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ORIGINAL ARTICLE

Prevalence of Mood and Anxiety Disorders in Women With Systemic Lupus Erythematosus

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Objective. **To examine the lifetime prevalence of mood and anxiety disorders in patients with systemic lupus erythematosus (SLE). Demographic and disease-related variables were examined for association with lifetime major depressive disorder (MDD) and the presence of any mood or anxiety disorder.**

Methods. **Three hundred twenty-six white women with SLE completed the Composite International Diagnostic Interview and the Systemic Lupus Activity Questionnaire, a self-report measure of SLE disease activity. The binomial test was used to compare the prevalence of psychiatric diagnoses in patients with SLE with a population sample of white women.**

Results. **Sixty-five percent of the participants received a lifetime mood or anxiety diagnosis. MDD (47%), specific phobia (24%), panic disorder (16%), obsessive-compulsive disorder (9%), and bipolar I disorder (6%) were more common among patients with SLE than among other white women ($P = 0.00009$ for specific phobia; for all other values $P = 0.00001$). Although most patients with histories of mood disorders reported their psychiatric symptoms to a medical provider, a substantial number of patients with anxiety disorders did not. Self-reported disease activity was associated with a lifetime history of MDD ($P = 0.001$) and presence of a mood or anxiety disorder ($P = 0.001$), after controlling for demographic and clinical characteristics.**

Conclusion. **Several mood and anxiety disorders were more common in women with SLE compared with the general population, and disease activity may contribute to this higher risk. Brief self-report questionnaires may help providers identify patients with these conditions, particularly when patients are reluctant to disclose their symptoms.**

INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic, relapsing autoimmune disorder that involves multiple organ systems and is most prevalent in women (1). Due to the potentially debilitating nature of the disease and its relatively early onset for many women, SLE can pose multiple challenges and disrupt life goals throughout adulthood. Previous studies have found higher levels of psychiatric disturbance in patients with SLE, particularly depression or distress (2–10). The reported prevalence of depressive symptoms in people with SLE varies widely across studies, from 17–71% (11). This variation is likely due to the divergent criteria used to define distress or psychiatric disturbance, differences in sample characteristics, the assessment tools used, and small sample sizes. Some but not all studies have found that greater disease activity, greater SLE severity, or longer disease duration increases vulnerability for clinical depression in people with SLE (4–12).

Although most research has focused on depressed mood or clinical unipolar depression in people with SLE, other research suggests that symptoms of anxiety may be equally important in this population. In an Icelandic study of 62 patients with SLE, diagnoses of agoraphobia with and without panic, specific phobia, and social phobia were more prevalent in patients with SLE than in the general population (13). Segui et al (6) reported that among 20 female patients with SLE, 40% met criteria for a psychiatric disorder, with generalized anxiety disorder (GAD) and panic disorder being the most common diagnoses. Higher levels of social introversion (10) and obsessive-compulsive disorder (OCD) have also been reported in patients with SLE (14) compared with healthy controls or population rates. Because population prevalence rates of some anxiety and depressive disorders are low, employing larger sample

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sizes to examine rates of these disorders in people with SLE is advantageous (15).

In the US, epidemiologic studies indicate that comorbidity of psychiatric disorders is common, with more than half of all lifetime disorders occurring in the 14% of the population who have a history of ≥3 comorbid disorders, and only 21% of lifetime disorders occurring in respondents with a history of just 1 disorder (15). These findings suggest that although a history of psychiatric disorders is common (affecting nearly 50% of the general population), the major burden of such disorders is concentrated in a highly comorbid group (15). No studies to date have examined the comorbidity of psychiatric disorders among patients with SLE.

In addition to high rates of psychiatric comorbidity, US studies have also found an underutilization of professional services for emotional problems (15,16). Fewer than 40% of respondents with any lifetime psychiatric disorder have received professional treatment (15). Physicians provide the most care for psychiatric problems in the US, and primary care physicians are responsible for almost all referrals to mental health specialists (17,18). Because rheumatology patients may visit their rheumatologists as often or more often than they visit their primary care providers (19), rheumatologists can also play an important role in identifying and facilitating the treatment of psychiatric problems. Recently, Sleath et al (20) found that only 19% of depressed patients with rheumatoid arthritis (RA) discussed depression with their rheumatologists during medical visits, and that patients initiated the discussion each time.

