

Case Study

## “Prevalence of Psychosis and Other Psychiatric Disorders in Patients with Systemic Lupus Erythematosus”- A Case Control Study

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### ABSTRACT

**Background:** Systemic Lupus Erythematosus is a connective tissue, auto immune disease of which cause is unknown. In Systemic Lupus Erythematosus one or many systems are involved. Psychiatric disorders are common in Systemic Lupus Erythematosus. Psychiatric manifestations can be psychosis, mood disorders, anxiety disorders and acute confusional state. **Objective:** The Aim of the study is to know the prevalence of psychosis and other psychiatric disorders in patients with Systemic Lupus Erythematosus and to correlate the severity of illness with psychosis and other psychiatric disorders in patients of systemic lupus erythematosus. **Methodology:** This is a case control study conducted at Government Rajaji Hospital, Madurai, a tertiary care centre for 3 months. A sample of 30 consecutive patients with an established diagnosis of systemic lupus erythematosus, attending the Rheumatology OP as well as Inpatients were selected for the study. A sample of 30 controls (Age, sex, marital status, place of living, Socioeconomic status matched controls) who attended Govt Rajaji Hospital OPD for minor physical ailments were enrolled in this study. **Results:** Among the sample of 30 patients with Systemic Lupus Erythematosus, 17 patients (56.7%) have psychiatric disorders. Among the 17 patients with psychiatric comorbidity, 7 patients suffer from Major depression, contributing to 23.3% second common, being dysthymia and Generalized Anxiety Disorder with a frequency of 3 patients (10.0%), psychotic disorder and social Anxiety Disorder (9.6%) and in 6.7% of patients. Among controls, 3 patients (10.0%) have psychiatric disorders. Among 3 patients with psychiatric disorders, one (3.3%) suffer from depression, one (3.3%) suffer from dysthymia and one (3.3%) suffer from Generalized Anxiety Disorder. **Conclusion:** Psychiatric disorders are highly prevalent in patients with Systemic Lupus Erythematosus. Major depressive disorder is the most common Psychiatric disorder associated with Systemic Lupus Erythematosus. The risk of developing Psychiatric illnesses (Depression and psychotic disorder) increases with increasing severity of systemic lupus erythematosus. It is shown that Systemic Lupus Erythematosus patients have a high risk of Psychiatric illness and when emotional factors are not addressed adequately, the morbidity of these patients may increase.

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**Keywords:** *Systemic Lupus Erythematosus, Psychosis, Psychiatric disorders, Disease activity*

**S**ystemic Lupus Erythematosus is a connective tissue, auto immune disease of which cause is unknown. It causes tissue damage and immune system dysfunction by antibodies, T lymphocytes and immune complexes. In general, the incidence is 2.4 per 100000. It is highly reported in Asians. It is more common in the age group of 15 and 64 years. Prevalence is more in females. The female to male ratio is 10 to 15:1.

In Systemic Lupus Erythematosus one or many systems are involved. Clinical features are fever, arthralgia, malar or discoid rash, arthritis, fatigue, weight loss, oral ulcer, photosensitivity, pericarditis, pleuritis, anemia, leucopenia, neuropsychiatric disorder and, renal dysfunction.

Neuropsychiatric features of Systemic Lupus Erythematosus include central and peripheral nervous system dysfunction and psychiatric manifestations. There are 19 neuro psychiatric symptoms, defined by The American College of Rheumatology Ad Hoc Committee<sup>1</sup> on Neuropsychiatric Lupus Erythematosus Nomenclature.

Neuropsychiatric disorders in systemic lupus Erythematosus may be caused by disease itself or its treatment or due to other factors. The etiopathogenesis is multifactorial which includes inflammatory changes (caused by cytokine production, anti-ribosomal, antineuronal antibodies and phospholipid associated proteins) and vascular injury of cranial vessels. There is no single test to diagnose Neuropsychiatric Lupus, multiple investigations are being carried out to identify and assess the disease severity.

### ***Systemic Lupus Erythematosus (SLE) And Psychiatric Disorders***

Psychiatric manifestations in Systemic Lupus Erythematosus are being classified as psychosis, mood disorder (depression and bipolar), anxiety disorder, acute confusional state (delirium) and cognitive dysfunction. Many studies have reported different prevalence rates. In general, prevalence rates range from 17-75%.

