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Prevalence of mood and anxiety disorders in women with systemic lupus erythematosus

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Abstract

Objective—To examine the lifetime prevalence of mood and anxiety disorders in patients with SLE. Demographic and disease-related variables were examined for association with lifetime major depressive disorder and the presence of any mood or anxiety disorder.

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

Results—Sixty-five percent of participants received a lifetime mood or anxiety diagnosis. Major depressive disorder (47%), specific phobia (24%), panic disorder (16%), obsessive-compulsive disorder (9%), and bipolar I disorder (6%) were more common among the SLE patients compared to Caucasian women ($p = 0.00009$ for specific phobia, all other p values = 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 major depression ($p = 0.001$) and presence of a mood or anxiety disorder ($p = 0.001$), after controlling for demographic and clinical characteristics.

Conclusion—Several mood and anxiety disorders are more common in women with SLE compared to 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.

Systemic lupus erythematosus (SLE) is a chronic, relapsing autoimmune disorder that is most prevalent in women and involves multiple organ systems (1). Due to the potentially debilitating nature of the disease and 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 symptomatology in SLE varies widely across studies, from 17 to 71% (11). This variation is likely due to divergent criteria used to define distress or psychiatric disturbance, differences in sample characteristics, the assessment tools used, and small sample sizes. Some studies, but not all, have found that greater disease activity, SLE severity or longer disease duration increases vulnerability for clinical depression in SLE (4–12).

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Although most research has focused on depressed mood or clinical unipolar depression in SLE, others suggest that symptoms of anxiety may be equally important in this population. In an Icelandic study of 62 SLE patients, diagnoses of agoraphobia with and without panic, specific phobia and social phobia were more prevalent in SLE patients than the general population (13). Segui et al. (6) reported that among 20 female SLE patients, 40% met criteria for a psychiatric disorder, with generalized anxiety disorder and panic disorder being the most common diagnoses. Higher levels of social introversion (10) and obsessive-compulsive disorder have also been reported in patients with SLE (14), compared to healthy controls or population rates. Because population prevalence rates of some anxiety and depressive disorders are low, employing larger sample sizes to examine rates of these disorders in SLE is advantageous (15).

In the United States, epidemiological studies indicate that comorbidity of psychiatric disorders is common, with more than half of all lifetime disorders occurring in 14% of the population who have a history of three or more comorbid disorders and only 21% of lifetime disorders occurring in respondents with a history of just one disorder (15). These findings suggest that while a history of psychiatric disorders is common (affecting nearly 50%), 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, U.S. studies also find an underutilization of professional services for emotional problems (15–16). Fewer than 40% of respondents with any lifetime psychiatric disorder receive professional treatment (15). Physicians provide the most care for psychiatric problems in the U.S. 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 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 discussed depression with their rheumatologists during medical visits, and that patients initiated the discussion each time.

The purpose of this study is 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 SLE patients, 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 determine 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 are examined as potential correlates of lifetime major depression and presence of a psychiatric disorder.

PATIENTS AND METHODS

Cohort

Participants were 326 Caucasian women living in diverse geographical regions in the U.S. and enrolled in a study examining genetic risk factors for SLE at the University of California at San Francisco (UCSF Lupus Genetics Project) (22). For the current study, 616 women participants in the genetics project who were Caucasian 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 and eighty-five women (62.5%) returned a postcard expressing interest, and we were able to reach 371 of

them by telephone. Of those reached, 326 participated (88% of 371; 53% of 616). Reasons for nonparticipation among those who returned a postcard included health problems (5), too busy (6), moved (4), changed mind or didn't return consent forms (21), no longer diagnosed with SLE (3), or other (6). The 326 participants were recruited from UCSF-affiliated rheumatology offices (13%), community rheumatology offices (11%), and community-based sources, such as support groups and conferences (28%), and newsletters, Web site, and other forms of publicity (48%). Participants did not differ from non-participants (n =290) in terms of age (47.9+/−11.3 vs. 47.7+/−13.2 years, respectively), age at SLE diagnosis (32.5+/−12.2 vs. 34.1+/−13.0 years, respectively), or history of renal involvement (25.5% vs. 20.8%, respectively), all p's >.05.