The purpose of this study was to investigate lifetime prevalence rates of anxiety and depressive disorders in patients with SLE. It extends previous work by simultaneously assessing multiple lifetime anxiety and mood disorders in a large sample of patients with SLE using a reliable and validated structured clinical interview and diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (21). In addition, we determined rates of comorbidity for lifetime disorders and the prevalence of symptom reporting to medical providers in the sample. Finally, demographic and clinical characteristics of SLE, including duration of disease, recent self-reported disease activity, history of renal involvement (as an indicator of SLE severity), and current prednisone use were examined as potential correlates of lifetime major depression and the presence of a psychiatric disorder.

PATIENTS AND METHODS

Cohort. Participants were 326 white women living in diverse geographic regions in the US and enrolled in the Lupus Genetics Project, a study examining genetic risk factors for SLE at the University of California at San Francisco (UCSF) (22). For the current study, 616 female participants in the Genetics Project who were white and confirmed as having SLE by medical chart review (23) were contacted by mail and invited to participate in a study investigating health and well-being in women with SLE. Three hundred eighty-five women (62.5%) returned a postcard expressing interest, and 371 of them were successfully reached by telephone. Of those reached, 326 participated in the current study (88% of 371; 53% of 616). Reasons for nonparticipation among those who returned a postcard included health problems (n = 5), too busy (n = 6), moved (n = 4), changed mind or did not return consent forms (n = 21), no longer diagnosed with SLE (n = 3), or other (n = 6). The 326 participants were recruited from UCSF-affiliated rheumatology offices (13%), community rheumatology offices (11%), community-based sources such as support groups and conferences (28%), and newsletters, Web sites, and other forms of publicity (48%). Participants and nonparticipants (n = 290) were similar in terms of age (mean ± SD 47.9 ± 11.3 years versus 47.7 ± 13.2 years), age at SLE diagnosis (mean ± SD 32.5 ± 12.2 years versus 34.1 ± 13.0 years), and history of renal involvement (25.5% versus 20.8%; $P > 0.05$ for all).

Data collection. During a telephone interview, participants completed the Composite International Diagnostic Interview (CIDI), a structured diagnostic interview for the assessment of psychiatric disorders that provides, by means of computer algorithms, lifetime diagnoses according to DSM-IV criteria (15). The CIDI is the most widely used interview in epidemiologic studies of mental disorders and was used in the National Comorbidity Survey: Baseline (15) and the National Comorbidity Survey Replication (NCS-R) (24) to determine the prevalence of lifetime psychiatric diagnoses in the US. The CIDI has good reliability and validity for diagnosing mood and anxiety disorders (25). The demographic, anxiety, and depressive modules of the CIDI were administered, and included questions about the age at onset and recency of psychiatric disorders. Interviews were conducted by a trained clinical psychologist (EAB) who received designated training to conduct the CIDI. In addition to computerized scoring of diagnoses, we also used criteria described by Means-Christensen et al (26), which allows for a more sensitive assessment of panic disorder when other comorbid anxiety disorders are present. Finally, no symptom was counted toward a psychiatric diagnosis if it was attributed by either the respondent or their clinician to physiologic effects of injury, illness, medication, drugs, or alcohol.

Following the CIDI, participants were interviewed about current psychotropic and SLE medications. Participants received mailed questionnaires, including the Systemic Lupus Activity Questionnaire (SLAQ), to assess self-reported lupus activity in the last 3 months (27). An analog to the Systemic Lupus Activity Measure (SLAM), the SLAQ includes 24 questions related to disease activity in SLE. Items are weighted and aggregated in a manner analogous to the scoring system used in the SLAM, and scores range from 0–44, with higher scores indicating greater disease activity (27). The SLAQ is highly correlated with physicians' ratings of disease activity (27,28) and other health indices, including the Short Form 12 Health Survey physical component summary and the Short Form 36 physical functioning subscale (29). Renal involvement for each participant was determined through medical chart

review. Subjects meeting the American College of Rheumatology renal criterion (23,30,31) or who showed lupus nephritis on renal biopsy findings were classified as having a history of renal involvement. History of renal involvement was chosen as an indicator of disease severity because the kidney is one of the most commonly involved organs in people with SLE, and because nephritis is a major determinant of disease morbidity and mortality in people with SLE (32). The study was approved by the Institutional Review Boards at UCSF and Mills College.