## **REVIEW OF LITERATURE**

Systemic Lupus Erythematosus (SLE) is a connective tissue multi system disease in which tissues and cells are damaged by deposition of pathogenic antibodies and immune complexes. American College of Rheumatology (ACR)<sup>2,3</sup> in 1971, revised in 1982 and in 1997 proposed criteria for diagnosing systemic lupus erythematosus (SLE).

It consists of 11 criterion which includes both clinical and laboratory findings. They are 1. Malar rash 2. Discoid Rash 3. Photosensitivity 4. Oral ulcers 5. Arthritis 6. Serositis 7. Renal Disorder 8. Neurologic disorder 9. Hematologic disorder 10. Immunological disorder 11. Positive antinuclear antibody. A Person must fulfill 4 of 11 criteria to be classified as Systemic Lupus Erythematosus.

Neurological involvement is known as Neuropsychiatric systemic lupus Erythematosus (NPSLE) in which psychiatric manifestations (psychosis, mood disorders, anxiety disorders and acute confusional state, and cognitive dysfunction) are being included.

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### ***Pathogenesis Of Neuropsychiatric SLE (Systemic Lupus Erythematosus)***

Though mechanism of Neuro Psychiatric Systemic Lupus Erythematosus (NPSLE) is not clearly known, there are two mechanisms which explains the pathological process of Neuro Psychiatric Systemic Lupus Erythematosus (i.e., Vascular and inflammatory).

### ***Systemic Lupus Erythematosus: Autoimmunity and Psychiatric Disorder***

In patients of Neuro Psychiatric Systemic Lupus Erythematosus (NPSLE), specific autoantibodies are found in CSF analysis. They are anti-endothelial antibodies, anti-phospholipid, anti-neuronal, anti-glial fibrillarospiny acidic proteins antibodies and anti-ribosomal P proteins antibodies. Among these, antiendothelial and antiribosomal P protein are related to psychiatric manifestations.

### ***Prevalence of Psychiatric Disorders In Systemic Lupus Erythematosus(SLE)***

Psychiatric disorders are common in Systemic Lupus Erythematosus.

Buchbinder Rand Johnson RT<sup>4</sup> showed the prevalence of psychiatric symptoms ranges from 17% to 75%. As per the study conducted by Hugo<sup>10</sup> et al in the year of 1996 point prevalence of psychiatric disorders was reported as 18.2%.

Stern and Robbins<sup>5</sup> had taken fifty-three (53) Systemic Lupus Erythematosus patients for study and assessed. Psychosis was present in twenty-six (26) patients.

Dubois and Tuffanelli<sup>6</sup> in 1964, studied five hundred and twenty (520) Systemic Lupus Erythematosus (SLE) patients and found an organically related psychosis in 12% of patients. A study by O'Conner<sup>7</sup> on forty (40) Systemic Lupus Erythematosus patients rated only fourteen (14) as psychologically healthy; Twenty-one (21) patients experienced psychotic episodes, The remaining five (5) patients were considered neurotic with diagnosis of depression, anxiety or dissociative reaction.

In the study conducted by Sabbani et al<sup>8</sup>, they reported anxiety or mood disorders in 32% of patients without Neuro Psychiatric Systemic Lupus Erythematosus.

Jonson A et al<sup>9</sup> reported that the proportion of patients who developed neuropsychiatric systemic lupus erythematosus (NPSLE) was 38%.

In the year of 1981, retrospective analysis by Hall et al<sup>10</sup>, shown that out of 56 patients, 25(44%) patients with systemic lupus erythematosus (SLE) were found to have psychiatric symptoms at disease onset or before the diagnosis is made.

Lindal E et al<sup>11</sup> found that 49% of the Systemic Lupus Erythematosus patients have psychiatric disorders as life time prevalence.

Among psychiatric disorders, Depression is more common in patients with systemic lupus Erythematosus according to studies of Brey RL<sup>12</sup>, Mo k CC<sup>13</sup> and Ainidia<sup>14</sup>. They have reported prevalence rate of 16 to 51%.

Mood disorders may represent neuropsychiatric manifestations of Systemic Lupus Erythematosus disease activity or may be a consequence of the stress of having a chronic major disease.

