scores indicating moderate to severe depression were contacted and offered a structured psychiatric interview. Of these patients, 11 (41%) were interviewed with the SADS[18] and 8 (73%) were found to have major depression by the *Diagnostic and Statistical Manual of Mental Disorders*, third edition (DSM III) criteria.[21] Of the three patients who did not meet criteria for major depression,

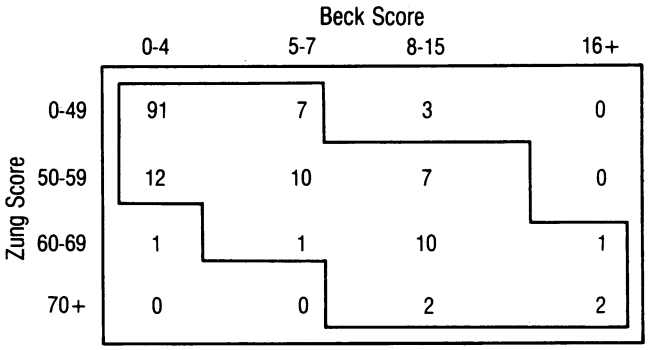

Figure 1.—Correlation of scores on the Beck Depression Inventory and the Zung Self-Rating Depression Scale by categories. Beck scores: 0 to 4 = no depression, 5 to 7 = mild, 8 to 15 = moderate, 16 and above = severe; Zung scores: 0 to 49 = no depression, 50 to 59 = mild, 60 to 69 = moderate, 70 and above = severe.

TABLE 2.—*Correlations Between Depressive State and Continuous Variables (Analysis of Variance [ANOVA])*

	Primary Care Utilization							
	Office Visits		Telephone Calls		Evaluations		Psychiatric Medications	
Depressive State	2 Years Before	1 Year After	2 Years Before	1 Year After	2 Years Before	1 Year After	2 Years Before	1 Year After
None, N = 91	6.9	3.8	.7	.3	4.2	1.9	.2	.1
Mild, N = 29	9.9	6.6	1.2	.6	8.4	3.6	.2	.3
Moderate, N = 22	9.9	6.5	1.4	1.4	6.4	4.3	1.4	.4
Severe, N = 5	12.0	15.4	3.6	.2	9.8	3.6	2.2	.4
Significance (ANOVA)	$P = .14$	$P < .01$	$P = .01$	$P < .01$	$P = .05$	$P = .02$	$P < .01$	$P = .07$

one met DSM III criteria for alcohol abuse, one for a dysthymic disorder and the third, who was 8½ months' pregnant, had rated false-positive due to her advanced stage in pregnancy that caused symptoms of anorexia, insomnia and decreased energy.

In the one-year period after screening, only ten (37%) of the patients with moderate to severe depression on the Beck and Zung depression scales were recognized by their physicians as being depressed. Nine of these ten patients were treated with tricyclic antidepressants.

Correlations Between Depressive State and Health Care Usage

In the two years before screening, patients with depression made significantly more telephone calls to their physicians, had more evaluations by their physicians and more psychiatric medications were prescribed (Table 2). In the one year after the index visit, patients with depression had significantly more office visits, telephone calls and medical evaluations (physical examinations, blood tests, x-ray films) than controls, and there was a trend toward being given more psychiatric medications.

Correlation Between Depressive State and Chief Complaints

Patients with depression did not have any more specific complaints in the two-year period before the index visit, but did have significantly more nonspecific, psychophysiologic and depressive complaints in the one year after screening (Table 3).

Correlation Between Depressive State and Diagnosis

In the two years before the index visit, patients with depression were more likely to be diagnosed as depressed and having a problem with pain (Table 4). In the period of one year after the index visit, patients with depression were more likely to have a specific psychiatric diagnosis, a psychophysiologic diagnosis, a diagnosis of acute musculoskeletal pain and a diagnosis of abdominal pain.

Discussion

Our findings allow several conclusions:

- The Zung and Beck inventories are highly correlated in our patient population.
- The prevalence of depression in our population is high, consistent with other published research.
- Increases in certain kinds of medical utilization preceded and followed the diagnosis of depression.
- Patients with depression experienced increases in certain complaints and diagnoses following their diagnosis of depression.