Statistical analysis. The binomial test (GraphPad Software [33]) was used to compare the prevalence of mood and anxiety disorders in the sample with prevalence estimates in white women in the US. Comparison rates were taken from the NCS-R because it provides recent prevalence data from a large, nationally representative sample of adults and, like the current study, employed the CIDI as its diagnostic instrument and based diagnoses on DSM-IV criteria (24,34,35). Logistic regression was used to study demographic and disease-related variables associated with the prevalence of lifetime major depressive disorder (MDD) and any mood or anxiety diagnosis. Sociodemographic covariates included age, education, income, and marital and employment status. Additional covariates included duration of SLE, renal involvement, current prednisone use, and recent disease activity. *P* values less than 0.05 were considered statistically significant.

RESULTS

Three hundred one participants (92.3%) returned their questionnaires following the phone interview (CIDI). Participants who failed to return questionnaires (n = 25) were similar to those who did in terms of age and prevalence of psychiatric diagnoses. Therefore, participants who did not return questionnaires were included in the prevalence assessment of psychiatric diagnoses.

Demographic and clinical characteristics of the sample are shown in Table 1. Subjects were diagnosed with SLE an average of 15 years prior to study participation. At the time of the interview, 46% reported taking psychotropic medications, the most common of which were antidepressants (41%). The mean ± SD SLAQ score for the sample was 14.0 ± 7.6 (range 0–35), reflecting a wide range of self-reported disease activity in patients with SLE. Twenty-six percent of the sample had a history of renal involvement, which is consistent with other white SLE cohorts (36).

Psychiatric diagnoses. Fifteen participants were excluded from the prevalence estimates because their symptoms were attributed to the physiologic effects of injury, illness, medications, or drugs (including MDD [n = 5], social anxiety disorder [n = 5], agoraphobia [n = 2], dysthymic disorder [n = 2], and panic disorder [n = 1]), thus yielding conservative estimates. Similarly, 22 subjects reported persistently elevated or irritable mood due to medications or medical causes and were not included in the rates of bipolar disorder.

Table 1. Demographic and clinical characteristics of 326 study subjects with SLE*

Characteristic	Value
Age, mean ± SD (range) years	47.9 ± 11.3 (18–83)
Education level	
High school/GED or less	136 (41.7)
Associate's degree	54 (16.6)
Bachelor's degree	89 (27.3)
Master's degree or higher	47 (14.5)
Marital status	
Single	104 (31.9)
Married	222 (68.1)
Working outside the home	
Yes	131 (43.7)
No	169 (56.3)
Household income	
<$9,999–$49,999	131 (45.5)
≥$50,000	157 (54.5)
Age at SLE diagnosis, mean ± SD (range) years	32.5 ± 12.2 (1–73)
SLE duration, mean ± SD (range) years	15.4 ± 9.7 (1–47)
SLE medications†	
NSAIDs	185 (56.7)
Prednisone	136 (41.7)
Hydroxychloroquine	169 (51.8)
Methotrexate	29 (8.9)
Other DMARDs	57 (17.5)
History of renal involvement‡	
Yes	83 (25.5)
No	239 (74.2)

* Values are the number (percentage) of subjects unless otherwise noted. SLE = systemic lupus erythematosus; GED = General Equivalency Diploma; NSAIDs = nonsteroidal antiinflammatory drugs; DMARDs = disease-modifying antirheumatic drugs.
† Current at time of interview.
‡ Defined as meeting the American College of Rheumatology renal criterion (31) or having a renal biopsy result consistent with lupus nephritis.

Two hundred eleven of the 326 participants (65%) met criteria for ≥1 of the following lifetime depressive or anxiety disorders: MDD (47%), specific phobia (24%), social phobia (16%), OCD (9%), panic disorder (8%), bipolar I disorder (formerly manic-depressive disorder; 6%), GAD (4%), dysthymic disorder (3%), and agoraphobia without panic disorder (1%). A further review of panic disorders indicated that 35 participants met the criteria for panic disorder, but did not receive the diagnosis due to a preexisting comorbid anxiety disorder that is often accompanied by panic attacks. Using the revised scoring criteria described by Means-Christensen et al (26) that address this issue, 26 of the 35 participants were reclassified as having a panic disorder because they answered yes to having frequent panic attacks in situations unrelated to their comorbid anxiety disorder (e.g., in a patient with social phobia, panic attacks also occurred in nonsocial situations). This resulted in a 2-fold increase of panic disorder (from 8% to 16%).

