

Does the Severity of Mood and Anxiety Symptoms Predict Health Care Utilization?

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BACKGROUND. Traditional diagnostic criteria for depression and anxiety fail to account for symptom severity. We previously evaluated a severity-based classification system of mood and anxiety symptoms. This study examines whether those severity groups are predictive of differences in health care utilization.

METHODS. We used a cohort design to compare the health care utilization of 1232 subjects classified into 4 groups according to symptom severity. Health care billing data were evaluated for each subject for a 15-month period around the index visit. Multiple linear regression models were used to examine relative contributions of individual variables to differences in health care utilization. Analysis of variance procedures were used to compare charges among the severity groups after adjusting for demographic and medical comorbidity variables.

RESULTS. After adjustment, significant differences in health care utilization between groups were seen in all but 3 of the 15 months studied. Also, after adjustment, the presence of a mood or anxiety disorder influenced utilization for only a 6-month period. At 9 to 12 months, subjects in the high-severity group showed a more than twofold difference in adjusted charges compared with the low-severity group (\$225.36 vs \$94.37).

CONCLUSIONS. Our severity-based classification predicts statistically and clinically significant differences in health care utilization over most of a 15-month period. Differences in utilization persist even after adjustment for medical comorbidity and significant demographic covariates. Our work lends additional evidence that beyond screening for the presence of mood and anxiety disorders, it is important to assess symptom severity in primary care patients. Further study directed toward developing effective methods of identifying patients with high levels of mood and anxiety symptom severity could result in significant cost savings.

KEY WORDS. Mental disorders/diagnosis; psychiatric status rating scales; health services; primary health care. (*J Fam Pract* 1999; 48:769-777)

Mental health problems in the primary care setting have received a great deal of attention over the past 20 years. Much of the interest and study has focused on depressive disorders, which have been shown to be common in primary care.¹⁻⁷ Studies have demonstrated that while depressive disorders result in significant morbidity,^{8,9} they are often underrecognized by primary care physicians.¹⁰⁻¹² Consequently, instruments have been developed to assist primary care physicians in the screening and identification of patients who meet standard *Diagnostic and Statistical Manual*¹³ (*DSM*) criteria for depressive disorders.^{6,7,14,15}

This underrecognition and the development of screening tools have fostered the creation of a screen-detect-treat-improve strategy. This strategy is embodied in the National Institute of Mental Health/Agency for Health Care Policy and Research guidelines for the detection and treatment of depression in primary care.¹⁶ The underlying assumption is that primary care patients who meet criteria for depression are at risk for significant morbidity and mortality, and may significantly increase costs to the health care system.¹⁷ Unfortunately, early clinical trials utilizing this screen-detect-treat-improve strategy have shown little success in improving outcomes.¹⁸⁻²¹ One explanation for this may be that screening on the basis of *DSM*²² criteria alone does not identify those patients with the highest morbidity and those most likely to benefit from intervention.

In a previous study, we described a mathematical approach to classifying patients with mood and anxiety symptoms in primary care.²³ This approach grouped patients according to the self-reported severity of 15 mood and anxiety symptoms. These groupings did not show much agreement with the diagnosis of *DSM-III-R* criteria-based mood or anxiety disorders, but did as well or better than *DSM-III-R* criteria at predicting differences in health-related quality of life (HRQOL). This follow-up study sought to deter-

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mine if these severity-based groups were also useful in predicting differences in health care utilization over time. If severity-related groupings are proved predictive of utilization differences, our study would lend additional evidence to support the routine assessment of mood and anxiety symptom severity before, or even instead of, screening for mental health disorders.

METHODS

SAMPLE AND PROCEDURES

For this study we used a secondary analysis of data collected as part of a study of alcohol screening methods in primary care funded by the National Institute on Alcohol Abuse and Alcoholism. Subjects were adult primary care patients presenting for nonurgent care to the Family Practice Center of the University of Texas Medical Branch (UTMB) in Galveston, Texas. They were enrolled over 15 months, beginning in October 1993. The sampling strategy called for an oversampling of women, African Americans, and Mexican Americans. Full details of the sampling strategy are available elsewhere.²⁴ Institutional Review Board approval was obtained from UTMB before the initial study and before the subsequent sampling of charge data.

