

The Elevated Prevalence of Anxiety and Depression Among Adults with Systemic Lupus Erythematosus: A Systematic Review and Meta-Analysis

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Introduction

Systemic lupus erythematosus (SLE), is a chronic, systemic autoimmune disease, with a wide range of relapsing and remitting symptoms, which often makes it difficult to recognise. Frequently presenting symptoms are fatigue, arthritis, malar rash, alopecia and myalgias. The condition can progress to lupus nephritis or central nervous system involvement

Throughout past literature, elevated prevalence rates of anxiety and depression have been demonstrated in the SLE population, compared to the general population. This increased anxiety and depression has been shown to be significantly associated with reduced quality of life (QoL). Furthermore, their impairment in QoL is similar to that of other severe chronic disorders, namely major depressive disorder and post-traumatic stress disorder.

Numerous psychosocial and clinical factors have shown association with an increase in these psychiatric manifestations, such as activity of disease symptoms.

Aims

This systematic review and meta-analysis present updated pooled prevalence values for anxious and depressive symptoms in adult SLE population from current literature, described throughout as anxiety and depression prevalence rates. Existing systematic reviews on this matter have significant heterogeneity of prevalence estimates between studies, so we clarify some of this divergency through subgroup analyses and meta-regressions of our final study data.

Additionally, many studies exist with mention of associative factors with presence of depression and anxiety. Thus, the secondary objective of this review will be to explore the characteristics of SLE patients most frequently correlated with development of these mental health disorders. This will enable more focused screening of patients or alternatively allow for management of these associated factors to aid prevention of anxiety and depression.

Methods

CINAHL, Embase, Medline and PsycInfo databases were searched from inception to September 2025. Abstracts and full texts were screened by two independent reviewers (TC and FE). Grey literature was identified through forward and backward citation searching of eligible papers.

Eligibility criteria:

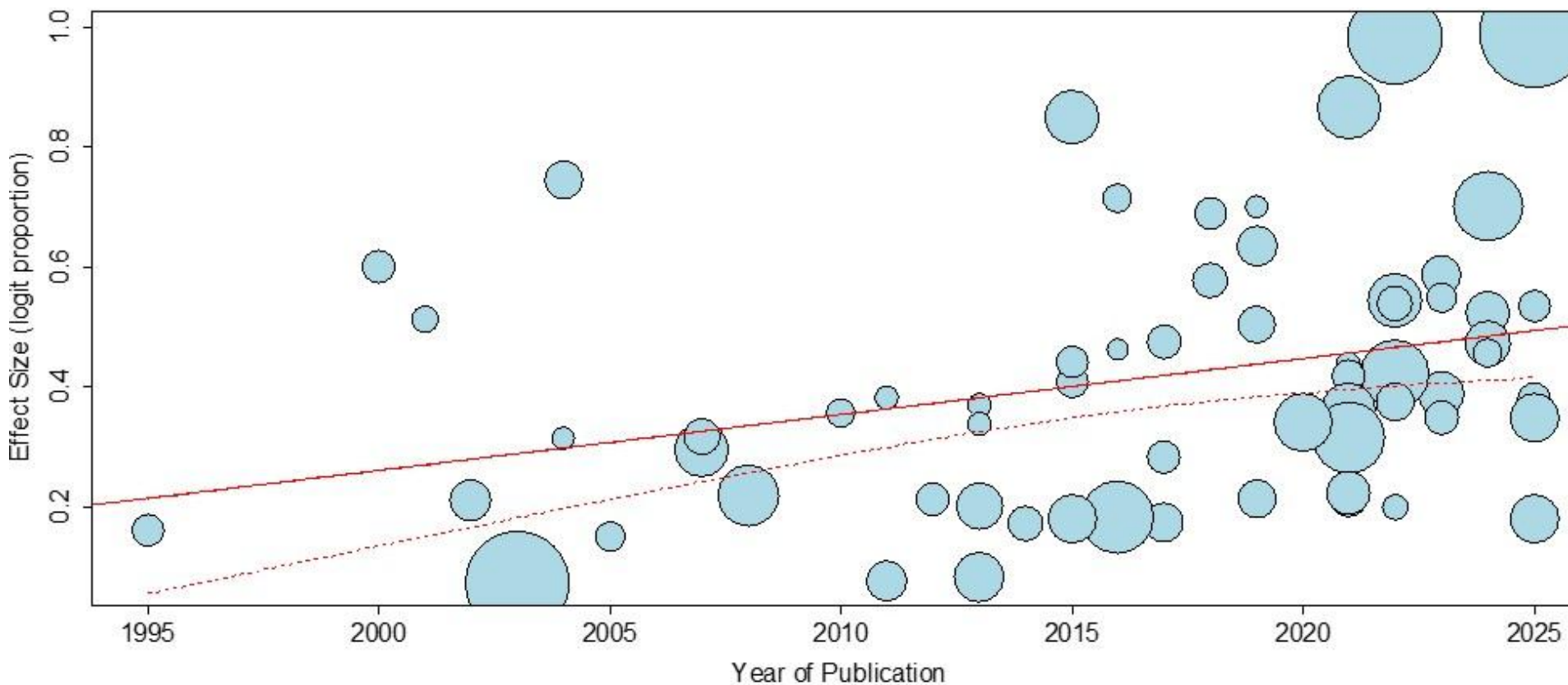
- Recognised diagnostic criteria for SLE
- Inclusion of prevalence values of anxiety or depression
- Observational studies
- Written in the English language
- Unrecognised metrics for anxiety and depression
- Inappropriate study design
- Paediatric population