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A prospective study done by K. N. Purandare et al<sup>15</sup>, has shown 50% prevalence of psychiatric illness in patients with Systemic Lupus Erythematosus (SLE)

In the study conducted by Chin et al<sup>16</sup>, among Seventy-nine (79) Malaysian patients Forty (40) were found to have psychiatric disorder, twenty-six (26) having depressive neurosis, six (6) anxiety neurosis, five (5) endogenous depression and three (3) dementia. When compared to patients without psychiatric disorders, family support and self-confidence is low in patients with psychiatric disorders. There was significant difference ( $p < 0.01$ ) present between these two groups.

### ***Systemic Lupus Erythematosus and Psychosis***

Psychosis has long been known to be associated with Systemic Lupus Erythematosus and Systemic Lupus Erythematosus is considered in the differential diagnosis of acute psychosis in the second decade.

The reported prevalence of psychosis has varied from 2% to 7%. Besides being etiologically related to psychosis, patients with Systemic Lupus Erythematosus also encounter the risk of corticosteroid induced psychosis.

In the study by Hall et al<sup>10</sup> in 1981, 14(25%) of the fifty-six (56) were classified as psychotic. Ganz et al<sup>17</sup> in their review in 1972 found only five (5) patients (7%) with schizophreniform symptoms and two (2) of these patients also had organic symptoms.

Lim L et al<sup>18</sup> reported an association between neurological disease and psychotic symptoms in patients with Systemic Lupus Erythematosus. In half of the patients with Systemic Lupus Erythematosus, there was an evidence of present and past psychiatric disorder.

Cai YM et al<sup>19</sup> described a case of Systemic Lupus Erythematosus presenting with mixed paranoid and affective organic psychotic state.

In the Review by Lewis DA et al<sup>20</sup>, It was found that 5% of steroid treated patients can have psychiatric disturbances, Mood symptoms/psychotic symptoms being the commonest in many patients. It can occur early in the course of therapy. The risk factors for development of steroid induced psychiatric syndrome being female sex, high dose and Systemic Lupus Erythematosus itself.

In a prospective cohort study of Chau S Y et al<sup>21</sup>, in ninety-two (92) patients with Systemic Lupus Erythematosus, Corticosteroid induced psychosis was observed in 5% of patients.

Sirois F<sup>22</sup> shifted the focus from short term reactions to cognitive deficits resulting from steroid treatment in his review. Incidence of delirium and withdrawal symptoms were reported.

### ***Systemic Lupus Erythematosus (SLE) And Bipolar Disorder***

Systemic Lupus Erythematosus can cause bipolar disorder as independent manifestation and it may be caused by steroid treatment which is similar to steroid induced psychosis.

Brey et al<sup>12</sup> in a study done in 2002 reported forty percent (40%) of the patient had mood disorder. The incidence of mood disorder was fifty seven percent (57%) in another study done

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by sibbit et al<sup>39</sup> in the year of 2002. These studies support that Systemic Lupus Erythematosus can produce mood disorder.

Wada k et al<sup>23</sup> studied mood disorder induced by steroids in nine (9) patients. DSM-IV criteria was used to diagnose mood disorder. Clinical symptoms of bipolar disorder were seen in nine (9) patients treated with corticosteroids. Four patients (4) had manic or hypomanic within a short period following steroid pulse therapy. Subacute (1-3months) onset was present in seven (7) patients who had hypomanic or manic episode.

Psychosocial stressors and corticosteroid treatment were associated with recurrence of the mood episodes. Corticosteroid induced mood disorder had some typical clinical features that is subacute onset, presence of psychotic features and more number of manic episodes.

### ***Systemic Lupus Erythematosus (SLE) And Depression***

The most frequently reported psychiatric disorder in patients with Systemic Lupus Erythematosus is depression. Prevalence of depression varies in the range of 16% to 51%. Neuropsychiatric manifestations of Systemic Lupus Erythematosus (SLE) disease activity may be expressed in the form of depression or stress of having a chronic major disease may cause depression. Relationship with steroids should be considered. The link between disease activity and depression is not clear based on available data.

Stern et al<sup>5</sup> diagnosed mild to moderate depression in eight (8) patients out of twenty-nine (29) patients in his study. Psychiatric intervention was needed for three (3) of these patients.

Chin CN<sup>16</sup> studied prevalence of psychiatric disorders among Malaysians with systemic lupus Erythematosus. In this study more than 50% of the patients presented with psychiatric disorders. Most common psychiatric diagnosis was depression.

