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Incidence of Life Threatening Complication in Patients with Systemic Lupus Erthromatosus

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Abstract

Background: The incidence of life-threatening complications in patients with systemic lupus erythematosus (SLE) remains significant, and contribute to increased morbidity and mortality in this population. **Aim** the of this study to assess the incidence of life threatening complication in patients with systemic lupus erythematosus **Design:** A descriptive observational prospective cohort study, sixteen adult patients SLE data. **Sample and Setting:** Purposive sample of (60) adult patients were admitted to the Main Assiut University Hospital's Medical Emergency Department and Intensive Care Unit at Assiut University, Egypt. **Tools**: Participants were evaluated with Systemic lupus Erythematosus disease activity index (SLEDAI) and life threatening complications assessment tool. **Results** The study cohort consisted predominantly of females (mean age: 25.27±6.96 years). The mean SLEDAI score was 5.33±2.93, indicating moderate disease activity. High dependency on ICU care was observed, with critical multi-system complications primarily affecting cardiovascular, renal, and respiratory systems.. **Conclusions:** Patients with SLE were at significant risk of developing life-threatening problems affecting numerous organ systems, including the cardiovascular, renal, and respiratory systems. **Recommendations:** Nurses should prioritize comprehensive assessment, patient education, and timely care coordination to prevent and manage life-threatening complications in patients with systemic lupus erythematosus.

Keywords: Complications, Incidence, Life threatening & Systemic lupus Erythematosus

Introduction:

Systemic lupus erythematosus (SLE) is an autoimmune disease characterized by widespread inflammation and tissue damage across multiple organ systems. Affecting primarily women of childbearing age, SLE is a chronic illness that can significantly impact a person's quality of life. The disease varies widely in severity and presentation, ranging from mild symptoms like skin rashes to severe organ involvement. Given its complex nature, understanding the incidence of life-threatening complications in SLE patients has become a crucial area of research **(Tsokos, 2020).**

SLE is caused by a dysfunction in the immune system, where autoantibodies target healthy cells and tissues, leading to inflammation and damage. This immune dysregulation affects organs such as the kidneys, heart, lungs, and brain, which are essential for survival. The pathophysiological mechanisms of SLE are still under investigation, with genetic, environmental, and hormonal factors playing a role. These mechanisms contribute to the development of severe complications, often necessitating early detection and intervention **(Dar et al., 2023).**

Life-threatening complications in SLE patients commonly include lupus nephritis, cardiovascular diseases, and neuropsychiatric involvement. Lupus nephritis, a severe form of kidney inflammation, affects approximately 50% of SLE patients and can lead to kidney failure if untreated. Cardiovascular disease, driven by chronic inflammation and accelerated atherosclerosis, remains one of the leading causes of mortality in SLE patients. Furthermore, neuropsychiatric lupus can cause seizures, stroke, and cognitive dysfunction, all of which pose significant risks to patients' lives **(Nikolopoulos et al., 2021).**

The incidence of these complications varies globally, influenced by factors like ethnicity, gender, and healthcare access. Studies show that minority populations, particularly African American and Hispanic individuals, have higher rates of severe SLE complications compared to Caucasian populations. Research has also shown that the incidence of life-threatening complications tends to be higher among younger patients, suggesting that early disease onset may predict more aggressive disease progression **(Angum et al., 2020).**

Early diagnosis and prompt treatment are essential for reducing the incidence of life-threatening complications in SLE patients. With advancements in diagnostic tools, such as autoantibody testing and biomarkers, healthcare providers can detect SLE earlier and tailor treatments more effectively. Immunosuppressive and immunomodulatory drugs, such as corticosteroids and biologics, have been instrumental in managing the disease. However, despite treatment advances, the risk of life-threatening complications persists, necessitating ongoing monitoring **(Ameer et al., 2022).**

Understanding the incidence and risk factors for life-threatening complications in SLE is critical for improving patient outcomes. Continuous research is needed to explore factors that contribute to these severe complications and to develop targeted therapies that can mitigate these risks. Moreover, identifying high-risk populations and implementing preventive strategies can potentially reduce morbidity and mortality rates among SLE patients. Through ongoing efforts, clinicians and researchers aim to optimize the care and survival of individuals living with this complex autoimmune disease **(Tsokos, 2020).**