PRIMARY MEASURES

Mood and Anxiety Symptoms and Severity-Based Clusters. We developed a severity measure of

mood and anxiety symptoms for the primary alcohol screening study. We asked patients to rate the frequency of their symptoms using a 2-week time frame. Response options included "none of the time," "a little of the time," "some of the time," "most of the time," and "all of the time." Questions from the symptom measure are presented in Table 1.

Responses to this symptom measure were used to create clusters or groups of patients with similar severity profiles.²³ Four distinct groups were identified: low severity, moderate anxiety/minor mood, moderate anxiety/severe mood, and high severity. The groups were distinguished by their relative levels of severity across both mood and anxiety symptoms rather than by clustering mood and anxiety symptoms into individual groups. As previously reported, these groups varied on indicators of physical comorbidity, income and occupational status, and measures of HRQOL.

Health Care Costs. We obtained billing data from UTMB Hospital Information Services for the 15-month period composed of the 3 months before and the 12 months after each patient's index visit. These data included physician charges and charges for other technical services. Details regarding those services were not obtained. Outpatient pharmacy data was not included. The data reflected all activity within the UTMB Hospitals and Clinics, and therefore included inpatient, outpatient, and mental health services. Because we recognize that any mental health symptomatology captured at the index visit reflected morbidity that had been present for an unknown period, we included charge data from 3 months preceding the index visit. We are confident we captured the majority of health care use in our study population because of the dominant presence of the UTMB Hospitals and Clinics in the local health care market.

All charges were divided into 3-month intervals, then summed. Because missing charge data could (1) indicate the patient had left the area, or (2) indicate the patient received no charges during the period in question, we developed the following procedure. Where charge data for a patient was missing within a 3-month period, we examined the subsequent 3-month periods, including 3 months beyond the period of study. If charge data existed for any subsequent period, we assumed that the patient was still active in the UTMB health system but no charges had been recorded during the intervening period(s). In

TABLE 1

Questions from Mood and Anxiety Symptom-Based Measure

Over the LAST 2 WEEKS, how often have you experienced any of the following?

- Feeling nervous, anxious, or on edge. (Nervous)
- Worrying about different things. (Worry)
- Having an anxiety attack (suddenly feeling panic or fear). (Anxiety attack)
- Feeling dizzy, unsteady, or faint. (Dizzy)
- Your heart racing, pounding, or skipping. (Heart racing)
- Having trouble concentrating on things, like reading or watching TV. (Concentration)
- Being tired easily. (Fatigue)
- Having muscle tension, aches, or soreness. (Muscle aches)
- Having nausea or an upset stomach. (Nausea)
- Feeling sad. (Sad)
- Having no interest in being with other people. (Withdrawal)
- Feeling like a failure as a person. (Failure)
- Having trouble making decisions. (Decision making)
- Feeling so down that nothing could cheer you up. (Down)
- Feeling depressed. (Depressed)

Note: Responses to questions were on a 5-point Likert scale ranging from "none of the time" to "all of the time."

this situation, a zero was recorded as the amount billed. If, in contrast, all subsequent periods were void of charge data, we assumed the patient had left the UTMB health system, and the data was treated as "system missing" and not used in any data analysis calculations. This conservative approach would reduce the average charges for each group, though more for the low-severity group, which had the lowest medical comorbidity.

Other Variables. We also examined age, sex, ethnicity, income level, medical comorbidities, and the presence or absence of a mood or anxiety disorder as independent variables.

Adjustment for medical comorbidities was based on a count of diagnoses of chronic health problems from patients' problem lists that were found predictive of Short Form-36 Physical Component Summary scale (SF-36 PCS) scores.²⁵ Chronic health problems, grouped by International Classification of Diseases diagnosis codes, indicative of PCS scale scores were identified through a linear regression model that used the SF-36 PCS scale scores as the dependent variable. These chronic disease states, representing chronic health problems seen commonly in primary care patients, were included in the comorbidity index. The index was confirmed by testing a validation subset of a randomly selected group of cases. The comorbidity index was also shown to have predictive validity for future health care costs. This approach was modeled after the adaptation by Deyo²⁶ of the Charlson Index,²⁷ a widely used and validated clinical comorbidity adjustment index developed in a hospital-based patient population.