Data collection

During a telephone interview, participants completed the Composite International Diagnostic Interview (CIDI), a structured diagnostic interview for the assessment of psychiatric disorders, which provides, by means of computer algorithms, lifetime diagnoses according to DSM-IV criteria (15). The CIDI is the most widely used interview in epidemiological studies of mental disorders and was used in the National Comorbidity Survey (NCS-1) (15) and National Comorbidity Survey Replication (NCS-R) (24) to determine the prevalence of lifetime psychiatric diagnoses in the U.S. 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 of onset and recency of psychiatric disorders. Interviews were conducted by one of the authors (EB), who is trained as a clinical psychologist and 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 clinician to physiological effects of injury, illness, medication, drugs, or alcohol.

Following the CIDI, participants were interviewed about current psychotropic and SLE medications. Participants were mailed questionnaires that included 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 to 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 SF-12 Physical Component Summary and SF-36 Physical Functioning subscale (29). Renal involvement for each participant was determined through medical chart review. Subjects meeting the ACR renal criterion (30) or who had lupus nephritis on renal biopsy 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 SLE and nephritis is a major determinant of disease morbidity and mortality in SLE (31). The study was approved by the Institutional Review Boards at UCSF and Mills College.

Statistical analysis

The binomial test [(GraphPad Software (32)] was used to compare the prevalence of mood and anxiety disorders in the sample with prevalence estimates in Caucasian females in the United States. Comparison rates were taken from the NCS-R because the NCS-R 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 (24,33–34). Logistic regression was used to study demographic and disease-related variables associated with the prevalence of lifetime major depressive disorder and any mood or anxiety diagnosis. Sociodemographic covariates included age, education, income, marital and employment status. Additional covariates included duration of SLE, renal involvement, current prednisone use, and recent disease activity. Statistical significance was evaluated at the 0.05 level of significance.

RESULTS

Three-hundred and one (92.3%) participants returned their questionnaires following the phone interview (CIDI). Participants who failed to return questionnaires (n=25) did not differ from those who did, in terms of age or 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 using psychotropic medications, the most common of which were antidepressants (41%). The mean SLAQ score for the sample was 14.0+/−7.6 and ranged from 0 to 35, reflecting a wide range of self-reported disease activity in SLE. Twenty-six percent of the sample had a history of renal involvement, which is consistent with other Caucasian SLE cohorts (35).

Psychiatric diagnoses

Fifteen participants were excluded from the prevalence estimates because their symptoms were attributed to the physiological effects of injury, illness, medications or drugs[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.

Two-hundred and eleven of the 326 participants (65%) met criteria for at least one of the following lifetime depressive or anxiety disorders: Major depressive disorder (MDD) (47%), specific phobia (24%), social phobia (16%), obsessive-compulsive disorder (OCD) (9%), panic disorder (8%), bipolar I disorder (formerly manic-depressive disorder, 6%), generalized anxiety disorder (GAD) (4%), dysthymic disorder (3%), and agoraphobia without panic disorder (1%). A further review of panic disorder indicated that 35 participants met criteria for panic disorder, but did not receive the diagnosis due to a pre-existing comorbid anxiety disorder that is often accompanied by panic attacks. Using the revised scoring criteria described by Means-Christensen et al. (26) that addresses 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 non-social situations). This resulted in a 2-fold increase (from 8 to 16%) of panic disorder.

The binomial test was used to compare prevalence rates of psychiatric disorders in the SLE sample with Caucasian women in the U.S., using prevalence rates obtained from the NCS-R (34).[2] As shown in Table 2, prevalence rates for the SLE sample did not change appreciably

[1]This included MDD (n=5), social anxiety disorder (n = 5), agoraphobia (n = 2), dysthymic disorder (n = 2) and panic disorder (n = 1).

[2]Age of NCS-R subsample was 47.5 +/− 0.6 years; 57% of cohort was married; 62% worked outside the home; 42% completed high school or less; 30% completed some college; 27% completed college or higher.

after adjusting for age using the NCS-R age distribution. Thus, 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; all other p values = 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 SLE patients and Caucasian 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 one disorder, 19% had two comorbid disorders, and 17% had three or more comorbid disorders. Thus, about one-third of participants with a psychiatric disorder met criteria for at least two lifetime psychiatric disorders.

Over 90% of participants who met criteria for MDD or bipolar 1 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 of onset of each psychiatric disorder was compared to the age at which SLE was diagnosed. Table 3 shows 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 onset of a psychiatric disorder in this group. As shown in Table 3, the majority of patients experienced their first onset of psychiatric disorders prior to being diagnosed with SLE. 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 1 disorder, where 40 to 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 one or more years (mean = 5 years), we also examined the percentage who reported the onset of a psychiatric disorder after SLE symptom onset. As shown in Table 3, an even higher percentage of psychiatric disorders began after the onset of SLE symptoms.