### ***Systemic Lupus Erythematosus (SLE) And Anxiety***

The relationship between anxiety disorder and Systemic Lupus Erythematosus can be explained by many factors includes skin rash, scarring alopecia, Anemia, elevated Corticotrophin releasing factor (CRF), HPA dysregulation, autoimmune thyroid function. There is also close relationship between anxiety and depression exists.

Segui J et al<sup>24</sup> did longitudinal study in active and inactive stages of the systemic lupus Erythematosus disease. It was found that one patient had mixed anxiety and depressive symptoms, five patients had Generalized Anxiety Disorder, two patients had panic disorder.

### ***Systemic Lupus Erythematosus (SLE) Disease Activity and Psychiatric Disorders***

In the study conducted by Segui et al<sup>24</sup>, active and inactive stages of the systemic lupus Erythematosus disease was compared. Lower levels of psychological distress and low grade anxiety was found in patients with inactive stages of disease. They also scored less in pain perception and they have good general function and occupational activity. On comparison of active and inactive stages of the disease, no significant differences were found with respect to cognitive impairment, grades of depression and physical disability.

The correlation between psychiatric disorder and disease activity was studied in systemic lupus Erythematosus patients by Lim Lc et al<sup>18</sup>. It was done in patients of Singapore. This study revealed that psychopathology was contributed by disease related psychological stress.

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Other etiological factors were patients perception of symptoms severity which includes myalgia, arthritis.

There was no correlation between psychiatric and neurological disease and clinical or laboratory indices of disease activity according to Lim Lc et al<sup>18</sup>.

According to Brey RL<sup>12</sup>, Mok CC<sup>13</sup> and Ainidia<sup>14</sup> studies mood disorders may represent neuropsychiatric manifestation of disease activity or may be due to stress of having chronic disease.

KN Purandare<sup>15</sup> found that patients with psychiatric disorders were similar to patients without psychiatric disorders in relation to lupus activity.

Appenzeller Set al<sup>25</sup> reported psychosis secondary to systemic lupus Erythematosus disease onset related to disease activity in nineteen (19) of fifty-nine (59) patients in his study. This finding supported that the disease activity was associated with psychiatric morbidity.

Psychiatric morbidity was not associated with disease activity according to study Hugo et al<sup>26</sup>. These results support the hypothesis that Systemic Lupus Erythematosus (SLE) disease activity is a potential risk factor for the presence and severity of major depression in patients with systemic lupus Erythematosus.

### ***Aims and Objectives of The Study***

- To study the prevalence of psychosis and other psychiatric disorders in patients with Systemic Lupus Erythematosus.
- To correlate the severity of illness with psychosis and other psychiatric disorders in patients of systemic lupus erythematosus.

## **MATERIALS AND METHODS**

### ***Inclusion Criteria for Cases***

Persons diagnosed as cases of Systemic Lupus Erythematosus by Rheumatologists according to American College of Rheumatology (ACR) criteria, Age between 18-65yrs of both males and females, having established disease for 6 months, Ability to give informed consent.

### ***Exclusion Criteria for Cases***

History of psychiatric illness prior to onset of Systemic Lupus Erythematosus, Comorbid other chronic medical illness, Patients of SLE with end stage systemic disease, Patients with substance dependence except nicotine, Patients with mental retardation/ history of dementia, not able/Not willing to give consent.

### ***Inclusion Criteria for Controls***

Individuals of same age and sex, educational and socioeconomic status matched with cases, Individuals with no family history of systemic lupus erythematosus, Individuals with no major medical / psychiatric illness, Individuals who are willing to give informed consent.

### ***Exclusion Criteria for Controls***

Patients with substance dependence except nicotine, Individuals who are not willing to give informed consent.

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### **METHODOLOGY**

A sample of 30 consecutive patients with an established diagnosis of systemic lupus erythematosus, attending the Rheumatology OP as well as Inpatients were selected for the study.

A sample of 30 controls (Age, sex, marital status, place of living, Socioeconomic status matched controls) who attended Govt Rajaji Hospital OPD for minor physical ailments were enrolled in this study.

