Investigation of a Severity-Based Classification of Mood and Anxiety Symptoms in Primary Care Patients

Donald E. Nease, Jr, MD, Robert J. Volk, PhD, and Alvah R. Cass, MD, SM

Background: **Current *Diagnostic and Statistical Manual of Mental Disorders* (DSM) classifications describe spectrums of symptoms that define mood and anxiety disorders. These DSM classifications have been applied to primary care populations to establish the frequency of these disorders in primary care. DSM classifications, however, might not adequately describe the underlying or natural groupings of mood and anxiety symptoms in primary care. This study explores common clusters of mood and anxiety symptoms and their severity while exploring the degree of cluster congruency with current DSM classification schemes. We also evaluate how well the groupings derived from these different classifying methods explain differences in patients' health-related quality of life.**

Methods: **Study design was cross-sectional, using a sample of 1333 adult primary care patients attending a university-based family medicine clinic. We applied cluster analysis to responses on a 15-item instrument measuring symptoms of mood and anxiety and their severity. We used the PRIME-MD to determine the presence of DSM-III-R disorders. The SF-36 Health Survey was used to assess health-related quality of life.**

Results: **Cluster analysis produced four groups of patients different from groupings based on the DSM. These four groups differed from each other on sociodemographic indicators, health-related quality of life, and frequency of DSM disorders. Cluster membership was associated in three of four clusters with a clinically significant and progressive decrease in mental and physical health functioning as measured by the SF-36 Health Survey. This decline was independent of the presence of a DSM diagnosis.**

Conclusions: **A primary care classification scheme for mood and anxiety symptoms that includes severity appears to provide more useful information than traditional DSM classifications of disorders. (J Am Board Fam Pract 1999;12:21-31.)**

Since publication of the article by Regier et al[1] on the prevalence mental health problems within primary care, much attention has been focused on their epidemiology, recognition, and treatment in the primary care setting. Studies have used various tools to detect mental health disorders, including the Hamilton Rating Scale for Depression,[2] the Center for Epidemiologic Studies-Depression Scale,[3] the Structured Clinical Interview,[4] and the PRIME-MD.[5] The rates at which primary care physicians have detected mental health disorders in their offices, as well as the impact of recognition and treatment, have been studied.[6-13] The issue of comorbid anxiety and mood disorders has also been examined.[9,14,15] Together these primary care studies indicate that mental health problems are common, the rate of detection of disorders is low, undetected disorders tend to be less severe, and treatment of undetected disorders might have little effect on outcomes.

The use of instruments based on DSM criteria to screen primary care patients for mood and anxiety disorders implies two assumptions. First, it assumes that mood and anxiety disorders occur in primary care with the same constellation of symptoms as they do in specialty offices. Second, it assumes that all patients who meet DSM criteria for a particular disorder will experience similar levels of morbidity and, therefore, be equally recognizable and have similar treatment outcomes. If these assumptions are not valid, much of the nondetection of disorders in primary care could be explained, and a primary-care-specific approach to the classification of mood and anxiety disorders would be required. Schwenk[16] has discussed the is-

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From the Department of Family Medicine (DEN, RJV, ARC), The University of Texas Medical Branch at Galveston. Address reprint requests to Donald E Nease Jr, Department of Family Medicine, The University of Michigan Medical Center, 1018 Fuller St, Ann Arbor, MI 48109-0708.

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sues of screening for depression in primary care.

This study began with an interest in investigating the patterns or clusters of mood and anxiety symptoms in primary care patients. The study progressed in two phases: development of clusters of patients with common patterns of mood and anxiety symptoms, and validation of these clusters and their ability to predict health-related quality of life. To derive common groupings of mood and anxiety symptoms, we applied cluster analysis to a set of measures already collected. Cluster analysis has been used previously to distinguish groups of patients with psychiatric symptoms and to validate DSM[17] classification criteria,[18-21] but it has not been used in primary care for this purpose. Our initial hypothesis was that primary care patients would exhibit groups of symptoms that are consistent with DSM disorders. After establishing groups or clusters of patients, we proceeded to describe and validate these clusters. Finally, we compared our derived clusters with groups based on DSM criteria.