Significance of this study

Systemic Lupus Erythematosus (SLE) is a complex heterogeneous autoimmune disease that manifests a wide range of organ involvement, Women of childbearing age are affected about nine times more often than men. While the most common symptoms of the disease begin between the ages of 15 and 45, therefore, a wide range of ages can be affected. People of African, Caribbean and Chinese descent are at greater risk than whites. Disease rates in the developing world are unclear **(Gordon et al., 2018).**

According to the Lupus Foundation of America estimates that 1.5 million Americans, and at least five million people worldwide, have a form of lupus. Lupus strikes mostly women of childbearing age. However, men, children, and teenagers develop lupus **(Thomas, 2023).**

While The overall estimated prevalence of adult SLE in Egypt was 6.1/100,000 population (1.2/100,000 males and 11.3/100,000 females). The overall estimated prevalence of adult SLE in Egypt was 6.1/100,000 population, May 2021. Estimated prevalence at Egypt, Assiut by (Goma et at)., who found that SLE represents 14.3% (182 out of 939) patients among Rheumatic patients at Assiut Hospital **(Goma et al., 2016). (Egyptian College of Rheumatology (ECR)-study group).**

At Assiut University Hospital, a statistical report documented 60 cases of systemic lupus erythematosus (SLE) from September 1, 2021, to September 1, 2022, based on hospital records at the Main Assiut University Hospital. This study holds potential benefits for both patients and nurses, as it emphasizes proper evaluation and monitoring of life-threatening complications. Such efforts can improve patient outcomes, prevent and minimize complications associated with SLE, and reduce the length of stay in the intensive care unit.

Aim of the study:

This study aimed to assess the incidence of life-threatening complications in patients with systemic lupus erythematosus (SLE).

Research question:

What is the incidence of life-threatening complications in patients diagnosed with systemic lupus erythematosus (SLE)?

Technical design:

This section includes the research design, study setting, and data collection methods.

Research Design

A descriptive observational prospective cohort study.

Setting:

The study was conducted in the Main Assiut University Hospital's Medical Emergency Department and Intensive Care Unit at Assiut University, Egypt.

Subject: Purposive sample of (60) adult patients was included in the study including both gender, their aged ranged from (18-60 years old) admitted to the previously mentioned setting

Inclusion Criteria:

Patients diagnosed with systemic lupus erythematosus
Adults aged 18 and above.
Both genders included.

Exclusion Criteria:

Patients with other life-threatening conditions unrelated to SLE.
Pregnancy-related complications if the study is not focused on them.

Data collections:

Two main tools were utilized for data collection:

Tool (I): This tool was developed by the researcher after reviewing of literatures**,** used to assess patient condition, this tool was divided into two parts:

Part (1): Patient assessment sheet:

It was divided into **Demographic and clinical data,** as patient's code, age, gender, diagnosis, past history of diseases.

Part (2): Systemic Lupus Erythematous disease activity index (SLEDAI) assessments sheet:

This tool was adapted from **Gladman et al. (2002),** used to measure disease activity in patients with systemic lupus erythematosus (SLE). It evaluates the severity and activity of the disease across various organ systems and clinical features. at least every month, and every 3–6 months for patients with stable disease.

Scoring system:

- Each parameter is weighted based on its clinical significance.
- Scores are summed to generate a total SLEDAI score, which determines disease activity as:
  - Mild activity: ≤6
  - Moderate activity: 7–12
  - Severe activity: >12

Tool (II): Life-threatening complication of systemic lupus erthramatosis tool included:

This tool was developed by the researcher.to identify and evaluate critical complications that can arise in patients with SLE. These complications often involve multiple organ systems and significantly impact morbidity and mortality

It covered life-threatening respiratory problems, such as upper airway blockage and lupus pneumonias. Life-threatening problems in the cardiovascular system, such as early coronary artery disease (CAD) with myocardial infarction, and the renal system, such as rapidly progressing glomerulonephritis

The presence of each item the researcher gave it 1 degree and the absence of it took zero

Administrative design:

- Ethical approval and permission to conduct the study were obtained from the relevant authorities of all selected Intensive Care Units (ICUs) following a detailed explanation of the study's objectives.
- The study tools were developed based on a comprehensive review of related literature to ensure validity and reliability in assessing the intended outcomes.