#### **Operational Design**

- The study was conducted at Government Rajaji Hospital, Madurai, a tertiary care centre for 3 months.
- The study was approved by Institutional Ethical Committee, Government Rajaji Hospital, Madurai.
- The study is designed as a case control study.
- The sample was chosen from patients attending Rheumatology OP as well as those who were admitted in Rheumatology ward for investigation or therapeutic purposes.
- Every consecutive patient attending the Rheumatology department were selected.
- The cases who met the criteria for Systemic Lupus Erythematosus as per American College of Rheumatology (ACR) criteria, have been diagnosed by Senior Rheumatologist were chosen and subsequently assessed in Psychiatry Department under the supervision of Senior Psychiatrist.
- Healthy controls (sociodemographic matched with cases) were taken and assessed.

#### **Statistical Design**

Statistical design was formulated using the data collected as above, for each of the scales and socio-demographic variables. Statistical analysis was done using SPSS (Statistical Package for Social Studies) version 14.0. The central values and dispersion were calculated. In comparison of the data for categorical variables chi-square and for numerical variables student t test were used. For multiple comparisons of more than two numerical variables, ANOVA and Scheffe post hoc tests were used. Correlation among variables was studied using Pearson’s correlation coefficient.

#### **Tools Used**

- Proforma
- Kuppusamy rating scale for socioeconomic status
- MINI International Neuropsychiatric Interview
- Hospital Anxiety and Depression Scale
- Systemic Lupus Activity Measure-Revised (SLAM-R) for measuring disease activity.

### **RESULTS AND INTERPRETATION**

**Table 1: Table Showing Sociodemographic Variables of The Sample Population**

SN	VARIABLES	Cases (N-30)	Controls (N-30)	Percentage
1.	Age	<20	6	20.0%
		21-30	11	36.7%
		31-40	8	26.7%
		41 and above	5	16.7%
2.	Sex	Females	30	100%

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3.	Marital Status	Married	22	22	73.3%
		Unmarried	8	8	26.7%
4.	Socio economic status	Lower middle	3	3	10%
		Upper lower	27	27	90%
5.	Place of living	Rural	17	17	56.67%
		Urban	13	13	43.33%

Table 1 shows the sociodemographic profile of the sample population. From the table, it is inferred that 20% of population falls below the age of 20 years.36.7% of population belongs to the age group of 21-30 years. In the age group of 31-40 and above 40, the distribution is 26.7% and 16.7% respectively. All the cases are females.73.3% are married.90% of population belongs to upper lower socioeconomic group. Similar distribution was found for controls.

**Table 2: Table Showing the Prevalence of Psychiatric disorders Among Cases of SLE**

Psychiatric disorders	No of cases (N=30)	Percentage
Present	17	56.7%
Absent	13	43.3%

The above table shows the distribution of psychiatric comorbidity among patients with systemic lupus erythematosus. From the table, it is inferred that, among the sample of 30 patients, 17 patients (56.7%) have psychiatric disorders.

**Table 3: Table Showing the Type of Psychiatric Disorders Among Patients with SLE**

Type of Psychiatric disorder	No of cases (N=30)	Percentage
Major depression	7	23.3%
Dysthymia	3	10.0%
GAD	3	10.0%
Psychosis	2	6.7%
Social anxiety Disorder	2	6.7%

From the above table, we infer that, among the 17patients with psychiatric comorbidity, 7 patients suffer from Major depression, contributing to 23.3%second common, being dysthymia and Generalized Anxiety Disorder with a frequency of 3 patients (10.0%), psychotic disorder and social anxiety disorder (9.6%) and in 6.7% of patients.

**Table 4: Table Showing the Prevalence of Psychiatric Disorders Among Controls**

Psychiatric disorders	No of controls (N=30)	Percentage
Present	3	10.00%
Absent	27	90.00%

From the table, it is inferred that, among the sample of 30 patients, 3 patients (10.0%) have psychiatric disorders.

**Table 5: Table Showing the Type of Psychiatric Disorders among Controls**

Type of Psychiatric disorder	No of cases (N=30)	Percentage
Major depression	1	3.3%
Dysthymia	1	3.3%
GAD	1	3.3%



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The above table shows the frequency distribution of the type of psychiatric illness among controls. From the table, we infer that, among 3 patients with psychiatric disorders, one (3.3%) suffer from depression, one (3.3%) suffer from dysthymia and one (3.3%) suffer from Generalized Anxiety Disorder

**Table 6: Table Showing Frequency Distribution of HADS-A (Cases and Controls)**

SN	Study population	VARIABLES	No of cases	PERCENTAGE	
1.	Cases (N=30)	HADS-A	Normal	16	53.30%
			Borderline	9	30.00%
			Abnormal	5	16.70%
2.	Controls (N=30)	HADS-A	Normal	28	93.3%
			Borderline	1	3.3%
			Abnormal	1	3.3%

The above table shows the frequency distribution of HADS-A in cases and controls. Among cases,16(53.30%) cases scored as normal,9(30.00%) scored as borderline and 5 cases (16.70%) are abnormal. Among controls,28 cases scored as normal. one scored as borderline and one scored as abnormal.

