Estimating the Prevalence of Depression in Family Practice Using Variant Methods

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Prevalence estimates for depression in primary care vary depending on diagnostic methods and classification criteria. The present study assessed the prevalence of depression in new, female, family practice patients using self-report and office visit data. Psychological and somatic symptoms and physician interventions were used to create classification criteria. Prevalence was higher by self-report than by physician assessment. The single checklist item "depression" appeared to yield a valid prevalence estimate. Agreement between self-report and physician recognition was low. Prevalence estimates were enhanced when single-visit patients were excluded. The findings suggest that patients who report depression by questionnaire may differ from those admitting depression to physicians; therefore, patient and physician characteristics are likely to contribute to the underrecognition of depression in primary care.

Depression appears to be the most common psychiatric disorder among medical patients.[1-12] Establishing the prevalence of depression has been difficult, however, because of presumed differences in the nature of depression in medical patients compared with that in psychiatric patients, and the noncomparable diagnostic criteria used in various studies.[4,8,13]

Self-report questionnaires[11,14-18] yield a higher prevalence of depression than do psychiatric interviews,[3,13,14,19,20] which, in turn, yield higher figures than counts of recorded physician diagnoses.[21-23] The National Ambulatory Medical Care Survey and other studies indicate that physician-derived criteria, such as reason for visit, diagnosis, pharmacotherapy, and counseling, have different frequencies and can occur independently.[13,20]

Differences in prevalence between self-report questionnaire methods and indices of provider recognition have led to the conclusion that physicians fail to recognize a high proportion of depressed patients. Recognition is a complex process, however; patients may present with multiple or vague somatic complaints, or may emphasize organic problems and conceal depressive symptoms. Physicians may recognize distress but not formally diagnose depression or, alternatively, choose not to record such a diagnosis. It has been suggested that high scores on standard depression scales are not necessarily equivalent to clinical depression.[24]

The aim of the present study was to estimate the prevalence of depression using multiple criteria. Specifically, prevalence estimates based on classification criteria using psychological symptoms, somatic symptoms, and physician intervention were compared. Prevalence estimates based on self-report were compared with estimates derived from physician notations from office visit records. In addition, patients making a single visit only were compared with patients making multiple visits, with the expectation that the prevalence of depression in an unselected sample is diminished by underrepresentation in patients appearing only once, most likely for acute and circumscribed problems.

The epidemiology of mental health problems among women has been cited as a relevant concern for family medicine.[25] Depression is known to be more common in women in both self-report and physician assessment,[17] suggesting that men and women may differ in propensity to self-disclose and in depressive symptomatology. The sample was therefore limited to female patients to control for possible gender differences in prevalence rates across various criteria. Thus, an effort was made to enhance internal validity at some cost in generalizability.

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METHODS

A random audit was conducted on charts of new, female patients enrolling in a university-affiliated, community-based family practice center between June and December 1984. Of a total of 386 charts of eligible patients aged 20 to 64 years, 175 were randomly selected for review. Of these charts, 71 were excluded because of an incomplete or missing enrollment checklist (38); visit for immigration, school, or other physical examination only (25); mental retardation (6); or no contact with physician (2). Thus, 104 patients formed the study sample.

The patients were assigned to a total of 25 physicians: 21 patients to seven faculty physicians, and 83 patients to 18 resident physicians. Patients were occasionally seen by physicians other than their primary physician. Four nurses, all with extensive experience in family practice, obtained from patients during the intake interview the reasons for the visit and vital signs and noted both reasons and findings directly on the medical chart.

Self-Report Criteria

Patients routinely fill out two forms when they enroll in the practice—an enrollment form and a health checklist. The enrollment form was reviewed for age, race, financial class, head of household, marital status, and assigned physician. The health checklist, which contains the instruction "check any illnesses or problems that apply to you," was used to determine self-report of depression by patients.

Seventeen of the 85 items that appear on the checklist were selected for review as being relevant to the diagnosis of depression: 9 comprising psychological and vegetative symptoms related to depression, and 8 describing somatic symptoms.