Each of these conclusions will be discussed in detail.

Our study is the first, to our knowledge, documenting the high correlation between the Zung and Beck inventories in a primary care patient population. Statistically, the two inventories were indistinguishable, indicating that either could be used for screening. Examining the crude scores, however, indicates that the Beck was slightly more sensitive, with 25 patients classified in the moderately to severely depressed categories compared with 17 so classified by the Zung. Physicians may use either instrument, depending on the purpose of the screen (the inventories have slightly different focuses) and the clinical situation.

There are substantial data that patients with mental illness utilize significantly more nonpsychiatric outpatient medical care than controls without mental illness.[22-25] Few studies, however, have determined the specific mental disorders that lead to increased usage of primary care. The results of this study specifically indicate that patients with depression (as diagnosed by depression self-rating scales and SADS interview) in the one year after diagnosis visited their physicians more frequently, made more telephone calls to their physicians and had more medical evaluations. In the two years before diagnosis, the results indicate that patients with depression made more telephone calls and had more medical evaluations.

These data are consistent with studies of the prevalence and treatment of affective disorder in the community. Weissman and co-workers found that 65% of patients with major depression in the community did not receive specific treatment for their illness.[26] The patients with untreated depression made significantly more visits to their primary care physicians, presumably for somatic complaints. Overall, half of the major depressive sample had sedative-hypnotic drugs prescribed for insomnia and anxiety, whereas only 17.2% were specifically treated with antidepressant medication. In a study of the use of health services by 2.3 million people covered by Michigan Blue Cross and Blue Shield, Liptzin and associates have also shown that although mental disorder is not the only reason for high medical utilization, there were approximately twice as many patients with high medical care usage rates among patients with a mental disorder.[27] Mechanic and colleagues also found in two separate studies of a primary care prepaid group practice and a student health service that psychological distress was the single most important predictor of seeking help.[28,29] In fact, in the primary care

population, psychological stress was as statistically significant as chronic physical illness in predicting health care utilization.[28]

The above data are important because specific psychological and psychopharmacologic treatments for depression exist that substantially decrease patient morbidity. Also, many patients with depression resort to unhealthy coping mechanisms (alcohol abuse, lack of exercise, poor compliance with medications) that may maladaptively affect physical health.[30]

Patients with depression were found to have significantly more complaints of depression, nonspecific or vague complaints—fatigue, weakness, tinnitus, palpitations, dizziness, weight problems—and more psychophysiologic complaints—irritable bowel syndrome, peptic ulcer disease, temporomandibular joint problem, eczema, premenstrual syndrome—than controls in the year after the diagnosis of depression. Also during this time period, the family physicians were more likely to diagnose the patients with depression as having a psychophysiologic problem, acute musculoskeletal pain (excluding neck and back), abdominal pain and other psychiatric syndromes or disorders.

Results were less clear in the two-year period before the diagnosis of depression. There were no specific differences in patient complaints in the two-year period between depressed and nondepressed patients. But physicians were significantly more likely to diagnose depressed patients as depressed and having a pain problem not categorized elsewhere—that is, generalized pain, eye pain, ear pain, skin pain and so forth—than controls. It may be that the two-year period studied was too long due to the lack of clarity about when the depression began, whereas the one-year period after diagnosis more closely approximated the course of depressive illness.

These results are the first prospective evidence known to us associating depression with high primary care clinic utili-

TABLE 3.—*Number of Patients With Each Chief Complaint by Depressive State in the 2 Years Before and 1 Year After Index Visit*

		2 Years Before Index Visit					1 Year After				
Complaints	Depressive State	None	Mild	Moderate	Severe	P Value*	None	Mild	Moderate	Severe	P Value*
Specific		90	29	22	5	.9	90	29	21	5	.5
Injury		13	6	3	1	.8	9	1	4	1	.3
Headache		11	3	2	0	.8	4	0	3	0	.1
Back/neck pain		16	2	4	0	.4	7	2	5	0	.1
Acute musculoskeletal pain		12	8	2	0	.1	7	5	5	1	.2
Chest pain		10	1	1	0	.4	2	2	1	0	.6
Abdominal pain		15	8	3	1	.5	7	6	3	0	.2
Pain (other)		10	1	2	1	.5	6	5	1	0	.2
Nonspecific		54	15	10	3	.6	34	11	9	5	.05†
Other psychiatric		12	2	2	0	.6	8	3	3	0	.8
Depression		4	3	3	1	.3	4	2	4	2	.009†
Psychophysiologic		7	1	0	0	.4	6	1	1	2	.02†
Social problems		4	3	2	0	.5	5	2	2	0	.9
Total		258	82	56	12		189	69	62	16	

*χ^2 Statistic.
†Statistically significant.