Correlates of lifetime major depression 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. As shown in Table 4, greater disease activity was associated with a higher odds of MDD and any psychiatric disorder after controlling for all other variables in the model (for MDD, OR 1.10, 95% CI 1.05–1.14, $p = 0.001$; for any disorder, OR 1.15, 95% CI 1.09–1.20, $p = 0.001$). For every one-unit increase in SLAQ scores, 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 a higher odds of 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 (36). Our findings indicate that psychiatric manifestations are frequent in SLE patients and extend earlier work by documenting that more than one form of psychiatric disorder often occurs in the same patient.

Most studies investigating psychological concomitants of SLE have focused on depression. Our study indicates that lifetime MDD, affecting 47% of the sample, was the most common diagnosis and two times more common than general population estimates. A similar lifetime prevalence of MDD (49%) was recently found in an outpatient sample of Brazilian female SLE patients (5). Our results are also consistent with those of Shih et al. (37), who using a nationally representative sample of U.S. 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 to prevalence estimates for Caucasian women in the U.S, SLE patients 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 SLE, though 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. Indeed, Lindal et al. (13) found an increase in specific phobia, with a lifetime prevalence (26%) almost identical to ours, and like our study, a 2.5-fold increase in panic disorder. Consistent with our results, Slattery et al. (14) also observed about a 10-fold increase in OCD in clinic sample of 50 SLE patients, 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 SLE and the need to examine etiology.

Contrary to expectation, GAD and dysthymic disorder were less common in our SLE sample, compared to 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 SLE.

Psychological distress may be associated with SLE outcomes, including fatigue (38), physical disability (39), and decreased functioning (40). While 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 (41), substance dependence (42), depression (43), and in primary care patients, greater disability and utilization of general medical services (44). 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 disorder are elevated in SLE as our study suggests, this warrants further investigation.

Given the elevated rates of depressive and anxiety disorders observed in SLE, it is important to understand contributing factors. Disease activity and severity, duration of SLE, and central nervous system complications may increase vulnerability for psychiatric disorders in SLE, although findings are mixed (4–12). Psychosocial stressors associated with having a chronic illness may also increase risk for depression and anxiety (45). In our study, we found that self-reported disease activity in 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 symptomatology that interferes with day-to-day activities and quality of life, such as fatigue, rashes, pain, and swelling.

Disease activity in SLE may also contribute to psychiatric symptomatology through shared pathophysiological mechanisms, including antineuronal and antiphospholipid antibodies (46), proinflammatory cytokines (47), 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 1 disorder reported symptoms of depression to their medical providers. This disclosure rate is higher than 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 one-half of patients (66%) never told a provider about their obsessive-compulsive symptoms or social anxiety concerns (60%). Such findings are important as 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 U.S. However, participants were recruited from diverse sources, including non-clinical sources, which represented three-fourths of our sample. Moreover, we found that participants did not differ from non-participants with respect to important clinical variables, and were comparable to other SLE cohorts with respect to prevalence of kidney involvement and age of diagnosis (35,48).

Because our study included only Caucasian women, results may not be generalizeable to women of other ethnic groups, or to men. In the U.S., rates of certain depressive and anxiety disorders are often reported higher among African Americans and Hispanics, but largely accounted for by socioeconomic status (SES) differences in income and education (49). Our sample is likely to have a higher educational attainment than the general population of patients with SLE in the U.S., and indeed, 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 an anxiety or depressive disorder was higher in participants with household incomes below $50,000. Thus, the inclusion of other ethnic groups with disadvantaged SES may yield higher rates than reported here.

This study also did not include a medically ill comparison group, so we are unable to determine if 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, the use of 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 SLE patients, using DSM-IV criteria. Our results clearly suggest that rates of depressive and some anxiety disorders (including OCD and phobias) are elevated in 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 (50), 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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Table 1

Demographic and clinical characteristics of 326 SLE study subjects.

