

Assessment of Depression in a Family Practice Center

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This study examined the presence of depressive symptoms in an adult outpatient population. Through review of 100 randomly selected patient charts, it was found that a diagnosis of depression was recorded in 31 percent, with an additional 31 percent having symptoms and diagnoses suggestive of depression noted. Data collection on a sample of 123 patients in a second study phase designed to assess agreement among alternative methods for identifying depression included patient interviews (using the Beck Depression Inventory, the Zung Self-Rating Depression Scale, and a visual analog), physician interviews, and chart abstracts. The proportion of patients considered depressed using each of the measures ranged from 21 percent to 38 percent. The patient-reported measures were more closely correlated with each other than with the physician-reported measures.

The finding that depressive symptoms are highly prevalent in this population supports the need for training physicians in recognition, treatment, and documentation of depression. Future research imperatives should include differentiating between depressive symptoms and diagnoses, investigating the use of interviewer-administered measures of depression as screening tools, and investigating the relationships between depression, physiologic disease, and use of health services.

Depression is considered the most common psychiatric problem in the general population and is the most frequently encountered psychiatric problem in primary care settings.¹ The prevalence of serious, psychotic, or major depression in the United States reportedly ranges from 0.15 percent to 4.3 percent.² Recent systematic population studies conducted by the National Institute of Mental Health (NIMH) suggest that the point prevalence of all depressive disorders may be 7 to 10 percent.^{3,4} In some general medical settings depressive symptoms, not necessarily related to psychiatric diagnosis, are reported by over 40 percent of patients.⁵ Estimates of the prevalence of depression and depressive symptoms vary with the definition of the condition, with the assessment techniques used, and with the population studied as a result of the influence of such other factors as socioeconomic status,

stress, physical illness, life events, and medical treatment.⁶⁻⁸

Many scales have been developed to standardize identification of depressive symptoms and enable appropriate comparisons within and between populations.² Two such scales, the Beck Depression Inventory and the Zung Self-Rating Depression Scale,^{9,10} have been used to estimate the prevalence of depression in a variety of settings, including family practice ambulatory care populations.^{1,2,5,6} Several studies have shown that depression and depressive symptoms often are not recognized or documented by primary care physicians.^{5,11-13} In some studies, recognition of depression has been improved by relaying information from rating scales back to residents.^{5,14}

Recognition of depressive symptoms by primary care physicians remains an issue of concern. Clinical depression can have a major effect on patients' quality of life. Although the impact of depressive symptoms on quality of life may be less obvious and less devastating than the impact of clinical depression, failure to recognize these symptoms can subject patients to costly and potentially harmful diagnostic procedures in an effort to explain somatic complaints. There is some evidence that the pres-

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ence of depression or depressive symptoms is associated with increased utilization of health services including tests, procedures, and hospitalizations.¹⁵ There also is suggestive evidence that certain types of depressive symptoms may be improved with pharmacologic therapy or counseling.^{5,16,17}

This article reports on a two-phase study of depression conducted in the Department of Family Medicine ambulatory care setting, the Family Practice Center (FPC). The FPC is located on an outpatient care floor of an urban teaching hospital. Of the 13,000 registered patients, 74 percent are female, 70 percent are black, and 25 percent are aged 60 years or over. The purpose of the first phase of the study was to estimate the period prevalence or frequency of depressive symptoms in the patient population by examining the medical records for a randomly selected sample of patients seen over a defined period. In the second phase of the study, patients and physicians were interviewed, and data were abstracted from the medical record to assess the agreement in identifying depressive symptoms among alternative methods for collecting data on depression. The objectives of this study were to investigate the period prevalence or frequency of depressive symptoms in the population as found by specific, standardized, interviewer-administered measures of depression, review of patients' medical records, and interviews with physicians; these methods were then compared in terms of appropriateness, ease of administration, and agreement in identifying depressive symptoms.

METHODS

In the first study phase information on depression and depressive symptoms was abstracted from the medical records of 100 randomly selected adult patients. A random sample of registered patients aged over 18 years was identified from the practice's computerized registration database. A research assistant searched for the records in the randomly listed order, and, if found, determined whether they met the active patient eligibility criterion of having made at least one visit to the practice within the past two years. An abstract form including demographic information and a detailed review of all notations of depression and symptoms suggestive of an underlying depression was completed for all patients whose eligibility was confirmed. The reliability of the research assistant's abstracts was verified by comparing her assessments with those made by the investigators on a sample of records.