The presence of a mood or anxiety disorder was determined in the original study through use of the mood and anxiety modules of the PRIME-MD instrument.⁶ We included anxiety disorders in this study because we used those symptoms in the original study that produced the severity groups. Disorders included major depression, partial remission or recurrence of a major depressive disorder, dysthymia, bipolar disorder, generalized anxiety disorder, and panic disorder. Prevalence estimates for these disorders in our sample were consistent with those obtained by the PRIME-MD 1000 study, with the exception of major depressive disorder, which was identified in 18.2% of our sample compared with 12% in the PRIME-MD 1000 study.

DATA ANALYSIS

After aggregating the charge data for each 3-month period, we normalized the data using a logarithmic transformation. We calculated unadjusted utilization costs for each 3-month period surrounding the study index visit. Associated 95% confidence limits were also estimated. Analyses of variance were used to test for differences between symptom severity groups. *T* tests were performed to examine charge differences

between patients with and without a diagnosed mood or anxiety disorder as determined by the PRIME-MD.

We next evaluated whether the differences seen between the symptom severity groups would remain after adjusting for significant covariates. To ensure that our analyses did not overestimate the contributions of a mood or anxiety disorder or symptom-severity group membership, analyses of covariance were used to test for interactions between these variables.

We used stepwise multiple linear regression to examine which covariates, in addition to the symptom severity groups, had an influence on charges within each period. Because membership in a symptom severity group was not an ordinal measure, this variable was transformed into 4 dichotomous variables, one to denote membership for each group. The 2 moderate-severity groups and the high-severity group were entered into the regression model as a single block, with the low-severity group serving as the reference group. Medical comorbidity was entered into the model first, a stepwise block containing all demographic variables was entered, the symptom severity group block was entered, and finally the *DSM-III-R* variable. The ordering of variables was chosen to examine the relative impact on charges of the severity groups after first entering the comorbidity and demographic variables, and finally whether the presence of a diagnosed mood or anxiety disorder added additional information. As a part of our evaluation of each regression model, we also examined collinearity diagnostics.

Using the information from the regression models, the significant covariates were included in an analysis of covariance for each period to test for significant differences in adjusted charges between severity groups. For each symptom severity group, means for covariate adjusted charges were also estimated across each period.

RESULTS

SAMPLE DESCRIPTION

Mean age of subjects in our sample was 43 years (standard deviation = 15.7); 70% of our subjects were women, 39% white, 35% African American, and 26% Hispanic. Among our Hispanic patients, the level of acculturation by birth status was relatively high: 51% were at least second-generation US residents, and an additional 34% were first-generation US residents. A total of 57% of our sample had taken some courses beyond the high school level, and 53% had an annual household income of less than \$20,000. Additional sociodemographic information is available in the original paper describing this sample.²³

From our sample of 1333 subjects, 83 were excluded from the cluster analysis procedure because of incomplete responses to the 15-item symptom severity instrument. Another 18 subjects were excluded

because of an inability to access their billing records, leaving 1232 subjects for our utilization analyses. Loss of charge data over time was 14.3%, with available charge data for 1055 subjects for the period 9 to 12 months after each subject's index visit.