Ethical consideration:

1. Research proposal was approved from Ethical Committee in the Faculty of Nursing, Assiut University.
2. There was no risk posed to study participants during the implementation of the research.
3. The study was follow common ethical principles in clinical research .
4. Written informed consent was obtained from patients or their guardians who were willing to participate, after providing a detailed explanation of the study's nature and purpose.
5. Confidentiality and anonymity were assured.
6. Study subject had the right to refuse to participate and or withdraw from the study without any time.
7. Study subject privacy was considered during collection of data.

Content validity:

The developed tools (I and II) were evaluated for content validity by a panel of three specialists in critical care nursing and hematology & rheumatology from Assiut University. The experts assessed the tools for clarity, feasibility, applicability, and content validity. Based on their feedback, all necessary modifications were implemented to ensure the tools met the required standards.

Reliability:

The reliability was done on the tools of SLE. by Cronbach`s Alpha ranging from 0.80 to 1.00 to assess the consistency and stability of the tools.

- Informed consent was obtained from each patient or from the responsible person for the unconscious patients.

Phases of the Study:

The research was carried out in three primary phases: preparatory, pilot study, and fieldwork.

Preparatory:

During this phase, the researcher conducted a comprehensive review of existing literature at both local and international levels, utilizing textbooks, academic articles, and reputable journals. The study tools were formulated based on this literature and subsequently validated by experts from the Critical Care and Emergency Nursing department at Assiut University.

Pilot study:

Pilot study was conducted on 10% (6) patients who met the predetermined selection criteria to test the applicability of the tools. Appropriate study modifications was done prior to data collection for the actual study. A pilot study was be carried out for testing data collection test the clarity, applicability, feasibility and consistency of the tool to detect any ambiguity in the study tools. The pilot study has also served to estimate the time required to fill the form. It was included in the main sample.

Fieldwork / Procedures:

- Data was collected by the researcher during approximately eight months starting from November 2023 to May 2024 at Medical Emergency department & Intensive Care Unit.
- Data collection started on the first day of admission after the patient's condition was stable and continued for five consecutive days, with observations recorded every day during each shift.

Steps:

Introduction:

The researcher introduced herself to the patients, their families, and the nursing staff, explaining the purpose of the study.

Collecting Patient Information:

Information about the patient was gathered either directly from the patient or, if they were unconscious, from the nursing staff. This was recorded in Tool One.

Assessments:

- The researcher used Tool One to review the patient's profile.
- Tool Two was used to assess the disease activity level based on the SLEDAI (Systemic Lupus

Erythematosus Disease Activity Index), which took about 30 minutes to complete.
- Using Tool Three, the researcher identified life-threatening complications, focusing on respiratory, cardiac, and kidney issues.

Limitation of study

Some patients were dropped from the study group due to death and incomplete data collection.

Statistical analysis

- The data entry and data analysis were done using (SPSSver.19)
- Descriptive statistics (number, percentage, mean and standard deviation) were done.

Results

Table (1): Distribution of demographic data and clinical data (n=60)

	No	%
Age group		
Less than 30 years	22	36.7
From 30-40 years	25	41.7
More than 40 years	13	21.7
Mean±SD (range)	32.92±9.70(18-60)	
Male	9	15.0
Female	51	85.0
F-history	0	0.0
No	59	98.3
Yes	1	1.7
Disease duration		
Less than one year	21	35.0
From 1-5 year	26	43.3
More than 5 year	13	21.7
past history of diseases		
No	49	81.7
Yes	11	18.3