The abstracts were summarized into three categories by the investigators. Patients for whom depression was noted directly in the problem list or elsewhere in the chart for more than one visit were classified as probably de-

pressed. Patients for whom neither depression nor depressive symptoms were mentioned in the chart were classified as probably not depressed. All remaining abstracts were reviewed and independently rated as probably depressed, probably not depressed, or possibly depressed by three of the investigators. In general, patients classified as possibly depressed had depressive symptoms recorded for more than one visit, although depression was not explicitly stated as a diagnosis.

The second phase of the study also estimated the prevalence of depression and investigated specific issues in measurement of depression. Each day, one or two of the 22 physicians in the practice (10 faculty, 6 second-year residents, and 6 third-year residents) were randomly selected for participation in the study. The research assistant interviewed all adult patients seen by those physicians on that day prior to the physician-patient encounter. The patient interview included the Beck Depression Inventory (BDI),⁹ the Zung Self-Rating Depression Scale (SDS),¹⁰ and a depression visual analog in the form of a thermometer, 10 inches in length, with end points marked "not at all sad or depressed" and "as sad or depressed as could be." The physicians were not informed that their patients had been interviewed until the end of the day, at which time they were asked to complete a brief questionnaire on each patient, including presence and severity of depression and depressive symptoms, diagnosis of depression, severity of anxiety, and treatment with medication or psychotherapy. As a fifth measure of depression, the research assistant completed a revised version of the chart abstract form used in the first phase of the study for each interviewed patient.

During the study period, 204 patients with scheduled appointments were eligible for participation. Of these, 68 (33 percent) failed to keep their appointment. Of the 136 remaining patients, 3 refused to participate and 10 were not seen for administrative reasons (the interviewer was not available or the visit occurred outside normal office hours). Therefore, the interview cohort included 123 patients. Data were partially complete for 12 patients: 10 were unable to complete the BDI because of difficulty in understanding the instructions or many of the specific items, 1 was unable to complete the SDS for similar reasons, and 1 was unable to complete either instrument.

Data were entered into microcomputer files and analyzed using SYSTAT.¹⁸ Analysis began with a description of the population and descriptive analysis of each measure of depression. The cut points used for classification of BDI and SDS scores into categories were based on those reported previously in the literature.^{1,2,5,14,19,20} The cut points used for the visual analog were determined by the investigators. Correlations between measures were computed and were further investigated by decomposing the covariation.

TABLE 1. DEPRESSION IN A RANDOMLY SELECTED SAMPLE OF PATIENTS (FIRST STUDY PHASE), AS NOTED IN THE MEDICAL CHART (n = 100)

Variable	Depression			Total No.	Significance* P
	Diagnosis Noted No. (%)	Suggestive Symptoms No. (%)	Nothing Noted No. (%)		
Sex					<.002
Male	1 (4)	9 (35)	16 (61)	26	
Female	30 (40)	22 (30)	22 (30)	74	
Race					>.20
White	10 (27)	9 (25)	18 (48)	37	
Nonwhite	21 (34)	22 (35)	20 (31)	63	
Age (years)					>.30
18 to 35	10 (27)	11 (28)	17 (45)	38	
36 to 60	8 (25)	13 (40)	11 (35)	32	
61+	13 (43)	7 (24)	10 (33)	30	
Provider**					<.006
Faculty	20 (39)	9 (18)	22 (43)	51	
Resident	9 (20)	21 (48)	14 (32)	44	
Total	31 (31)	31 (31)	38 (38)	100	

* Based on a chi-square test

** For 5 patients, the provider could not be determined from the chart (2 had diagnosis noted, 1 had suggestive symptoms noted, and 2 had nothing noted relating to depression)

RESULTS

The records of 185 patients were reviewed in obtaining the sample of 100 patients eligible for the first phase of the study, the chart abstract. Thirteen charts could not be located, and 72 were ineligible, as they were charts of patients not active at the time of the study; however, there were no significant differences in demographic characteristics between the final sample and the 85 ineligible patients. The sample of 100 patients was 74 percent female and 63 percent nonwhite and had a mean age of 46 years (Table 1). Of these patients, 31 percent had a diagnosis of depression recorded in the chart. An additional 31 percent had symptoms and diagnoses suggestive of depression (eg, anxiety, fatigue, insomnia). The distribution of diagnoses of depression, as well as the distribution of the possibly depressed, spanned all age groups; however, diagnosed depression was more prevalent in elderly patients.