Methods

Sample and Procedures

This study was conducted as a secondary analysis of data collected for an alcohol abuse screening study funded by the National Institute on Alcohol Abuse and Alcoholism.[22] The study population consisted of adult primary care patients seeking nonurgent care at the Family Practice Center of The University of Texas Medical Branch (UTMB) in Galveston. Data were collected for 15 months, beginning in October 1993. The sampling strategy called for oversampling of female and minority (African-American and Mexican-American) patients. Randomly selected patients with scheduled office visits were contacted by telephone and asked to participate in the study before their office visit. If telephone contact failed, patients were approached in the waiting area the day of their visit. This combined approach resulted in a refusal rate of 5.7 percent, leaving a final sample of 1333 patients. Details of the sampling strategy can be found elsewhere.[22]

While waiting to see their physicians, the participants completed self-report questionnaires that included sociodemographic questions, a measure of anxiety and depressive symptoms developed for this study, and the SF-36 Health Survey.[23] A diagnostic interview followed the office visit, wherein the PRIME-MD[5] mood and anxiety disorder modules were administered by trained study interviewers. Medical comorbidity was assessed using chronic health problems from patients' problem lists. The UTMB Institutional Review Board approved the use of human subjects, and they were compensated $10 for participating.

Measures

SF-36 Health Survey

The SF-36 Health Survey was used as a general measure of health-related quality of life. This instrument measures the respondents' health-related functioning in eight areas. The study focused on the eight primary scales and the physical health and mental health component summary scales.[23] The summary scales were developed from orthogonal principal components analysis of the eight primary scales. The component summaries are scored as T scores, with a mean in the general US population of 50 and a standard deviation of 10. Higher scores indicate better functioning.[24] The eight primary scales of the SF-36 Health Survey were also transformed to T scores, again using general US population norms.

Primary Care Evaluation of Mental Disorders (PRIME-MD)

The PRIME-MD is a diagnostic interview schedule for mental health disorders developed for use in the primary care setting.[5] We administered the mood and anxiety disorder modules, each yielding diagnostic criteria consistent with DSM-III-R.[25] Disorders included major depression, partial remission or recurrence of a major depressive disorder, dysthymia, minor depression, bipolar disorder, panic, generalized anxiety, and anxiety disorder not otherwise specified.

Medical Comorbidity

Physical comorbidity is a potential confounding variable in evaluating the severity of mood and anxiety symptoms because mental health problems are often secondary to physical illness. We used a previously developed measure of physical comorbidity based on a simple count of chronic health problems from patients' problem lists, using physical health component scores as the criterion measure.[26] Our approach was similar to the Deyo et al[27] modification of an index developed by Charlson and colleagues[28] with hospitalized patients. Diagnostic clusters were developed using ICD-9-CM codes,[29] representing the common chronic

Table 1. Questions from Mood and Anxiety Symptom-Based Measure.

During 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)
Heart racing, pounding, or skipping (Heart Racing)
Having trouble concentrating on things, like reading or watching television (Concentration)
Being easily tired (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)

health problems seen in primary care patients. Each participant received a score ranging from 0 (no chronic health problems) to 3 (3 or more chronic health problems).

Mood and Anxiety Symptoms

We developed a measure of mood and anxiety symptoms for the original alcohol screening study to serve as an indicator of the severity of such symptoms experienced by the patient. We selected symptoms that are typically associated with anxiety disorders (including panic disorder) and mood disorders, using as sources other self-report measures[30] and diagnostic criteria.[17] To balance the measure, we selected six symptoms associated with anxiety disorders and six associated with mood disorders. Three additional somatic symptoms were included that are typical of both disorders. In asking patients to rate the frequency of their symptoms, we used a 2-week time frame, with response options including none of the time, a little of the time, some of the time, most of the time, and all of the time. Table 1 presents the questions from the symptom measure.

Because this instrument was new, we gave additional attention to issues of its reliability and validity. Internal consistency reliability estimates as measured by coefficient alpha[31] were 0.92 for the total scale, 0.83 for the anxiety symptoms, and 0.89 for the mood symptoms. Construct validity of the measure was supported by confirmatory factor analysis, where two highly correlated factors were established as corresponding to mood and anxiety symptoms. High correlation between summed mood and anxiety symptom scales and the SF-36 Health Survey mental health scale supported concurrent validity: correlation coefficients were 0.66 for the anxiety symptoms and 0.74 for the mood symptoms.

Data Analysis

Cluster Development and Description

We used the 15-item mood and anxiety symptoms scale to derive our clusters. The following approach was used to select and evaluate clusters of patients based on severity patterns of mood and anxiety symptoms. First, we randomly divided the sample into quartiles and then used hierarchical agglomerative techniques[32] as an initial exploration of the number of clusters characterizing the mood and anxiety symptoms. An examination of the dendograms suggested that three to five clusters seemed to emerge consistently in all the quartiles.