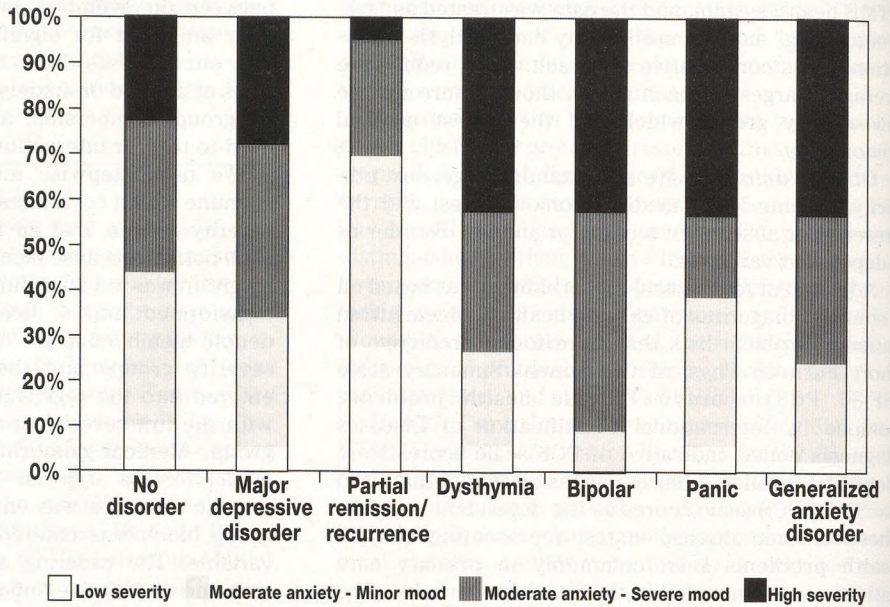
SYMPTOM SEVERITY GROUP DESCRIPTIONS

We clustered study subjects into 4 groups: low severity (n = 686), moderate anxiety/minor mood (n = 335), moderate anxiety/severe mood (n = 148), and high severity (n = 81). Sociodemographic information on subjects in each cluster and mean symptom severity scores for each cluster were presented in our initial paper.²² Membership in a higher-severity cluster tended to be associated with being female, unemployed, and having an annual income of less than \$10,000. Significant differences were not seen between groups with respect to age, education, or presence of chronic health problems.

With the exception of the 2 moderate-anxiety groups, individuals in each group were distinguished by the level of severity across all symptoms. Subjects in the 2 moderate anxiety symptoms but differed in the severity of their mood symptoms.

FIGURE

Distribution of Subjects Across Severity Groups



The Figure displays the distribution across the 4 severity groups for those patients who met criteria for individual disorders. (For comparison, we also show the distribution for subjects who failed to meet criteria for any disorder.) This figure illustrates the lack of relationship between the severity groups and the diagnostic entities. The distribution does not follow an expected distribution of the majority of subjects with any particular disorder in the high-severity group. For major depressive disorder, partial remission or recurrence of a depressive disorder, and bipolar disorder the majority of subjects meeting criteria are actually

TABLE 2

Unadjusted Mean Charges, in Dollars, for Patients in Each Severity Group, by Date of Study Enrollment

Severity Group	Months After Enrollment				
	3	0 to 3	3 to 6	6 to 9	9 to 12
1. Low severity	405.14	180.05	50.16	102.45	86.94
2. Moderate anxiety/Minor mood	549.03	325.31	119.78	149.45	96.27
3. Moderate anxiety/Severe mood	578.90	253.16	113.37	145.41	154.28
4. High severity	1106.11	638.85	270.64	242.38	291.81
Significant between-group differences*	A,B,C,E,F	B,C,E	A,B,C	No significant differences	C, E

All charges are in US dollars.

*Post-hoc comparisons include Bonferroni adjustment for number of individual comparisons, and are denoted as follows: A = cluster 1 vs 2; B = cluster 1 vs 3; C = cluster 1 vs 4; D = cluster 2 vs 3; E = cluster 2 vs 4; F = cluster 3 vs 4. Differences were significant at the level of P < .05.

TABLE 3

Unadjusted Mean Charges, in Dollars, for Patients With and Without a Diagnosed Mood or Anxiety Disorder Relative to Index Visit

Diagnosed Disorder Present?	Months After Enrollment				
	3	0 to 3	3 to 6	6 to 9	9 to 12
No	433.11	203.61	60.34	107.35	91.45
Yes	703.72	393.73	183.23	195.84	175.07

Charges are in US dollars.

Note: Differences between group means within each period are significant at $P < .05$.

patients in the high-severity group had an average of more than 3 times the health care charges of patients in the low-severity group.