The binomial test was used to compare prevalence rates of psychiatric disorders in the SLE sample versus white women in the US using prevalence rates obtained from the

Table 2. Prevalence of DSM-IV psychiatric disorders among white women with SLE, and population prevalence estimates for white women in the US*

Psychiatric disorder†	Population prevalence (n = 3,618)‡	Prevalence in SLE sample (n = 326)	Age-adjusted prevalence in SLE sample
MDD	24.6 (23.5–25.7)	46.9 (41.5–52.3)§	42.4 (37.0–47.7)
Bipolar I disorder (manic-depression)	1.0 (0.5–1.4)	5.8 (3.3–8.4)§	4.9 (2.6–7.2)
Dysthymic disorder	5.5 (4.6–6.3)	3.3 (1.4–5.3)¶	2.9 (1.8–4.7)
Specific phobia	15.8 (14.4–17.2)	23.9 (19.3–28.6)#	21.7 (17.3–26.2)
Social anxiety disorder	13.2 (11.8–14.6)	15.6 (11.7–19.6)	14.0 (10.3–17.8)
Panic disorder	6.2 (5.5–6.9)	15.6 (11.7–19.6)§	14.7 (10.8–18.5)
Agoraphobia without panic disorder	1.5 (1.1–1.9)	1.2 (0.03–2.4)	0.8 (0–1.8)
OCD	0.8 (0.4–1.2)	8.9 (5.8–12.0)§	8.5 (5.5–11.5)
GAD	11.1 (10.0–12.1)	4.3 (2.1–6.5)§	4.3 (2.1–6.5)

* Values are the percentage (95% confidence interval). DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; SLE = systemic lupus erythematosus; MDD = major depressive disorder; OCD = obsessive-compulsive disorder; GAD = generalized anxiety disorder.
† Prevalence of any mood or anxiety disorder in SLE sample = 65.0%.
‡ Estimates for white, non-Hispanic US women age ≥18 years from the National Comorbidity Survey Replication (35).
§ Significant difference from population prevalence, $P = 0.00001$.
¶ Significant difference from population prevalence, $P = 0.05$.
# Significant difference from population prevalence, $P = 0.00009$.

NCS-R (35). The mean ± SD age of the NCS-R subsample was 47.5 ± 0.6 years, 57% of the cohort was married, 62% worked outside the home, 42% had completed high school or less, 30% had completed some college, and 27% had completed college or higher.

Prevalence rates for the SLE sample did not change appreciably after adjusting for age using the NCS-R age distribution, as shown in Table 2. Therefore, observed (unadjusted) prevalence rates were used for analysis. MDD, bipolar I disorder, panic disorder, specific phobia, and OCD were significantly more common among the SLE subjects ($P = 0.00009$ for specific phobia; for all other values, $P = 0.00001$). In contrast, GAD and dysthymic disorder were less common in the SLE sample ($P = 0.00001$ and $P = 0.05$, respectively), and there was no difference in the prevalence of social phobia and agoraphobia without panic disorder between patients with SLE and white women in the NCS-R.

Rates of psychiatric comorbidity were also assessed in the sample. Of the 211 participants with a lifetime history of psychiatric disorders, 29% had 1 disorder, 19% had 2 comorbid disorders, and 17% had ≥3 comorbid disorders. Thus, approximately one-third of participants with a psychiatric disorder met criteria for ≥2 lifetime psychiatric disorders.

More than 90% of participants who met the criteria for MDD or bipolar I disorder reported symptoms of depression to a medical care provider. Eighty-five percent of the patients with GAD informed their providers of their anxiety symptoms. However, only 72% of patients with panic disorder, 50% of patients with either dysthymia or agoraphobia without panic disorder, 40% of patients with social anxiety disorder, and 34% of patients with OCD reported their symptoms to a provider.