We used a nonhierarchical, K-means method[32] to examine these clusters further. The K-means method assigns each case to a specific cluster. By serially using K-means to specify 5, 4, and 3 groups within each quartile, we could determine when and where groups tended to split. We were able to evaluate the stability of cluster membership using this technique. We chose a four-group model, which seemed to be most consistent across all quartiles. This model was then applied to the entire group of patients using K-means methods, resulting in four unique groups of patients based on their mood and anxiety symptom scores. z Scores were computed for each symptom, and means were plotted by cluster, providing a profile of the final four-cluster solution. We then contrasted the clusters on a host of sociodemographic indicators, number of chronic health problems, and daily cigarette use. As these analyses were descriptive, 95 percent confidence limits (rather than P values) were reported.

Note that cluster analysis requires selecting a type of similarity measure and a clustering method. These selections should reflect the types of relations being sought. We used a squared Euclidean distance approach because it is sensitive to differences in magnitude in variables (for this study,

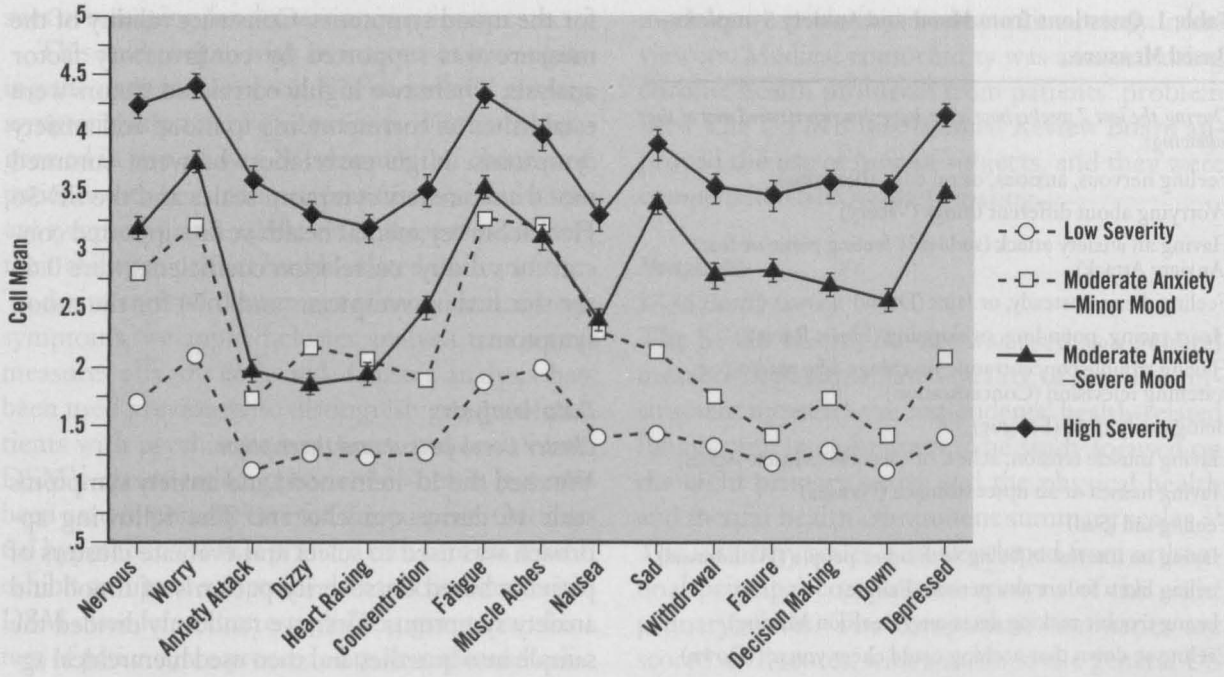

Figure 1. Mean symptom severity scores by cluster (means). Error bars represent ± 1 standard error(s).

severity of symptoms). Ward's method, which tends to produce small, distinct clusters, was used to group patients into clusters.[32] These methods should produce relatively tight clusters in which members are distinguished by differences in the level of symptom severity.

Cluster Validation

We sought to validate differences between clusters using measures that differed from those that produced the clusters. The health burden of cluster membership was examined by comparing SF-36 Health Survey component and primary scale means across each cluster. We tested for differences in SF-36 component means among clusters using analysis of variance (ANOVA) and post hoc comparisons with a Bonferroni adjustment. Means and 95 percent confidence limits from one-way ANOVA analyses were plotted for each of the primary scales.

We then examined concordance between cluster membership and various DSM-III-R mood and anxiety disorder diagnoses from the PRIME-MD by determining the proportion of patients meeting DSM-III-R diagnostic criteria for a mood or anxiety disorder in each cluster. Post hoc comparisons using *z* tests for differences in proportions are reported, again with a Bonferroni adjustment to control for overall type I error.