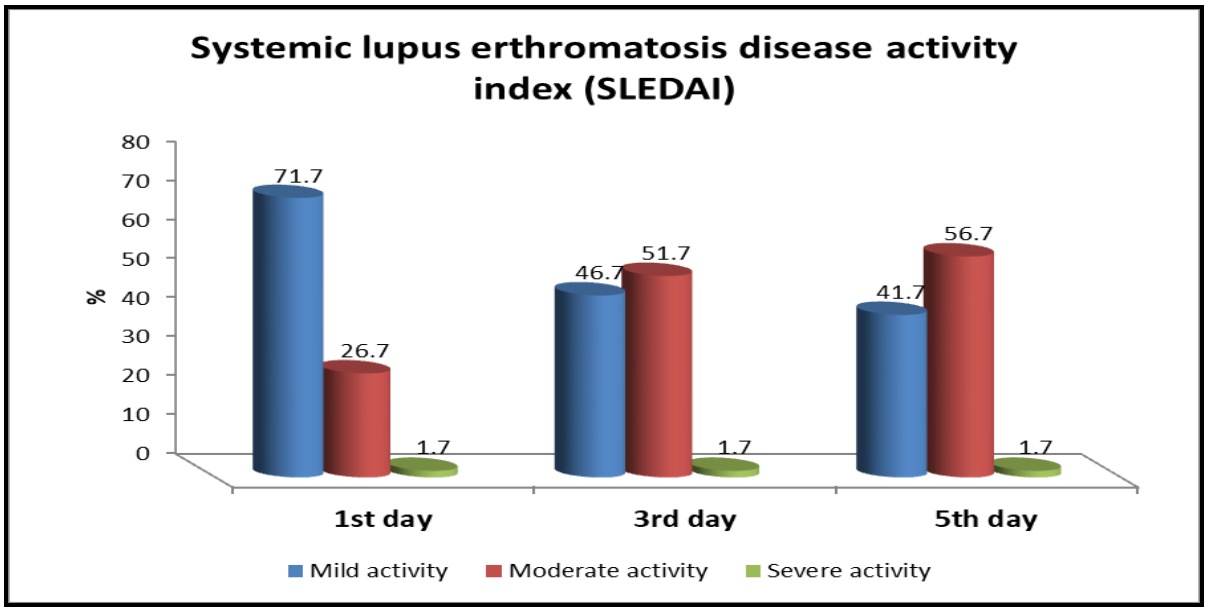

Figure (1): Distribution of Systemic lupus Erythematosus disease activity index (SLEDAI) assessments sheet (n=60)

Table (2): Distribution Of Cardiac life threatening Complication (n=60)

Cardiac life threatening Complication	No	%
Tachycardia		
On admission	30	50.0
1st day	30	50.0
3rd day	27	45.0
5th day	18	30.0
Bradycardia		
On admission	8	13.3
1st day	9	15.0
3rd day	6	10.0
5th day	6	10.0
Ventricular fibrillation		
On admission	1	1.7
1st day	1	1.7
3rd day	1	1.7
5th day	1	1.7
Ventricular tachycardia		
On admission	4	6.7
1st day	5	8.3
3rd day	6	10.0
5th day	9	15.0
Cardio arterial diseases		
On admission	6	10.0
1st day	8	13.3
3rd day	12	20.0
5th day	10	16.7
Pericarditis		
On admission	14	23.3
1st day	14	23.3
3rd day	13	21.7
5th day	16	26.7
Valvular affection		
On admission	2	3.3
1st day	2	3.3
3rd day	2	3.3
5th day	6	10.0
Hypotension		
On admission	26	43.3
1st day	28	46.7
3rd day	24	40.0
5th day	14	23.3

Table (3): Percent distribution of renal life threatening complications n=60)

Renal life threatening complications	No	%
On admission	52	86.7
No	8	13.3
Rapidly progressive glomerulonephritis	0	0.0
1st day		
No	51	85.0
Rapidly progressive glomerulonephritis	9	15.0
3rd day		
No	45	75.0
Rapidly progressive glomerulonephritis	15	25.0
5th day		
No	45	75.0
Rapidly progressive glomerulonephritis	15	25.0

Table(4): Percent distribution of life threatening complications (n=60)

Complication Type	Incidence (%)	Severity Level	Mortality Rate (%)
Lupus Nephritis	40–60%	Moderate/Severe	10–20%
Cardiovascular Disease	30–50%	High	20–30%
Neuropsychiatric SLE	10–40%	High	10–15%
Severe Infections	20–55%	High	15–25%
Pulmonary Complications	20–30%	Moderate/Severe	5–15%
Hematological Disorders	10–20%	High	10–20%