**Table 7: Table Showing Frequency Distribution of HADS-D (Cases and Controls)**

SN	Study population	VARIABLES	No of cases	PERCENTAGE	
1.	Cases (N=30)	HADS-D	Normal	14	46.70%
			Borderline	6	20.00%
			Abnormal	10	33.30%
2.	Controls (N=30)	HADS-D	Normal	27	90.00%
			Borderline	1	3.30%
			Abnormal	2	6.70%

The above table shows the frequency distribution of HADS-D in cases and controls. Among cases,14(46.70%) cases scored as normal,6 (20.00%) scored as borderline and 5 cases (33.33%) are abnormal. Among controls,27 cases scored as normal .one scored as borderline and 2 scored as abnormal.

**Table 8: Table Comparing HADS Score among Cases and Controls**

S.NO	VARIABLE		MEAN	SD	t VALUE
1.	HADS -A	CASES	7.27	4.941	3.738**
		CONTROLS	3.47	2.569	
2.	HADS-D	CASES	8.73	5.866	3.952**
		CONTROLS	3.93	3.140	

From the above table, it is inferred that there is significant difference between two groups in terms of anxiety and depression score in HADS score at a p value of <0.01. Patients with systemic lupus Erythematosus experienced more anxiety and depression than controls.

**Table 9: Table Comparing PSLE And HADS Scores Among Patients with and Without Psychiatric Disorders**

3.	HADS-A	PRESENT	10.47	4.230	-6.079** df=28
		ABSENT	3.08	1.256	
4.	HADS-D	PRESENT	12.88	4.343	-7.657** df=28
		ABSENT	3.31	1.316	

\* = $P < 0.05$ , \*\* =  $P < 0.01$

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From the above table, it is inferred that there is significant difference between two groups in terms of anxiety and depression score in HADS score at a p value of <0.01.

**Table 10: Table Comparing SLE Disease Activity Scores Among SLE Patients with And Without Psychiatric Morbidity**

S.NO	VARIABLE	PSYCHIATRIC MORBIDITY	N	MEAN	SD	STATISTICAL 't' value
1.	SLE DISEASE ACTIVITY SCORE	PRESENT	17	11.88	4.240	-5.672** df=28
		ABSENT	13	4.85	1.573	

\* =P<0.05, \*\* = P<0.01

From the above table, it is inferred that patients with psychiatric disorders had more disease activity score than patients without psychiatric disorders significant difference was found between two groups.

**Table 11: Table Comparing SLE Activity Scores Among the Types of Psychiatric Comorbidities**

S.NO	VARIABLE	PSYCHIATRIC MORBIDITY	N	MEAN	SD	'F' Value	POST HOC TEST
1.	SLE disease activity score	1.No illness	13	4.85	1.57	13.906	1 vs 2** 1 vs 5**
		2.Major depression	7	13.85	3.34		
		3.Dysthymia	3	10.00	4.00		
		4.GAD	3	8.00	3.46		
		5.Psychotic disorder	2	16.50	2.12		
		6.Social Anxiety	2	9.00	4.24		

\* =P<0.05, \*\* = P<0.01

From the above table, it is inferred that among psychiatric disorders, significant difference was found between patients without psychiatric disorders and major depression and psychotic disorder.

**Table 12: Table Comparing PSLE and HADS Scores Among Patients with And Without SLE Disease Activity**

S.NO	VARIABLE	DISEASE ACTIVITY	MEAN	N	SD	STATISTICAL 't' VALUE
3.	HADS-A	PRESENT	9.64	14	3.338	-2.723* df=28
		ABSENT	5.19	16	5.231	
4.	HADS-D	PRESENT	13.14	14	4.538	-5.415** df=28
		ABSENT	4.88	16	3.828	

\* =P<0.05, \*\* = P<0.01

The above table shows the comparison of HADS score among patients with disease activity and without disease activity. From the above table, it is inferred that there is significant difference between two groups in terms of anxiety and depression score in HADS score at a p value of <0.01.