The largest significant differences were seen between the low- and high-severity clusters, except for the 6- to 9-month period. No statistically significant differences in charges were seen between the moderate-severity clusters for any period studied.

found in the 2 moderate-severity groups. Subjects who failed to meet diagnostic criteria for any major depressive disorder have a symptom severity distribution similar to those who do. This suggests that for these mood and anxiety disorders, meeting the diagnostic criteria is not necessarily associated with a high level of symptom severity.

CHARGE DIFFERENCES BETWEEN CLUSTERS

Table 2 presents the unadjusted mean charges for each cluster group for each 3-month period of charge data obtained. Charges decreased for each severity group over the period of study, but the general trend toward higher charges in the high-severity group persisted over time. Even 9 to 12 months after the index visit,

CHARGE DIFFERENCES BY MOOD AND ANXIETY DISORDER CRITERIA

Table 3 presents mean charges for patients who did and did not meet *DSM-III-R* criteria for any mood or anxiety disorder according to the PRIME-MD. Again, a trend of diminishing charges over time was seen for all patients. For each period studied, patients who met criteria for either a mood or anxiety disorder had nearly twice the charges of patients who did not meet criteria for these disorders. Significant differences were seen between groups for each period.

MOOD OR ANXIETY DISORDERS AND SYMPTOM SEVERITY

No significant interactions were seen between the pres-

TABLE 4

Regression Models with Significance of Individual β Coefficients and Overall R^2

Variables Stepped in by Blocks	Months After Enrollment				
	3	0 to 3	3 to 6	6 to 9	9 to 12
Medical comorbidity	0.00	0.00	0.00	0.00	0.00
Demographics					
Age	NS	0.00	NS	0.00	0.00
Sex	NS	NS	NS	NS	NS
Income	0.00	0.00	0.00	0.00	NS
Black	NS	NS	NS	NS	NS
Hispanic	0.01	NS	NS	NS	0.00
Severity group					
MA/MM	0.01	0.00	0.01	0.05	0.01
MA/SM	0.03	NS	NS	NS	NS
HS	0.00	0.05	NS	NS	NS
Presence of a diagnosed mood or anxiety disorder	NS	0.03	0.00	NS	NS
R^2 for model	$R^2 = 0.15$	$R^2 = 0.11$	$R^2 = 0.08$	$R^2 = 0.09$	$R^2 = 0.09$

MA/MM denotes moderate anxiety/minor mood; MA/SM, moderate anxiety/severe mood; and HS, high severity.

Note: P values denote significance of T after all variables enter.

TABLE 5

Regression Models Predicting Health Care Charges with Significance of Individual β Coefficients and Overall R²

Severity Group	Months After Enrollment				
	3	0 to 3	3 to 6	6 to 9	9 to 12
Low severity	458.53	230.20	75.13	113.85	94.37
Moderate anxiety/Minor mood	575.44	364.32	140.03	161.26	102.64
Moderate anxiety/Severe mood	590.02	238.72	104.55	157.94	162.10
High severity	897.90	444.41	156.03	182.56	225.36
Significance by covariate					
adjusted ANOVA	<i>P</i> < .001	<i>P</i> = .014	<i>P</i> = .035	<i>P</i> = .191	<i>P</i> = .032

ANOVA denotes analysis by variance.

Note: *P* values reflect significance of overall differences seen between covariate adjusted means.

existed in the mean charges between severity groups for all periods, except the 6 to 9 months after the index visit. There was an almost fourfold reduction in the mean charges for the high-severity group over the entire study period; however, even at 9 to 12 months, patients in this group showed an average of 2 times the charges of those in the low-severity group.

ence of a clinically diagnosed mood or anxiety disorder and symptom severity with respect to our charge data when examined using analysis of covariance procedures. This lack of interaction persisted across all periods for which we obtained charge data. Again this lends support to the idea that mood and anxiety symptom severity operates independently from the presence of a diagnosed disorder.