Finally, we examined the contribution of cluster membership in predicting health-related quality of life, controlling for the presence of DSM mood and anxiety disorders, using the Statistical Package for Social Sciences (SPSS) GLM General Factorial procedure.[31] Covariate adjusted physical and mental health component summary scales means are given, along with 95 percent confidence limits, for those patients not meeting criteria for a DSM mood or anxiety disorder. These means represent the average decrement in predicting health-related quality of life for patients in each cluster who do not meet criteria for a disorder. Means were adjusted for age, sex, race or ethnicity, income, and physical comorbidity.

Data analysis was performed using SPSS for Windows[33] and StatView[34] for Macintosh.

Results

Cluster Development and Description

Identification of Severity-Based Clusters

Figure 1 shows a plot of mean symptom severity scores for each of the four clusters. Symptom severity scores were transformed to *z* scores (mean of 0, standard deviation of 1) to facilitate comparisons across groups. The figure shows a clear distinction between those patients in the cluster with mild mood and anxiety symptoms and those with more severe symptoms.

Table 2. Sociodemographic Indicators, Number of Chronic Health Problems, and Proportion of Daily Cigarette Users, by Cluster.

Indicator	Cluster 1 Low Severity (n - 686)	Cluster 2 Moderate Anxiety-Minor Mood (n - 335)	Cluster 3 Moderate Anxiety-Severe Mood (n - 148)	Cluster 4 High Severity (n - 81)
Age, y (mean)	44.5 (43.3, 45.8)*	41.1 (39.8, 43.0)	40.9 (38.5, 43.4)	40.4 (37.5, 43.3)
Sex, female, %	62.0 (58.4, 65.6)	77.3 (72.8, 81.9)	77.7 (71.0, 84.4)	82.7 (74.5, 90.9)
Work status, %				
Full-time, part-time or self-employed	60.6 (56.9, 64.3)	61.5 (56.3, 66.7)	45.9 (37.9, 53.9)	40.7 (30.0, 51.4)
Unemployed or disabled	13.7 (11.1, 16.3)	21.8 (17.4, 26.2)	29.8 (22.4, 37.2)	46.9 (36.0, 57.8)
Education: high school or less, %	40.8 (37.1, 44.5)	42.1 (36.8, 47.4)	49.3 (41.2, 57.4)	44.4 (33.6, 55.2)
Annual household income < $10,000, %	20.8 (17.8, 23.8)	34.4 (29.3, 39.5)	34.0 (26.4, 41.6)	51.9 (41.0, 62.8)
Chronic health problems: 1 or more, %	28.2 (24.8, 31.6)	30.7 (25.8, 35.6)	37.8 (30.0, 45.6)	38.3 (27.7, 48.9)
Daily cigarette use, %	25.1 (21.9, 28.3)	28.1 (23.3, 32.9)	29.7 (22.3, 37.1)	51.9 (41.0, 62.8)

*95% confidence limits in parentheses.

Profiles for the moderate severity clusters offered a more complex picture. The moderate severity clusters showed similar severity profiles for the anxiety-related and somatic symptoms but diverged on the depression-related symptoms, with the patients in the third cluster experiencing greater depressive symptom severity. We used the following descriptors for the clusters in subsequent analyses: low severity, moderate anxiety-minor mood, moderate anxiety-severe mood, and high severity.

Description of Clusters

Table 2 displays descriptive information on various sociodemographic indicators by cluster. (In interpreting these results, estimates where confidence limits do not overlap are statistically significant at $P < 0.05$.) The low-severity cluster included patients who tended to be older, and proportionately more of them were male. In contrast, more than 80 percent of patients in the high-severity cluster were female. Patients in the moderate anxiety-severe mood cluster were more likely to be unemployed or retired compared with patients in the low-severity and moderate anxiety-minor mood clusters. Patients in the high-severity cluster were more likely to be unemployed or disabled than patients in the low-severity and moderate anxiety-minor mood clusters. Finally, 51.9 percent of the patients in the high-severity cluster earned less than $10,000 per year, compared with 20.8 percent of those patients in the low-severity cluster. The number of chronic health problems experienced by patients varied slightly across clusters. More than 50 percent of the patients in the high-severity cluster were daily cigarette users compared with fewer than 30 percent from the other three clusters.