The following criteria were determined to identify patients who were depressed by self-report:

1. Endorsement of the single item "depression" (self-report depression criterion)
2. Endorsement of four or more of nine depression-relevant complaints: change in weight, change in appetite, weakness or fatigue, depression, crying for no reason, bad nerves or tension, suicidal thoughts, loss of memory, nervous or emotional problems
3. Endorsement of three or more of eight somatic complaints—headache, dizziness, obesity, constipation, frequent urination, chest pain, palpitations, numbness—that reflect the view that depression often presents in medical practice as multiple somatic complaints[26]
4. A broad self-report criterion of depression, or three or more of the symptoms (other than "depression") listed in categories 2 or 3

The routine checklist was used instead of a formal depression scale in order to (1) compare this routine form with such scales and (2) examine its utility in view of the greater ease and acceptability involved in its use.

Provider Recognition Criteria

Physician recognition of depression in a patient was determined by chart review. One of two authors (E.D. or L.G.) audited patient charts visit by visit from date of enrollment (June through December 1984) through August 1985; thus, each patient's chart had between seven and 14 months of available data. The following four areas were reviewed: (1) reason for visit, (2) subjective recognition of symptoms, (3) assessment, and (4) intervention.

Regarding the first three areas, the authors coded up to four reasons for the visit, up to four subjective complaints, and up to four physician assessments using a 15 item symptom list. This symptom list, which is broader than the self-report checklist, incorporates major psychological and somatic complaints relevant to depression, plus symptoms categorized by Cadoret et al[26] as ill-defined functional complaints, pain of undetermined etiology, and anxiety. The seven psychological-vegetative symptoms were depressed mood, low energy, fatigue, sleep disturbance, loss of appetite, loss of weight, and inability to concentrate. The six somatic symptoms were head or neck pain, chest pain, stomach or abdominal pain, back pain, central nervous system symptoms (dizziness or fainting), and gastrointestinal symptoms (nausea, vomiting, diarrhea, or constipation). Anxiety and stress were coded as unique items. The symptom noted in the chart had to be identical to the symptom on the symptom list to be encoded, ie, syncope would not be encoded as dizziness, nor would angina be encoded as chest pain. An assessment of "anxiety/depression" was encoded as both anxiety and depression.

The following criteria were used to determine by chart review physician recognition of depression in the study patients:

1. Depression as a reason for visit
2. Subjective complaint of (1) depression; (2) at least one psychological-vegetative symptom; (3) three or more psychological-vegetative symptoms across all visits; (4) at least one somatic symptom; (5) three or more somatic symptoms across visits; and (6) a broad subjective criterion of complaint of depression, or three psychological-vegetative symptoms, or three somatic symptoms.
3. In identical fashion, physician assessment of (1) depression, (2) at least one psychological-vegetative symptom, (3) three or more psychological-vegetative symptoms across visits, (4) at least one somatic symptom; (5) three or more somatic symptoms across visits, (6) broad

assessment criterion of depression, or three psychological-vegetative assessments, or three somatic assessments.

For each visit, physician intervention for depression was considered to have taken place if the physician recorded any of the following three kinds of actions: (1) prescribing an antidepressant medication, (2) counseling a patient for depression or a related problem, or (3) referring a patient to a mental health professional for depression or a related problem. A general intervention was considered to have occurred if any of the three interventions was noted as offered on any visit.

Finally, depression was considered to be broadly recognized if the physicians noted an assessment of depression or noted any intervention for depression on any visit.

Data Analysis

Prevalence estimates derived from various pairs of criteria were compared using the two-tailed McNemar test (z) for the difference between proportions of correlated data. Chi-square tests were performed to compare estimates between independent groups.

RESULTS

Among 104 female patients, the mean age was 36.2 years (SD = 11.5 years) with a range of 20 to 64 years. There were 54 white, 48 black, 1 Hispanic, and 1 Asian-American patients. Thirty patients were single, 30 married, 25 divorced, 15 separated, and 4 were widowed. Forty patients were private paying, 23 were receiving county funds (indigent), 33 received Medicaid or Medicare, and 1 used Worker's Compensation.

Prevalence Rates for Self-Report Criteria of Depression

Prevalence rates for depression identified by self-report for the checklist symptoms are displayed in Table 1. Prevalence rates were comparable among the three categories of single item for depression, psychological symptoms, and somatic symptoms (21, 18, and 22, respectively). A total of 45 patients (43 percent) identified themselves as depressed according to the broad self-report criterion.