To explore the timing of psychiatric disorders relative to SLE, the age at onset of each psychiatric disorder was compared with the age at which SLE was diagnosed. The percentage of participants who reported the onset of a psychiatric disorder after the diagnosis of SLE, and the mean number of years between a diagnosis of SLE and the

Table 3. Relationship between participant-reported onset of lifetime DSM-IV psychiatric disorder and diagnosis of SLE*

Psychiatric disorder	Onset of psychiatric disorder after SLE diagnosis	Years between SLE diagnosis and onset of psychiatric disorder, mean ± SD	Onset of psychiatric disorder after onset of SLE symptoms
MDD	70 (46.1)	7.3 ± 8.0	91 (61.1)
Bipolar I disorder	7 (36.8)	2.9 ± 2.6	8 (44.4)
Dysthymic disorder	1 (12.5)	0.0 ± 0.0	4 (50.0)
Specific phobia	5 (6.8)	6.4 ± 4.8	7 (9.6)
Social anxiety disorder	5 (10.0)	2.4 ± 3.8	13 (26.0)
Panic disorder	22 (43.1)	5.7 ± 5.2	30 (62.5)
Agoraphobia without panic disorder	2 (50.0)	0.0 ± 0.0	2 (50.0)
OCD	5 (18.0)	8.0 ± 6.6	8 (29.6)
GAD	1 (7.7)	9.0 ± 0.0	5 (38.5)

* Values are the number (percentage) of participants unless otherwise noted. See Table 2 for definitions.

Table 4. Logistic regression analysis of sociodemographic and clinical factors and likelihood of lifetime history of MDD or any mood or anxiety disorder among patients with SLE*

Factor	MDD	Any disorder
Age, years	1.00 (0.98–1.03)	0.98 (0.95–1.01)
Marital status		
Single	0.95 (0.52–1.74)	0.95 (0.48–1.90)
Married	1.00	1.00
Education		
High school/GED or less	0.48 (0.21–1.07)	0.45 (0.18–1.01)
Associate's degree	0.84 (0.34–2.08)	0.78 (0.28–2.17)
Bachelor's degree	1.13 (0.50–2.54)	0.94 (0.38–2.32)
Master's degree or higher	1.00	1.00
Income		
<$9,999–$49,999	1.76 (0.97–3.17)	2.01 (1.03–3.91)†
≥$50,000	1.00	1.00
Working outside the home		
No	1.06 (0.61–1.84)	1.37 (0.74–2.53)
Yes	1.00	1.00
Disease activity	1.10 (1.05–1.14)‡	1.15 (1.09–1.20)‡
SLE duration, years	1.00 (0.97–1.03)	0.99 (0.96–1.03)
History of renal involvement§		
Yes	1.16 (0.61–2.22)	0.63 (0.31–1.28)
No	1.00	1.00
Current prednisone use		
Yes	1.33 (0.79–2.25)	1.31 (0.72–2.37)
No	1.00	1.00

* Values are the adjusted odds ratio (95% confidence interval). GED = General Equivalency Diploma. See Table 2 for additional definitions.
† $P = 0.04$.
‡ $P = 0.001$.
§ Defined as meeting American College of Rheumatology renal criterion (23,31) or having renal biopsy results consistent with lupus nephritis.

onset of a psychiatric disorder in this group, is shown in Table 3. The majority of patients experienced their first onset of psychiatric disorders prior to being diagnosed with SLE (Table 3). However, a substantial proportion of participants also had first episodes of psychiatric disorders following SLE diagnosis. This was particularly true for MDD, panic disorder, agoraphobia, and bipolar I disorder; 40–50% of participants with these disorders reported an onset after SLE diagnosis. Because many participants reported that their SLE symptoms preceded a SLE diagnosis by ≥1 years (with a mean of 5 years), we also examined the percentage who reported the onset of a psychiatric disorder after the onset of SLE symptoms. An even higher percentage of psychiatric disorders began after the onset of SLE symptoms (Table 3).