There was a statistically significant difference ($P < .006$) between the faculty and residents in notation of depression or depressive symptoms in the chart. The faculty diagnosed more patients as depressed (39 percent vs 20 percent), whereas the residents identified more as having depressive symptoms (48 percent vs 18 percent). This difference, however, disappears ($P > .35$) when diagnosis noted and suggestive symptoms are combined and compared with nothing noted. Depression also was recorded in the chart more frequently for female patients (40 percent) than for male patients (4 percent) ($P < .002$).

TABLE 2. DEMOGRAPHIC DESCRIPTION OF THE INTERVIEW POPULATION (SECOND STUDY PHASE), BY PHYSICIAN TYPE (n = 123)

Variable	Physician Type		Total No. (%)
	Faculty No. (%)	Resident No. (%)	
Sex			
Male	14 (24)	16 (25)	30 (24)
Female	45 (76)	48 (75)	93 (76)
Race			
White	22 (37)	18 (28)	40 (33)
Nonwhite	37 (63)	46 (72)	83 (67)
Billing class			
Medicare	13 (22)	16 (25)	29 (23)
Medicaid	19 (32)	24 (38)	43 (35)
Private	27 (46)	24 (38)	51 (42)
Mean age (SD)	54.6 (16.6)	52.1 (18.5)	53.3 (17.6)
Total	59 (48)	64 (52)	123 (100)

The interview sample (n = 123) in the second phase was similar to the survey sample in the first phase with respect to demographic characteristics (Table 2): patients were 76 percent female and 67 percent nonwhite and had a mean age of 53 years. The scores on the different depression measures and the results of the post-visit physician assessments are reported in Table 3 by physician type.

TABLE 3. SCORES ON DEPRESSION MEASURES, BY PHYSICIAN TYPE (n = 123)

Depression Measures	Physician Type		Total Mean (SD)	Significance* P
	Faculty (n = 59) Mean (SD)	Resident (n = 64) Mean (SD)		
Beck Depression Inventory (range 0-63)	11.0 (8.7)	9.6 (7.2)	10.2 (7.9)	>.30
Zung Self-Rating Depression Scale (range 25-100)	47.0 (11.8)	45.2 (11.8)	46.1 (11.8)	>.40
Visual analog (range 0-10)	2.7 (2.9)	2.7 (3.1)	2.7 (3.0)	>.90
Physician assessment (range 0-5)	1.2 (1.0)	0.8 (0.9)	1.0 (1.0)	<.03

* Based on a two-sided t test

TABLE 4. FREQUENCIES OF DEPRESSION AND DEPRESSIVE SYMPTOMS, AS NOTED IN THE MEDICAL CHART (n = 123)

Medical Chart Notation	Physician Type			Significance*
	Faculty No. (%)	Resident No. (%)	Total No. (%)	
Diagnosis of depression	24 (41)	17 (27)	41 (33)	P > .10
Depressive symptoms	7 (12)	13 (20)	20 (16)	
No suggestion of depression	28 (47)	34 (53)	62 (50)	
Total	59 (48)	64 (52)	123 (100)	

* Based on a chi-square test

TABLE 5. CLASSIFICATION OF PATIENTS AS DEPRESSED, AS JUDGED BY DIFFERENT MEASURES (n = 123)

Measure	Depressed No. (%)	Possibly Depressed No. (%)	Not Depressed No. (%)
Zung Self-Rating Depression Scale (cut points)	26 (21) (55-100)	19 (16) (50-54)	76 (63) (25-49)
Beck Depression Inventory (cut points)	31 (28) (13-63)	33 (29) (8-12)	48 (43) (0-7)
Visual analog (cut points)	46 (38) (3.1-10.0)	23 (19) (1.1-3.0)	53 (43) (0.0-1.0)
Medical chart	41 (33)	20 (16)	62 (51)
Physician assessment	36 (30)	37 (30)	49 (40)

Patients seen by faculty or resident physicians showed little difference when compared by mean scores of the BDI, the SDS, and the visual analog. There was, however,

a statistically significant difference between faculty physicians and residents according to the physician assessment questionnaire (faculty rating their patients as more depressed, $P < .03$). Similarly, as reported in Table 4, faculty recorded diagnoses of depression in the medical charts for more patients than did residents (41 percent vs 27 percent) ($P > .10$). Although the majority (76 percent) of patients were female, analyzing the data separately for male and female patients did not have any significant effects on the results.