Validity of Cluster Membership

Health-Related Quality of Life

Table 3 shows results from one-way ANOVA analyses in which SF-36 physical and mental health component summary scales scores are compared across clusters. Statistically significant differences were observed across clusters for each component. Mean mental health component scores showed progressively poorer health-related quality of life for each cluster. The mean mental health component score of 29.75 for the high-severity cluster is equivalent to approximately a 2 standard deviation decrement in mental health functioning compared with general US population norms. Differences were evident also for physical health, although not of the same magnitude as those observed for mental health. For the physical health component score, significant differences did not exist between the moderate anxiety-minor mood and moderate anxiety-severe mood clusters (clusters 2 and 3) and between the moderate anxiety-minor mood and the high-severity clusters (clusters 2 and 4).

Table 3. Results From One-Way Analysis of Variance, Comparing Means for Mental and Physical Health Component Summary Scales Across Clusters.

Cluster	Number	Mean	95% Confidence Limit for Mean*
Mental health component summary scale			
1. Low severity	671	54.54	53.99, 55.08
2. Moderate anxiety-minor mood	328	46.73	45.76, 47.71
3. Moderate anxiety-severe mood	148	36.69	35.06, 38.32
4. High severity	80	29.75	27.21, 32.29
Physical health component summary scale			
1. Low severity	671	46.40	45.63, 47.17
2. Moderate anxiety-minor mood	328	39.95	38.66, 41.25
3. Moderate anxiety-severe mood	148	42.06	39.98, 44.13
4. High severity	80	37.31	34.79, 39.84

$F(3,1223) = 35.61$, $P < 0.001$.
Post hoc comparisons showed significant differences in all pairs of means for mental health summary scales, and in clusters 1 vs 2, 1 vs 3, 1 vs 4, 3 vs 4 for physical health summary scales. Sample size does not total 1333 because of missing data.
*Lower and upper 95% confidence limits.

Figure 2 shows SF-36 Health Survey profiles for each cluster. (T scores are presented, where 50 is the general US population mean, and 10 is the standard deviation.) As shown, patients in the low-severity cluster scored highest (better health-related quality of life), and their scores were higher than the US general population means. The decrement in health-related quality of life for the moderate anxiety-minor mood group was less than half a standard deviation for each scale. Patients in the moderate anxiety-severe mood cluster scored lower than patients in the first two clusters, and these differences were largest for the vitality, social functioning, role-emotional functioning, and mental health scales (each indicators of overall mental health). The high-severity cluster scored lowest for each scale, with the greatest decrement observed for the scales measuring mental health functioning.

Cluster Membership and DSM Diagnoses

Table 4 displays the percentage of patients with various mood and anxiety disorders in each cluster. These data show a progression from the low-severity cluster, in which fewer than 5 percent of the patients met criteria for either a mood or anxiety disorder, to the high-severity cluster, in which more than 80 percent of the patients met criteria.

Patterns were also evident for the specific disorders. For major depression, percentages increased for each cluster, with more than 56 percent of patients in the moderate anxiety-severe mood cluster and 75 percent of patients in the high-severity cluster meeting criteria. The pattern was different for minor depression (a subthreshold disorder) and partial remission-recurrence, where higher percentages were observed for the two moderate severity clusters (these differences were not statistically significant). Few patients in the low-severity cluster met criteria for dysthymia or double depression, compared with approximately 50 percent of the patients in the high-severity cluster.

Panic disorder was rare in the low-severity cluster and showed similar rates in both moderate severity clusters. In contrast, more than 28 percent of patients in the high-severity cluster met criteria for panic disorder. Generalized anxiety disorder increased with each cluster. Anxiety disorder not otherwise specified (a subthreshold disorder) was most common in the moderate anxiety-severe mood cluster (more than 35 percent).

Health-Related Quality of Life for Patients Without DSM Mood and Anxiety Disorders

Figure 3 displays mean mental and physical health component summary scale scores for patients not meeting criteria for a DSM mood or anxiety disorder. These means are adjusted for patient age, sex, race or ethnicity, income, and medical comorbidity. The mean mental health score for the low-severity cluster was 55.1, or 5.1 points higher than the general US population mean. Mental health scores for patients in the moderate anxiety-minor mood were similar to those of the general US pop-