Correlates of lifetime MDD and any mood or anxiety disorder. Demographic characteristics (age, marital status, income, education, working outside the home) and characteristics of SLE (duration of SLE, self-reported disease activity [SLAQ], history of renal involvement, and current use of prednisone) were examined for association with lifetime MDD and the presence of any mood or anxiety disorder. Greater disease activity was associated with higher odds of having MDD (odds ratio [OR] 1.10, 95% confidence interval [95% CI] 1.05–1.14; $P = 0.001$) and any psychiatric disorder (OR 1.15, 95% CI 1.09–1.20; $P = 0.001$) after controlling for all other variables in the model (Table 4). For every 1-unit increase in SLAQ score, there was a corresponding 9% increase in the likelihood of lifetime MDD and a 14% increase in the likelihood of any mood or anxiety disorder. Household income below $50,000 was also associated with higher odds of having any psychiatric disorder after controlling for the remaining clinical and demographic characteristics (OR 2.01, 95% CI 1.03–3.91; $P = 0.04$). Finally, because the SLAQ includes symptoms that overlap with MDD (depression, fatigue, and forgetfulness), we repeated the regression analyses using a modified SLAQ score that eliminated these items. In each analysis, disease activity remained a significant predictor of MDD (OR 1.10, 95% CI 1.06–1.16; $P = 0.001$) and any disorder (OR 1.16, 95% CI 1.10–1.23; $P = 0.001$) after controlling for all other variables in the model.

DISCUSSION

Symptoms of depression and anxiety are commonly reported in patients with SLE and are likely associated with the physical disability and stress of living with a chronic disease (37). Our findings indicate that psychiatric manifestations are frequent in patients with SLE, and extend earlier work by documenting that >1 form of psychiatric disorder often occurs in the same patient.

Most studies investigating psychological concomitants of SLE have focused on depression. Our study indicated that lifetime MDD, affecting 47% of the sample, was the most common diagnosis, and was 2 times more common than in general population estimates. A similar lifetime prevalence of MDD (49%) was recently found in an outpatient sample of Brazilian women with SLE (5). Our results are also consistent with those of Shih et al (38), who, using a nationally representative sample of US adults, found that anxiety and depressive symptoms were more than twice as common in adults with arthritis than those without arthritis.

In addition to MDD, we found that patients with SLE had higher lifetime rates of certain anxiety disorders and mania. Compared with prevalence estimates for white women in the US, patients with SLE had a 6-fold increase in bipolar I disorder, an 11-fold increase in OCD, and a 1.5-fold increase in specific phobia. Panic disorder was also more common, with rates up to 2.5 times higher. Few studies have examined anxiety and bipolar disorders in patients with SLE, although elevated rates of such disorders are consistent with results from smaller clinical samples (3,5,14) and those of Lindal et al (13), who studied an unselected population of 62 Icelandic patients with SLE. Lindal et al (13) found an increase in specific phobia, with a lifetime prevalence (26%) almost identical to ours, and similar to our study found a 2.5-fold increase in panic disorder. Consistent with our results, Slattery et al (14) also observed an ~10-fold increase in OCD in a clinic sample of 50 patients with SLE, and Magner (3) found that hypomania (manic episodes with less marked impairment) was more common in SLE than RA, and was unrelated to corticosteroid use. Together, these findings highlight the importance of recognizing the spectrum of mood and anxiety disorders in people with SLE and the need to examine etiology.

Contrary to expectation, GAD and dysthymic disorder were less common in our SLE sample compared with national estimates. Chronic anxiety and depressed mood are common features of MDD, and diagnoses of GAD and dysthymic disorder each require that symptoms have occurred independently of an episode of major depression. It is possible that the high rates of MDD in this study made it difficult to assess lifetime GAD and dysthymic disorder. Prospective studies may be more effective in assessing rates of these disorders in people with SLE.

Psychological distress may be associated with SLE outcomes, including fatigue (39), physical disability (40), and decreased functioning (41). Although most research has focused on depression, it is well known that anxiety can also be debilitating. Without treatment, anxiety disorders are typically chronic and often lead to social and occupational impairment (42), substance dependence (43), depression (44), and in primary care patients, greater disability and utilization of general medical services (45). In our sample, 59% of patients who met criteria for lifetime MDD also had a comorbid anxiety disorder, suggesting that some of the observed effects of depression on health outcomes in SLE may be due to underlying difficulties with anxiety. Finally, to our knowledge, no one has studied the impact of bipolar disorder on lupus functioning. If rates of bipolar I disorder are elevated in people with SLE as our study suggests, this warrants further investigation.