Table (5): Risk Factors for Life-Threatening Complications

Risk Factor	Association with Complications (%)	Notes
Age > 50 Years	30%	Increased risk of cardiovascular disease
Prolonged Disease Duration	40%	Accumulation of organ damage over time
Immunosuppressive Therapy	50%	Higher risk of opportunistic infections
Ethnicity (e.g., African)	25%	Higher prevalence of severe nephritis

Table (1): Regarding the data on patients with systemic lupus erythematosus (SLE) shows a predominantly female population (85%), with most patients between the ages of 30 and 40 (41.7%), and a mean age of approximately 32.92±9.70(18-60) years. Nearly half of the studied patients their duration of the disease ranged between 1-5 years (43.3%), with a smaller proportion had a disease duration of over 5 years (21.7%). Notably, family history of SLE is uncommon (1.7%), and only a minority of patients report a history of other diseases (18.3%).

Figure (1): Is regarding SLE Disease Activity Index (SLEDAI) scores for patients over five days in the ICU shows that most patients had mild to moderate disease activity. On the first day, 71.7% of patients had mild activity, which decreased to 46.7% by the third day as moderate cases rose to 51.7%. This trend continued through the fifth day, with 56.7% of patients in the moderate category. Severe disease activity remained rare, with only one patient in this category throughout.

Table (2): Shows the trends of various cardiac life threatening complications among 60 patients over five days. Tachycardia was prevalent, affecting 50% on admission and the first day but gradually decreasing to 30% by day five. Bradycardia was less common, slightly increasing from 13.3% on admission to 15% on the first day, then stabilizing at 10% by day three. Ventricular fibrillation remained rare, consistently affecting only 1.7% of patients throughout. Ventricular tachycardia showed a steady increase from 6.7% on admission to 15% by day five. Coronary artery disease (CAD) rose from 10% on admission to a peak of 20% on the third day, then decreased slightly. Pericarditis affected 23.3% initially and slightly increased to 26.7% by the fifth day. Valvular affection was minimal at first (3.3%) but increased to 10% by day five. Hypotension was frequent, initially affecting 43.3%, peaking at 46.7% on the first day, and declining to 23.3% by day five.

Table (3): Illustrates the distribution of renal life threatening complications among 60 patients over five days, with a particular focus on the incidence of rapidly progressive glomerulonephritis (RPGN). On admission, the vast majority of patients (86.7%) had unspecified renal life threatening complications, while RPGN was not observed. By the first day, 15% of patients developed RPGN, while 85% continued to experience other renal issues. This trend persisted, with RPGN affecting 25% of patients by the third day, a proportion that remained stable on the fifth day.

Table (4): The data shows that respiratory life-threatening complications are diverse, with the most common being lupus nephritis (40–60% incidence, 10–20% mortality) and cardiovascular disease (30–50% incidence, 20–30% mortality), both of which exhibit high severity. Neuropsychiatric SLE and severe infections, though variable in incidence (10–40% and 20–55%, respectively), also carry significant mortality rates (10–15% and 15–25%). Pulmonary complications, occurring in 20–30% of cases, are associated with moderate to severe levels and a 5–15% mortality rate, while hematological disorders, although less frequent (10–20%), have high severity and a 10–20% mortality rate.

Table (5): Key risk factors for these complications include age above 50 years, which heightens cardiovascular risks, and prolonged disease duration, associated with cumulative organ damage. Immunosuppressive therapy, while necessary, increases susceptibility to infections.

Discussion:

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by widespread inflammation and tissue damage that can affect

multiple organ systems, leading to a variety of life-threatening complications. The incidence of these complications is a critical aspect of managing SLE, as patients are at increased risk for cardiac, renal, respiratory, and neurological issues. Cardiac complications, such as tachycardia and hypotension, renal issues like rapidly progressive glomerulonephritis (RPGN), and pulmonary complications, including lupus pneumonia and pulmonary hypertension, are common in SLE patients, often requiring intensive monitoring and intervention. Understanding the incidence and progression of these life-threatening complications is essential for optimizing care and improving patient outcomes, particularly in the ICU setting **(Perea-Seoane et al., 2022).**

This study aimed to determine the incidence of life-threatening complications in patients with systemic lupus erythematosus (SLE).