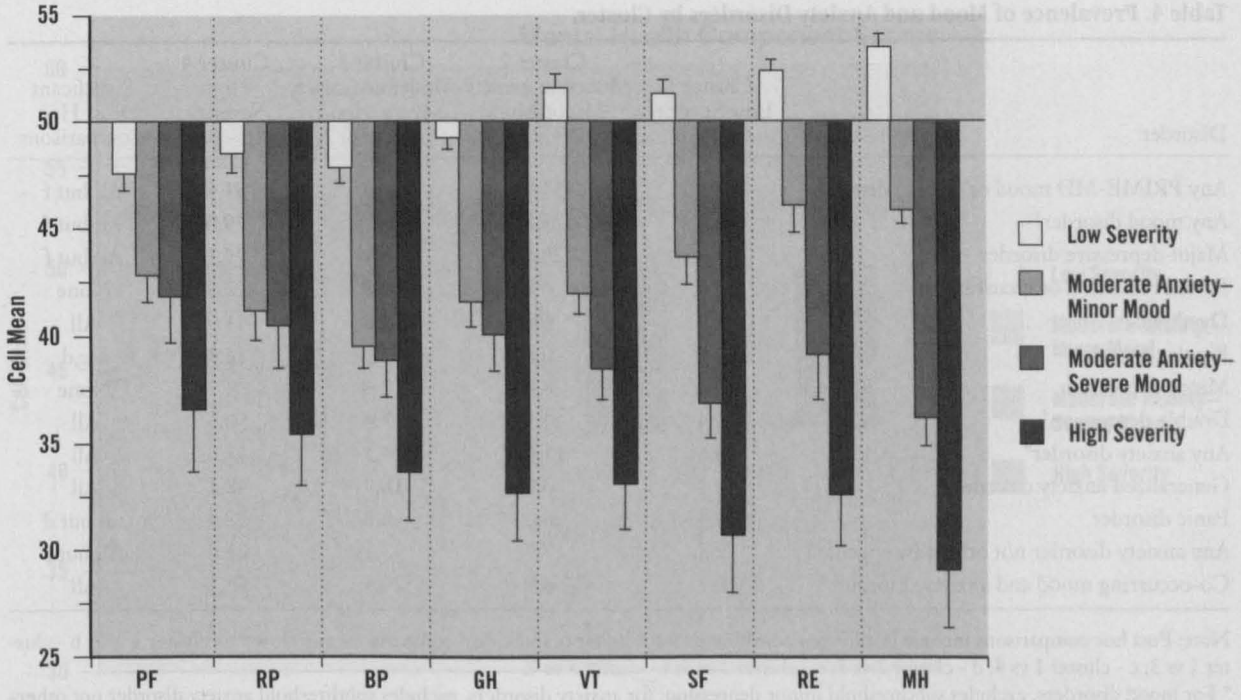

Figure 2. Mean SF-36 Health Survey scale score by cluster (T scores). Solid bars represent deviations in mean scores from national norms. Error bars represent 95% confidence intervals.

SF-36 Health Survey scales: PF, physical functioning; RP, role functioning - physical; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role functioning - emotional; MH, mental health.

ulation. Scores were lowest for the moderate anxiety-severe mood and high-severity clusters compared with the other two clusters ($P < 0.05$), with the magnitude of the decrement in mental health scores more than 1 standard deviation compared with the low-severity cluster.

Mean physical health scores for each cluster were less than those for the general US population mean. The moderate anxiety-minor mood and moderate anxiety-severe mood clusters had the lower physical health scores, but these scores were not significantly different from the other two clusters.

Discussion

This study sought to investigate the groupings that emerge when the presence and severity of mood and anxiety symptoms are used to categorize or classify primary care patients. Again, our study progressed in phases of development and validation. We asked whether these groups differ from those defined by DSM-III-R and whether these derived groupings might explain differences in health-related quality of life more fully than DSM-III-R groupings alone.

In the development phase, our cluster analysis of participants' responses to our symptom instrument did indeed develop four groups that differed from groupings suggested by DSM-III-R criteria. The groups derived from cluster analysis were distinguished mainly by differences in symptom severity, in contrast to DSM-III-R groupings, which tend to differ by type of symptom. Furthermore, our validation phase showed that a patient's assignment to a cluster explained significant differences in health-related quality of life, which were independent of the presence of a DSM-III-R diagnosis.

Our analyses showed large statistically and clinically significant declines in health-related quality of life associated with cluster membership, even in those patients who had no current mood or anxiety disorders. These findings show that our cluster-based classification is sensitive to clinically significant differences in mood and anxiety symptoms, independent of DSM criteria.

Finally our cluster analysis shows that a spectrum of symptom severity does exist among our patients with mood and anxiety disorders. Most of the patients in our study who met criteria for a disorder belonged to clusters with moderate levels of severity. While these patients did display signifi-

Table 4. Prevalence of Mood and Anxiety Disorders by Cluster.