Closer examination of the data indicated that various categories of symptoms were identified by different subsets of patients. Twelve of the 18 patients who checked four or more psychological symptoms on the self-report checklist also checked the depression item. In contrast, of the 22 patients who checked over three somatic symptoms on the self-report checklist, only eight checked depression. Therefore the psychological and somatic patients are overlapping but distinctive subgroups.

TABLE 1. PREVALENCE RATES FOR SELF-REPORT CHECKLIST CRITERIA (n = 104 patients)

Patient Self-Report Criteria	No. (%)
Depression item	21 (20)
Four or more psychological-vegetative complaints	18 (17)
Three or more somatic complaints	22 (21)
Broad self-report criterion (any criterion above)	45 (43)

TABLE 2. PREVALENCE RATES FOR PHYSICIAN RECOGNITION CRITERIA ACROSS OFFICE VISITS (n = 104 patients)

Physician Recognition Criteria	No. (%)
Depression as reason for visit	3 (2.8)
Subjective complaint	
Depression	7 (6.7)
One or more psychological-vegetative symptoms	13 (12.5)
Three or more psychological-vegetative symptoms	1 (1.0)
One or more somatic symptoms	46 (44)
Three or more somatic symptoms	9 (8.7)
Depression, or three or more psychological-vegetative or three or more somatic symptoms	12 (11.5)
Physician assessment	
Depression	10 (9.6)
One or more psychological-vegetative symptoms	5 (4.8)
Three or more psychological-vegetative symptoms	0 (0)
One or more somatic symptoms	26 (25)
Three or more somatic symptoms	1 (1.0)
Depression, or three or more psychological-vegetative or three or more somatic symptoms	11 (10.6)

Physician Recognition of Depression

Physician recognition of depression data are displayed in Table 2. Three patients (2.9 percent) directly reported depression to the nurse as a reason for visit on at least one visit. Depression was more common as a subjective complaint (7, or 6.7 percent). Almost twice as many patients (13) gave at least one psychological-vegetative symptom on at least one visit, but surprisingly, only one patient gave three or more of these complaints. Vague somatic complaints were common (46, or 44 percent), and nine patients (8.7 percent) reported three or more somatic complaints over all visits. Using the broad subjective complaint criterion of either depression, or three or more vegetative symptoms, or three or more somatic symptoms yielded a prevalence estimate of 11.5 percent (12/104).

TABLE 3. PREVALENCE RATES FOR INTERVENTIONS BY PHYSICIANS FOR DEPRESSION (n = 104 patients)

Intervention	No. (%)
Antidepressant medications	7 (6.7)
Counseling	6 (5.8)
Mental health referral	8 (7.7)
Any intervention	12 (11.5)

Physicians assessed ten patients as depressed. Assessment of psychological-vegetative complaints was rare (only five patients with even one such assessment), reflecting the symptomatic nature of these criteria (ie, loss of appetite would not ordinarily constitute an assessment). Twenty-six patients (25 percent) had an assessment of at least one somatic symptom, but only one patient had assessments for three or more somatic symptoms. Eleven patients met the broad assessment criterion for depression.

Thus, it may be noted that for the subjective complaints, the estimated prevalence increased from 7.0 percent to 11.5 percent when a broader symptomatic criterion was used; however, by focusing only on physician assessment, the depression alone criterion provides a representative prevalence figure.

The frequency of intervention was found to be consistent with the prevalence figures for depression above. Physicians prescribed antidepressants to 7 patients (6.7 percent), counseled 6 (5.8 percent), and referred 8 (7.7 percent). Twelve patients (11.5 percent) received at least one of these forms of intervention (Table 3).

Combining intervention with physician assessment yielded a total of 15 patients (14.4 percent) meeting this broader index of physician recognition.

Physician Recognition and Intervention

Agreement between physician assessment of depression and intervention was examined. Of seven patients receiving antidepressant medication, six had a recorded assessment of depression. Of the 12 patients receiving at least one form of intervention, seven had an assessment of depression. Viewed in terms of treatment, 6 of 10 patients assessed as depressed received medications; 7 of the 10 had at least one form of intervention.

Self-report and Physician Recognition

The prevalence figures from various self-report and provider recognition criteria were compared. Depression recorded on the self-report checklist was more prevalent than depression recorded as a reason for visit ($z = 4.02$, $P < .01$), as a subjective complaint ($z = 2.98$, $P < .01$), or as an assessment ($z = 2.29$, $P < .05$). These comparisons were also significant for the self-report psychological and self-report somatic criteria.