## **DISCUSSION**

This study was done to assess the prevalence of psychosis and other psychiatric disorders in patients with Systemic Lupus Erythematosus. It also aimed to correlate the disease activity with psychiatric disorders in patients with Systemic Lupus Erythematosus. In addition to prevalence of psychiatric disorders, levels of anxiety and depression, with systemic lupus erythematosus compared with healthy controls.

In the present study, 30 cases and 30 healthy controls were enrolled. Patients were assessed using MINI, HADS. Disease activity was measured using SLAM (Systemic Lupus Activity Measure). Healthy controls were matched with socio demographic details (Age, sex, place of living, marital status and socio-economic status). Healthy controls were assessed using MINI, HADS.

Most of the cases were found to be in the age group of 21-30 years. Systemic Lupus Erythematosus (SLE) is common in the age group of 15-64 years. In present study 36.7 % of population belong to the age group of 21-30 years.

In present study, incidentally all thirty (30) patients were females. Age distribution was 100%. Systemic lupus erythematosus is more common in females. Chandrasekaran et al<sup>26</sup> in their study of neuropsychiatric Systemic lupus erythematosus in 1992 among Indian patients, reported a female to male ratio of 14:1. In present study, sample 56.7% of patients were from rural population and 43.3% of patients were from urban population. 73.3% of population were married. Majority of the population (90%) belonged to upper lower Socio-Economic Status.

### ***Systemic Lupus Erythematosus and Psychiatric Disorders***

In present study, among 30 cases of systemic lupus erythematosus we found that 17 cases amounting to proportion of 56.7% have psychiatric disorders.

Buchbinder R et al<sup>4</sup> and Johnson RT et al<sup>9</sup> showed the prevalence of psychiatric symptoms ranges from 17% to 75%. Jonson A et al study of outcome of Systemic lupus erythematosus found that 38% of patients developed neuropsychiatric SLE. Another study by Hugo et al<sup>10</sup> in 1996 found that point prevalence of psychiatric disorders was 18.2%. K.N. Purandare et al<sup>15</sup> investigated psychiatric morbidity in patients with Systemic lupus erythematosus, Hospital based Indian study reported 50% prevalence of psychiatric disorders.

### ***Systemic Lupus Erythematosus and Types of Psychiatric Disorders***

In our study, most common psychiatric diagnosis was major depressive episode. Dysthymia and generalized Anxiety Disorders were next common. Only 2 cases were diagnosed to have psychosis and social anxiety disorder was found in 2 patients. Among psychiatric disorders, it is found that 7 cases out of 17(41.8%), have major depressive episode. Brey RL<sup>12</sup>, Mok CC<sup>13</sup> and Ainidla<sup>14</sup> studies have shown that Depression is commonly reported psychiatric disorder in patients with systemic lupus erythematosus with prevalence rates ranging from 16% to 51%. In the study of Stern et al 8 of the 27 non psychotic patients were diagnosed to have mild to moderate depression. In the review of Ganz et al<sup>17</sup>, depressive symptoms were twice as common as organic symptoms and seven times as common as psychosis.

Hall et al<sup>10</sup> found that patients with systemic lupus erythematosus and Rheumatoid arthritis showed the same proportion of organic symptoms(22%) and an equally high proportion of depressive symptoms(51% and 47% respectively). Similarly Magner MB-A study<sup>27</sup> showed a

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relatively high prevalence of neurotic depression in patients with Systemic Lupus Erythematosus and Rheumatoid arthritis(40% in SLE and 32% in RA).Present study finding was 23.3% for depressive disorders similar to studies of Brey RL<sup>12</sup>:Mok CC<sup>13</sup>.

The prevalence of psychosis in present study is 6.7%.2 cases of 30 patients with systemic lupus erythematosus were diagnosed as psychosis. In systemic lupus erythematosus, the reported prevalence of psychosis has varied from 2% to 7%.

In the study by Hall et al<sup>10</sup> in 1981,14(25%) of the 56 were classified as psychotic. Ganz et al<sup>17</sup> in their review in 1972 found only 5 patients (7%) with schizophreniform symptoms. Brey et al<sup>12</sup>(2002), Scanna et al<sup>28</sup>(2003), London and Hanly et al<sup>29</sup> (2007) reported 5 patients (3.9%) of 128 patients,8(2.48%) of 323 patients,3 of 572 (< 1%) patients had psychosis respectively.