Characteristic	Mean (SD) or N (Proportion)
Age, mean (SD), yr	47.9 (11.3), range 18–83
Education level, N (%)	
High school/GED or less	136 (41.7)
Associate degree	54 (16.6)
College degree	89 (27.3)
Master's degree or higher	47 (14.5)
Marital status, N (%)	
Single	104 (31.9)
Married	222 (68.1)
Working outside the home, N (%)	
Yes	131 (43.7)
No	169 (56.3)
Household income, N (%)	
<$9,999 – $49,999	131 (45.5)
$50,000 or higher	157 (54.5)
Age at SLE diagnosis, mean (SD), yr	32.5 (12.2), range 1–73
SLE duration, mean (SD), yr	15.4 (9.7), range 1–47
SLE medications*, N (%)	
Non-steroidal anti-inflammatory drugs	185 (56.7)
Prednisone	136 (41.7)
Hydroxychloroquine	169 (51.8)
Methotrexate	29 (8.9)
Other disease-modifying antirheumatic drugs	57 (17.5)
History of renal involvement**, N (%)	
Yes	83 (25.5)
No	239 (74.2)

GED = General Equivalency Diploma.

* Current SLE medications at time of interview.

** History of renal involvement was defined as meeting ACR renal criterion or renal biopsy consistent with lupus nephritis.

Table 2

Prevalence and Confidence Intervals of DSM-IV psychiatric disorders among 326 Caucasian women with SLE and population estimates for Caucasian women in the United States.

Psychiatric Disorder*	Population Prevalence (%)** (95% CI)	Prevalence in SLE sample (%) (95% CI)	Age-adjusted prevalence in SLE sample (%) (95% CI)
Major depressive disorder	24.6 (23.5–25.7)	46.9[1] (41.5–52.3)	42.4 (37.0–47.7)
Bipolar I disorder (Manic-depression)	1.0 (0.5–1.4)	5.8[1] (3.3–8.4)	4.9 (2.6–7.2)
Dysthymic disorder	5.5 (4.6–6.3)	3.3[3] (1.4–5.3)	2.9 (1.8–4.7)
Specific phobia	15.8 (14.4–17.2)	23.9[2] (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[1] (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)
Obsessive compulsive disorder	0.8 (0.4–1.2)	8.9[1] (5.8–12.0)	8.5 (5.5–11.5)
Generalized anxiety disorder	11.1 (10.0–12.1)	4.3[1] (2.1–6.5)	4.3 (2.1–6.5)

DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

* Prevalence of any mood or anxiety disorder in SLE sample = 65.0%.

** Prevalence estimates for psychiatric disorders among white, non-Hispanic females, 18 years and older, in the United States are from the National Comorbidity Survey Replication (NCS-R), n = 3,618 (34).

[1] denotes significant difference from population prevalence, p = 0.00001

[2] denotes significant difference from population prevalence, p = 0.00009

[3] denotes significant difference from population prevalence, p = 0.05

Table 3

Relationship between onset of lifetime DSM-IV psychiatric disorder and diagnosis of SLE.

Psychiatric Disorder	Participants who reported onset of psychiatric disorder after SLE diagnosis % (n)	Number of years following SLE diagnosis and onset of psychiatric disorder, mean (SD)	Participants who reported onset of psychiatric disorder after onset of SLE symptoms % (n)
Major depressive disorder	46.1 (70)	7.3 (8.0)	61.1 (91)
Bipolar I disorder	36.8 (7)	2.9 (2.6)	44.4 (8)
Dysthymic disorder	12.5 (1)	0.0 (0.0)	50.0 (4)
Specific phobia	6.8 (5)	6.4 (4.8)	9.6 (7)
Social anxiety disorder	10.0 (5)	2.4 (3.8)	26.0 (13)
Panic disorder	43.1 (22)	5.7 (5.2)	62.5 (30)
Agoraphobia without panic disorder	50.0 (2)	0.0 (0.0)	50.0 (2)
Obsessive-compulsive disorder	18.0 (5)	8.0 (6.6)	29.6 (8)
Generalized anxiety disorder	7.7 (1)	9.0 (0.0)	38.5 (5)

DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

Table 4

Logistic regression analysis of sociodemographic and clinical factors and likelihood of lifetime history of major depressive disorder or any mood or anxiety disorder among SLE patients.

Factor	Adjusted OR (95% CI) Major Depressive Disorder	Adjusted OR (95% CI) Any Disorder
Age (yr)	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 degree	0.84 (0.34–2.08)	0.78 (0.28–2.17)
College 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 or higher	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 (yr)	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

GED = General Equivalency Diploma.

History of renal involvement was defined as meeting ACR renal criterion or renal biopsy consistent with lupus nephritis. OR = Odds ratio; CI = Confidence interval.

* p = .04

** p = .001