REGRESSION ANALYSES

The results of stepwise multiple regression analyses are seen in Table 4. Medical comorbidity and income entered each regression model. Age was a significant factor influencing charges in 3 of the 5 periods. The influence of symptom severity on utilization showed decreasing levels of significance over time. The variable that tracked the presence of a mood or anxiety disorder entered the regression models for only the 2 periods encompassing the first 6 months after the index visit. This indicates that whether a subject met *DSM-III-R* criteria did not significantly influence utilization beyond the 6 months immediately following the index visit. The variance in total charges explained by each model was consistently approximately 8% to 11%, except for the initial period, where the model explained 15% of the charge variance. Regression diagnostics confirmed that the independent variables were not collinear.

ADJUSTMENT OF MEAN CHARGES FOR SIGNIFICANT COVARIATES

Table 5 displays mean charges across symptom severity groups after adjusting for covariates that entered our regression models. While the magnitude of charges was reduced somewhat compared with the unadjusted values, the relative charge differences between symptom severity groups were nearly the same as in the unadjusted means. As expected, significant differences

DISCUSSION

In this study we sought to expand our initial study of differences between patients with varying levels of mood and anxiety symptoms by examining differences in health care utilization. We also sought to determine whether any utilization differences would persist over time. Because of the availability of charge data in the UTMB health system, we used charge data as a surrogate measure for health care utilization.

LIMITATIONS

Our study has limitations that should be understood before we address potential implications. The findings are limited by being a retrospective secondary analysis of data. Our original study was not specifically designed to address the questions we have raised here. Also, the subjects were recruited from a single primary care site, which may limit the generalizability of the results. However, the high quality of the initial sampling and our ability to adjust for potential sociodemographic and medical confounders may balance these limitations.

Total charges from a single system were used as an indirect measure of health care utilization. Although it is possible that patients may have accessed health care outside of the UTMB system during the study period, our setting of Galveston Island represents a relatively closed health care environment, with UTMB being the dominant care provider. One confirmation of this fact is the 14.3% rate of attrition from our sample. While this rate may seem high, it should be remembered that our study was purely observational, with no direct contact between the investigators and subjects after the initial index visit. We were unable to obtain information on third-party payers from our billing data. We could not therefore adjust for potential variations in charges based on these differences.

A final limitation stems from the initial sampling

design, which enrolled subjects who were presenting for health care and measured their symptom severity at a single point. The relative impact of mental health symptom severity on utilization in our study may be different from that of subjects who were not actively presenting for care. But our sampling design, which enrolled only patients with prior appointments for nonurgent care, and our adjustment for medical comorbidity should have helped alleviate this issue. However, it is very likely that the progressive decrease seen in both the charges and in the ability of our regression models to explain charge variances is due to this limitation. In future studies, measuring mental health symptom severity at multiple points over time might provide a way of understanding the relationship of our findings to patients presenting for medical care.

STUDY IMPLICATIONS

The implications of this study should be placed in the context of our earlier study. In that study we demonstrated that primary care patients might be better characterized according to the severity of their mood and anxiety symptoms rather than by a diagnostic label. The groupings that we created using cluster analysis techniques were distinguished more by their symptom severity than by whether they had symptoms that were predominantly mood or anxiety related. We found these groupings very predictive of differences in HRQOL as measured by the SF-36. While *DSM-III-R* mood and anxiety disorder criteria also predicted HRQOL differences, the differences associated with membership in a symptom severity group were more profound.²³

This study reinforces the findings in our previous work by demonstrating health care utilization differences between symptom severity groups. Not only were significant differences measured between levels of utilization in the 3 months preceding and including the date subjects were enrolled, these differences also persisted for the entire 15 months of the study, with the exception of one 3-month period. The differences were robust to adjustment for significant covariates including age, income, medical comorbidity, ethnicity, and mood or anxiety disorder diagnosis. Except for the period from 1 to 180 days after the index visit, the presence of a mood or anxiety disorder failed to appear in our regression models as a factor that significantly influenced utilization.