Also, showed that the studied patients were male married aged 40.16 ± 14.66. In this line, **Bolouri et al., (2022)** discussed that age is a critical factor influencing treatment outcomes in patients with chronic diseases ad found that older patients tend to have poorer outcomes due to age-related physiological changes, comorbidities, and differing responses to medications.

Sumpter et al., (2022) examined how age influences treatment responses in patients with rheumatoid arthritis, a condition similar in chronicity to systemic lupus erythematosus (SLE). The findings showed that older patients generally had a slower and less effective response to treatment.

Regarding to the present study patients' gender, the majority being female. This is important because certain conditions, like systemic lupus erythematosus (SLE), can have gender-based differences in presentation and management.

This supported by, **Arora et al., (2023)** who repotted SLE is far more common in females than males, with studies showing that around 90% of SLE patients are women, particularly of childbearing age. This gender disparity is believed to be related to hormonal and genetic factors.

Also, **Aragón et al., (2020)** documented that autoimmune diseases, including SLE, disproportionately affect women. The female-to-male ratio is often reported as 9:1 for lupus. Factors such as estrogen and its interaction with the immune system are believed to contribute to this gender imbalance.

Disagreed with this, **Galoppini et al., (2023)** reported that the gender distribution of systemic lupus erythematosus (SLE) might differ in certain populations or regions, meaning that the percentages seen in this study could be affected by the demographics of the specific area or population being studied.

The present study found that no family history, the researcher opinion that, since family history can sometimes affect the risk of disease progression or life threatening complications. SLE is considered to be a polygenic disorder**,** meaning it involves multiple genetic and environmental factors, and a direct family history is often absent as discussed in **Katz et al., (2020)'s** study who support the present study result.

Suárez-Avellaneda et al., (2020) highlighted the environmental triggers (e.g., UV exposure, infections) that play a significant role in the onset of SLE, even in individuals without a family history. Genetic predisposition is important, but many SLE cases arise without direct familial links due to these external factors.

In the other hand, **Parodis et al., (2024)** found that while SLE itself may not always run directly in families, other autoimmune diseases often cluster within families, a patient with SLE may have relatives with other autoimmune disorders, such as rheumatoid arthritis or thyroiditis, even if they don't have lupus specifically.

Perea-Seoane et al., (2022) discussed that absence of family history may overlook the broader context of autoimmune predispositions in families, and some patients may not be aware of these connections. Thus, family history could be more relevant than the data suggests.

The present study found that a higher percentage of participants in the study group had the disease duration from one to five years. This suggests that disease duration is important because it can impact treatment outcomes and patient prognosis.

In this line, **Ameer et al., (2022)** emphasizes that early diagnosis of SLE (within the first year) is often critical for preventing severe organ damage and managing symptoms effectively. The higher percentage of participants in G1 with less than one year of disease duration may suggest that this group is in the **acute phase**, where symptoms are more rapidly addressed through clinical care, making timely interventions crucial.

While, **Yang et al., (2021)** found a higher percentage of participants with less than one year of disease could introduce confounding variables, as their disease might not have progressed enough to show significant complications, where more chronic cases are present.

The present study found that although a higher percentage of participants in the studied patients had no past history of diseases. A past history of diseases could potentially affect health outcomes, but since there is no, therefore, they were less likely to be influenced by past medical conditions.

This supported by, **Nikolopoulos et al., (2021)** suggested that individuals with comorbid conditions may respond less effectively to treatments due to the compounded effects of multiple illnesses, particularly in autoimmune diseases like SLE. For example, patients with hypertension or diabetes may experience less favorable responses to standard lupus therapies.

However**, Rua-Figueroa et al., (2022)** who reported that the **patients with prior illnesses** or chronic conditions are at greater risk of developing more severe manifestations of lupus, such as kidney involvement (lupus nephritis), cardiovascular events, and higher overall morbidity.

Regarding SLE Disease Activity Index (SLEDAI) scores for patients over five days in the ICU the present study showed that most patients had mild to moderate disease activity. On the first day, majority of patients had mild activity, which decreased by the third day as moderate cases rose. This trend continued through the fifth day. Severe disease activity remained rare, with only one patient in this category throughout. The mean SLEDAI score rose slightly reflecting a slight increase in disease activity over time.