Results

Anxiety

A total sample size of 9,850 from 63 studies was included in the meta-analysis of anxiety patients. The pooled prevalence of anxiety was **41.3%** (95% CI: 35.4% - 47.3%). Heterogeneity was extremely high ($I^2 = 96.7\%$, $\tau^2 = 0.0572$, $p = 0$). Variability in prevalence values was extreme, ranging from 7%, to 100%.

Meta-regression with the moderator of publication year explained approximately 8.8% of heterogeneity ($R^2 = 8.81\%$). This regression is demonstrated in the bubble plot.



Meta-regression bubble plot of effect size with Year of Publication as the moderator, for anxiety papers

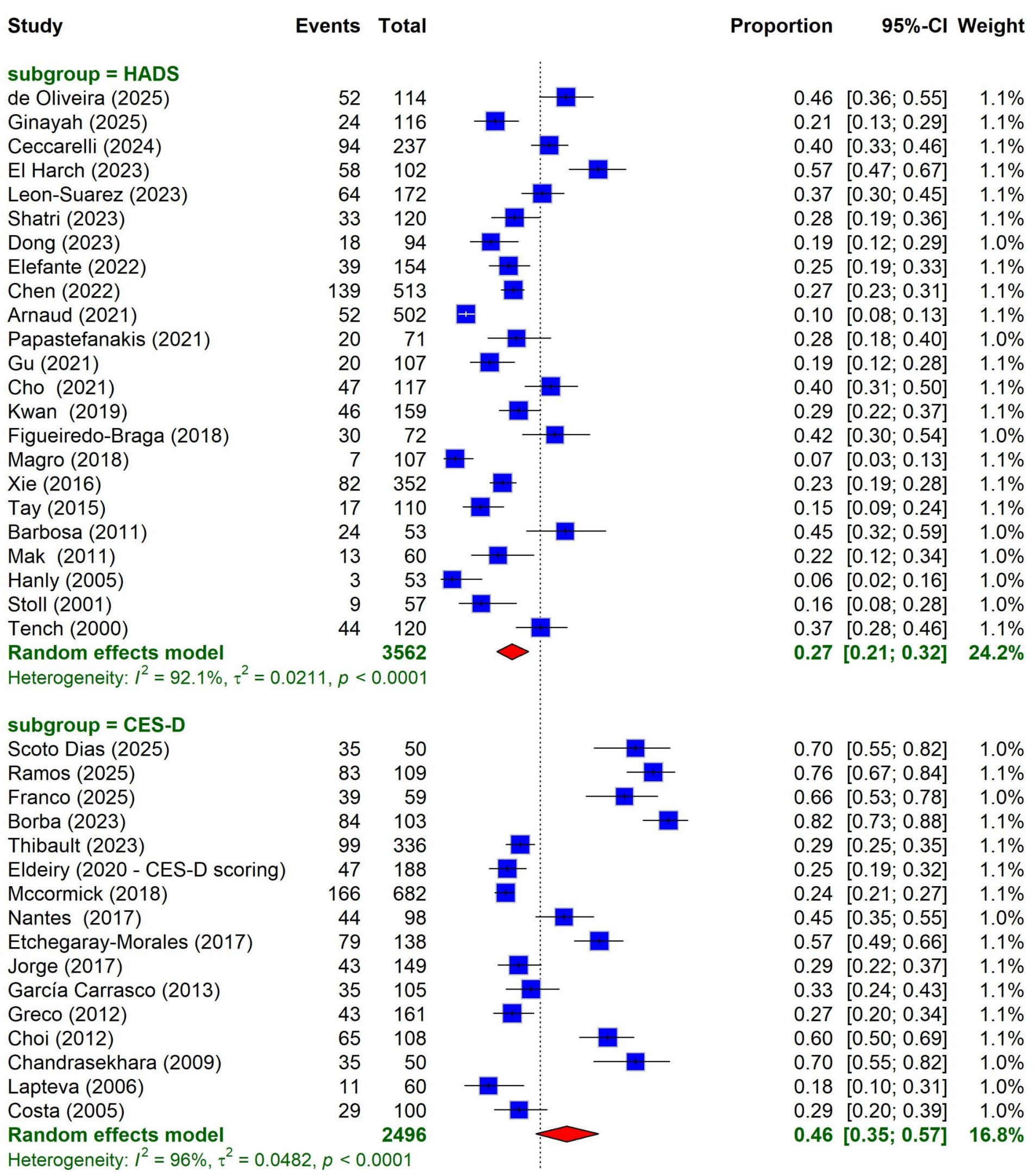
Results (Continued)

Depression

94 studies consisting of data from 15,187 patients made up our random effects meta-analysis of pooled prevalence of depression, calculated to be **36.6%** (95% CI: 32.7%-40.6%). Heterogeneity was high ($I^2 = 95.7$, $\tau^2 = 0.0388$, $p = 0$) and the range of prevalence estimations between studies was 6% to 86%.

Subgroup analyses

For both anxiety and depression, subgroup analysis found a statistically significant difference in prevalence rates found dependent on which screening tool was used. The Hospital Anxiety and Depression scale (HADS) and the Centre for Epidemiologic Studies Depression Scale (CES-D) found pooled prevalence values of 27% and 46%, respectively, as shown below.



HADS and CES-D subsection of a forest plot displaying a subgroup analysis of depression papers, divided by screening metrics

Key Findings

Prevalence of anxiety: 41.3%.

•Prevalence of depression: 36.6%.

•Anxiety prevalence has been gradually increasing over the last 30 years.

•Prevalence rates varied dependent on choice of screening tools.

•Frequently associated factors with both were identified, shown in the table below:

Anxiety	Depression
Depression	Reduced quality of life
Reduced quality of life	Poor sleep quality
Increased disease activity	Fatigue
Fatigue	Increased disease activity
Poor sleep quality	Disease severity
Employment status	Greater glucocorticoid dosage

Table displaying the factors most frequently associated with increased rates of anxiety and depression, respectively, listed in order of frequency

Recommendations

From our findings, it would be our recommendation that clinicians managing SLE patients should be vigilant to symptoms of anxiety or depression, as their prevalence is so high. This could be implemented by attempting more routine anxiety and depression screening as part of their management.

Furthermore, awareness of the frequently associated characteristics with increased rates of anxiety and depression guide targeting screening tools for the most at-risk patients.

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