Disorder	Cluster 1 Low Severity (n - 686)	Cluster 2 Moderate Anxiety-Minor Mood (n - 335)	Cluster 3 Moderate Anxiety-Severe Mood (n - 148)	Cluster 4 High Severity (n - 81)	Significant Post Hoc Comparisons
Any PRIME-MD mood or anxiety disorder*	4.5	31.9	69.6	81.5	All but f
Any mood disorder*	4.1	27.8	66.2	79.0	All but f
Major depressive disorder	1.5	20.1	56.1	75.3	All but f
Partial remission or recurrence	2.6	6.9	9.5	2.5	None
Dysthymia	0.9	6.3	21.6	51.9	All
Bipolar disorder	0.0	0.6	8.1	12.3	b,c,d
Minor depression	3.6	8.4	7.4	3.7	None
Double depression†	0.4	4.5	17.6	50.6	All
Any anxiety disorder*	0.6	11.0	24.3	55.6	All
Generalized anxiety disorder	0.1	6.0	18.9	48.1	All
Panic disorder	0.4	6.0	6.8	28 4	All but d
Any anxiety disorder not otherwise specified	2.5	17.7	35.1	21.0	All but f
Co-occurring mood and anxiety disorders*	0.1	6.9	20.9	53.1	All

Note: Post hoc comparisons include Bonferroni adjustments for number of individual comparisons 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.

* For mood disorders, excludes subthreshold minor depression; for anxiety disorders, excludes subthreshold anxiety disorder not otherwise specified.

†Double depression denotes major depressive disorder with dysthymia.

cant decreases in quality of life, we can speculate that members of these moderate clusters might have had disorders that are detected at a lower rate by their physicians.

Cluster analysis has a tradition of use in the investigation of mental health classifications. Andreasen et al[21] used cluster analysis to confirm and validate the classification system proposed by DSM-III. Even earlier, Paykel and Henderson[18,19] also used cluster analysis to investigate various schemes of organizing and classifying mental health disorders. Some authors have pointed out the pitfalls that can be associated with the use of cluster analysis and mental health research.[20,35] These pitfalls center around the clustering methods used, which could influence the types of clusters produced.

To address these concerns, we chose clustering methods consistent with the types of groups we were looking for, that is, methods sensitive to severity and specificity. Our cluster analysis resulted in groups that were distinguished mainly by the severity as well as the types of symptoms present; membership in these groups was associated with decreases in health-related quality of life independent of a DSM-III-R diagnosis. We propose that symptom severity is an important dimension of the epidemiology of mood and anxiety symptoms in primary care, and, therefore, severity should be a part of any scheme for the classification of these symptoms.

The idea that severity plays an important role in the primary care diagnosis and recognition of mood disorders is not new. At least three studies have found that recognition seems to be influenced by severity.[7,8,11] Our data include the dimension of anxiety symptoms and provide a detailed picture of how mood and anxiety symptoms co-occur at various levels of severity. Although we have not explored recognition in this study, it is reasonable to suggest that severity also plays a roll in mood and anxiety disorder recognition in our sample.

The DSM system of classifying mood and anxiety disorders partially accounts for severity by counting different types of symptoms; nevertheless, the severity of the individual symptoms is not measured directly. Instead, DSM criteria focus on the presence or absence of symptoms that distinguish individual disorders. A patient either meets or does not meet criteria for a disorder. This method is useful for discriminating among types of disorders but not for determining severity. The DSM system is therefore better suited for psychiatric practice, where symptoms are generally severe, and the dominant issue is not whether to