Next, the self-report psychological and self-report somatic criteria were compared with the chart review psychological-vegetative and somatic criteria (keeping in mind that the symptom clusters were not identical). Because the subjective complaints are more comparable to checklist symptom report than assessment would be, the prevalence estimates based on physician's recording of subjective complaints were used. There was no difference in prevalence between the self-report psychological criteria and physician notation of at least one psychological or vegetative subjective complaint ($z = 1.04$, NS), but a significant difference was found for three or more such complaints ($z = 3.90$, $P < .01$). For somatic criteria, the self-report somatic criterion was less prevalent than subjective complaint of one somatic symptom ($z = 3.79$, $P < .01$), but more prevalent than three or more such complaints ($z = 2.71$, $P < .01$).

In general, there was a low rate of agreement between self-report and physician recognition. Of the 21 patients checking depression, 3 made this subjective complaint, and 4 were so assessed by physicians (thus, 6 additional patients who did not check depression on the self-report checklist were subsequently assessed as depressed by physicians). Of the 18 patients who checked four or more psychological symptoms, only 4 complained of even one psychological or vegetative symptom on any visit (thus, 9 additional patients had a psychological or vegetative subjective complaint recorded). For somatic complaints, concordance was higher: of the 22 patients checking three or more somatic symptoms on the checklist, 14 made at least one complaint of a somatic symptom, but only four had three or more such complaints.

Single-Visit and Multiple-Visit Patients

These independent subgroups were compared to determine whether patients appearing only once are an acute care group with a low prevalence of depression.

On the checklist, self-reported frequency for the depression item only and the self-reported psychological criterion did not differ between the single (n = 45) and multiple (n = 59) visit groups. However, those patients with more than one visit tended to be more likely to endorse three or more somatic symptoms (27 percent vs 13 percent, $\chi^2 = 2.91$, 1 *df*, $P < .09$).

In terms of physician recognition, no single-visit patient gave depression as the reason for visit, complained directly, or was assessed as depressed. Of the 59 patients with more than one visit, six were assessed as depressed on their first visit. The multiple-visit patients were more likely to have a somatic complaint recorded (47 percent vs 29 percent, $\chi^2 = 3.69$, 1 *df*, $P < .06$). Using a criterion

TABLE 4. COMPARISON OF PREVALENCE RATES OR VARIOUS DEPRESSION CRITERIA BETWEEN FULL SAMPLE AND MULTIPLE-VISIT-ONLY PATIENTS

Depression Criteria	Percent of Full Sample (n = 104)	Percent of Multiple-Visit-Only Patients (n = 59)
Depression as reason for visit	3	5
Subjective complaints		
Depression	7	12
One or more psychological-vegetative symptoms	12.5	19
One or more somatic symptoms	44	56
Depression, three or more psychological-vegetative or three or more somatic symptoms	11.5	19
Physician assessment		
Depression	9.6	17
Depression, three or more psychological-vegetative or three or more somatic symptoms	10.6	19
Intervention		
Medication	6.7	12
Counseling	5.8	7
Referral	7.7	10
Any intervention	11.5	15
Any broad recognition	14.4	20

of any recognition (assessment or intervention), the groups did not differ statistically (12 percent vs 6.7 percent) when the first visit only was considered.

Because statistical comparisons between single-visit and multiple-visit subsamples are biased by extra opportunity for multiple-visit patients to meet various criteria for depression, changes in prevalence going from the full sample to multiple visitors only are presented (without statistical analysis) in Table 4. As expected, these results suggest that the prevalence estimates are indeed enhanced by excluding one-time visitors. Therefore, comparisons of prevalence estimates across studies should consider visit frequency.

DISCUSSION

Prevalence estimates for depression have been shown to vary depending on data collection methods and classification criteria. Estimates based on self-report were in this study, as in most other studies, higher than those based on physician recognition. The use of vague somatic complaints (on self-report or during office visits) on the grounds that medical patients often present a masked or somatized form of depression lead to the inclusion of individuals otherwise not noted as depressed (who may or may not be depressed). Using broad inclusion criteria augmented the prevalence figures.