This study of health care utilization is unique because it began with the severity of mood and anxiety symptoms experienced by an entire practice-based sample without selection according to symptoms, disorders, or physician recognition. The severity of the symptoms were used to derive a classification scheme that was tested for its ability to predict health care utilization. This is an important break from current classification schemes that employ methods of counting symptoms to identify patients with disorders and subsequent targeting for intervention. The importance of this approach is

illustrated in the Figure, where we demonstrate that patients who meet specific *DSM-III-R* disorder criteria distribute across most (if not all) our symptom severity groups. In other words, if a primary care patient reports enough symptoms to meet criteria for a particular disorder we cannot assume that those symptoms are severe. The reverse also appears to be true; that is, patients who fail to meet criteria are not necessarily experiencing a low level of symptom severity. The severity distribution of subjects who have no disorder is strikingly similar to those who meet criteria for major depressive disorder.

Taken together, our 2 studies lay the groundwork for a reconceptualization of how primary care patients with mood and anxiety symptoms are evaluated and classified. Clues are emerging that psychiatric labels may not be adequate to fully describe the spectrum of mental health problems in primary care. Evidence from studies of cancer patients suggests that application of psychiatric criteria for major depressive disorder outside a psychiatric population results in misclassification.^{28, 29} Gallo and colleagues³⁰ have used the Baltimore Epidemiologic Catchment Area Program sample to demonstrate that traditional criteria for classifying depression may not be adequate to identify elderly patients who are at risk. Data from the Michigan Depression Project indicate that primary care physicians appear to recognize an overlapping but different group of patients from those identified by mental health screening tools.³¹ Our work appears to lend additional evidence that psychiatric labels describe only part of a complex picture of mental health symptomatology.

Our explorations of mood and anxiety symptom severity through cluster analysis have yielded what we have termed a "classification." However, we believe this classification is most likely representative of an underlying severity dimension that cuts across mood and anxiety symptom types. This concept is not new. Many treatment trials of depression in primary care have already used monitoring of severity with instruments such as the Hamilton Depression Rating Scale³² as outcome measures. What is new is mood and anxiety symptom severity as an independent predictor of HRQOL and utilization outcomes beyond presence of a psychiatric disorder. This suggests a unique and independent priority for symptom severity status.

Consensus is emerging that depression is a chronic illness with periods of exacerbation and recovery.^{33, 34} Conceptualizing a symptom severity dimension as a predictor of HRQOL and utilization appears consistent with this idea. The presence of a mood or anxiety disorder may be similar to having asthma, with actual mood and anxiety symptom severity similar to peak flow status. Just as patients experiencing bronchospasm for any of a variety of reasons have decreased peak flow independent of an asthma diagnosis, it appears that primary care patients experience severe mood and anxiety symptoms for a variety of reasons independent of a psychiatric dis-

order diagnosis. Also for patients who have disorders, symptom severity may be a more important parameter to follow than *DSM-III-R* criteria that measure the "recovery from" or "relapse back into" a disorder.

Because our instrument did not include other symptom severity measures we were unable to compare it with others, such as the Hamilton Depression Rating Scale.³¹ However, questions exist about the ability of the Hamilton Scale to serve as a measure of depression severity.³⁵ Beyond these concerns, a 15-item self report measure of severity appears to have advantages in a busy clinical setting.

Finally, given the apparent sensitivity of symptom severity for impairment and utilization differences, we postulate that our severity instrument could be useful in initially identifying patients at risk, as well as in monitoring previously identified patients. Existing instruments are not well accepted by primary care clinicians, perhaps because of high rates of false positives.³⁶ We are currently testing whether such a use would be feasible. With intervention studies of treatment-resistant patients now being undertaken, use of a severity measure to identify patients for intervention could be very helpful. This work could proceed along the lines of stepped-care approaches for other disease entities, such as diabetes, asthma, or depression.

CONCLUSIONS

We agree with Klinkman and Okkes,³⁷ who have called for more primary epidemiology within the area of mental health in primary care. Our work demonstrates that the relationship between symptom severity and the presence of a mood or anxiety disorder is very complex and worthy of further exploratory study. Indeed, the utilization implications here are profound because our classifications have the potential to identify patients who have high levels of health care utilization in a way other than by traditional diagnoses or medical comorbidity. Cluster analysis has provided a useful tool for examining new ways of understanding how mood and anxiety symptoms are present in the primary care setting. Further prospective work should continue to enlarge this understanding.

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