Classification of patients as depressed, possibly depressed, or not depressed using the predetermined cut points is shown in Table 5. The number of patients considered depressed using each of the measures was 21 percent by the SDS, 28 percent by the BDI, 38 percent by the visual analog, 33 percent by the medical chart, and 30 percent by the physician assessment.

Correlations between the different measures are reported in Table 6. The interviewer-administered patient-reported measures were highly correlated, with the BDI and the SDS having the highest correlation ($r = .78$). The physician's assessment of depression did not correlate so well with the interview measures ($r = .45$ for the SDS and $r = .34$ for the BDI). There was little association between age and any measure of depression. In addition, the number of patient visits to the office during the year in which the interviews took place was correlated more closely with the physician's assessment of depression ($r = .21$) than with the interviewer-administered measures of age. In examining the correlation between physician assessment and each of the other measures, broken down by physician type (faculty vs resident), the variation within physician type accounted for 95 percent of the total variation, suggesting the observed covariation between physician types was relatively unimportant.

The relationship between office visits and depressive symptoms—as identified by physicians in the physician assessment and in the chart, and by the three instruments used in the patient interview—is shown in Table 7. The

TABLE 6. CORRELATION BETWEEN VARIABLES (n = 123)

Variable	SDS	BDI	Visual Analog	Physician Assessment	Age	Visits 1984
Zung Self-Rating Depression Scale	1.00	.78	.59	.45	-.01	.12
Beck Depression Inventory		1.00	.50	.34	.13	.07
Visual analog			1.00	.39	-.07	-.04
Physician assessment				1.00	-.01	.21
Age (years)					1.00	.10
Office visits in 1984*						1.00

* Annualized for those with first visit in 1984

SDS, Zung Self-Rating Depression Scale

BDI, Beck Depression Inventory

TABLE 7. ANNUALIZED OFFICE VISITS IN 1984 FOR DEPRESSED/POSSIBLY DEPRESSED VS NOT DEPRESSED PATIENTS, AS IDENTIFIED BY DIFFERENT STUDY MEASURES, BROKEN DOWN BY PHYSICIAN TYPE (n = 123)

Study Measures	Faculty			Resident		
	Depressed/Possibly Depressed		P**	Depressed/Possibly Depressed		P**
	Mean (N)	Not Depressed Mean (N)		Mean (N)	Not Depressed Mean (N)	
Medical chart	11.2 (30)	6.1 (27)	.007	7.8 (29)	9.0 (31)	.51
Physician assessment	10.3 (39)	5.6 (17)	.03	8.1 (31)	8.7 (29)	.75
Beck Depression Inventory*	8.3 (29)	8.9 (21)	.80	9.6 (33)	6.8 (24)	.15
Zung Self-Rating Depression Scale*	9.0 (21)	8.4 (35)	.79	8.8 (21)	8.4 (38)	.84
Visual analog*	8.4 (33)	9.2 (23)	.72	9.3 (33)	7.3 (27)	.28

* See Table 5 for cut points

** Statistical significance is based on a two-sided t test

faculty's depressed and possibly depressed patients, as identified by the medical chart, had a significantly higher number of office visits than those identified as not depressed ($P = .007$). This difference was not found for the residents' patients ($P = .514$). A similar difference between patients of faculty ($P = .026$) and residents ($P = .750$) was observed when comparing utilization and physician assessment of depression. Curiously this relationship between office visits and depression was not found when comparing patients grouped by the three interviewer-administered measures of depression.

DISCUSSION

Depression is difficult to classify or categorize. Among the currently available classification schema are the American Psychiatric Association Committee on Nomenclature and Statistics (DSM-III)²¹ and the Research Diagnostic Criteria supported by the National Institute of Mental Health (NIMH),²² both of which require significant clinical

training to administer, are not well suited to routine administration in an ambulatory care setting, and make distinctions with which some clinicians would disagree. The purpose of this study was not to identify particular diagnoses, but rather to demonstrate the prevalence of all depression and depressive symptomatology using standardized interviewer-administered questionnaires, a physician questionnaire, and a chart review.