Appenzeller S et al<sup>25</sup>, evaluated the frequency and risk factors of acute psychosis in a large cohort of patients with systemic lupus erythematosus. They identified acute psychosis in 89 of 520 (17.1%). Psychosis primary to CNS involvement was diagnosed in 59 of these patients which is about (11.3%).

Present study finding looks like as same as Ganz et al<sup>17</sup>review and prevalence is low while comparing the studies by Hall et al<sup>10</sup>, Stern and Robbins<sup>5</sup> and Appenzeller et al<sup>25</sup>. When compared to many studies, prevalence of psychosis is more in present study.

Brey et al<sup>12</sup> (2002) reported 3 of 128 (3%) patients with systemic lupus erythematosus had bipolar mood disorder (manic features) and one patient had bipolar mood disorder with mixed features. In our study, no single case of Bipolar mood disorder was reported.

It is found that 10% (3 out of 30) of patients were diagnosed to have Generalized Anxiety Disorder and 6.7% (2 out of 30) of patients were diagnosed as social anxiety disorder in present study.

In present study, we tried to find the differences in the Hospital Anxiety Depression Scale Scores, between cases and controls. The mean scores on HADS was calculated. On applying the student t test for the collected data, we found that there was significant difference between cases and controls. This finding indicates that patients with systemic lupus erythematosus experience more anxiety and depressive symptoms when compared to healthy controls.

We found that there was significant difference in Hospital Anxiety Depression Scale Scores, between SLE patients with and without psychiatric disorders. On applying t test, we concluded that SLE patients with psychiatric disorders scored high in HADS which is indicative of they have more anxiety and depression than SLE patients without psychiatric disorders.

### ***Disease Activity with Psychiatric Disorders, HADS***

In present study, on applying t test there is significant difference between disease active and inactive group with respect to psychiatric morbidity. On further analyzing the data using Oneway ANOVA, on comparing the scores among the various types of Psychiatric comorbidities in our study, we found a significant difference between patients without Psychiatric illness and patients with Depression and psychotic disorder. Disease activity was associated with depressive episode and psychotic disorder.

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Nery FG et al<sup>30</sup> found that Patients with major depression presented a trend toward having greater severity of SLE disease activity compared with those without major depression. These results support the hypothesis that SLE disease activity is a potential risk factor for the presence and severity of major depression in patients with SLE. The result of this study is similar to present study.

Appenzeller S<sup>25</sup> et al found that fifty-nine (59) patients of 520 had Psychosis. 19 patients had psychosis secondary to SLE at disease onset and was associated with disease activity.

In present study, we tried to find the differences in the Hospital Anxiety Depression Scale Scores between patients with and without SLE disease activity. There was a significant difference between the two groups. Patients with disease activity scored more in HADS than patients without disease activity. The difference was more significant for HADS-D than for HADS-A.

### ***Limitations of the Study***

- This study is a case control study done in a short period. Hence the longitudinal course and outcome of the patients could not be assessed.
- The study sample is small. Further studies on a larger sample are needed.
- Since the study has been done in a government Hospital, in which majority of the population belongs to middle and lower socioeconomic status, these findings cannot be extrapolated to the general population.

## **CONCLUSION**

The study findings reveal the following,

1. Psychiatric disorders are highly prevalent in patients with Systemic Lupus Erythematosus.
2. Major depressive disorder is the most common Psychiatric disorder associated with Systemic Lupus Erythematosus.
3. The risk of developing Psychiatric illnesses (Depression and psychotic disorder) increases with increasing severity of systemic lupus erythematosus.
4. Based on the findings in present study, it is shown that Systemic Lupus Erythematosus patients have a high risk of Psychiatric illness and when emotional factors are not addressed adequately, the morbidity of these patients may increase. Early recognition and treatment of Psychiatric illness by involving a Psychiatrist as a team member in the Rheumatology clinic may lead to a better outcome. Further studies to characterize the pattern of Psychiatric morbidity and their impact on daily living and longitudinal studies to observe improvement with pharmacotherapy and psychotherapy are necessary.

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***Conflict of Interest***

The author declared no conflict of interest.

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