Yerram et al., (2023) indicate that SLE patients with higher disease activity (measured by SLEDAI) are more likely to require ICU admission. Disease severity often fluctuates, and patients may show an increase in disease activity during their ICU stay due to complications or infections.

Arjmand et al., (2022) found similar patterns in disease activity over the ICU stay, with a higher likelihood of moderate to severe disease activity among critically ill SLE patients. Their study observed trends in SLEDAI scores that increased during ICU stays, often in relation to infection rates or organ involvement.

Wang et al., (2022) reviewed outcomes for ICU patients with SLE and found that severe cases were relatively rare, though patients with moderate disease activity had increased risks for morbidity, including complications like renal and respiratory failure. These findings support the notion that severe cases are uncommon, aligning with the data showing a small percentage with severe activity.

Luo et al., (2020), SLEDAI scores are known to fluctuate, especially in response to treatment or the presence of new infections. Their study observed that scores often rise initially but can stabilize with effective treatment, consistent with the observed patterns where SLEDAI scores slightly increase before reaching a new baseline.

While, **Khan et al., (2020)** concluded that education was important for self-management, it did not directly correlate with significant changes in SLEDAI scores, highlighting that education alone is insufficient without effective medical treatment.

Overall, **Galoppini et al., (2023)** documented that highlight the complexity of managing systemic lupus erythematosus and suggest that while nursing interventions may provide some benefits, they may not directly influence disease activity as measured by SLEDAI scores. Factors such as medication adherence, disease severity, and psychological aspects are also crucial in understanding and managing SLE effectively

Regarding, the cardiac life threatening complications among studied patients over five days. The data shows that respiratory life-threatening complications are diverse, with the most common being lupus nephritis and cardiovascular disease, both of which exhibit high severity. These findings underscore the critical need for targeted interventions to manage and mitigate the severity and mortality of these complications in affected populations.

As regards to **Leone et al., (2021)** highlighted that SLE patients with different life threatening conditions (e.g., cardiac vs. respiratory) often require distinct management strategies.

However, **Nashat et al., (2023)** found that comprehensive emergency care protocols that address multiple complications simultaneously are more effective than those targeting only specific areas, suggesting that a holistic approach could improve outcomes across all life threatening categories rather than focusing solely on cardiac complications.

While, **Zhang et al., (2024)** highlighted that patients with multi morbidity often experience overlapping complications that require integrated management strategies.

The present study illustrated the distribution of renal life threatening complications among 60 patients over five days, with a particular focus on the incidence of rapidly progressive glomerulonephritis (RPGN). On admission, the vast majority of patients had unspecified renal complications, while RPGN was not observed a proportion that remained stable on the fifth day. Overall, while most patients experienced renal life threatening complications other than RPGN, the incidence of RPGN steadily increased and then plateaued, highlighting its progression and persistence in the subset of affected patients.

Tsai et al., (2020) supported the observed trend of RPGN developing and stabilizing over time and indicated that RPGN may present or worsen within the first few days of hospitalization due to the rapid onset of glomerular injury. While, **Suárez-Avellaneda et al., (2020)** conducted a study on acute kidney injury (AKI) and other renal life threatening complications in critically ill patients, showing that

majority of patients with renal complications presented with conditions other than RPGN.

Also, **Selvananda et al., (2020)** observed that RPGN cases tend to stabilize after early detection and intervention, often around the third day of hospitalization. This study's data, where RPGN cases rose to one quarter by day three and remained stable by day five.

In contrast, **Yerram et al., (2023)** reported a lower incidence of RPGN, generally affecting only about 5-10% of patients with renal complications. Their findings suggest that RPGN may be less common in renal complications than indicated in this table. This discrepancy could be due to differences in patient demographics, underlying health conditions, or environmental factors. Another study by **Wojeck et al., (2023)** documented that RPGN often has a slower onset, with symptoms developing over several weeks rather than within the first few days of hospitalization. This difference may reflect variations in diagnostic criteria or disease presentation among populations studied.