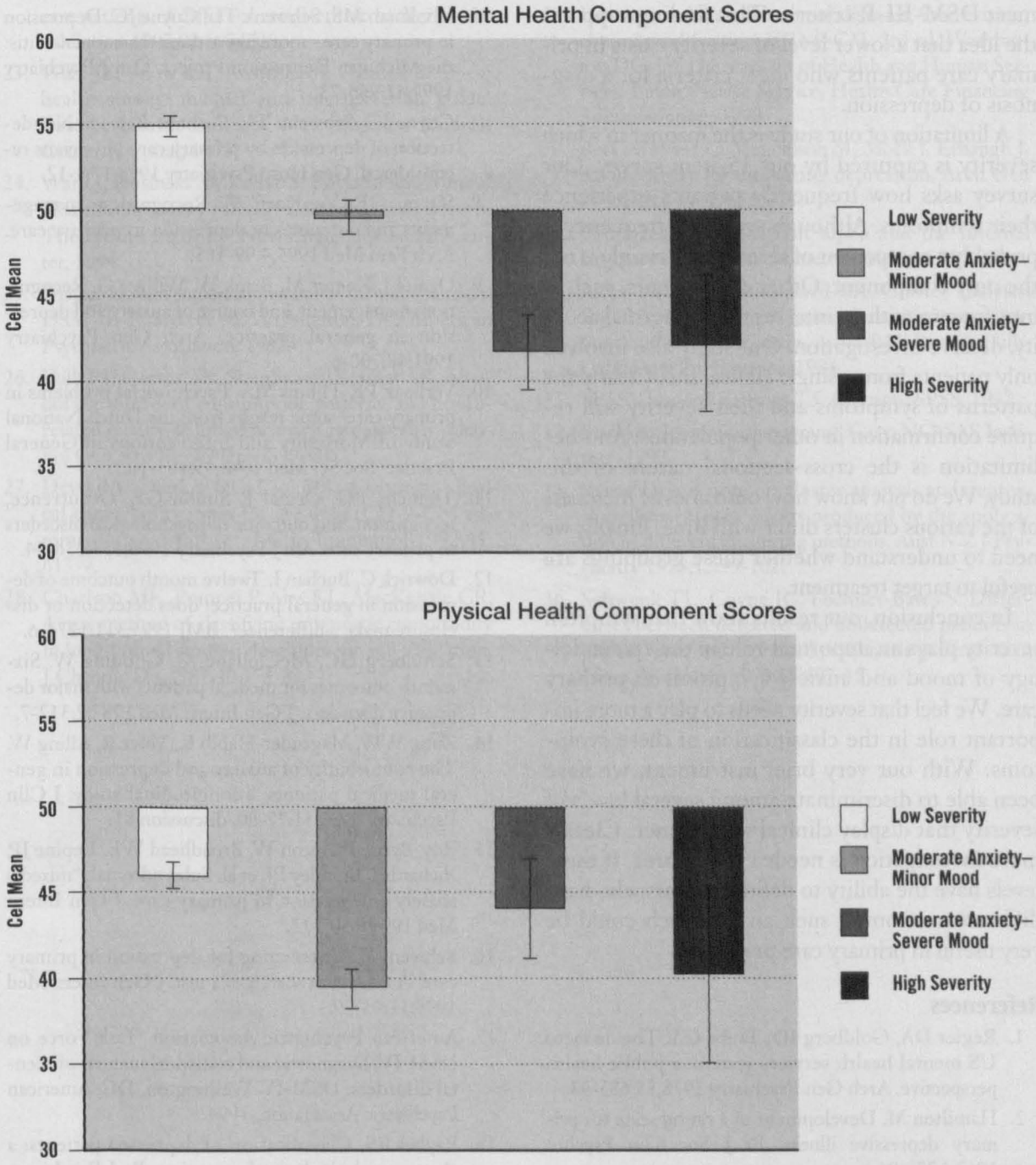

Figure 3. Covariate adjusted mean SF-36 Health Survey component scores for patients with subthreshold disorders or no disorder. Solid bars represent deviations in mean scores from national norms. Error bars represent 95% confidence intervals.

treat but how. In contrast, mood and anxiety symptoms exhibit a wide range of severity in primary care. While these symptoms can be classified along DSM criteria, these criteria tell little about severity beyond whether a patient qualifies for a disorder. Our findings suggest that clinically important information is lost as a result.

Schwenk et al[36] compared primary care and psychiatric patients who met criteria for major depressive disorder. Whereas the two populations did not differ on Hamilton Depression Rating Scale scores, the primary care patients had higher global assessment of functioning scores and fewer symptoms above those necessary to

meet DSM-III-R criteria. This finding supports the idea that a lower level of severity exists in primary care patients who meet criteria for a diagnosis of depression.

A limitation of our study is the manner in which severity is captured by our 15-item survey. Our survey asks how frequently patients experience their symptoms. Although symptom frequency is probably a component of severity, it certainly is not the only component. Other components, such as interference with or interruption of normal activity, deserve investigation. Our study also involved only patients from a single clinical site. Clearly the patterns of symptoms and their severity will require confirmation in other populations. Another limitation is the cross-sectional nature of this study. We do not know how outcomes of members of the various clusters differ with time. Finally, we need to understand whether these groupings are useful to target treatment.

In conclusion, our results show that symptom severity plays an important role in the epidemiology of mood and anxiety symptoms in primary care. We feel that severity needs to play a more important role in the classification of these symptoms. With our very brief instrument, we have been able to discriminate among several levels of severity that display clinical significance. Clearly more investigation is needed in this area. If these levels have the ability to define patients who have different outcomes, such an approach could be very useful in primary care practice.

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