Given the elevated rates of depressive and anxiety disorders observed in people with SLE, it is important to understand the contributing factors. Disease activity and severity, duration of SLE, and central nervous system complications may increase vulnerability for psychiatric disorders in patients with SLE, although findings have been mixed (4–12). Psychosocial stressors associated with having a chronic illness may also increase risk for depression and anxiety (46). In our study, we found that self-reported disease activity in patients with SLE, but not renal involvement (an important indicator of disease severity), predicted lifetime diagnoses of MDD and presence of any mood or anxiety disorder. It is possible that disease activity is more closely tied to mental health outcomes because it reflects symptoms that interfere with day-to-day activities and quality of life, such as fatigue, rashes, pain, and swelling.

Disease activity in patients with SLE may also contribute to psychiatric symptoms through shared pathophysiologic mechanisms, including antineuronal and antiphospholipid antibodies (47), proinflammatory cytokines (48), and calcifications in the basal ganglia, a brain region that is implicated in OCD (4).

In this study, we assessed the degree to which patients reported symptoms of anxiety or depression to a medical provider. Over 90% of participants who met criteria for lifetime MDD or bipolar I disorder reported symptoms of depression to their medical providers. This disclosure rate is higher than that reported by Sleath et al (20), possibly because they focused on current depressed mood and reporting to a rheumatologist. Like Sleath et al, we found reporting to be higher when depressive symptoms were more severe; only 50% of our sample reported symptoms of dysthymia to their providers. In contrast, close to one-third of those with panic disorder did not report their symptoms to a provider, and well over half of patients (66%) never told a provider about their OCD symptoms or social anxiety concerns (60%). Such findings are important because medical providers are usually the first line of intervention for psychiatric problems, providing direct treatment or referrals to mental health specialists. Untreated psychiatric disorders may compromise adherence to treatment regimens, quality of sleep, and other factors associated with health outcomes (20).

Several limitations need to be considered when interpreting the present findings. Our cohort is not a population-based sample of adults with SLE in the US. However, participants were recruited from diverse sources, including nonclinical sources, which represented three-fourths of our sample. Moreover, we found that participants did not differ from nonparticipants with respect to important clinical variables, and were comparable with other SLE cohorts with respect to prevalence of kidney involvement and age at diagnosis (36,49).

Because our study included only white women, results may not be generalizeable to women of other ethnic groups, or to men. In the US, rates of certain depressive and anxiety disorders are often reported to be higher among African Americans and Hispanics, but this is

largely accounted for by socioeconomic status differences in income and education (50). Our sample is likely to have a higher educational attainment than the general population of patients with SLE in the US, and was more likely to have graduated college than our comparison group in the NCS-R. Although education was not associated with psychiatric diagnoses in our study, the odds of having an anxiety or depressive disorder was higher in participants with household incomes below $50,000. Therefore, the inclusion of other ethnic groups with disadvantaged socioeconomic status may yield higher rates than are reported here.

This study also did not include a medically ill comparison group, so we were unable to determine whether the increased rates of psychiatric disorders found in our sample are specific to SLE. Finally, although many patients in our study reported the onset of psychiatric disorders after being diagnosed with SLE, cross-sectional data cannot be used to infer causation.

In conclusion, we believe that this is the largest study to date to examine depressive and anxiety disorders in a single sample of patients with SLE using DSM-IV criteria. Our results clearly suggest that rates of depressive and some anxiety disorders (including OCD and phobias) are elevated in patients with SLE, and that comorbidity of psychiatric disorders is common in this population. Although most patients reported severe depression or mania to a medical provider, a large percentage of patients with anxiety disorders did not. Because patients with anxiety disorders often feel embarrassed to openly disclose their symptoms (51), other methods of assessment such as brief self-report questionnaires may be helpful in identifying patients with these conditions so that treatment can be delivered to alleviate psychological distress and improve overall function (16,20).

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AUTHOR CONTRIBUTIONS

All authors were involved in drafting the article or revising it critically for important intellectual content, and all authors approved the final version to be submitted for publication. Dr. Bachen had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study conception and design. Bachen, Chesney, Criswell.
Acquisition of data. Bachen, Chesney, Criswell.
Analysis and interpretation of data. Bachen, Chesney, Criswell.

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