The Beck Depression Inventory and the Zung Self-Rating Depression Scale are among the most widely used quantitative screening tools for depression. The scores derived from such scales are useful when examining differences between groups, changes over time for individuals and groups, and association between depressive symptoms scores and measures of other characteristics or health outcomes. Nevertheless, clinically meaningful categories must be defined by grouping scores and setting cut points. As with any screening test, it is not always clear where the cut points for the scale should be set. As long as the cut points are recognized as imprecise and the instruments have been determined to be reliable and valid, however,

there is benefit in a test that is simple and easy to administer. Recently, Rucker et al¹² reported on the feasibility and usefulness of depression screening using the BDI. Others have had success in administering similar instruments to primary care and general populations.³ In this study, depressive symptoms were found to be a commonly encountered problem in an urban outpatient population. While the percentages in each group would change if different cut points had been set, the association between measures would not.

Not surprisingly, the BDI and SDS were highly correlated ($r = .78$). The main advantage of the SDS was that it was found to be easier to administer in a population in which a significant number of patients had a limited level of education (11 patients did not understand the BDI as opposed to two unable to complete the SDS). Interestingly, a simple visual analog scale had a noticeable correlation with the BDI ($r = .50$) and the SDS ($r = .59$). Based on ease of administration, a visual analog may be a useful tool for the primary care physician to obtain a rough estimate of the patient's emotional status.

The agreement between physician's assessment of depression and the interviewer-administered questionnaires was not so high as the agreement between the questionnaires. This study does not establish the extent to which physicians recognize depressive symptoms when present. While patient report of depressive symptoms in an interview on one occasion does not necessarily indicate a life problem, the finding that depressive symptoms are often not noted in the chart even when recognized by physicians indicates that the medical chart may be an inadequate source of information for assessing the prevalence of depression or depressive symptoms in an ambulatory population. Jencks,¹³ using data from the National Ambulatory Medical Care Survey, found that many patients received psychotropic medications or psychotherapeutic services without mention of psychiatric diagnosis in the chart.

Some investigations suggest that depressed patients use more health services¹⁵ and that patients who have more chronic conditions or more severe conditions have more symptoms of depression.²³ This study was not intended to address those questions directly. In this study, the number of office visits was correlated with scores on the interviewer-administered instruments, but had a higher correlation with the physician's assessment of depression ($r = .21$). Patients of faculty physicians identified as depressed in the chart had a significantly higher number of office visits than those classified as not depressed. Although higher utilization of physician services may be related to depression, the association between depression (as judged by the faculty physician) and utilization may be due either to differences in the number or severity of other medical conditions or to faculty physicians' beliefs that more frequent visits are appropriate for patients with depressive symptoms.

CONCLUSIONS

Clearly depression and depressive symptoms are common in this urban family practice, as determined by the use of a variety of measures. Clinicians and teachers of primary care should be concerned with enhancing physicians' recognition of depressive symptoms, treatment of those symptoms, and attention to health-related events and outcomes among these patients. Additional investigation is needed to differentiate between depressive mood, symptoms and illness, severity of depression, and identification of medical, psychosocial, and sociodemographic factors that contribute to depressive symptoms.

The present study was not intended to classify patients as depressed or not depressed or into different groups or categories of depression but rather to demonstrate the variety and extent of symptoms of depression as measured by several standard instruments in a family practice center. It was not surprising to find agreement between family physicians, and the extent to which depressive symptoms were related to those measures and the assessments by the health care utilization. Patients with clearly established depressions are often helped by different therapies^{5,16,17} such as medications, psychotherapy, mobilization of social supports, and counseling. It is less clear how to help patients with depressive symptoms. From this study and others it appears that physician identification of patients with depressive symptoms is associated with increased office visits.

Further investigation of depressive symptoms as a primary care problem seems appropriate. Better understanding is needed of the extent to which depressive symptoms, as measured by standard instruments, are confirmed by psychiatric interview with independent psychotherapists. Also, the independent influence of depressive symptoms on the use of nonmental health services, compliance (in terms of broken appointments, completion of therapeutic regimens), and general health status and well-being is poorly understood. Further exploration of the prevalence of this problem and its implications for providing high-quality ambulatory care is needed.

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