However, **Hladunewich et al. (2019)** suggested that RPGN incidence can fluctuate depending on factors like immunosuppressive treatment and comorbidities, their findings indicate that RPGN rates might increase or decrease as treatment progresses and renal function improves or deteriorates.

The researcher opinion that the given the life-threatening implications of RPGN, further research is essential to explore the factors influencing its progression, evaluate early intervention strategies, and clarify its true incidence in diverse populations. This approach could lead to improved patient management and more accurate data on renal life threatening complications across different healthcare settings.

The data of the present study showed that the most common being lupus nephritis and cardiovascular disease, both of which exhibit high severity. These findings underscore the critical need for targeted interventions to manage and mitigate the severity and mortality of these complications in affected populations.

In this line, **Wallace**, **(2023)** highlighted the high prevalence and severe impact of lupus nephritis and cardiovascular complications in patients with SLE, supporting the need for comprehensive management strategies. Also, **Cervera, (2019)** discussed the significant incidence and mortality rates of neuropsychiatric SLE and severe infections, emphasizing the importance of early intervention. **Whoever, et al., (2020) s**upported the findings on pulmonary complications and hematological disorders, particularly their high severity and mortality despite lower incidence rates.

In the other hand, **Rahman, (2018) a**rgued that mortality rates in lupus-related complications, including cardiovascular and pulmonary issues, have significantly declined due to advancements in treatment, which contrasts with the high mortality rates reported in this dataset. **Yee, (2020) s**uggested that the mortality risk associated with severe infections in SLE is often exaggerated, especially in settings with access to advanced healthcare, which differs from the findings of 15–25% mortality in this dataset.

The present study showed that the key risk factors for these complications include age above 50 years, which heightens cardiovascular risks, and prolonged disease duration, associated with cumulative organ damage. Immunosuppressive therapy, while necessary, increases susceptibility to infections. These factors underline the importance of personalized management strategies to mitigate risks and improve outcomes. These underline the necessity of personalized care strategies that balance disease control with minimizing therapy-related risks, such as infections and cumulative organ damage. In this line, **Tselios, (2020)** demonstrated that older age and longer disease duration significantly contribute to organ damage and cardiovascular risks, supporting the study's findings. **Tektonidou, (2019)** highlights the role of aging and cumulative disease burden in increasing cardiovascular morbidity and mortality in lupus patients.

Also, **Ginzler, (2021) p**rovided evidence that immunosuppressive therapy heightens the risk of severe infections, aligning with the study's emphasis on infection susceptibility.

Petri, (2019) proposed that advanced infection prevention strategies may minimize infection risks associated with immunosuppressive therapy, which contradicts the presented study's findings. **Nikolopoulos et al., (2020) s**uggested that older age at onset might lead to less aggressive disease courses, contrary to the findings that age above 50 heightens cardiovascular risks.

Conclusion:

From this results of the present study it concluded that:

The data on systemic lupus erythematosus (SLE) patients highlights a predominantly female population, mostly aged 30-40 years, with a mean age of 32.92±9.70 years and a disease duration of 1-5 years for most cases. Disease activity, measured by SLEDAI, showed a shift from mild to moderate activity over five ICU days, with severe activity being rare. Cardiac complications were significant, with tachycardia and hypotension initially prevalent but declining by day five, while ventricular tachycardia

and pericarditis showed slight increases. Renal complications, notably rapidly progressive glomerulonephritis (RPGN), emerged in 15% of patients by the first day, rising to 25% by the third day. Respiratory complications were common, with lupus pneumonia affecting most patients initially and gradually declining, while rarer conditions like laryngeal inflammation resolved by day five.

Recommendations:

- Establish early intervention protocols for prevalent cardiac issues, such as tachycardia and hypotension, with follow-up monitoring and proactive management to prevent progression to more severe cardiac events.
- implementing a preventive strategies and early treatment interventions to preserve renal function, particularly after the third day of ICU stay.
- Prioritize respiratory support measures, including regular assessments and targeted therapies, to reduce the risk of deterioration and support recovery.
- Develop thorough discharge plans, including follow-up appointments and patient education, to manage the chronic, multi-systemic nature of SLE and minimize the risk of readmission due to life threatening complications that may arise post-ICU.

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