TABLE 4.—*Number of Patients With a Given Diagnosis by Depressive State in the 2 Years Before and 1 Year After Index Visit*

		2 Years Before Index Visit					1 Year After				
Complaints	Depressive State	None	Mild	Moderate	Severe	P Value*	None	Mild	Moderate	Severe	P Value*
Specific		91	29	22	5	—	91	29	22	5	—
Injury		26	10	5	1	.8	14	5	7	2	.2
Headache		7	3	1	0	.8	3	0	2	0	.3
Back/neck pain		8	1	1	0	.6	3	0	1	1	.15
Acute musculoskeletal pain		2	0	1	0	.7	0	1	0	1	.001†
Chest pain		2	2	1	0	.6	2	0	0	0	.7
Abdominal pain		5	4	3	0	.3	3	0	3	1	.04†
Pain (other)		0	1	2	0	.05†	1	2	0	0	.2
Nonspecific		18	5	5	1	1.0	10	5	2	1	.7
Other psychiatric		15	4	6	0	.4	7	3	2	3	.003†
Depression		4	4	5	3	.001†	6	4	4	2	.06
Psychophysiologic		8	4	3	1	.7	9	2	1	3	.002†
Social problems		5	3	1	0	.7	4	1	0	0	.7
Total		191	70	56	11		153	52	44	19	

*χ^2 Statistic.
†Statistically significant.

zation rates, more physician evaluations and patterns of specific complaints and diagnoses. One surprising difference from retrospective studies is that complaints such as headache and backache that are associated with depression in the primary care literature were not more common in the depressed subgroup. Pain is the most frequent complaint patients present with to their physicians and represents 80% of all chief complaints in one study.[31] Thus, both patients with and without mental illness will likely have a chief complaint of pain. More significant associations between pain and depression may have been found if we had differentiated more clearly between acute and chronic pain. For instance, Lloyd and colleagues could not predict by psychological testing which patients with acute low back pain would still be symptomatic at 90 days.[32] In all, however, 35% of the patients who still had back pain at 90 days were diagnosed as having significant psychiatric morbidity, most commonly depression.

Despite the increased utilization of the primary care clinic by the depressed patients, there was still a low rate of accurate diagnosis by physicians of their affective illness. The results of this study confirm the tendency of primary care patients with depression to present their distress in a somatic idiom. The recent results of the National Ambulatory Care Survey (in which primary care physicians provided a wide range of information on approximately 90,000 office visits) also showed that nearly three of four patients (72%) whose visit to a general medical physician results in a psychiatric diagnosis have some sort of physical symptom as their chief complaint.[33] Given the fact that primary care visits with physicians average only 12 to 15 minutes and that study physicians ordered more medical tests and evaluations for the depressed patients compared with controls, patients were likely worked up and treated symptomatically.

The study findings suggest that physicians should consider the diagnosis of depression in patients with a pattern of increased clinic utilization (office visits and telephone calls) who present with nonspecific and psychophysiologic symptoms and receive a diagnosis such as abdominal pain, acute musculoskeletal pain, a psychophysiologic disorder or another psychiatric illness. The National Ambulatory Care Survey also confirmed that patients with psychiatric diagnoses initially presented with nonspecific symptoms (24% had chest pain, headaches, dizziness or exhaustion) and abdominal stomach pain or cramps (7.5%) or neck, back or leg problems (5.8%).[33] Clearly the patient self-rating depression scales are sensitive indicators of depression and the widespread use of these scales in primary care would increase the accuracy of the diagnosis of depression. These scales can be easily purchased, are inexpensive, can be administered and scored by primary care nurses and take less than five minutes of patient time.[1,2]

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