The present study provided criteria for the appearance of depression, eg, a complaint of depressed mood on any office visit. Other criteria allowed for summation across visits, eg, the complaint of three vague somatic symptoms across visits. This use of multiple visits obviously differs from studies using random single visits[27,28] or first visits only.[29] Rates are, as expected, higher with more opportunity for presentation and recognition, but are considered more representative for a medical population, given that family practice patients may intersperse visits for acute problems with visits associated with psychosocial distress.

This study utilized criteria combining psychological and vegetative, somatic, and physician intervention measures in addition to various unique criteria. This method allows for patients who may deny depressed moods, but who do self-report or complain of other depression-relevant symptoms. Consistent with Jencks' findings,[28] the combination of assessment and intervention yielded a more valid estimate of physician recognition than either did alone.

The present study used a routine symptom checklist rather than a validated depression scale. The obtained prevalence of about 20 percent here from the routine checklist compares with prevalences found in studies using the Beck Depression Scale of 12 percent,[13] 18 percent,[17] and 32 percent[30]; the Zung, 13.2 percent,[31] 12 percent,[32] but also 32 percent[33]; and the CES-D, 21 percent.[34] Prevalence was similar using a single face-valid item (depression), or criteria of four or more psychological symptoms, or three or more somatic symptoms. The 20 percent figure may be somewhat elevated by the high proportion of black and low socioeconomic class patients in the sample, two factors found to augment self-report prevalence.[13,35]

The physician recognition rate of 14 percent based on assessment of depression or intervention compares favorably with rate of 14 percent found among female patients[18] and the 12.6 percent in a family practice setting.[36] The prevalence estimate increased to 20 percent when only patients making multiple visits were considered. It is important to note that (1) these estimates are generalizable only to female patients, (2) the use of newly enrolled patients may actually lower estimates by excluding long-term chronically depressed patients, but (3) estimates may be inflated by fewer married and more low socioeconomic class patients than in other populations.

The low agreement found between self-report and physician recognition is consistent with prior research. Ficken et al[27] found that family practice residents recognized six of 17 patients diagnosed as depressed by psychiatric interview. A multitude of other studies report recognition rates between 2 and 20 percent.[13,17,28,29,31,34] The severity of depression does not appear to correlate with recognition.[13]

It must be recognized that even though depression inventories are in far better accord with independent psychiatric interview than with nonpsychiatric physician assessment, the relationship between checklist and diagnostic status is far from clear.[24]

Explanations of the discongruence between self-report and physician diagnosis have typically focused on physician characteristics, such as undervaluation of psychosocial distress,[27] lack of personal experience,[29] lack of training,[13] fear of stigmatizing patients,[29] and other barriers to recognition.[37] Perusal of the subjective complaint patterns and the specific areas of discongruence between checklist and visit data in this study points to patient characteristics that may help explain the oft-noted discongruence. Patients who report depression on a checklist may not provide clues to physicians to make recognition possible because (1) they may be seeking help elsewhere, (2) they simply choose not to (this may be especially true among black patients[38]), or (3) they are unable to express such concerns to physicians.[24,31,39,40]

Some patients checking depression-relevant items on the checklist may have transient affective disturbances, nonaffective disorders, or other reasons for endorsement.[41] Some may reflect distress associated with low socioeconomic status, which may then be accepted by physicians as typical for the social class and therefore not diagnosable as depression. Alternatively, some patients may appear depressed to physicians yet not endorse depression-related items on checklist because (1) they make insufficient effort to complete the checklist, (2) they lack awareness of their depression, which is elicited by the physician with sensitive interviewing, (3) they were not depressed on enrollment (at time of checklist completion) but later became depressed (this possibility is less likely in that six of 10 patients were diagnosed as depressed on their first visit), or (4) checklists may not pick up minor depression or depressive personality.[24]

Future studies seeking to estimate the prevalence of depression in primary care should consider (1) combining subjective complaints, assessment, and intervention to assign physician recognition, (2) comparing routine checklists and even single-item (depression) screening with validated depression inventories, (3) examining symptom clusters within and across self-report and visit data to identify depression syndromes that might differ from the psychiatric nosology, and (4) comparing prevalence estimates by gender, race, and social class. Furthermore, physician assessment of depression should be studied to clarify what cues, complaints, and patient characteristics influence diagnosis and treatment decisions.

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